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**36th WEDC International Conference, Nakuru, Kenya, 2013**

DELIVERING WATER, SANITATION AND HYGIENE SERVICES
IN AN UNCERTAIN ENVIRONMENT

# The mythical nature of MDG7c to Kenya's arid and semi-arid lands (ASALS)

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**REFEREED PAPER 1621**

*Achieving millennium development Goal 7c (MDG7c) on access to improved water seems doubtful for Kenya's Arid and semi-Arid lands (ASALs). This work sought to investigate the progress made in Kenya's ASALs towards achieving the MDG7c, with a view to establishing whether it is achievable with the short time left. Heads of 4872 household (HH) in six ASAL counties of Kenya were identified using Probability and non-probability sampling techniques, and pretested structured questionnaire, Key Informant Interviews (KII) and Focused Group Discussions (FGD) administered to them. There are at least six different water sources, with 43% HHs using natural water sources. Whereas 89% of the world's population had attained the MDG goal on access to improved water source, Sub-Saharan Africa is only 61% while Kenya's ASALs rate even worse, with only 33% of all HHs have attained the MDG7 on improved water, rendering its achievement a myth in these ASAL areas.*

## Introduction

Lots of disparities were noted in the global progress towards achieving decent living in 1990's. Out of these concerns, the Millennium Development Goals (MDGs) were born. Nearly 190 countries have subsequently signed up to them. Eight MDGs were agreed at the United Nations Millennium Summit in September 2000, each with targets. Water was one of the items prioritized, and assigned goal 7 (environmental sustainability), Within this goal is target C whose aim was 'to halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation' (hereafter called MDG7c). Whereas Kenya's 1990 baseline water access was 60%, the MDG7c demanded that it attains 80% improved water access (66% rural and 96% urban) by 2015. However, by 2007, it had attained 49% rural and 83% urban, which changed to 69% in 2010 (33% rural and 84% urban). By 2012, it was estimated that it had attained 89% in urban areas and 49% in the rural (GoK, 2006, WHO / UNICEF, 2012). This is despite the fact that the rural target of 52% by 2010 should have been met if Kenya was to meet MDG7c. These Kenya MDG7c records, like in the rest of Sub-Saharan Africa, are very inconsistent. Whereas urban areas have better prospects of offering cheaper water to its residents through organized water schemes, pollution of the existing sources renders treatment expensive. On the other hand, non-point source pollution in rural areas renders access to improved water a challenge. With Kenya's water security declining to the point of being downgraded from water stressed to water scarce country in the 1990's, it's unclear what MDG7c portends to the marginalized parts of Kenya. With the evidence that the overall coverage has been declining in terms of quality and quantity, reliability and nature of access, it would seem that for most ASAL populations, MDG7c is likely to be unachievable. This work strives to determine whether MDG7c is a reality or myth in the Kenya's ASAL context. Use Ctrl and shift to align your bullet points. This document has been created using Microsoft Word. The margins should be set to 2.5cm top and bottom and 3.0cm left and right.

## Aim and objectives

This study aimed at establishing the progress made, and determining the whether the MDG7c is achievable and valid by ASALs of Kenya. The specific objectives were: (i) To establish the water sources in Kenya's ASALs; and (ii) To estimate the extent of HH access to improved water source (MDG7) and its implications

## Methodology

Five participatory surveys were done in Kenya's five ASAL counties between 2008 and 2011 using quantitative and qualitative methods. Through multi-stage sampling, starting with provinces (Rift valley, Coast and Eastern), to counties (Baringo, West Pokot, Nakuru, Taita taveta and Makueni) , and finally to specific survey sites (Mogotio, Orwa, Ndabibi, Taita Taveta I and II, and Makueni districts) as shown in table 1 below. A pretested questionnaire was administered by trained research assistants to consenting heads of 4872 households (HHs) in the sampled counties. Each county had a sampling frame of over 10,000 HHs, of which at least 380 was targeted. The actual sample size was calculated using the Fished method with a p-value of 0.5, at 95% confidence level, and a design effect of 1.2 to maintain statistical validity (Fisher et al, 1998). A combination of sample proportionate to a population (and area index) as well as cultural diversity was used to get the sample sizes in table 1. In addition, 40 Key Informant Interviews (KII), observation, secondary data, and 10 Focused Group Discussions (FGDs) were used, targeting water users associations, community based organizations (CBOs) and government departments. The questionnaire contained questions on water sources, round time to water source, seasonal availability of water source, and per capita water use.

**Table 1. The sampling criteria by county**

| Province | Frequency | Percent | Survey Site | County | Sample size | Percent |
|---|---|---|---|---|---|---|
| Rift Valley | 2626 | 53.9 | Mogotio | Baringo | 900 | 18.5 |
| | | | Orwa | West Pokot | 825 | 16.9 |
| | | | Ndabibi | Nakuru | 901 | 18.5 |
| Coast | 1346 | 27.6 | Taita Taveta I | Taita Taveta | 900 | 18.5 |
| | | | Taita Taveta II | Taita Taveta | 446 | 9.2 |
| Eastern | 900 | 18.5 | Makueni | Makueni | 900 | 18.5 |
| Total | 4872 | 100.0 | | | 4872 | 100.0 |

## Results and discussion

### Household water sources

The HHs used very diverse water sources such as Piped (24.9%), well (8.3%), protected spring (0.2%), roof catchment (1.5%), and natural sources (4.8%). Access to a wide range of water source options enables HHs to make appropriate and more informed choices depending on the specific use of the water, thereby offering the HH a chance for being water secure. Regardless of quality, a wide choice may even help improve health status of HHs (Mughogho and Kosamu, 2012). For instance, among the categories of water related diseases, water washed diseases are often controlled by sheer increase in supply and use of more water, regardless of quality (Hunter et al, 2010). However, controlling water borne and water based diseases require improved water quality. Ishakul et al (2011) argues that whereas access to safe water supply has great influence on the health, economic productivity and quality of life of the people, meeting this need is one of the major challenges facing the rural communities of Nigeria today. This is relevant in Kenya too. Water security, however, implies a temporal access to all.

