

# **Comprehensive Review of Sector Performance Monitoring Framework and Systems**

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## EXECUTIVE SUMMARY

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### ***Background and Objectives***

The water sector in Tanzania has recently adopted a sector-wide approach to planning. The Water Sector Development Programme (WSDP), launched in 2007, is the most obvious component of this shift. Key development partners including the World Bank, African Development Bank, KfW and the Netherlands Embassy are financing the first five years of this 20-year nationwide programme encompassing all sub-sectors. Alongside this, the shift in approach is also reflected in efforts to improve dialogue and coordination and in taking a sector-wide view of institutional development and capacity building and performance monitoring.

Though much progress has been made in improving sector performance monitoring systems and tools since the WSDP was launched, there is still significant room for improvement. This situation was recognised in late 2008 in two calls for a review of the sector performance monitoring framework – at the 2008 Joint Water Sector Review (JWSR) and as a Temporary Process Action (TPA) in the sector's 2009 Performance Assessment Framework (PAF) under the MKUKUTA dialogue framework. Specifically, both the JWSR undertaking and PAF commit the sector to the following:

*MoWI will conduct a full review of the monitoring framework and systems to ensure consistency of definitions and accuracy of data (including data on sanitation, water resources management and water supply services) by September 2009.*

This report constitutes the conclusion of this review process. According to the terms of reference, the expected outputs of the review are as follows:

- 1. A simple framework of clearly defined and harmonised indicators monitoring outputs and outcomes in water resources management, water supply and sanitation sub-sectors.*
- 2. Details of how this monitoring should be conducted, using data from which sources, collected by which agencies, and how regularly.*
- 3. Recommendations for any further work required to operationalise the proposed new monitoring framework.*

### ***Methodology***

Following the structure of the existing Sector Performance Monitoring Framework, five sub-sectors are considered, as follows:

1. Domestic water supply in rural areas
2. Domestic water supply in urban areas, including small-towns
3. Household sanitation and hygiene
4. Institutional water supply, sanitation and hygiene
5. Water resource management

For each sub-sector, current output and outcome indicators and definitions are reviewed, alongside alternative indicators where appropriate.

The lead consultant for the review held discussions with representatives of all key stakeholder groups involved in performance monitoring in the water sector. This included two stakeholder meetings during the course of the review – an inception meeting and a stakeholder consultation workshop at which a first draft of the review report was shared with a wider stakeholder group for comments.

**Proposed Revised Sector Performance Monitoring Framework**

Extended version with all proposed indicators (headline indicators in bold)

		<i>Indicators</i>	<i>Source</i>	<i>Periodicity</i>		
Rural / Community Water Supply	Outputs	<b>Number of public improved waterpoints</b>	NRWSIMS, LGAs	Annual		
		<b>Annual functionality rate</b>	NRWSIMS, LGAs	Annual		
	Outcomes	Number of COWSOs registered as legal entities	LGAs, MoWI	Annual		
		<b>% Household using improved sources for drinking water</b>	Household surveys (NBS)	1-2 years		
Urban / Commercial Water Supply	Outputs	<b>No. of water supply connections supplied by utilities in regional centres, including Dar es Salaam</b>	EWURA Utility Database	Annual		
		Average hours of supply to water supply connections	EWURA Utility Database	Annual		
		No of public water kiosks supplied by regulated utilities in regional centres, including Dar es Salaam	EWURA Utility Database	Annual		
		<b>No. of water supply connections supplied by utilities in small towns</b>	EWURA Utility Database	Annual		
		No of public water kiosks supplied by regulated utilities in small towns	EWURA Utility Database	Annual		
	Outcomes	<b>% Households using piped sources for drinking water</b>	Household surveys (NBS)	1-2 years		
		% Households using piped or protected sources for drinking water	Household surveys (NBS)	1-2 years		
		% Households using piped or protected sources for drinking water and accessing within 30 minutes collection time	Household Surveys (NBS)	1-2 years		
		Household Sanitation and Hygiene	Outputs	Number of households with sewerage connections	EWURA Utility Database	Annual
				<b>% rural households with access to an improved latrine</b>	Household surveys (NBS)	1-2 years
Outcomes	<b>% urban households with access to an improved latrine</b>		Household surveys (NBS)	1-2 years		
	% rural households with access to a basic latrine		Household surveys (NBS)	1-2 years		
	<b>% households with a designated place for handwashing with soap and water present</b>		Household surveys (NBS)	1-2 years		
Institutional Water and Sanitation	Outputs	<b>Number of school latrines (girls and boys)</b>	EMIS (LGAs, MoEVT)	Annual		
		Number of schools with on-site access to an improved water source	EMIS (LGAs, MoEVT)	Annual		
		Number of health facilities with at least one client latrine	HMIS (LGAs, MoHSW)	Annual		
		Number of health facilities with on-site access to an improved water source	HMIS (LGAs, MoHSW)	Annual		
	Outcomes	<b>Number of pupils per improved latrine (girls and boys)</b>	EMIS (LGAs, MoEVT)	Annual		
Water Resource Management	Outputs	<b>number of water resource monitoring stations regularly producing reliable data</b>	BWOs, MoWI	Annual		
		number of applications for water use permits received	BWOs, MoWI	Annual		
		<b>number of water use permits issued</b>	BWOs, MoWI	Annual		
		number of BWOs fully operational and implementing an approved plan for integrated basin management.	BWOs, MoWI	Annual		
	Outcomes	<b>Number of water use/quality conflicts identified and resolved</b>	BWOs, MoWI	Annual		
		% groundwater monitoring stations with declining water levels	BWOs, MoWI	Annual		

### ***Summary of Recommended Actions***

- In both urban and rural water supply, a much clearer separation should be made between outputs and outcomes, by ending the practice of using data on outputs (waterpoints, household connections, piped networks, etc.) to estimate household access. Data on infrastructure should be monitored through routine monitoring systems and data on access monitored only through household surveys.
- More detailed disaggregation of indicators on rural and urban water supply should be conducted, breaking down the existing indicators into “improved supplies” and “supplies within 30 minutes” for rural water supply and into “piped supplies”, “piped and protected supplies”, and “supplies within 30 minutes” for urban water supply.
- Finalise development of the National Rural Water Supply Infrastructure Monitoring System (NRWSIMS) and ensure that routine monitoring data is collected and fed into the database, including data on functionality, in order that the NRWSIMS can become the main source of routine monitoring data for this sub-sector.
- Utilities should continue to report to EWURA, where the utility database should continue to be based. Communications and networking should be improved in order to ensure that MoWI has full-time access to the database. EWURA should also take over responsibility for the preparation of the annual performance report for urban water supply and sewerage authorities.
- Strengthen the relationship between MoWI and NBS by inputting into consultation processes for future surveys and encouraging NBS participation in the Thematic Working Group for Performance Monitoring. In particular, MoWI should liaise with NBS to ensure that future household surveys include the same full set of survey questions and response options. This includes questions on the type of water source, collection time, type of latrine, the presence of handwashing facilities in households and on handwashing at critical times. A proposed standard set of questions is included attached as Annex 6. The recently developed National Panel Survey (an annual survey) presents an ideal opportunity for MoWI to engage with MBS and to ensure suitable data is available more regularly for use by the sector.
- Adopt more sensitive monitoring of household sanitation and hygiene – focusing on improved rather than basic latrines (using the JMP definition) and by exploring the options for monitoring household hygiene facilities and practices
- Conduct more thorough monitoring and reporting of water supply and sanitation in schools and health facilities. To operationalise this will require MoWI to liaise with MoEVT and MoHSW to ensure that all necessary data can be collected through the education and health sector routine monitoring systems.
- Continue discussions on performance monitoring in WRM, using the indicators proposed here as the basis of discussions. As part of this, it would be beneficial to strengthen the involvement of WRM stakeholders in ongoing debates on performance monitoring in the Thematic Working Group for Performance Monitoring.

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## **Acronyms and Abbreviations**

BWO	Basin Water Office
CBO	Community Based Organisation
COWSO	Community Owned Water Supply Organisation
DSA	Daily Subsistence Allowance
DAWASA	Dar es Salaam Water and Sewerage Authority
DAWASCO	Dar es Salaam Water and Sewerage Corporation
DHS	Demographic and Health Survey
EMIS	Education Management Information System
EWURA	Energy and Water Utilities Regulatory Authority
KFW	German Development Bank
GWP	Global Water Partnership
HH	Household
HBS	Household Budget Survey
HMIS	Health Management Information System
JMP	Joint Monitoring Programme
JWSR	Joint Water Sector Review
LGA	Local Government Authority
MoHSW	Ministry of Health and Social Welfare
MoWI	Ministry of Water and Irrigation
MoEVT	Ministry of Education and Vocational Training
MKUKUTA	Mpango wa Kupunguza Umaskini na Kukuza Uchumi
NBS	National Bureau of Statistics
NRWSIMS	National Rural Water Supply Infrastructure Monitoring System
NSGRP	National Strategy for Growth and the Reduction of Poverty
NAWAPO	National Water Policy
NWSDS	National Water Sector Development Strategy
NGO	Non-Governmental Organisation
PAF	Performance Assessment Framework
PMORALG	Prime Minister's Office for Regional Administration and Local Government
RWSS	Rural Water Supply and Sanitation
SWAP	Sector-Wide Approach to Planning
TSPA	Tanzania Service Provision Assessment
TPA	Temporary Process Action
TWG-PM	Thematic Working Group for Performance Monitoring
UNICEF	United Nations Children's Fund
UWSA	Urban Water Supply Authority
VIP	Ventilated Improved Pit
WRM	Water Resource Management
WSDP	Water Sector Development Programme
WUA	Water User Association
WPM	Waterpoint Mapping
WHO	World Health Organisation

## 1. INTRODUCTION

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### 1.1 Background

The water sector in Tanzania has recently adopted a sector-wide approach to planning. The Water Sector Development Programme (WSDP), launched in 2007, is the most obvious component of this shift. Key development partners including the World Bank, African Development Bank, KfW and the Netherlands Embassy are financing the first five years of this 20-year nationwide programme encompassing all sub-sectors. Alongside this, the shift in approach is also reflected in efforts to improve dialogue and coordination and in taking a sector-wide view of institutional development and capacity building and performance monitoring.

