**SUB-THEME: POPULATION, ENVIRONMENT, AND SUSTAINABLE DEVELOPMENT**

**47: ACHIEVING MDGS FOR WATER AND SANITATION**

# Title: AVAILABILITY OF DOMESTIC WATER AND SANITATION IN TANZANIA: ARE WE CLOSE TO REALIZING THE MDG?

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***Abstract***

To date developing countries are faced with a challenge of providing adequate water and sanitation for all. Governments, international organizations and other development agencies are constantly working towards ensuring that people have safe water and improved sanitation. International efforts are exemplified by, among others, the United Nations Millennium Development Goals (MDGs). The UN specifically stipulated a goal by 2015, to reduce by half the proportion of people without sustainable access to safe water and basic sanitation. The present paper used the 2002 Tanzania Population and Housing Census and the 2004 Tanzania Demographic and Health Survey to analyze accessibility of water and sanitation in Tanzania. Results suggest that progress has been made, but the country is far from realizing the MDG for water and sanitation. The paper suggests that socioeconomic and demographic factors and poverty reduction measures should receive adequate weight if MDG for water and sanitation is to be realized.

## Introduction

Safe drinking water and sanitation are critical for not only health but also economic development (WHO &UNICEF, 2006). Sullivan (2002) also argued that water supply is not only a prerequisite for human development but also economic advancement. Despite realization of this undisputable fact, clean water and sanitation facility remain a luxury to many people, notably the poor in many developing countries including Tanzania. The impact of inadequate availability of safe drinking water and sanitation goes beyond deaths and the burden of waterborne diseases. In the context of development, it is reported that impacts of inadequate water and sanitation facilities include poor school attendance by school –aged children who are infected with intestinal worms transmitted through inadequate sanitation facilities and poor hygiene (WHO &UNICEF, 2006). The document argued further that ensuring availability of safe water and sanitation is not only important for humanitarian reasons but also critical for poverty reduction.

It is encouraging to note that the importance of providing safe water and sanitation is recognized both at national and international levels. Massive international efforts are made to increase provision of adequate water and sanitation facility. Such efforts are exemplified by the United Nations Millennium Development Goals (MDGs). The MDGs include various targets among them is that of water and sanitation. It has specifically stipulated a goal by 2015, to reduce by half the proportion of people without sustainable access to safe water and basic sanitation.

It is noted that sub Saharan Africa faces the greatest challenge because the number of people without access to drinking water, over the period of 1990-2004, increased by 23 percent, while those without sanitation increased by 30 percent over the same period (WHO & UNICEF, 2006). A great variety of factors attributed to the observed increase. In this premise, it is paramount to have a better understanding of factors which can significantly undermine various measures taken toward realizing the MDG for water and sanitation.

This paper aimed at analyzing demographic and socioeconomic factors as well as wealth index and relate to availability of domestic water and sanitation. The critical importance of adequate consideration of socioeconomic variables is attributed to the fact that accessibility, affordability and sustainability of domestic water and sanitation are closely determined by a great variety of factors including socioeconomic status of households (Dungumaro, 2007). Lawrence *et al.,* (2002) in their study on construction of International Water Poverty Index emphasized on the need to analyze socioeconomic variables and relate them with availability of water. They argued that this type of analysis helps national and international organizations concerned with water provision to assess socioeconomic factors and their impacts on access and use of water. This would allow practitioners to decide on water projects which are practical, effective and sustainable. More importantly, is the ability to pay for water. Providing expensive water systems to poor communities can jeopardize efforts to realize the MDG. Understanding household's socioeconomic status is therefore important for informing poverty levels and prioritizes areas and households for affordable improved water and sanitation.

## Indicators of MDG for water and sanitation

At the United Nation Summit held in September 2000 from which the MDGs emerged, a fixed deadline to achieving the goals was set. Normally, for any set goals, there should be indicators that would allow tracking the progress and measure achievements. The selected indicators of progress for MDG for water and sanitation are (i) proportion of population with sustainable access to an improved drinking water source (urban and rural); and (ii) proportion of population with access to improved sanitation (urban and rural) (WHO & UNICEF, 2006). Table 1 presents sources of water and sanitation facilities defined as improved and unimproved.