### The gross access to improved water in Kenya's ASALs

Access to **i**mproved water sources is the gist of MDG7c. Using the UNICEF / WHO Joint monitoring program (JMP) definitions, results indicated that improved water sources were accessed by only 43%. These comprised the 24.9% using piped source (64.1% Coast; 12.6% Rift valley and 0.9% Eastern). The non-piped but protected sources were used by 17.0% (5.4% coast; 28.2% Rift valley and 1.5% Eastern). Overall, the proportion of the HHs with access to potable water for close to 10 months totals 43.4% (69.8% Coast province; 43.4% Rift valley and 2.4% Eastern). This is the gross water access, before the temporal aspect of

the source is incorporated into the model. These figures depict Kenya is performing better than Mozambique, whose access to improved sources is only 15% (UNICEF (2009). However, what is so far presented here are gross figures, which is the actual amount available form a water source assuming year round access. The next section strives to get to the net access, bringing in the temporal factor- i.e. 12 month access, which squeezes the prevalence of access to improved sources just no far from the Mozambique's.

### Net access to improved water in Kenya's ASALs

The net waster access was calculated by multiplying the gross water access with the proportion of months when a water source is in use. **T**here is indication that if approached from county perspective, it may be possible to make some progress in MDG7c, as much as it has lagged behind. However, as table 2 shows, only 77% of the water sources are in use throughout the year, with a range of 76% to 82%. The water sources have water for a weighted mean of 9.7 (9.2 in Coast, 10.5 in Eastern and 9.8 in Rift valley) months per year. This means that even if the regular water source is an improved one, there is no guarantee that the alternate source is also improved. The alternate water source here means the source used for the 2.3 months when the first major source is not in a usable state. This may be because: (a) the water source is non-all season and therefore dries up; (b) for boreholes, the pump may have broken down, and some time passes before repair; and (c) for pastoral populations in Coast and Rift valley- especially Pokot county, they resort to alternative sources when they are not in their regular home. A mean of 42.9% HHs use an improved water source, with 77% of these sources being all year round. This means the temporal factor reduces this to 33.0% overall having year round access to potable/ improved water. As shown in the table below, this discounting factor (0.23) reduces the piped water sources to 18.9% from 24.5%, and other protected sources to 14.1% from 18.3%. This paints the gloomy, but real gloomy picture for Kenya's ASAL with the resulting prevalence of access to improved water source, with Coast province having the highest and Eastern Province the lowest in terms of access to potable water (table 2).

**Table 2. Prevalence of access to improved water supply in Kenya's ASALS (by province)**

| | **Province** | | | | |
|---|---|---|---|---|---|
| | Coast | Rift valley | Eastern | Gross access 2012 | Net access % |
| Piped into dwelling | 3.4% | 1.8% | .1% | 1.9% | 1.4 |
| Piped into yard/plot | 38.4% | 2.4% | | 11.9% | 9.2 |
| Public tap | 22.3% | 8.4% | .8% | 10.8% | 8.3 |
| Protected well in dwelling/yard/plot | .2% | 1.1% | .3% | .7% | .6 |
| Protected public well | 4.4% | 1.1% | 1.1% | 2.0% | 1.5 |
| Roof catchment | .3% | 2.6% | | 1.5% | 1.2 |
| Protected spring | | .4% | | .2% | .1 |
| Borehole | .8% | 25.6% | .1% | 13.9% | 10.7 |
| Total 2008/10 | 69.80% | 43.4% | 2.40% | 42.90% | 33 |
| Adjusted / Net 2008/10 | 53.0% | 40.2% | 2.0% | | 33.0 |
| Survey site total | 20 | 5 | 1 | 10 | |
| National Total 2000 | 43 | 43 | 43 | 43 | |
| Total 2010 | 52 | 52 | 52 | 52 | |

In the above adjustment of 0.23, necessitated by the % of the months when a HH water source is not in use, means that 23% adjustment figure has been used, reducing the overall proportion of HHs with access to improved water source by 9.9%. This is close to the adjustments done by the JMP, where 10% was the result. According to the JMP, Onda et al 2012 estimated that 1.8 billion people (28% of the global population) used unsafe water in 2010, up from 1.1 billion commonly cited by most literature, and by the JPM. This seems to have used a 38.9% correction factor. The 2010 JMP estimate is that 783 million people (11%) use unimproved sources. Onda et al 2012 estimates revise the 1990 baseline from 23% to 37% (37.9% adjustment factor), and the target from 12% to 18% (33.3% adjustment), resulting in a shortfall of 10% of the global population towards the MDG target in 2010. In contrast, using the indicator "use of an improved source" suggests that the MDG target for drinking-water has already been achieved. While Onda et al (2012) say that their estimate is imprecise, the magnitude of the estimate and the health and development implications suggest that greater attention is needed to better understand and manage drinking water safety.

## Conclusion

Natural water source remains the most prevalent in ASALs, with the proportion of the population with access to potable water for close to 10 months being 43.4%. Only 33% of all HHs have attained the MDG goal on access to improved water, with wide spatial variations. Whereas some progress has been made, Kenya's ASALs are unlikely to meet MDG7c at the current implementation rate, and new approaches and investments in water may be required to forestall this globally unfavorable possibility. The MDG goal on access to improved water is currently more mythical than reality in Kenya's ASALs.

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