Though much progress has been made in improving sector performance monitoring systems and tools since the WSDP was launched, there is still significant room for improvement. Different data sources appear to paint different pictures of progress (or lack of progress) in the sector – most notably the apparent discrepancies between data from routine monitoring systems and data from household surveys. These two sources give very different estimates of access (surveys give lower figures) and show opposite trends (surveys show a decline in access while routine data shows steady improvement). A second challenge is that the sector performance monitoring framework, agreed at the 2006 Joint Water Sector Review (JWSR), has a number of shortfalls, such as unmeasurable indicators and some key aspects of sector performance excluded, that have not been fully addressed in the time since. As a result of these challenges there is confusion in some areas and no data in others, all at a time, two years into the WSDP, when the pressure on the sector to demonstrate results is high.

This situation was recognised twice in late 2008. In particular, there were two calls for a review of the sector performance monitoring framework – first as one of the undertakings for 2008-9 agreed at the 2008 JWSR and second as a Temporary Process Action (TPA) in the sector's 2009 Performance Assessment Framework (PAF) under the MKUKUTA dialogue framework. Specifically, both the JWSR undertaking and PAF commit the sector to the following:

*MoWI will conduct a full review of the monitoring framework and systems to ensure consistency of definitions and accuracy of data (including data on sanitation, water resources management and water supply services) by September 2009.*

This report constitutes the conclusion of this review process.

### 1.2 Review Objectives and Expected Outputs

The general objective of this review, as stated in the Terms of Reference (see Annex 1), is as follows:

*To conduct a full review of the monitoring framework and systems, so as to ensure consistency of definitions and accuracy of data in measuring performance of water sector.*

The Terms of Reference also specify the expected outputs of the review, as follows:

1. *A simple framework of clearly defined and harmonised indicators monitoring outputs and outcomes in water resources management, water supply and sanitation sub-sectors.*
2. *Details of how this monitoring should be conducted, using data from which sources, collected by which agencies, and how regularly.*
3. *Recommendations for any further work required to operationalise the proposed new monitoring framework.*

## **2. REVIEW METHODOLOGY**

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### **2.1 Review Approach**

The overall approach taken for this review can be described as comprehensive, incremental and flexible.

The review is comprehensive in that it encompasses all sub-sectors and all aspects of performance monitoring in the sector. This includes considering the full range of actors and data sources.

It is incremental is that it builds on existing work and systems rather than starting from a blank sheet. For example, where a particular system is working well or where the Thematic Working Group for Performance Monitoring (TWG-PM) has already taken steps to improve the performance monitoring framework and systems, this review does not re-open those discussions except in cases where this was felt to be absolutely necessary.

Finally, a flexible approach was taken in order to use the review as an opportunity to consider new ideas.

### **2.2 Review Scope**

The Terms of Reference for this review refer specifically to reviewing the Sector Performance Monitoring Framework. For this reason, other aspects of performance monitoring – such as dialogue and coordination of performance monitoring and reporting – will not be reviewed here.

Three performance monitoring frameworks for the sector are currently in use – the Sector Performance Monitoring Framework (as approved at the 2006 Joint Water Sector Review), the MKUKUTA monitoring framework and the World Bank's Results and Covenants Monitoring Framework for the Water Sector Development Programme (WSDP). It is the first of these – the Sector Performance Monitoring Framework – that will form the basis of this review.

The MKUKUTA and Results and Covenants Monitoring Frameworks will be discussed briefly, including listing the indicators for each sub-sector at the start of each section. Furthermore, recommendations for revisions to the MKUKUTA monitoring framework will be proposed (see Annex 6), in order to feed into the forthcoming MKUKUTA review and to bring MKUKUTA monitoring into line with the Sector Performance Monitoring Framework.

Following the structure of the Sector Performance Monitoring Framework, five sub-sectors will be considered, as follows:

1. Domestic water supply in rural areas
2. Domestic water supply in urban areas, including small-towns
3. Household sanitation and hygiene
4. Institutional water supply, sanitation and hygiene
5. Water resource management

### **2.3 Review Structure**

A key starting point for this review is that the basic structure of the Sector Performance Monitoring Framework, as agreed at the 2006 Joint Water Sector Review, is valid and useful. In particular, dividing the sector first into its component sub-sectors and then considering the outputs and outcomes of each sub-sector provides a simple and user-friendly framework into which indicators and related details can be inserted. This basic structure will therefore not be altered, and the main output of this review – a proposed revised Performance Monitoring Framework – will take the same basic format as the original. Instead, the review will focus on the content of the framework – the detail of indicators, definitions, sources and tools.

The one substantive difference to the framework structure as proposed by this review is an expansion in the number of indicators to a pool of around 30. Of this number, around 10 of the most important indicators will be classified as headline indicators.

From this starting point, the review can easily be structured first by sub-sector and then by outputs and outcomes. The following five sections of this report focus on the five sub-sectors listed above.

On this basis, the proposed revised Sector Performance Monitoring Framework will take the structure outlined in table 2.1.

Table 2.1 – Proposed structure for revised monitoring framework

	Output Indicators	Outcome indicators
Rural Water Supply		
Urban Water Supply, including Small Towns		
Household Sanitation and Hygiene		
Institutional Water Supply, Sanitation and Hygiene		
Water Resource Management		

For each of the next five sections of this report, each covering one sub-sector, both output and outcome indicators for that sub-sector will be discussed. Specifically, current indicators, definitions and tools will be documented and reviewed, where necessary revisions to the indicators, definitions and tools will be proposed, and where necessary any further steps required to fully operationalise the framework will be recommended.

## 2.4 Review Process

The lead consultant for the review held discussions with representatives of all key stakeholder groups involved in performance monitoring in the water sector. This includes representatives of the various departments of the Ministry of Water and Irrigation (MoWI), the Ministry of Health and Social Welfare (MoHSW), the Ministry of Education and Vocational Training (MoEVT), the Prime Minister’s Office for Regional Administration and Local Government (PMORALG), the National Bureau of Statistics (NBS), the Energy and Water Utilities Regulatory Authority (EWURA), Local Government Authorities (LGAs), Basin Water Offices (BWOs), Urban Water Supply Authorities (UWSAs), key development partners and civil society organisations. These discussions were held through a combination of face-to-face meetings, telephone calls and email discussions.

Two stakeholder meetings were held during the course of the review. The first, an inception meeting, was held on July 24<sup>th</sup>, at the Ministry of Water and Irrigation, with representatives from the Ministry, MoHSW, MoEVT, Ministry of Finance, NBS and EWURA. Later, a first draft of the review report was shared with a wider stakeholder group at a stakeholder feedback workshop on September 25<sup>th</sup> at Landmark Hotel. In addition, a consultation draft was presented to the Joint Water Sector Review meeting in October 2009, following which further comments were received and further changes made.

A full list of stakeholders consulted during the review process, including those who attended the inception meeting and feedback workshop, is attached as Annex 2.

## 2.5 A Conceptual Note on Outputs and Outcomes

The distinction between outputs and outcomes is important, often misunderstood and often simply assumed. A useful way of looking at this is to think about the process of turning money into water. In the simplest case, inputs (money) are used to construct outputs (hardware, management entities, etc.), the outcome of which is that households have access to clean and safe water.

Sector outputs and outcomes can be defined as follows:

Sector outputs: *the direct products of the sector, the production of which is within the control of the sector.*  
 Sector outcomes: *the effects or changes brought about by the sector and its outputs.*

Since they are conceptually different, outputs and outcomes are measured in very different ways. Outputs are mainly measured through routine monitoring of investments and service delivery. How many new waterpoints have been constructed, how many are functioning, how many household connections are there, how many kiosks, etc? In contrast, you cannot measure outcomes in this way because the outcomes are not within the control of the sector, but rather are the wider effects or changes brought about by the sector, for example on households. To monitor household-level outcomes, therefore, you need an approach that looks at households themselves – a household survey. Monitoring of outputs and outcomes is presented and compared in table 2.1 below.

Table 2.2 – Monitoring outputs and outcomes

<i>What is being monitored?</i>	<i>Type of tool</i>	<i>How does it measure access?</i>	<i>Who is in charge?</i>	<i>Strengths</i>	<i>Limitations</i>
Outputs	Routine infrastructure monitoring	Measures the <b>availability of infrastructure</b>	National sectoral agencies	Information on infrastructure and service for planning	Difficulty to assess functionality and effective use
Outcomes	Household surveys and censuses	Measures <b>the use</b> of improved infrastructure	National statistics offices	Information on effective use of infrastructure	No geo-reference of infrastructures Infrequency of surveys

Source: adapted from presentation by Joint Monitoring Programme to Stockholm Water Week, August 2008

## 2.6 Characteristics of Good Indicators

In reviewing the sector performance monitoring framework, it is important to first decide on criteria for including or excluding possible indicators. For the purpose of this review, the following list of characteristics of good indicators has been used<sup>1</sup>:

A good indicator is:

1. Specific – clear and with no room for misinterpretation, ideally even to actors outside the sector
2. Measurable – feasible to collect and collate data
3. Relevant – information that is useful when summarising the performance of the sector
4. Consistent – with data collected in the past and with other indicators in the framework

In addition, the framework as a whole should be:

5. Comprehensive – covers all important aspects of sector performance
6. Manageable – to keep the collection, presentation and interpretation of data simple

<sup>1</sup> Two characteristics from the familiar SMART acronym have been left out here (achievable and time-bound), as the purpose here is not to set targets but rather to define the indicators for which targets can be set later.