**Table 1:** Water Sources And Sanitation Facilities.

| Improved drinking water source | Unimproved drinking water source |
|---|---|
| • Piped water into dwelling, plot or yard<br>• Public tap/standpipe<br>• Tubewell/borehole<br>• Protected dug well<br>• Protected spring<br>• Rainwater collection | • Unprotected dug well<br>• Unprotected spring<br>• Cart with small tank/drum<br>• Tanker-trunk<br>• Surface water (river, dam, lake, pond, stream, canal, irrigation channels) |
| **Improved sanitation facilities[1]** | **Unimproved sanitation facilities** |
| • Flush or pour-flush to<br>- piped sewer system<br>- septic tank<br>- pit latrine<br>• Ventilated improved pit latrine<br>• Pit latrine with slab<br>• Composting toilet | • Flush or pour-flush to elsewhere[2]<br>• Pit latrine without slab or open pit<br>• Bucket<br>• Hanging toilet or hanging latrine<br>• No facilities or bush or field |

*Source:* WHO/UNICEF, 2006.

[1]Only facilities which are not shared or are not public are considered improved.
[2]Excreta are flushed to the street, yard or plot, open sewer, a ditch, a drainage way or other location.

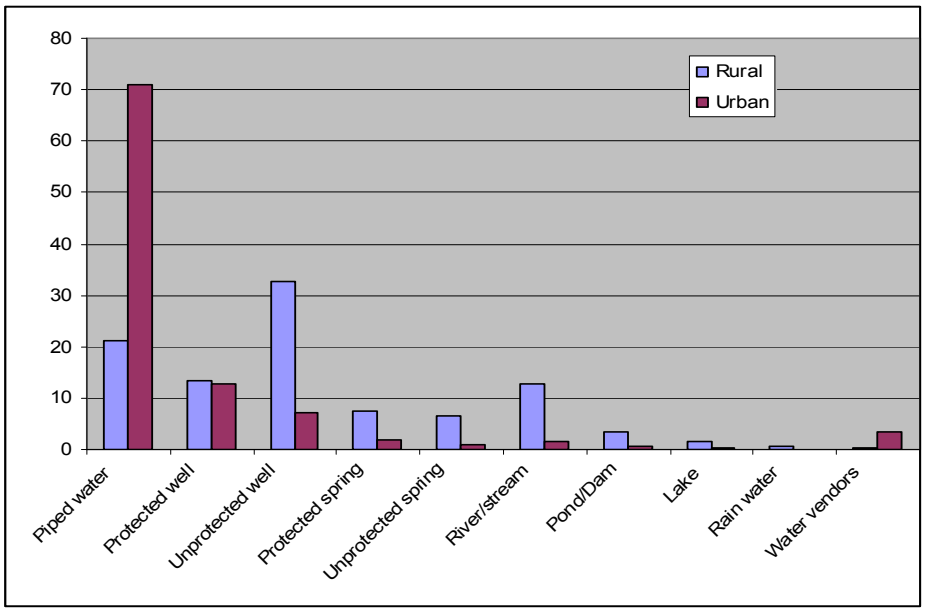
## Availability of Water and Sanitation in Tanzania

*i. Availability of water and sanitation by region and area of residence*

Levels of development in Tanzania, and probably elsewhere in developing country differ by areas of residence (rural and urban). There regions which are more developed as opposed to others and also urban areas are in most cases better off than their rural counterparts. In this premise, it was deemed important to analyze availability of water and sanitation facility by region and area of residence. It is reported that the present water policy in the country stipulates the goal of ensuring that all Tanzanians have access to clean and safe water within reasonable distance (URT, 2006). However, analysis of the 2002 Population and Housing Census indicated that the proportion of private household with piped water as the main source of water was only 34.4 percent. This figure increased slightly from that of 1988 Population and Housing Census which was

31.6 percent. An increase from 6.1 percent in 1988 to 13.4 percent in 2002 in the population using protected well and spring was also observed. When analysis was done by area of residence, 42.2 percent in rural area and 85.8 percent in urban area had access to clean and safe water (*ibid*). This information is presented in the Figure 1. As expected, higher percent of the rural population depend on unprotected water sources than the urban population. These results indicate that coverage of safe and clean water in rural areas of Tanzania is still poor.

