



# \$2 Billion Dollars – The Cost of Water and Sanitation Millennium Development Targets for Tanzania

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Tanzania is a signatory to the Millennium Development Goals, which include the targets of:

- ✓ Halving the proportion of people without access to safe drinking water in 1990 (signed in Stockholm in 2000) by 2015
- ✓ Halving the proportion of people without access to hygienic sanitation in 1990 (signed in Johannesburg in 2002) by 2015

**Meeting the Millennium Development Targets (MDTs)** for improving access to safe drinking water will cost Tanzania at least **\$1,436 million dollars**, and the cost to households for meeting the MDT for improving sanitation will total **\$520 million dollars**. These are the **minimum** costs for meeting the Millennium Development Targets for water and sanitation, and have been calculated for Tanzania Mainland only, not including Zanzibar.

The above calculation deals with both water supply and sanitation. However, it needs to be made clear that while the finance for improving water supply will largely be public finance, the finance for sanitation will have to be sourced privately from households building the required number of toilet facilities. The calculation for **sanitation** is based on a cost of \$50 per household for a basic pit latrine in rural areas, and \$250 per household for a permanent toilet facility in urban areas.

## Assumptions

This calculation makes two significant assumptions:

- ✓ **First**, that all public money would be spent through a single, well-coordinated and well-managed national programme, and
- ✓ **Second**, that the investment strategy would prioritise and exploit the full potential of low cost technologies, such as shallow wells and springs, only using more expensive piped water supplies where there is no alternative.

Three technologies are considered:

- ✓ Point sources such as shallow wells and springs at a cost of \$25 per capita;
- ✓ Small piped schemes from boreholes or springs to public taps at \$50 per capita; and
- ✓ For those places where there is no alternative e.g. due to high levels of natural fluoride, piped surface water from lakes or rivers to public taps at \$150 per capita.

The over all mix of technologies used for the calculation is 50:40:10 for point sources, small piped schemes and surface piped schemes respectively. The investment cost for urban water supplies is set at \$150 per capita.

While the above assumptions might be said to be unrealistically optimistic, the calculation does incorporate an important variable often left out of similar calculations, namely the cost of rehabilitating schemes that fall into disrepair during the lead up to 2015. In spite of the fact that there is a policy of full cost recovery for both urban and rural systems, it is estimated that 10% of schemes piped from surface water sources will collapse and have to be rehabilitated with public funds. In addition, it is estimated that 30% of point sources and 30% of small piped schemes will become non-functional during this period. The total cost of rehabilitation alone is calculated to be \$66 million.

If any of the above variables turn out to be set too low, the costs of meeting the MDTs would, of course, increase. However, should the two assumptions not hold true, the costs would rise dramatically. The aim here is simply to declare all these as influencing factors, and to point out that, as set, they are likely to lead to minimum requirements for the sector.

## Availability and Reliability of Data Used

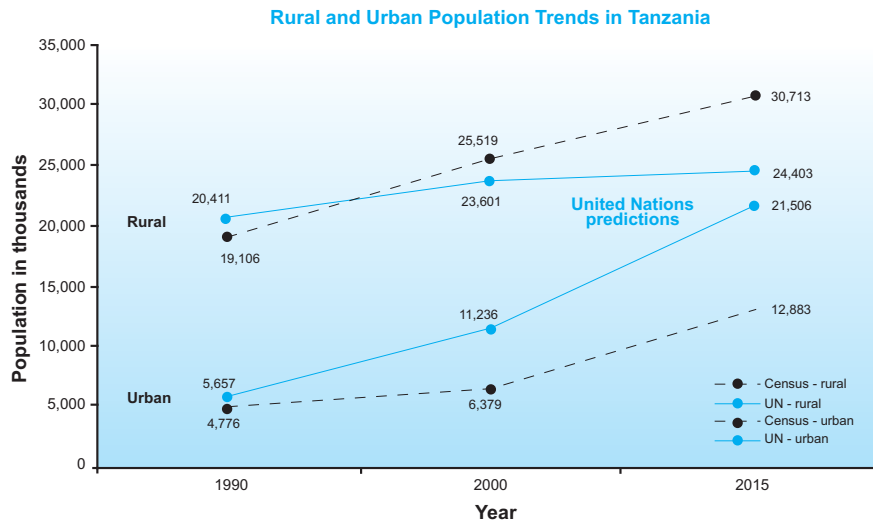
The availability of data in Tanzania has limited the accuracy of the calculation. For some of the variables, this has meant choosing from statistics quoted separately by different government agencies (e.g. water supply coverage). For other variables (e.g. the potential mix of technology), there are simply no data available.