### 3. RURAL / COMMUNITY WATER SUPPLY

Table 3.1 – Current Indicators for Rural / Community Water Supply

Framework	Outputs		Outcomes	
	Indicators	Measured by	Indicator	Measured by
<b>Sector Performance Monitoring Framework</b>	Number of water points built	Routine monitoring – LGAs, PMORALG, MoWI	% Household using improved sources for drinking water	NBS - Periodically by survey Census, HBS, DHS
	% of functional water points	Routine monitoring – LGAs, PMORALG, MoWI		
<b>MKUKUTA Monitoring Framework</b>	none	n/a	Proportion of population with access to piped or protected water as their main drinking water source ( <i>30 min - go, collect, return to be taken into consideration</i> )	NBS: DHS / HBS / ILFS / Census
<b>World Bank (WSDP) Results Monitoring Framework</b>	Community waterpoints constructed in rural programme area (new and rehabilitated)	LGAs	Population with access to improved water sources (number and %)	Various
	Programme village water committees registered as legal entities (number and %)	LGAs		

#### 3.1 Distinction between Outputs and Outcomes

The main challenge facing monitoring of rural / community water supply is that distinction between output and outcome indicators is often blurred. In particular, (output) data on infrastructure is inappropriately used to estimate outcomes. Data on the location and number of water points is used to estimate how many households are accessing water from an improved source. This relies on a number of assumptions that may not be correct.

It is worth exploring why using output data to estimate outcomes, such as coverage, gives inaccurate results. Two methods can be used to estimate rural household access to water supply based on infrastructure, both of which are flawed.

First, you can assume that if there is a public improved waterpoint available in a village community then all or most households in that village have access. This approach is currently used by village governments to estimate access based on output data, which is then aggregated by LGAs and MoWI to estimate district and national level access based on output data. However, the presence of a waterpoint does not guarantee that households are accessing water from that waterpoint – households may prefer to access free water from an unprotected source, for example, or may be accessing water from an improved source that requires more than 30 minutes collection time. Furthermore, this approach depends on having reliable data on functionality.

Second, you can use output data to estimate access by assuming a particular number of people or households are able to access water from each waterpoint. This approach is not sensitive to local contexts, and any average figure for the number of people served per waterpoint is likely to be too high in some cases and too low in others. It is also difficult to calculate the average number of households served by a waterpoint. For example, the National Water Policy of 2002 refers to a “minimum service level” of each waterpoint serving no more than 250 people, a figure which has been used by WaterAid to estimate how many people are served by each waterpoint in

Waterpoint Mapping (WPM) surveys. The Water Sector Performance Report for 2007/08 reports 44,297 waterpoints and 21.56m people served, which translates to 487 people per waterpoint (though 2,603 new waterpoints are reported to serve 650,750 people – an average of 250 people per waterpoint). And surveys in 13 districts for the 2009 Public Expenditure Review of the Water Sector found that on average only 166 people access water from each waterpoint. Without knowing which of these very different figures (166, 250 or 487) is most accurate, estimating coverage based on the number of waterpoints cannot give reliable figures.

This analysis can help explain why estimates of coverage from NBS household surveys have differed significantly from estimates produced by MoWI based on output data. In short, while household surveys are directly collecting data on household access, MoWI's figures are based on a set of assumptions about the use of infrastructure. The fact that these two sources give such different figures therefore suggests that the assumptions on which the Ministry's estimates are based cannot be accurate.

Due to the difficulty of using data on outputs to produce reliable estimates of outcomes, this review recommends that in future, output data (the number of waterpoints) should be used only to report on outputs and should not be used to estimate outcomes (the number of households accessing clean and safe water).

**Recommendation:**

Make a clear separation in both monitoring and reporting between rural water supply outputs and outcomes, by ending the practice of using data on waterpoints to estimate household access. Data on infrastructure should be monitored through routine monitoring systems and data on access monitored only through household surveys.

### 3.2 Rural Water Supply Output Monitoring

#### *Output indicators and definitions*

The first output indicators listed in table 3.1 above (number of waterpoints built) only requires a couple of minor clarifications. First, the first indicator refers specifically to the number of waterpoints built, whereas it would be more useful to report on the total number of rural waterpoints in place. Second, clarity on the definition of a waterpoint is required. There is no real debate on this, but it should be clearly stated that only public improved waterpoints are counted, using the classification taken from the Joint Monitoring Programme (JMP), already widely applied in Tanzania:

- Piped water to a public standpipe
- Borehole
- Protected well
- Protected spring
- Rainwater harvesting

The second indicator (looking at waterpoint functionality) is slightly more complex – how is functionality defined? The National Water Policy of 2002 refers clearly to a minimum supply level of “year round supply”, which suggests that only waterpoints that remain productive throughout the year should be included. However, the definition used by the Ministry to calculate functionality is that a waterpoint that operates for more than half the time is functional. A different definition has been used in Waterpoint Mapping (WPM) surveys, where a waterpoint is defined as being functional if it yields water at the time of the survey. These surveys have reported a lower functionality rate (54%) than the Water Sector Performance Reports (82%), though the WPM surveys have largely been in arid areas where functionality is typically lower. A 13-district survey for the 2009 Public Expenditure Review of the Water Sector, using the same definition as the WPM surveys (whether the waterpoint was currently operational) found a functionality rate of 78%.

The choice of definition here is important. It needs to produce an indicator that is simple, measureable and relevant. The forthcoming National Rural Water Supply Infrastructure Monitoring System (NRWSIMS, see below), based on WPM, is the best tool available for monitoring functionality. This produces a “snapshot” of functionality at the time of the survey. If kept up to date through routine monitoring, it should be possible to produce a quarterly (or even monthly) functionality rate, with figures then averaged to produce an annual figure.

In other words, a waterpoint is defined as functional on a specific date if it is able to produce water on that date. Routine monitoring and the NRWSIMS can produce quarterly snapshots on specific dates, such as the final day of each quarter, which can be averaged to produce an annual functionality rate. Tables 3.2 and 3.3 demonstrate how these figures are calculated.

Table 3.2 – Calculating functionality rates on a specific date

	District A	District B	District C	Total
Total no. of waterpoints on 30/9	550	900	180	1630
No. of functional waterpoints on 30/9	250	650	36	936
Functionality rate on 30/9 (no. of functional waterpoints divided by total number of waterpoints)	45%	72%	20%	57%

Table 3.3 – Calculating average annual functionality rate

	District A	District B	District C	Total
Functionality rate on 30/9 (from table 3.2)	45%	72%	20%	57%
Functionality rate on 31/12	50%	75%	40%	63%
Functionality rate on 31/3	60%	85%	50%	75%
Functionality rate on 30/6	55%	80%	30%	68%
Average annual functionality rate (average of figures in rows above)	53%	78%	35%	66%

The only additional outcome indicator for rural water supply included in either the MKUKUTA or World Bank WSDP results monitoring frameworks refers to the number of “village water committees registered as legal entities”. If refined so that it refers to Community-Owned Water Supply Organisations (COWSOs) rather than water committees, this is a useful output indicator that could be included in an expanded Sector Performance Monitoring Framework.

#### Recommendations:

1. Adopt a new definition of waterpoint functionality based on a snapshot on specific dates.
2. Include registration of COWSOs as an additional indicator in an expanded monitoring framework

#### Output monitoring tools and systems

Significant progress has been made in the past 12 months towards improving the tools used to monitor these two output indicators. Specifically, a project to develop a National Rural Water Supply Infrastructure Monitoring System (NRWSIMS) is expected to begin very shortly, based on the Waterpoint Mapping (WPM) tool developed by WaterAid. The NRWSIMS will provide a simple tool by which the number and functionality of public improved rural waterpoints can be monitored. It should help overcome two challenges that have faced rural water supply output monitoring: over-reporting of the number of waterpoints and under-reporting of non-functionality.

However, to capitalise fully on the potential of the NRWSIMS will require that routine local government monitoring systems effectively feed into the NRWSIMS database, to keep it up to date, including providing quarterly data on functionality. The NRWSIMS is designed to incorporate updating in this way, but there will remain the challenge of ensuring that data is actually collected and actually entered into the database. In particular, this will require district water departments to regularly check the functionality status of existing waterpoints (including when functionality changes following rehabilitation works) and to provide data on newly constructed waterpoints.

#### Recommendation:

Finalise development of the National Rural Water Supply Infrastructure Monitoring System (NRWSIMS) and ensure that routine monitoring data is collected and fed into the database, in order that the NRWSIMS can become the main source of routine monitoring data for this sub-sector.

### 3.3 Rural Water Supply Outcome Monitoring

#### *Outcome indicators and definitions*

The three monitoring frameworks in table 3.1 above all include essentially the same (though with minor variations) outcome indicator for rural water supply – the proportion of rural households using improved sources for drinking water. As currently defined (Water Sector Performance Report, 2007/08), this draws on the same JMP definition of improved sources as discussed above, with two additional components: private household supplies in rural areas are also included alongside public sources (provided the private supply is of an improved type), and there is a requirement that households should be able to collect water within 30 minutes to go, wait, collect and return (which is also specifically mentioned in the MKUKUTA indicator).

The only change to be recommended here is to clarify how the 30-minute collection time condition should be applied. Specifically, it is recommended to split the current indicator into two – one taking collection time into account and the other looking at household access irrespective of collection time

#### **Recommendation:**

Divide the current outcome indicator into two separate indicators: i) all households accessing water from an improved source and ii) only those households accessing within 30 minutes.

#### *Outcome monitoring tools and systems*

This type of indicator can only be reliably monitored through household surveys. However, this indicator and definition has not been applied precisely and consistently in recent NBS household surveys. From a review of the questionnaires and reports of past surveys (summarised in Annex 3), the following challenges can be identified:

- Data on collection times has not been consistently collected or reported. This was collected and reported on in the 2007 Household Budget Survey and has been collected in some previous surveys though not always reported.
- The 2002 census had less response options than the 2004/5 DHS or the 2007 HBS, though still had sufficient options to distinguish effectively between improved and unimproved sources.
- The 2004/5 DHS (and the proposed 2009/10 DHS) did not distinguish between protected and unprotected springs, while this forms part of the distinction between improved and unimproved sources.