**Figure 1:** Percentage Distribution of Water Sources in Urban and Rural Areas of Tanzania.




*Source:* The United Republic of Tanzania 2002 Population and Housing Census

Table 2 shows the percent distribution of households accessing water from improved and unimproved source and improved and unimproved sanitation facility by region. In the 2002 Population and Housing Census, 10 sources of water were enquired. These were:

- Piped water
- Protected well
- Unprotected well
- Protected spring
- Unprotected spring
- River/stream

- Pond/Dam
- Lake
- Rain water
- Water vendors

The mentioned water sources were grouped into two categories; improved and unimproved water sources. The ten sources were therefore reduced to only two. As for sanitation facility, only four facilities were enquired in the Population and Housing Census. These were, flush toilet, pit latrine (traditional), pit latrine (ventilated improved), and lastly no facility. These were also categorized into improved and unimproved sanitation facility according to the WHO/UNICEF (2006) categories provided in Table 1. Table 2 shows the distribution of water source and sanitation facility by region. Results show that most regions have more than 50 percent of their population accessing water from an improved water source, with an exception of Mara, Shinyanga, Tabora, Singida, Lindi and Coast. On average, 57.6 percent households obtain water from an improved source. When analysis was done using TDHS 2004, results show that 52.0 percent households depend on improved water source while those using water from unimproved source was 48.0.

**Table 2:** Distribution of Water Source and Sanitation Facility by Region

| | Water Source | | Sanitation Facility | |
|---|---|---|---|---|
| Region | Improved water source | Unimproved water source | Improved sanitation facility | Unimproved sanitation facility |
| Rukwa | 64.4 | 35.6 | 4.4 | 95.6 |
| Arusha | 78.9 | 21.1 | 7.0 | 93.0 |
| Kilimanjaro | 76.1 | 23.9 | 7.6 | 92.4 |
| Tanga | 58.3 | 41.7 | 7.8 | 92.2 |
| Morogoro | 65.4 | 34.6 | 6.6 | 93.4 |
| Coast | 34.1 | 65.9 | 2.2 | 97.8 |
| Dar Es Salaam | 64.1 | 35.9 | 10.1 | 89.9 |
| Lindi | 43.3 | 56.7 | 2.2 | 97.8 |
| Mtwara | 53.8 | 46.2 | 1.5 | 98.5 |
| Ruvuma | 67.7 | 32.3 | 6.4 | 93.6 |
| Iringa | 71.9 | 28.1 | 1.5 | 98.5 |
| Mbeya | 69.1 | 30.9 | 5.8 | 94.2 |
| Singida | 43.5 | 56.5 | 2.7 | 97.3 |
| Tabora | 32.2 | 67.8 | 3.5 | 96.5 |

| | | | | |
|---|---|---|---|---|
| Rukwa | 63.7 | 36.3 | 4.5 | 95.5 |
| Kigoma | 61.2 | 38.8 | 2.4 | 97.6 |
| Shinyanga | 45.1 | 54.9 | 6.0 | 94.0 |
| Kagera | 52.4 | 47.6 | 7.1 | 92.9 |
| Mwanza | 61.1 | 38.9 | 6.8 | 93.2 |
| Mara | 46.1 | 53.9 | 6.8 | 93.2 |

*Source:* Calculated from 2002 Population and Housing Census Data Files

Table 3 presents percent distribution of toilet facility by area of residence. Results indicate that majority of households depend on traditional pit latrine. When we look at areas of residence, results show that there is no big difference in using traditional pit latrine between rural and urban population.

**Table 3:** Percent Distribution Of Toilet Facility By Area Of Residence

| Type of toilet facility | Urban | Rural | Total |
|---|---|---|---|
| Flush toilet | 11.3 | 0.8 | 3.0 |
| Traditional pit toilet | 73.8 | 74.6 | 74.5 |
| Ventilated improved pit latrine | 11.4 | 2.2 | 4.1 |
| No facility, bush, field | 3.5 | 22.3 | 18.4 |

*Source:* Tanzania Demographic Household Survey, 2004

When types of toilet facility were collapsed into two broad categories, results are presented in Table 4, improved and unimproved sanitation facility, as expected, urban areas were better than rural areas. However, these results do not suggest that urban areas pose less challenge in meeting MDG for sanitation. The reason is that the percentage of those using improved sanitation facility in urban area is attributed to ventilated improved pit latrine and flush toilet only. On the other side, percent of those using traditional pit latrine is urban area is as high as in rural area. This suggests that the country faces a big challenge in meeting MDG for sanitation.