Surprisingly, the variable generating the greatest variability in the calculations outcome was the ratio of **rural to urban population in 2015**. Official predictions for rural and urban populations in 2015 have not yet been published by the Government of Tanzania. In the interim there is little to go on. Figures from the United Nations<sup>i</sup> have overestimated the urban population for the year 2000, and greatly overestimate the predicted urban population for 2015.

The 2002 Population and Housing Census for Tanzania reports a ratio of 77% rural to 23% urban dwellers compared to a UN-reported ratio of 32% to 68% for 2000. The UN prediction for 2015 is 53% rural to 47% urban dwellers. Based on past rates of urbanisation, the predicted ratio would be

70% rural to 30% urban in 2015. The actual rural to urban ratio in 2015 is likely to be somewhere in between the two. Given this uncertainty, the calculation here is based on a doubling of the urban population between 2002 and 2015. Were the calculation based on UN predictions, the headline cost would be closer to \$ 4 billion.

Figure 1. UN versus alternative rural and urban population predictions



### Can Tanzania Meet the MDTs for Water and Sanitation?

Having established that the minimum cost of meeting the MDTs for water and sanitation is approximately \$2 billion, how likely is it that Tanzania will be able to meet these targets? Past performance, available finance and a number of key influencing factors must be considered when trying to gauge this.

#### Meeting the Sanitation MDT

As mentioned above, the finance for sanitation will come from households building their toilet facilities. As Tanzania does not have a policy of subsidising latrine-building, the only tools that the Government can use to intervene in this sub-sector are public information and health extension. Although these are not currently costed, they make up an insignificant amount of money compared to the cost of the infrastructure.

In **rural** areas, past performance in the sector may well be an indicator of future performance, and on this basis, the MDT can be met in rural areas. Latrine coverage has been high in Tanzania ever since large-scale public information campaigns in the 1970s. What can be called into question is the quality and use of latrines, which exist, but are often unhygienic, and not always used.

In **urban** areas, meeting the sanitation MDT poses much more of a challenge. Building costs are much higher, building plots much smaller, and unplanned areas more common. Basic pit latrines, which perform the primary function of separating people from faecal matter in rural areas, are inadequate in urban areas, where there is less space and an

increased likelihood of contaminating water supplies and storm drains. Urban populations will therefore have to make the transition to more permanent facilities that can be emptied or used in rotation. The unit cost used in this calculation is \$250 per household, based on current market rates. This is a relatively large amount of money for poorer households to have to spend on a latrine, and there is a real need for innovative alternatives. Whilst the innovation is probably best left to the private sector, there may be a role for government and civil society in promoting successful, cost-effective designs. Government will also have to address disposal and treatment of waste. This has not been costed in this calculation, and is likely to run into millions of dollars.

Finally, due to the lack of data on the existing situation and on future requirements, it has not been possible to cost the financial requirements for institutional sanitation in schools, health facilities and other public service centres.

#### Meeting the Water MDT

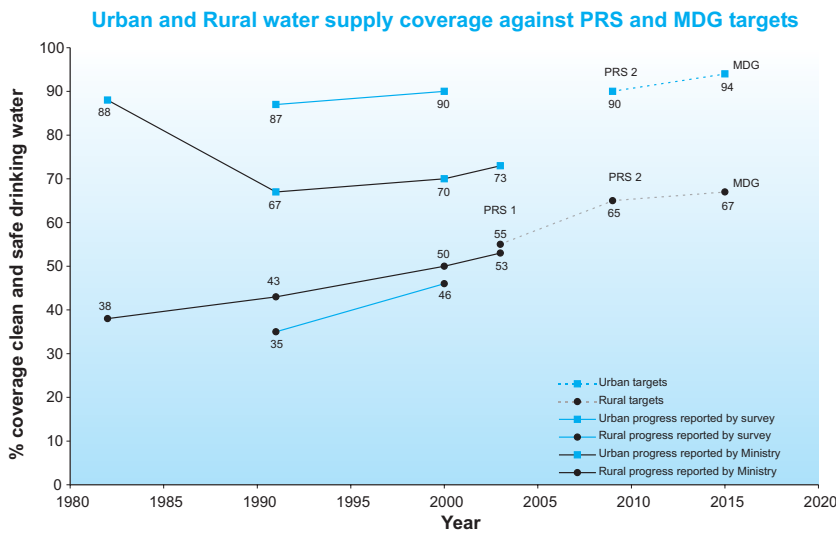
In contrast to sanitation, meeting the water MDT will almost entirely depend on public finance. The way in which public funds – both domestic revenue and development assistance – are spent on water supply is changing radically. In the past, the Government had little of its own funds to spend on the sector, instead assigning regions to donors, who then went off and built mainly rural water supplies. Now, and in the future, increasing amounts of finance are likely to flow through the government budget. The donors remaining in the sector, most of whom are development banks, have already and may continue to re-focus their assistance on urban water supplies.