It is also worth noting that none of the questions in any of these surveys make any reference to seasonality or to secondary sources that may be used for other purposes or when the main source is unavailable.

As noted in the box below, all NBS surveys use a distinction between urban and rural areas that is slightly different from definitions used in the water sector. However, the implications of this difference for monitoring rural water supply are very minor as the number of NBS-defined “urban” areas that the water sector would define as rural is very small, as is the population living in such areas.

In April 2007, the Thematic Working Group for Performance Monitoring initiated a dialogue with NBS aimed at ensuring that future surveys asked consistent questions. A standard set of questions and response options to be used in all surveys was proposed. This proposed set of questions is largely the same as the questions included in the draft questionnaire for the 2009/10 DHS (see table 3.2 above), with one significant exception: that the response options in the proposed questionnaire do not distinguish between protected and unprotected springs, as noted above. This dialogue does therefore seem to have made some progress.

However, relations between MoWI and NBS are currently somewhat strained, largely as a result of NBS survey data painting a less positive picture of progress in the sector than estimates of access based on output data (see also section 3.1 above). Given the importance of NBS data for the water sector, it is equally important that this relationship should be strengthened. In particular, MoWI should stay aware of forthcoming surveys and ensure that the questionnaire and methodology meet its needs, while NBS participation in the Thematic Working Group for Performance Monitoring should also be encouraged.

### Box – Household Surveys

The National Bureau of Statistics has previously conducted national household surveys every one-two years – see schedule below – and has very recently initiated an annual National Panel Survey. All major NBS surveys deploy random sampling methods to ensure that households included in the survey are representative of the national population. Sampling is typically supported by internationally appointed consultants who are fully conversant with international best practice sampling techniques.

<i>Type of Survey</i>	<i>Recent Surveys</i>	<i>Regularity</i>	<i>Forthcoming Surveys</i>
Demographic and Health Survey (DHS)	1991/2, 1996, 1999, 2004/5	Four years	2009/10
Household Budget Survey (HBS)	1990/1, 2000/1, 2007	Five years	2011
Census	1988, 2002	Ten years	2012
National Panel Survey	2008	Annual	2009, 2010, 2011

In all NBS surveys, a simple distinction is made between urban and rural areas that is slightly different in practice from definitions used in the water sector. For NBS, each ward is classed as urban, rural or mixed, depending on whether it is made up of only urban enumeration areas<sup>1</sup> (EAs), only rural EAs or a combination. On this basis, there are a large number of small “urban” EAs in rural areas, which contribute towards overall access figures for urban areas produced by household surveys. In the water sector, designated service areas for each urban water supply authority are effectively used as the definition of urban areas, with rural areas being everywhere outside the utility service areas.

### Recommendations:

1. Strengthen the relationship between MoWI and NBS by inputting into consultation processes for future surveys, engaging with the National Panel Survey design process and encouraging NBS participation in the Thematic Working Group for Performance Monitoring.
2. Ensure that future household surveys include the same full set of response options, both on the type of source and on collection time.

## 3.4 Proposed Revised Monitoring Framework for Rural / Community Water Supply

### Expanded Monitoring Framework

	<i>Indicators</i>	<i>Source</i>	<i>Periodicity</i>
Outputs	Number of public improved waterpoints	NRWSIMS, routine monitoring by LGAs	Annual
	Annual functionality rate	NRWSIMS, routine monitoring by LGAs	Annual
	Number of COWSOs registered as legal entities	Routine monitoring by LGAs, MoWI	Annual
Outcomes	% Household using improved sources for drinking water	Household surveys (NBS)	1-2 years
	% Household using improved sources for drinking water and accessing within 30 minutes collection time	Household surveys (NBS)	1-2 years

### ***Definitions***

Public improved waterpoints:	public standpipes, boreholes, protected wells, protected springs and rainwater harvesting
Functionality rate:	% of all waterpoints that are able to produce water on a specific date
Annual functionality rate:	average functionality rate of four specific dates during the year
Improved source:	public or private piped supplies, boreholes, protected wells, protected springs and rainwater harvesting
COWSO (Community Owned Water Supply Organisation):	Body legally constituted by a community to own, manage, operate and maintain the water supply systems on behalf of a rural community. This can include water user groups, water user associations, trusts, societies and private companies.

### ***Recommended Steps to Operationalise***

- Finalise development of the NRWSIMS and ensure that it is fed by routine monitoring data from LGAs, including functionality.
- Strengthen relations between MoWI and NBS and ensure that future household surveys meet the demands of the sector performance monitoring framework

## 4. URBAN / COMMERCIAL WATER SUPPLY (INCLUDING SMALL TOWNS)

Table 4.1 – Current Indicators for Urban / Commercial Water Supply

Framework	Outputs		Outcomes	
	Indicators	Measured by	Indicator	Measured by
<b>Sector Performance Monitoring Framework</b>	No. of connections to HH	UWSAs monthly and annual reports	% Household using improved sources for drinking water	NBS - Periodically by survey Census, HBS, DHS
	No of public water points (kiosks)	UWSAs monthly and annual reports		
<b>MKUKUTA Monitoring Framework</b>	none	n/a	Proportion of population with access to piped or protected water as their main drinking water source ( <i>30 min - go, collect, return to be taken into consideration</i> )	NBS: DHS / HBS / ILFS / Census
<b>World Bank (WSDP) Results Monitoring Framework</b>	Utilities coverage of service area with potable, reliable water	EWURA	Population with access to improved water sources (number and %)	Various
	Number of water points constructed in urban programme areas	EWURA		
	Number of piped household water connections of utilities (metered and unmetered)	EWURA		
	Average hours of water supply per day	EWURA	People with access to piped household level improved water source	Various
	Operating cost coverage ratio in utilities (%)	EWURA		
	Non-revenue water	EWURA		

### 4.1 Distinction between Outputs and Outcomes

As with rural water supply, there is danger of blurring the distinction between output and outcome monitoring in the case of urban water supply. In this case the two main outputs – water supply connections and public water supply kiosks – are again infrastructure. Any estimates of household access (an outcome) will depend on a set of assumptions that may well be unreliable.

For example, assumptions can be made about how many households are able to access water from each water supply connection (via neighbours, etc.) and from each public water supply kiosk. EWURA has explored this approach, based on each utility's own assumptions (reported in the Utility Database) of how many households access water from each household connection and each kiosk. Such assumptions vary from 5 people per household connection and 80 people per kiosk in one utility to 13 people per household connection and 713 people per kiosk in another. With such varied and untested assumptions, data produced in this way is highly unreliable and therefore should have no place in the performance monitoring framework.

An alternative approach is to simply calculate how many households live within a utility's piped network and assume that all such households have access to utility-supplied water, whether through their own household connection, via a neighbour or from a kiosk. This is the approach that the Ministry of Water and Irrigation has been using, and has also been explored by EWURA. In this case, the assumption is known to be false. Large

numbers of households are known to lack access to piped water supplies despite living within the areas covered by the network – for example when there is insufficient water to supply to the whole network. This method should therefore also be excluded from the framework.

Furthermore, as currently calculated, the data is made even less accurate by calculating un-weighted averages across all utilities. It is highly misleading to use un-weighted averages since this gives the same weight to Dar es Salaam (with around 4 million residents) as to relatively small towns such as Babati and Lindi (with around 50,000 residents each). Weighting averages when calculating national totals would make much more sense.

A simpler and more accurate approach, as with rural water supply, is to more clearly distinguish between outputs and outcomes. Use routine monitoring data to report on the number of connections and kiosks and let NBS produce estimates of access through household surveys. This overcomes the problem of unreliable assumptions and means that weighting is no longer required.

**Recommendation:**

Make a clear separation in both monitoring and reporting between urban water supply outputs and outcomes, by ending the practice of using data on piped networks, household connections and public kiosks to estimate household access. Data on infrastructure should be monitored through routine monitoring systems and data on access monitored only through household surveys.

## 4.2 Urban Water Supply Output Monitoring

### *Output indicators and definitions*

The two existing output indicators in the Sector Performance Monitoring Framework are largely clear and well defined. They do not require major revision, though the second could be expressed differently so that it more clearly refers to public kiosks with utility-supplied piped water.

However, there is a question about the status of connections – how reliable is the water supply? A simple indicator for this, and for which data is already collected, is the average hours of supply. It would be relatively simple to incorporate this into the framework. Care should be taken to ensure that national averages are calculated using population weighting, to ensure that the averages are representative.

A second question asked how small towns are treated in the reporting of these indicators. To date, reporting on urban water supply outputs has focussed largely on the 19 regional centres, with Dar es Salaam added in 2008, excluding small towns entirely. This is despite the fact that over 2 million Tanzanians currently live in small towns, according to estimates based on the 2002 census.

To maintain consistency with past reporting it doesn't make sense to add output data for small towns straight into the existing indicators. A better option would be to add separate indicators for small town water supply, and adjust the existing indicators so that they refer specifically to regional centres.

A final question is whether any additional output indicators on urban water supply should be added to the framework. From the indicators for the World Bank's WSDP Results Monitoring Framework, there are two options – operating cost coverage ratio and non-revenue water / unaccounted-for water. However, while either of these possible indicators would provide useful data on sector performance in different ways, for the sake of simplicity, this review recommends including only unaccounted-for water in the framework, defined as the difference between the quantity of water produced and the quantity of water sold to customers.

**Recommendations:**

1. Only cosmetic changes to the existing output indicators or definitions for urban water supply outputs are required.
2. Add an indicator on the average hours of supply for water supply connections.
3. Add output indicators for water supply in small towns, and adjust existing indicators so that they explicitly refer to regional centres.
4. Add unaccounted-for water to the performance monitoring framework.