**Table 4:** Percentage Distribution of Toilet Facility by Type of Residence

| New type of toilet facility | Type of place of residence | | |
|---|---|---|---|
| | Urban | Rural | Total |
| Improved sanitation facility | 22.7 | 3.0 | 7.1 |
| Unimproved sanitation facility | 77.3 | 97.0 | 92.9 |

*Source:* Tanzania Demographic Household Survey, 2004

*ii. Availability of water and sanitation by wealth index*

Economic status of households is closely related to the affordability of various services and life style. This prompted the analysis of wealth index and availability of an improved water source and sanitation facility. Table 5 shows distribution of toilet facility by wealth index. Result indicates that even households which fall under the richest category, more than 60 percent use traditional pit latrine. As for ventilated improved pit latrine, only those found in richer and richest had a few percentage of this type of sanitation facility. This suggests that there are profound challenges to realizing the MDG for sanitation.

**Table 5:** Percent Distribution Of Toilet Facility By Wealth Index

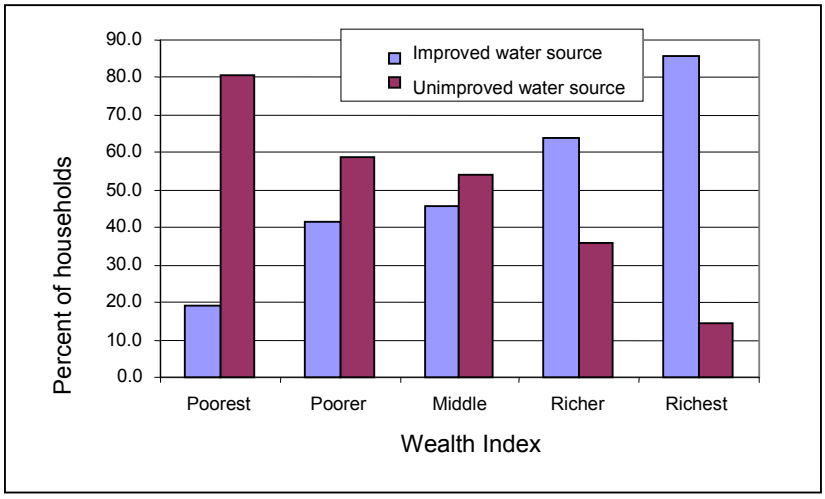
| Wealth index | Type of toilet facility | | | | | Total |
|---|---|---|---|---|---|---|
| | Flush toilet | Traditional pit toilet | Ventilated improved pit latrine | No facility, bush, field | Other | |
| Poorest | 0 | 58 | 0 | 42 | 0 | 100 |
| Poorer | 0 | 82 | 0 | 18 | 0 | 100 |
| Middle | 0 | 80 | 0 | 20 | 0 | 100 |
| Richer | 0 | 84 | 2 | 13 | 0 | 100 |
| Richest | 15 | 67 | 18 | 1 | 0 | 100 |
| Total | 3 | 74 | 4 | 18 | 0 | 100 |

*Source:* Tanzania Demographic Household Survey, 2004

Figure 2 show the percentage distribution of households obtaining water from improved and unimproved source by wealth index. Results clearly show that households obtaining water from improved source increases with increasing wealth status. Furthermore, percentage of households obtaining water from improved water source is higher than that

obtaining water from unimproved water source for richer and richest index. The percentage of households obtaining water from improved source increases as one moves from poorest to the richest, while those obtaining water from unimproved source increases from richest to poorest.

**Figure 2:** Percent Distribution of Water Source by Wealth Index




*Source:* Tanzania Demographic Household Survey, 2004

*iii.* *Household size and accessibility of water and sanitation facility*

The number of household members is one of the basic demographic characteristics of a household. It is also an important determinant of socioeconomic status of households Weeks (2005). Figure 3a and b present distribution of water source and sanitation facility by household size. It is observed that there is an increase in percentage of people using water from unimproved water source with increasing household size. Those with unimproved toilet facility also increase with increasing household size.