Past performance in this sub-sector is **not** a guide to future performance. While figure 2 shows considerable progress in rural areas between 1990 and 2000, this trend is unlikely to continue for two related reasons. Firstly, investments in the sector that were completed in the 1990s were focused on - and were successful in - shifting people from using surface sources to using protected sources. This is supported by data from both the Demographic and Health Surveys (DHS) and the Household Budget Surveys (HBS).<sup>ii</sup> Much of the current and planned investment for the next few years is directed at improving service levels for people who already have access to a piped or protected water source. This investment in second-generation water supplies, mainly piped and urban, will not shift many of rural Tanzania's population from unprotected water sources to protected water sources. It may result in some of the rural population moving to areas that can offer improved water supplies, although urbanisation is taking place far slower than at least the UN is predicting.

#### So what is the spending gap?

Calculating the gap between the required investment and existing expenditure only takes into account the development budget, as the recurrent budget does not get turned into new water supplies.

Figure 2.



Furthermore, it is actual spend rather than budget that is of interest, and reporting of actual spend lags behind budget figures by two years.

In 2002/3, the combined local and foreign development budget for water supply was \$30 million. In contrast, the actual spend recorded was less than \$12 million. Based on this figure, Tanzania needs to find at least \$84 million more annually up to 2015 in order to meet the MDT. Furthermore, this \$84 million has to be spent on first generation water supplies that actually enable people to shift from unprotected to either piped or protected water sources.

Frustratingly, the impact of additional money flowing into the sector in 2004/5 is only marginal. This applies to much of the urban investment as well as for national programmes such as the Lake Victoria/Shinyanga Kahama pipeline. The latter in particular has very high per capita costs (\$280 per capita)<sup>iii</sup> drastically reducing the finance available for low cost, first generation supplies. Given the nature of these investments, the required finance gap may not have diminished at all since 2000.

### What Should Tanzania do to Meet the Water Supply MDT?

**Devolving planning and expenditure for rural water supply to local councils** is the single biggest step that Tanzania could take to get back on track to meet the MDT for water supply. While the sector ministry budget has increased significantly in the past 8 years, local government transfers remain very low. In 2004/5, local councils were allocated just \$0.11 for each person they were expected to provide with safe water. **Fiscal decentralisation** should be implemented for both recurrent and development budgets in order to scale up implementation.

**Tanzania needs to deliver 3,000<sup>iv</sup> new water points each year** to meet its target for water supply in rural areas. Implementing this will require careful

targeting, and is possible using conditional grants, demand-responsive approaches and working with the local private sector. Some districts in Shinyanga Region are already able to deliver at this rate, and other districts need to be given the opportunity to do the same.

Devolving the roll-out of service delivery would also shift the bias of implementation towards low-cost technologies, as studies in neighbouring countries have shown.<sup>v</sup> It is essential to **prioritise investments in low-cost water supplies** over piped schemes, and to avoid large national projects which tend to have higher per capita costs. Low-cost technologies are more equitable, will make available finance go further and will be less of a future rehabilitation burden on the public purse.

Finally, back to that first big assumption. The Ministry for Water & Livestock Development urgently needs to **set up a single sector coordination mechanism** that is led by government, and that involves all development partners.

Once this is in place, an additional \$84 million a year needs to flow into the sector. For each year that the above pre-conditions are not in place, the finance gap will increase by over \$5 million. We are now in Year 5.

For all those who want Tanzania to meet the MDGs, and for those with specific interests in meeting the MDTs for water and sanitation - particularly those people who currently do not have access to safe water - these are the things YOU need to make sure happen. Not meeting the MDTs for water supply and sanitation will severely undermine parallel poverty reduction initiatives including that of halving the proportion of people living on under \$1 dollar a day.

*For further information about this MDT calculation, and to get a copy of the spreadsheet it is based on, contact the authors at WaterAid Tanzania, Policy [policy@wateraidtanzania.org](mailto:policy@wateraidtanzania.org)*

### References

- i. <http://esa.un.org/unpp>
- ii. Ministry of Water and Livestock Development, WaterAid Tanzania, Eastern Africa Statistical Training Centre (2003). *Water and Sanitation in Tanzania: Poverty monitoring for the sector using national surveys*. WaterAid, Dar es Salaam.
- iii. The planned costs for the scheme have been revised upwards from \$84 to \$170 million dollars February 2005
- iv. 250 people per water point
- v. World Bank (forthcoming). *Retrospective Study of the Impact of Three Years of Budget Support on Rural Water in Uganda*.