### ***Output monitoring tools and systems***

EWURA's Utility Database (MajIS) is the most comprehensive and reliable source of routine monitoring data on DAWASA/DAWASCO and the 19 Regional Centres' utilities. EWURA's independence and regulatory role makes it entirely appropriate for EWURA to have responsibility for output monitoring and for the utility database to be based there.

The database currently includes all data on all the indicators proposed above for regional centres, including the new indicator on unaccounted-for water, and a similar (simplified) version of the database is likely to be used for monitoring small town water supplies. The two proposed indicators for small town water supply are very basic information that even a simplified database will surely include, and there is therefore no need to make any changes to the database for the purpose of providing data for the monitoring framework. Consideration of monitoring and reporting in the forthcoming process of "clustering" small towns with regional utilities will need to ensure that data for small towns is clearly distinguished from data for regional utilities.

The Commercial Water Supply and Sewerage Department at the Ministry of Water and Irrigation has expressed difficulties at being able to access data on utility performance from the utility database. However, this review proposes that the most appropriate solution to these difficulties is to improve MoWI access to the EWURA database rather than to relocate institutional responsibility for the database.

Similarly, as EWURA has responsibility for monitoring and regulating commercial (urban) water supply, there is clear logic behind mandating EWURA to take over responsibility for preparing the annual performance report for urban water supply and sewerage authorities.

#### **Recommendations:**

1. No changes to the tools or institutional responsibilities for monitoring urban water supply output indicators are required.
2. The utility database (MajIS) should remain housed at EWURA, with data shared routinely with MoWI, and EWURA should prepare the annual performance report for urban water supply and sewerage authorities.
3. Ensure that the clustering process adequately considers monitoring and reporting.

### **4.3 Urban Water Supply Outcome Monitoring**

#### ***Outcome indicators and definitions***

There is an ongoing debate in urban water supply outcome monitoring, both in Tanzania and internationally, asking whether the same definition of access that applies in rural areas should also apply in urban areas. This breaks down into two questions. First, should protected wells, protected springs and rainwater harvesting be included within the range of sources defined as improved even in densely populated urban areas where the likelihood of groundwater pollution is high? The UNICEF-WHO Joint Monitoring Programme (JMP), for example, is currently considering revising their current definition of "improved" supplies in order to exclude such sources. Second, should urban water supplies be considered improved if they are provided by an unregulated supplier? The Thematic Working Group for Performance Monitoring has proposed that only piped supplies and boreholes provided by a regulated supplier should be considered improved. Consequently, the working group proposed a new question for NBS to include in household surveys asking who provides the water at each household's main source, a version of which has been included in the draft questionnaire for the 2009/10 DHS.

A case can certainly be made for these ideas and the suggested new question would undoubtedly provide interesting data. However, the issue for consideration here is whether they should be included in the proposed revised monitoring framework. This framework needs to be kept simple and, where possible, should remain consistent with past monitoring and reporting, in order to ensure comparability.

It is impossible with a single indicator to stay in entirely line with international best-practice on performance monitoring and to remain entirely consistent with past reporting. This review therefore proposes that two separate outcome indicators should be monitored, in line with the JMP and with past reporting respectively. An

additional, more demanding outcome indicator for urban water supply can be included. Specifically, we can use this additional indicator to look only at households with access to piped supplies (into their household, yard or plot or collected from a public kiosk or standpipe), in line with the JMP.

Existing reporting on urban water supply outcomes through household surveys includes both small towns and regional centres, without distinguishing between the two. With the exception of the census, which covers all households nationwide, none of the household surveys has a large enough sample size to distinguish effectively between small and larger towns. We cannot therefore split urban access figures into large and small towns.

As for rural water supply, the current MKUKUTA indicator specifies a 30-minute collection time, though in practice this has never been reported. This should be dropped from the headline indicator, for consistency, though should remain as part of the survey questionnaire and be included in analyses.

**Recommendation:**

Divide the current indicator into three separate indicators: i) all households accessing water from a piped source; ii) households accessing water from a piped or protected source, and iii) households accessing water from a piped or protected source within 30 minutes.

**Outcome monitoring tools and systems**

This type of indicator can only be reliably monitored through household surveys, which are typically conducted by the National Bureau of Statistics every two-three years.

Many of the same challenges discussed earlier in the section on rural water supply outcome monitoring also apply here. In particular, the question of collection time has not been consistently included or reported in past surveys, which should be rectified in future. Similarly, past surveys have not consistently distinguished between the full range of improved and unimproved sources, particularly between protected and unprotected springs, which should also be rectified. And the issue of coordination and communications between MoWI and NBS cuts across all sub-sectors.

The proposed new indicator (% households with piped water supplies) does not require any changes to standard survey questions. However, it will require some additional analysis to disaggregate households with access to an improved source further into those with and without access to piped supplies.

As noted in the box in section 3.3 above, the NBS definition of urban and rural areas differs slightly from the definition used in the water sector. However, provided that small towns are brought within the sector’s definition of urban areas, the difference in definitions is very minor and is therefore not a priority concern.

**Recommendations:**

1. Strengthen the relationship between MoWI and NBS by inputting into consultation processes for future surveys and encouraging NBS participation in the Thematic Working Group for Performance Monitoring.
2. Future household surveys should collect data and report on collection times for all households accessing water from an improved source. This data should then be used to disaggregate households accessing water from improved sources by collection time (on premises, below 30 minutes, above 30 minutes).
3. Ensure that future household surveys include the same standard set of response options.

**4.4 Proposed Revised Monitoring Framework for Urban / Commercial Water Supply**

**Expanded Monitoring Framework**

	<i>Indicators</i>	<i>Source</i>	<i>Periodicity</i>
Outputs	No. of water supply connections supplied by utilities in regional centres, including Dar es Salaam	EWURA Utility Database, data from utilities	Annual
	Average hours of supply to water supply connections	EWURA Utility Database, data from utilities	Annual

	No of public water kiosks supplied by regulated utilities in regional centres, including Dar es Salaam	EWURA Utility Database	Annual
	No. of water supply connections supplied by utilities in small towns	EWURA Utility Database, data from utilities	Annual
	No of public water kiosks supplied by regulated utilities in small towns	EWURA Utility Database, data from utilities	Annual
Outcomes	<b>% Households using piped sources for drinking water</b>	Household surveys (NBS)	1-2 years
	% Households using piped or protected sources for drinking water	Household surveys (NBS)	1-2 years
	% Households using piped or protected sources for drinking water and accessing within 30 minutes collection time	Household surveys (NBS)	1-2 years

### Definitions

Piped sources:	Piped water supply to a household, yard or plot or to a communal kiosk or standpipe
Protected sources:	Boreholes, protected wells, protected springs and rainwater harvesting
Water supply connection:	Piped connections into household, premise, yard or plot, supplied by a regulated utility
Public water kiosks:	Public standpipes providing water supplied by a regulated utility
Average hours of supply:	Average daily hours for which water is available to each connection, calculated nationally using weighted averages for each utility
Small towns:	<i>not yet clearly defined – to be defined by the sector</i>
Unaccounted-for water	The difference between the quantity of water produced and the quantity of water sold to consumers

### Recommended Steps to Operationalise

- Ensure EWURA Utility Database collects the required data on small town water supply
- Strengthen relations between MoWI and NBS and ensure that future household surveys meet the demands of the sector performance monitoring framework

## 5. HOUSEHOLD SANITATION AND HYGIENE

Table 5.1 – Current Indicators for Household Sanitation and Hygiene

Framework	Outputs		Outcomes	
	Indicators	Measured by	Indicator	Measured by
Sector Performance Monitoring Framework	No of rural people sensitized and trained on sanitation	LGAs and MoH annual health reports	% Rural households using adequate sanitation facilities	NBS - Periodically by survey Census, HBS, DHS
	No of urban people sensitized and trained on sanitation	LGAs and MoH annual health reports	% Urban households using adequate sanitation facilities	NBS - Periodically by survey Census, HBS, DHS
	No of urban households with connections to sewerage	UWSAs monthly and annual reports		
MKUKUTA Monitoring Framework	none	n/a	% of households with basic sanitation facilities	NBS: DHS / HBS / Census
			No. of reported cholera cases	MoHSW
World Bank (WSDP) Results Monitoring Framework	Urban wastewater / sewerage connections (residential and non-residential)	EWURA	Population with access to sewerage (number and %)	Various
	Number of (urban) household latrines retro-fitted with slabs	Not specified	Population with access to improved sanitation (number and %)	Various
			Population with access to basic sanitation (number and %)	Various

### 5.1 Distinction between Outputs and Outcomes

The distinction between outputs and outcomes in the case of household sanitation is perhaps more difficult than for water supply. Since policy does not support direct subsidies for household latrines, the construction of such latrines cannot be considered within the control of the sector. They are therefore outcomes rather than outputs.

What then are the sector's outputs? This is not a simple question as there are a wide variety of products the sector can produce in order to encourage households to construct latrines. This can include training or sensitisation sessions, poster campaigns, trained artisans, etc. It can also include some hardware, such as sewerage connections, sewage treatment sites, etc. Not of these are easy to monitor.

Hygiene is no easier. In this case, handwashing with soap at critical times would be one key outcome, perhaps alongside safe household water storage, both of which can be measured (though not easily) through household surveys. However, the challenge again is to determine outputs – training, campaigns, etc. are all possibilities, but again monitoring of these is far from straightforward.

### 5.2 Household Sanitation and Hygiene Output Monitoring

**Output indicators and definitions**

The household sanitation output indicators listed in the current sector monitoring framework refer to household sewerage connections and to people trained and sensitised on sanitation.