**Figure 3a:** Percent Distribution of Water Source by Number of People in Household

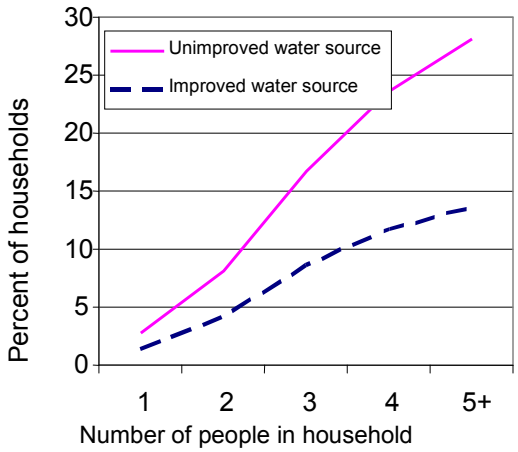
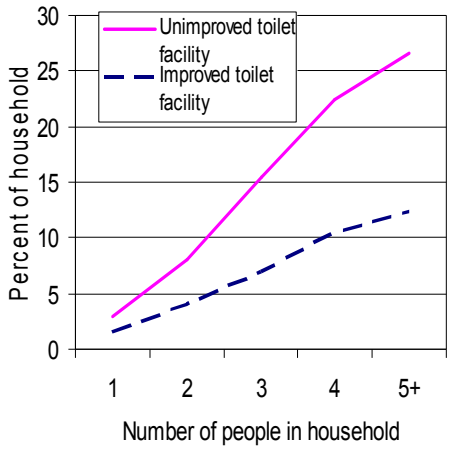



**Figure 3b:** Percent Distribution of Sanitation Facility by Number of People in Household




*Source:* Tanzania Demographic Household Survey, 2004

*iv.* *Availability of water and sanitation by level of education of head of household*

Figure 4a and b present percent distribution of sanitation facility and source of water by highest education. The importance of education in one's life cannot be overemphasized. Education is linked with various factors. For instance, there is a strong link between education and income. General understanding is that in most cases, educated people have a relatively higher income hence are able to afford important services such as water and sanitation. The figures show that heads of households with primary, secondary and higher levels scored higher percentage of those obtaining water from improved source as well as those with improved sanitation facility. This trend is opposite to that observed for those with no or with primary education. For these categories, those with unimproved sanitation scored higher than those with improved sanitation.

**Figure 4a:** Percent Distribution of Toilet Facility by Highest Education

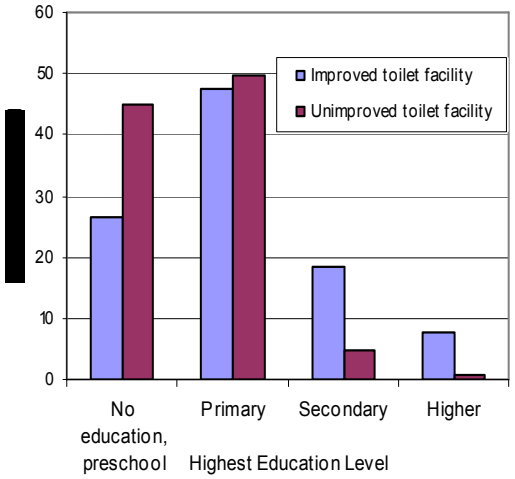
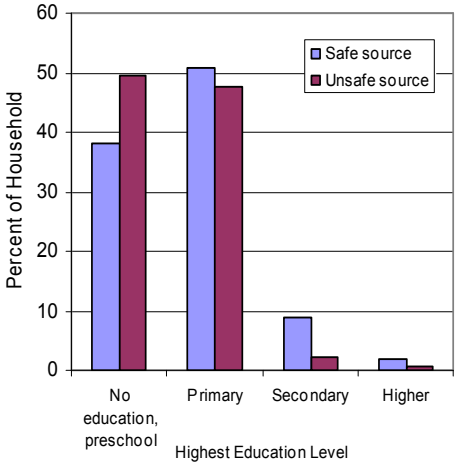