## WATER

## SANITATION

Rural water target			Urban water target			Rural sanitation target			Urban sanitation target		
Data required			Data required			Data required			Data required		
Year	Coverage rate %	Population (000s)	Year	Coverage rate %	Population (000s)	Year	Coverage rate %	Population (000s)	Year	Coverage rate %	Population (000s)
1990	33.7	19,106	1990	87.4	4,776	1990	85	19,106	1990	85	4,776
2000	45.9	25,519	2000	89.7	6,379	2000	87	25,519	2000	87	8,379
Calculations			Calculations			Calculations			Calculations		
1. MDG target		66.9	1. MDG target		93.7	1. MDG target		92.5	1. MDG target		92.5
2. 2015 Population		30,713	2. 2015 Population		12,882	2. 2015 Population		30,713	2. 2015 Population		12,882
3. Population served (000s)			3. Population served (000s)			3. Population served (000s)			3. Population served (000s)		
1990	6,439		1990	4,174		1990	16,240		1990	4,060	
2000	11,713		2000	5,722		2000	22,202		2000	5,550	
2015	20,532		2015	12,070		2015	28,410		2015	11,916	
4. Households served			4. Households served			4. Households served			4. Households served		
1990	1,238,216		1990	802,735		1990	3,123,096		1990	780,692	
2000	2,390,453		2000	1,167,748		2000	4,530,924		2000	1,132,598	
2015	4,562,587		2015	2,682,319		2015	6,313,228		2015	2,647,967	
5. Change in households served			5. Change in households served			5. Change in households served			5. Change in households served		
1990-2000	1,152,237		1990-2000	365,012		1990-2000	1,407,828		1990-2000	351,906	
2001-2015	2,172,134		2001-2015	1,514,571		2001-2015	1,782,303		2001-2015	1,515,369	
6. Monthly target			6. Monthly target			6. Monthly target			6. Monthly target		
1990-2000	9,602		1990-2000	3,042		1990-2000	11,732		1990-2000	2,933	
2001-2015	12,067		2001-2015	8,414		2001-2015	9,902		2001-2015	8,419	
7. Additional performance required			7. Additional performance required			7. Additional performance required			7. Additional performance required		
2000-2015	26%		2000-2015	177%		2000-2015	-16%		2000-2015	187%	

Calculation of drinking water finance needs			
Data required			
Technologies required by each group of the population (%)			
	Point sources	Piped borehole	Piped surface
Rural	50	40	10
Urban	0	0	100
Per capita cost (\$)	25	50	150
Future non-functionality rate	30	30	10
Rehabilitation cost (% of original cost)	50	30	30
Calculations			
1. Populations to be served			
Rural		8,818,420	
Urban		6,348,471	
2. Population to be served by each technology			
Point sources		4,409,210	
Piped borehole / spring		3,527,368	
Piped surface source		7,230,313	
3. Initial cost of each technology (\$m)			
Point sources		110	
Piped borehole / spring		176	
Piped surface source		1,085	
4. Rehabilitation of systems (2005-2015) (\$m)			
Point sources		17	
Piped borehole / spring		16	
Piped surface source		33	
5. Total costs (\$m)			
Point sources		127	
Piped borehole / spring		192	
Piped surface source		1,117	
<b>Grand Total</b>		<b>1,436</b>	

Calculation of sanitation finance needs		
Data required		
Technologies required by each group of the population (%)		
	Basic pit	Permanent facility
Rural	100	0
Urban	0	100
Per capita cost (\$)	50	250
Future non-functionality rate	50	10
Rehabilitation cost (% of original cost)	100	20
Calculations		
1. Households to be served		
Rural		1,782,303
Urban		1,515,369
2. Households to be served by each technology		
Basic pit latrine		1,782,303
Permanent facility		1,515,369
3. Initial cost of each technology (\$m)		
Basic pit latrine		89.12
Permanent facility		378.84
4. Rehabilitation of systems (2005-2015) (\$m)		
Basic pit latrine		44.56
Permanent facility		7.58
5. Total costs (\$m)		
Basic pit latrine		134
Permanent facility		386
<b>Grand Total</b>		<b>520</b>

Finance gap calculation	
Data required	
Annual Budget (development 2002/3)	\$ (m) 29
Annual actual spending	12
Calculations	
1. Total costs	\$ (m)
Water	1,436
Sanitation	520
<b>Grand Total</b>	<b>1,956</b>
2. Annual finance needs	\$ (m)
from public funds for water supply	96
from private households for sanitation	35
3. Annual public finance gap	\$ (m)
between need and budget	67
between need and actual spend	84

Average household size	
1990	5.2
2000	4.9
2015	4.5