Household sewerage connections are relatively straightforward, and can be monitored relatively easily through the Utility Database. This should stick strictly to tracking the number of households with sewerage connections without trying to estimate coverage. However, monitoring sewerage connections is arguably an incentive to prioritise wealthier households over the poor. For this reason, the number of sewerage connections should not be a headline indicator for the sector.

There are two main problems with the other indicator. First, it is not measureable – how can the number of people being trained and sensitised by the full range of actors in the sector be tracked? Second, it is hard to define – what constitutes “training and sensitisation”? Attending a single public meeting lasting an hour cannot be the same as a week-long training workshop, for example. This review therefore proposes to drop this indicator from the sector performance monitoring framework.

Alternative output indicators for household sanitation and hygiene are not much simpler. Options that could be considered are presented in table 5.2.

*Table 5.2 – Possible household sanitation and hygiene output indicators*

<b>Possible Indicator</b>	<b>Challenges</b>
Number of active / registered / trained latrine construction artisans	Difficult to monitor, not currently monitored
Number of person-days spent on sanitation and hygiene promotion	Difficult to monitor, not currently monitored
Number of villages reached with sanitation and hygiene promotion	Difficult to monitor, difficult to define
Hours of TV and radio broadcast with hygiene promotion messages	

An alternative would be to decide not to have any output indicators for household sanitation and hygiene (other than sewerage connections). This would not be ideal, but it is not essential to have output indicators in every section of the framework and it may be the best option.

<p><b>Recommendations:</b></p> <ol style="list-style-type: none"> <li>1. Remove the current indicator on the number of people sensitised and trained from the framework.</li> <li>2. Further explore options for hygiene and sanitation output indicators.</li> </ol>
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**5.2.2 Output monitoring tools and systems**

Monitoring of household sewerage connections is relatively straightforward through EWURA’s utility database.

**5.3 Household Sanitation and Hygiene Outcome Monitoring**

**Outcome indicators and definitions**

The existing indicators for household sanitation and hygiene outcomes look at households with “adequate sanitation facilities”. According to the Water Sector Performance Report for 2007/08, “adequate sanitation facilities” are defined as latrines that meet the following criteria:

- Well-designed latrine / toilet;
- affords safe disposal and protects water sources;
- inhibits transmission of faecal contaminants by flies;

- has hand washing facilities in it or annexed to it;
- easily accessible in all seasons; and
- used by owners without any psychological depression.

There are several problems with this definition. First, it is inconsistent with past and current survey tools, which simply ask for the type of latrine without asking whether it meets these criteria. Second, it is not at all easy to monitor, having so many criteria. To date, no surveys have collected data that fits this definition.

Instead, survey data has been collected and reported on the presence of four categories of latrines: flush or pour-flush; ventilated improved pit (VIP) latrines; traditional pit latrines; and no facility, bush or field. (See Annex 4 for a full list of household sanitation questions in recent household surveys). The challenge here is that in practice the category “traditional pit latrine” is very wide, ranging from basic uncovered pits with little or no superstructure that offer very little protection against disease to more well-designed latrines with slabs, lined pits and a solid superstructure that do offer good protection. This category also accounts for over 80% of all households, without telling us anything about the standard of the latrine.

An alternative approach would be to adopt the definitions of “improved” and “unimproved” latrines that have been included in the draft National Sanitation and Hygiene Policy – see table 5.3 below. These are internationally recognised definitions, taken from the UNICEF-WHO Joint Monitoring Programme.

Table 5.3 – JMP definitions of “improved” and “unimproved” latrines

<i>Unimproved latrines: facilities that do not ensure hygienic separation of human excreta from human contact</i>	<i>Improved latrines: facilities that ensure hygienic separation of human excreta from human contact</i>
<ul style="list-style-type: none"> <li>• <b>pit latrines without a slab or platform</b> – uses a hole in the ground for excreta collection and does not have a squatting slab, platform or seat. An open pit is a rudimentary hole in the ground where excreta is collected.</li> <li>• <b>hanging latrines</b> – is a toilet built over the sea, a river, or other body of water, into which faeces and urine drops directly</li> <li>• <b>bucket latrines</b> – refers to the use of a bucket or other container for the retention of urine and anal cleaning material, which are periodically removed for treatment, disposal or for fertilizer</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Flush or pour-flush toilet / latrine to piped sewer system, septic tank, pit latrine</b></li> <li>• <b>Ventilated improved pit latrine (VIP) latrine</b> – a dry pit ventilated by a pipe that extends above the latrine roof. The end of the vent pipe is covered with gauze mesh or fly-proof netting and the inside of the superstructure is kept dark.</li> <li>• <b>Pit latrine with slab</b> – a dry pit latrine which uses a hole in the ground to collect the excreta and a squatting slab or platform that is firmly supported on all sides, easy to clean and raised above the surrounding ground level to prevent surface water from entering the pit. The platform has a squatting hole, or is fitted with a seat.</li> <li>• <b>Composting toilet</b> – a dry toilet into which carbon-rich material are added to the excreta and special conditions maintained to produce inoffensive compost. A composting latrine may or may not have a urine separation device.</li> </ul>

The draft National Sanitation and Hygiene Policy also includes a definition of “basic latrines” as including both improved latrines and also traditional latrines constructed with local materials which allow for the separation of faeces from humans, but which may need to be rebuilt on an annual basis, or do not have a slab which is easy to clean.

These definitions are both internationally recognised and in line with emerging policy. This review therefore recommends that these definitions of “improved” and “basic” latrines are adopted, and that two corresponding outcome indicators should be included in the monitoring framework. This also matches two of the outcome indicators for household sanitation in the World Bank’s WSDP Results Monitoring Framework.

A second issue with the existing monitoring framework is that there is no outcome indicator looking at household hygiene. Finding a suitable indicator that is both easily measured and provides useful information on hygiene practices is not straightforward – see box below.

## Monitoring hygiene practices – possible indicators and challenges

### *Possible hygiene practice indicators:*

1. % of households with a designated place for hand washing where water and soap are present
2. % of households with soap present anywhere in the household
3. % of mothers of children aged 0-59 months who know all critical times for handwashing.
4. % of mothers of children aged 0-59 months who report washing their hands with soap at least 2 of the appropriate times during a 24 recall period
5. % of mothers of children aged 0-59 months who live in households with soap and water at the specific place for handwashing.
6. % of mothers of children aged 0-59 months who live in households with soap anywhere in the home.

### *Challenges*

- The presence of handwashing facilities and/or soap is no guarantee of good hygiene practices. (Nos. 1, 2, 5, 6)
- Similarly, knowledge of good hygiene does not guarantee good practice. (No. 3)
- Some indicators require observation, which is both time consuming and expensive. (Nos. 5 and 6)
- While mothers of young children are critical household members, focussing exclusively on this group excludes others (Nos. 3-6)
- Typical survey questions elicit household-level responses, which makes it difficult to collect data on the practices of individual household members (Nos. 3-6)
- Respondents may give “correct” answers to questions that ask respondents to report their own practices (No. 4)

Though there is no perfect solution to these challenges, there is potentially a lot to gain from including one or two hygiene-related indicators in the monitoring framework. As such, this review therefore proposes to include one indicator on hygiene practices – the % of households with a designated place for hand-washing where water and soap are present. It also recommends that future household surveys, particularly the forthcoming DHS, should incorporate a broad range of questions on hygiene practices.

The MKUKUTA monitoring framework has an additional sanitation and hygiene indicator – reported cholera cases. Reporting against this indicator has been challenging, particularly given the episodic nature of cholera epidemics, whereby some years have very few cases while other year there are a lot, which makes annual monitoring largely meaningless.

### **Recommendations:**

1. Adopt the proposed JMP-based definitions of “basic” and “improved” latrines (also as per proposed definitions in National Sanitation and Hygiene Policy) and include two corresponding outcome indicators in the monitoring framework.
2. Adopt an additional outcome indicator to monitor the presence of handwashing facilities with soap and water.

### ***Outcome monitoring tools and systems***

A more sensitive survey question will be required in order to monitor the proposed JMP-based definitions of “basic” and “improved” latrines. Specifically, table 5.4 proposes a suitable question and response options, which has already been shared with NBS for inclusion in the forthcoming Demographic and Health Survey. Similarly, new survey questions will also need to be deployed to monitor the proposed outcome indicator on hygiene practices, also suggested in table 5.4. A more complete list of recommended standard questions for future household surveys is attached as Annex 5.

Table 5.4 – Proposed survey questions on household sanitation and hygiene

What kind of toilet facility do members of your household usually use?	<ul style="list-style-type: none"> <li>• Flush / pour flush to piped sewer system</li> <li>• Flush / pour flush to septic tank</li> <li>• Flush / pour flush to pit latrine</li> <li>• Flush / pour flush to elsewhere</li> <li>• Ventilated improved pit (VIP) latrine</li> <li>• Pit latrine with slab</li> <li>• Pit latrine without slab / open pit</li> <li>• Composting toilet</li> <li>• Bucket</li> <li>• No facility / bush / field</li> </ul>
We would like to see the place where members of your household most often wash their hands? May I see this place?	<ul style="list-style-type: none"> <li>• Place for hand washing observed</li> <li>• Movable object used for hand washing (kettle, bucket, basin, container)</li> <li>• No specific place or movable object for hand washing</li> <li>• No permission to see</li> </ul>
<p>(Observation)</p> <p>Is water present at the place for hand washing?</p> <p><i>If there is a tap or pump at the specific place for hand washing, open the tap or operate the pump to see if water is coming out. If there is a bucket, basin or other type of water container, examine to see whether water is present in the container. Record observation.</i></p>	<ul style="list-style-type: none"> <li>• Water available</li> <li>• Water not available</li> </ul>
<p>(Observation)</p> <p>Is soap or detergent present at the specific place for hand washing?</p> <p><i>Record observation. Circle all that apply.</i></p>	<ul style="list-style-type: none"> <li>• Bar soap</li> <li>• Detergent (powder/liquid/paste)</li> <li>• Liquid soap</li> <li>• Ash, mud, sand</li> <li>• None</li> </ul>

**Recommendations:**

1. Deploy a new more comprehensive set of response options on household latrines in future household surveys.
2. Incorporate questions on the presence of handwashing facilities at household latrines and on handwashing at critical times into future household surveys.