**Figure 4a:** Percent Distribution of Source of Water by Highest Education




Source: Tanzania Demographic Household Survey, 2004

## Discussion

The 2002 Population and Housing Census indicated that only 34.4 percent private households used water from a piped system. This suggests that the coverage of piped water in the country is poor. However, when sources of water were collapsed into two broad categories, improved and unimproved, majority of private households were found to obtain water from improved source. This suggests that protected wells and springs significantly attribute to higher proportion of households obtaining water from improved water system. Results of TDHS 2004 show that only 40.3 percent households depend on piped water as opposed to 59.7 percent which depend on other sources. When sources of water were grouped under improved and unimproved category, more than 50 percent were found to be using water from improved water source. This observation, further confirms that protected well, spring and borehole attribute significantly to higher percentage of those obtaining water from improved sources.

The presented study also analyzed availability of water and sanitation facility by household size, education level of head of households, wealth status, and area of

residence. The mentioned factors are closely linked with economic status which is related to obtaining water from improved source. Household size is known to have a close link with socioeconomic status of a household. Kimenyi and Mbaku (1995) asserted that household with more members has higher probability of experiencing poverty than those with fewer members. Sundrum (1990) also maintain that there is a strong and negative correlation between large household size and poverty. Poverty is also related to obtaining water from unimproved water source. Dungumaro (2007) found a statistically significant relationship between:

(i) obtaining water from a safe source and socioeconomic condition of households

(ii) household size and obtaining water from a safe source

Based on the understanding that water sources for household depend on income among other things, and that large household size is characterized by low income, it can fairly be argued that households with large sizes are less likely to obtain water from improved water source. Satterthwaite (2003) also found that low income groups use unsafe water and stand higher chances of suffering from water related diseases. Results on wealth index further confirms that poor households are more likely to obtain water from unimproved than improved source.

Striking observations are made on sanitation facility. While for water source, households falling under the richest category use water mostly from improved source, for sanitation, majority of households use unimproved sanitation facility regardless of the wealth index. It has been shown that even households which fall under the richest category, 67 percent of them still use traditional pit latrine. General understanding and perception is that these households would be using an improved sanitation facility as opposed to the poorest households. This observation means that the country has a formidable challenge in terms of realizing MDG for sanitation.

The progress report of progress on meeting MDGs documented that the country is on track to achieving the MDG target for water (URT, 2006). It was reported that by 2005, 53 per cent of rural households and 73 per cent of urban households had access to

improved water sources. The government's report indicated that 87 percent of households use pit latrine while 9 per cent have no toilet. The report also clearly documented the need to involve different actors at various levels in order to register positive progress towards reaching or coming closer to realizing MDGs (URT, 2006). Relevant to this paper the report stipulated the need to scale up efforts in order to ensure that the goals are met. From the preceding discussion it is clear that we must identify variables which attribute to difficulties in realizing the MDG for water and sanitation and invite various actors to work together towards a common goal.

## Conclusion

Based on results and discussion, it can fairly be argued that Tanzania is making progress towards realizing MDGs for water and sanitation. However, it is apparent that challenges are also overwhelming, particularly in sanitation facility. It has been shown that majority of households falling under the rich category use traditional pit latrines which is unimproved sanitation facility. As for water sources, analysis and discussion in the present paper suggest that poverty reduction measures are paramount if Tanzania is to realize MDG for water, because the poor have been found to mostly use water from unimproved source.

It is encouraging to note that the government has various plans in ensuring that MDG target for water and sanitation is met. For instance there has been an increase in the rehabilitation of water infrastructure in rural and urban areas. However, the paper suggests that poverty alleviation measures must go hand in hand with efforts to realizing MDGs for water. Tanzania, just like other developing countries, remains largely rural, and in rural areas is where deeper poverty persists. This means, efforts to poverty reduction must be scaled up in order to ensure that MDG for water and sanitation are met.

Households and areas identified as poor deserve considerable weight in regard to water and sanitation and that water system should consider economic status of households for affordability and sustainability. Monitoring and evaluation is important to ensure that interventions make a difference. Unlike other variables which take too long to realize

changes, water and sanitation do not need many years to see changes. In this premise, nationally representative data sources are needed to analyze and inform on the progress.

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