**4.4 Proposed Revised Monitoring Framework for Household Sanitation and Hygiene*****Expanded Monitoring Framework***

	<i>Indicators</i>	<i>Source</i>	<i>Periodicity</i>
Outputs	Number of households with sewerage connections	EWURA Utility Database, data from utilities	Annual
Outcomes	% rural households with access to an improved latrine	Household surveys (NBS)	1-2 years
	% urban households with access to an improved latrine	Household surveys (NBS)	1-2 years
	% rural households with access to a basic latrine	Household surveys (NBS)	1-2 years
	% urban households with access to a basic latrine	Household surveys (NBS)	1-2 years

	% households with a designated place for handwashing with soap and water present	Household surveys (NBS)	1-2 years
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**Definitions**

Household sewerage connection: Utility piped sewerage direct from the household

Improved latrine: Flush or pour-flush to piped sewer, septic tank or pit latrine; ventilated improved pit (VIP) latrine; pit latrine with slab; or composting toilet

Basic latrine: An improved latrine or a traditional pit latrine (without slab)

**Recommended Steps to Operationalise**

- Develop standard questions for household surveys suitable for monitoring these indicators. Proposed questions for household latrines and handwashing facilities are presented in table 5.4 above.
- Ensure that these standard questions are consistently applied and reported on in all surveys, starting with the forthcoming DHS.

## 6. INSTITUTIONAL WATER SUPPLY, SANITATION AND HYGIENE

Table 6.1 – Current Indicators for Institutional Water Supply, Sanitation and Hygiene

Framework	Outputs		Outcomes	
	Indicators	Measured by	Indicator	Measured by
<b>Sector Performance Monitoring Framework</b>	Number of sanitation facilities built in schools	LGA & MoEVT annual reports	% of schools with adequate sanitation facilities	MoEVT/IMIS? On annual basis
<b>MKUKUTA Monitoring Framework</b>	None	n/a	% of schools having adequate sanitation facilities (as per Policy)	MoEVT / IMIS
<b>World Bank (WSDP) Results Monitoring Framework</b>	Number of (urban) school latrines retrofitted with slabs		Schools with access to improved sanitation facilities and practicing improved hygiene	Various

### 6.1 School Water Supply, Sanitation and Hygiene

The various indicators in table 6.1 above all focus largely on the same basic question – how many school latrines? – with some minor variations. This ignores other important aspects of institutional water supply, sanitation and hygiene. In particular, water supply and hygiene standards at schools are overlooked and there is no attention at all on water supply, sanitation or hygiene at health facilities. Health facilities will be the focus of the next sub-section, but let's look first at schools, starting with latrines.

There is considerable overlap between the output and outcome indicators listed above. A simple way of making this distinction clearer is to set the number of school latrines as an output indicator and the number of pupils per latrine as an outcome. In both cases, the indicators should be disaggregated by sex. All the necessary data to monitor these indicators is already available in the Education Management Information System (EMIS).

This approach would have two advantages. First, it would more clearly recognise progress in the number of school latrines – the number of latrines has been increasing, but only just enough to keep pace with rapidly increasing enrolment rates. Second, it would also solve a challenge with the current outcome indicators in the sector monitoring framework and for MKUKUTA. In both cases, the indicator asks how many schools have adequate sanitation facilities, which has been interpreted as including schools that meet the official “minimum standard” of no more than 20 girls per latrine and no more than 25 boys per latrine. However, data is not collected and aggregated in a way that allows the number of schools meeting this standard to be calculated. In practice, it is the pupil-latrines ratio that has been monitored, and/or the total number of school latrines nationally as a proportion of the number required to meet the minimum standard nationally.

Another challenge, however, is that existing data on school latrines says nothing about the standard of the latrines. One way of rectifying this would be to count only improved school latrines (using the same definition as for household sanitation), but this would require changes to EMIS and make comparisons with past data impossible.

Water supply at schools is also important and arguably should have a place in the monitoring framework. A simple indicator would be the number (or proportion) of schools having on-site access to improved water supplies. This is already monitored in EMIS and should therefore be relatively easy to include.

Hygiene is more challenging. Unless data is collected on the presence of handwashing facilities, on the cleanliness of school latrines or on hygiene education, for example it will not be possible to report on school hygiene.

**Recommendations:**

1. Revise the output and outcome indicators for school sanitation by setting the number of school latrines as an output indicator and the pupil-latrine ratio as an outcome indicator, both disaggregated by sex.
2. Add an indicator on school water supply

**6.2 Water, Sanitation and Hygiene at Health Facilities**

None of the monitoring frameworks in table 6.1 above pay any attention to health facilities. This is despite the crucial importance of water supply, latrines and critically hygiene services at such facilities and the currently poor state of such services. The Tanzania Service Provision Assessment (TSPA) of 2006 found that only 34% of health facilities had access to regular water supply and 37% had no client latrine facilities – see table 6.2.

*Table 6.2 – Water, sanitation and hygiene services at health facilities*

<i>Service</i>	<i>Hospitals</i>	<i>Health centres</i>	<i>Dispensaries</i>	<i>All</i>
Client latrine	71%	67%	62%	63%
Any safe onsite water (within 500m, improved source)	96%	67%	53%	56%
Regular water supply (safe, onsite, year-round)	42%	41%	33%	34%

*Source: Tanzania Service Provision Assessment, 2006*

The Health Management Information System (MHIS, also known as MTUHA: Mfumo wa Taarifa za Uendeshaji wa Huduma za Afya) routinely collects data from all hospitals, health centres and dispensaries nationwide. This includes both government and private health facilities. This does not currently include collection of data on water supply, sanitation or hygiene practices in health facilities, though there is clearly potential for such indicators to be incorporated into the system.

Taking a lead from the TSPA data above, health facilities to be included should include hospitals, health centres and dispensaries.

**Recommendations:**

1. Add indicators on water supply and sanitation services at health facilities.
2. Liaise with MoHSW to ensure that data on health facilities is collected.

**6.3 Proposed Revised Monitoring Framework for Institutional Water Supply, Sanitation and Hygiene*****Expanded Monitoring Framework***

	<i>Indicators</i>	<i>Source</i>	<i>Periodicity</i>
Outputs	Number of school latrines (girls and boys)	EMIS (LGAs and MoEVT)	Annual
	Number of schools with on-site access to an improved water source	EMIS (LGAs and MoEVT)	Annual
	Number of health facilities with at least one client latrine	HMIS (LGAs and MoHSW)	Annual
	Number of health facilities with on-site access to an improved water source	HMIS (LGAs and MoHSW)	Annual
Outcomes	Number of pupils per improved latrine (girls and boys)	EMIS (LGAs and MoEVT)	Annual

***Recommended Steps to Operationalise***

- Liaise with MoEVT and MoHSW to ensure that EMIS and HMIS is collecting and reporting on the necessary data

## 7. WATER RESOURCE MANAGEMENT

Table 7.1 – Current Indicators for Water Resource Management

Framework	Outputs		Outcomes	
	Indicators	Measured by	Indicator	Measured by
<b>Sector Performance Monitoring Framework</b>	Hydrometric network established.	MoWI – BWO	Inventory and status of available and potential WR & utilization established by 2010	MoWI?
	% functional monitoring stations	MoWI – BWO		
<b>MKUKUTA Monitoring Framework</b>	None	n/a	None	n/a
<b>World Bank (WSDP) Results Monitoring Framework</b>	National Water Board established and operational (Yes/No)	MoWI	Number of BWOs fully operational and implementing an approved plan for integrated water basin management	Various
	Number of BWOs that are fully staffed	BWOs, MoWI		
	% basins producing annual Basin Statistical Book	BWOs, MoWI		
	Number of basins with IWRM Basin Development and Management Plans in place	BWOs, MoWI		
	Number of sub-catchment committees established and operational	BWOs, MoWI		
	Number of WUAs established and operational	BWOs, MoWI		
	Number of BWOs that adopt national sustainable financing options for IWRM	MoWI		
	Number of watersheds legally gazetted as protected areas	BWOs, MoWI		
	Number of ground water recharge areas legally gazetted as protected areas	BWOs, MoWI		
	Smallholder irrigation schemes with improved water use efficiency	BWOs, MoWI		
	Number of BWOs granting, monitoring and enforcing water rights and pollution control	BWOs, MoWI		

## 7.1 Water Resource Management Indicators and Definitions

Selecting a few headline indicators for Water Resource Management is not an easy exercise. The length of the list of output indicators in the World Bank's WSDP Results Monitoring Framework demonstrates this difficulty. The current sector performance monitoring framework has a much shorter list, but the indicators here do not comprehensively express either what the sector produces or what changes are intended to be brought about by these products. Some fairly substantial changes may be required here.

For these reasons, the ambition of this section of the report is lower than for other sub-sectors. This section can be said to be starting a process of discussion rather than attempting to deliver a final conclusion to such discussions. This review has already stimulated this process but due to limitations of time is unable to present a final consensus.

It is worth looking to international best practice for ideas, just as has been done for water supply and sanitation. Two such best practice alternative sources of possible indicators are the Global Water Partnership (GWP) and Cap-Net / UNDP recommended lists of WRM indicators – see table 7.2. These are divided by thematic area, combining outputs and outcomes together, but it is fairly straightforward to separate the two. There is also a longer list of national- and basin-level indicators recently developed by the Department of Water Resources for the WSDP; this is attached as Annex 6.

Table 7.2 – Recommended WRM Indicators from the Global Water Partnership and Cap-Net / UNDP

<b>Global Water Partnership</b>	
<i>Water Allocation</i>	<ul style="list-style-type: none"> <li>- Number of surface and groundwater users applied for and issued with water rights and total volume issued.</li> <li>- Allocation criteria and water right determination process to prioritise key uses developed and in use.</li> <li>- Environmental flow requirements identified and monitored</li> </ul>
<i>Pollution Control</i>	<ul style="list-style-type: none"> <li>- Major polluters and dischargers identified</li> <li>- Number of dischargers issued with 'licences'</li> </ul>
<i>Monitoring of Water Resources</i>	<ul style="list-style-type: none"> <li>- Proportion of water abstractions/discharges complying with conditions</li> <li>- Number of water resource monitoring stations producing reliable data</li> <li>- Total water storage capacity (in structures above 5000 m<sup>3</sup>)</li> <li>- Water level trends in key groundwater monitoring stations</li> </ul>
<i>Basin Planning and Stakeholder Participation</i>	<ul style="list-style-type: none"> <li>- Number of basin plans developed</li> <li>- Stakeholder representation in planning process</li> <li>- Number of WUA's and Apex bodies established and active</li> </ul>
<i>Financial Management</i>	<ul style="list-style-type: none"> <li>- Total fees generated from issuance of water use and waste discharge permits</li> </ul>
<i>Conflict resolution</i>	<ul style="list-style-type: none"> <li>- Number of water use conflicts, water quality/quantity issues identified, reported and resolved.</li> </ul>
<b>Cap-Net / UNDP</b>	
<i>Water Allocation</i>	<ul style="list-style-type: none"> <li>- Number of surface and groundwater users licensed according to the regulations.</li> <li>- Water allocation criteria include use efficiency, economic benefit and social goals.</li> <li>- % of time environmental and social reserve is maintained in major water courses.</li> </ul>
<i>Pollution Control</i>	<ul style="list-style-type: none"> <li>- % of surface water quality samples complying with water quality objectives.</li> <li>- % of ground water quality samples complying with water quality objectives.</li> <li>- Number of polluters licensed according to the regulations.</li> </ul>
<i>Monitoring</i>	<ul style="list-style-type: none"> <li>- Proportion of water allocation permit holders complying with permit conditions.</li> <li>- Proportion of water pollution permit holders complying with permit conditions.</li> <li>- Number of water resource monitoring stations producing reliable data.</li> <li>- Total water storage capacity.</li> <li>- % groundwater monitoring stations with declining water levels.</li> </ul>
<i>Basin Planning</i>	<ul style="list-style-type: none"> <li>- Water management activities driven by Basin plan.</li> <li>- Stakeholder priorities reflected in the basin plan.</li> </ul>
<i>Economic and Financial Management</i>	<ul style="list-style-type: none"> <li>- Charges and fees for water allocation favour the poor and efficient water use.</li> <li>- % revenue received.</li> <li>- Pollution charges give incentive to reduce pollution.</li> <li>- % revenue received.</li> </ul>

<i>Information Management</i>	<ul style="list-style-type: none"> <li>- Data base is established in formats compatible with other river basin organisations.</li> <li>- Water management information is available to managers and other stakeholders as required.</li> </ul>
<i>Stakeholder Participation</i>	<ul style="list-style-type: none"> <li>- Number of meetings of Government agencies with water interests to consult and collaborate on water management.</li> <li>- Formal stakeholder structures established with clear roles and responsibilities in water resources management.</li> <li>- Basin stakeholders (male and female) represented in decision making bodies at all levels.</li> </ul>

**Output indicators**

The two output indicators in the current framework both refer to water resource monitoring infrastructure – the presence of a hydrometric network and number of functional monitoring stations. It is therefore a fairly minor adjustment to replace these two indicators with one adopted and adjusted from the GWP list: number of water resource monitoring stations regularly producing reliable data.

A second major function of the WRM sub-sector, beyond monitoring water resources, is to ensure effective management of these resources. Water Use Permits (water rights) are a key component of this. The first indicator on the GWP list focuses on water rights and could be the basis of a suitable indicator: number of surface and groundwater users applied for and issued with water rights and total volume issued. However, this is arguably three indicators rather than one (number of rights applied for, number issued, and volume issued) and should probably be broken down rather than adopted whole. The number of water use permits applied for and the number issued are the key aspects here.

Third, given the emergence of a new set of WRM institutions, such as Basin Water Offices, it makes sense to include an indicator monitoring the development of these institutions. The list of World Bank indicators above includes several of this type, including the National Water Board, staffing of BWOs, Basin Plans and Statistical Books, sub-catchment committees, WUAs and basins’ adoption of sustainable financing. The GWP list includes just one indicator on this – the number of basin plans developed – which is also on the World Bank list. However, the World Bank list has a more comprehensive indicator on institutional development: Number of BWOs fully operational and implementing an approved plan for integrated water basin management.

**Recommendation:**

Replace the current output indicators with the following indicators: i) number of water resource monitoring stations regularly producing reliable data, ii) number of applications for water use permits received; iii) number of water use permits issued, and iv) number of BWOs fully operational and implementing an approved plan for integrated basin management.

**Outcome indicators**

The above are all output indicators. At least one outcome indicator is also needed. Two questions can help us here. First, why is water resource management important? Second, what wider effects do we intend to be brought about by the presence of a fully functioning WRM sector? Look back at the WSDP’s overall objectives for WRM can help answer these questions.

The first WSDP objective for WRM is to “develop a sound water resources management and development framework in all nine water basins, for optimising the utilisation of the water resources in a sustainable manner for the various competing uses”. The key here is the second part of the objective, which talks first about optimal and sustainable usage of water resources and second about competing uses.

The GWP and Cap-Net lists have indicators that look at both these areas. From this we can select two to be used as the basis of further discussions. The first relates to competing uses: the number of water use / quality conflicts identified and resolved. A second indicator relating to sustainability of water resources would also be important. The best option from the best practice indicator lists above is the proportion of groundwater monitoring stations with declining water levels, though surface water flows are also a possible indicator.

**Recommendation:**

Replace the current outcome indicators with the following indicators: i) the number of water use / quality conflicts identified and resolved, and ii) the % groundwater monitoring stations with declining water levels.

## 7.2 Water Resource Management Tools and Systems

Current systems within the sector are already compatible with all the indicators proposed here. The remaining challenge is simply to ensure that data is being routinely collected and reported by all 9 basins.

**Recommendation:**

- Ensure regular data collection and reporting by all 9 basins.

## 7.3 Proposed Revised Monitoring Framework for Water Resource Management

### *Expanded Monitoring Framework*

	<i>Indicators</i>	<i>Source</i>	<i>Periodicity</i>
Outputs	number of water resource monitoring stations regularly producing reliable data	BWOs, MoWI	Annual
	number of applications for water use permits received	BWOs, MoWI	Annual
	number of water use permits issued	BWOs, MoWI	Annual
	number of BWOs fully operational and implementing an approved plan for integrated basin management.	BWOs, MoWI	Annual
Outcomes	Number of water use/quality conflicts identified and resolved	BWOs, MoWI	Annual
	% groundwater monitoring stations with declining water levels	BWOs, MoWI	Annual

### *Definitions*

WR monitoring station	River gauging stations, met stations, rainfall stations, sediment sampling stations, groundwater monitoring stations and water quality monitoring stations.
Monitoring station regularly producing reliable data:	Monitoring stations with functioning equipment, staffed, producing data at least monthly and regularly checked for accuracy.
Fully operational BWO:	Fully staffed, equipped and has a functional monitoring network
Declining water levels:	Average water levels for the past 2 years are below the average for the previous 5 years.

## 8. RECOMMENDATIONS

### 8.1 Proposed Revised Sector Performance Monitoring Framework

*Extended version with all proposed indicators* (headline indicators in bold)

		<i>Indicators</i>	<i>Source</i>	<i>Periodicity</i>
Rural / Community Water Supply	Outputs	<b>Number of public improved waterpoints</b>	NRWSIMS, LGAs	Annual
		<b>Annual functionality rate</b>	NRWSIMS, LGAs	Annual
		Number of COWSOs registered as legal entities	LGAs, MoWI	Annual
	Outcomes	<b>% Household using improved sources for drinking water</b>	Household surveys (NBS)	1-2 years
		% Household using improved sources for drinking water and accessing within 30 minutes collection time	Household surveys (NBS)	1-2 years
Urban / Commercial Water Supply	Outputs	<b>No. of water supply connections supplied by utilities in regional centres, including Dar es Salaam</b>	EWURA Utility Database	Annual
		Average hours of supply to water supply connections	EWURA Utility Database	Annual
		No of public water kiosks supplied by regulated utilities in regional centres, including Dar es Salaam	EWURA Utility Database	Annual
		<b>No. of water supply connections supplied by utilities in small towns</b>	EWURA Utility Database	Annual
		No of public water kiosks supplied by regulated utilities in small towns	EWURA Utility Database	Annual
	Outcomes	<b>% Households using piped sources for drinking water</b>	Household surveys (NBS)	1-2 years
		% Households using piped or protected sources for drinking water	Household surveys (NBS)	1-2 years
		% Households using piped or protected sources for drinking water and accessing within 30 minutes collection time	Household Surveys (NBS)	1-2 years
Household Sanitation and Hygiene	Outputs	Number of households with sewerage connections	EWURA Utility Database	Annual
	Outcomes	<b>% rural households with access to an improved latrine</b>	Household surveys (NBS)	1-2 years
		<b>% urban households with access to an improved latrine</b>	Household surveys (NBS)	1-2 years
		% rural households with access to a basic latrine	Household surveys (NBS)	1-2 years
		% urban households with access to a basic latrine	Household surveys (NBS)	1-2 years
	<b>% households with a designated place for handwashing with soap and water present</b>	Household surveys (NBS)	1-2 years	
Institutional Water and Sanitation	Outputs	<b>Number of school latrines (girls and boys)</b>	EMIS (LGAs, MoEVT)	Annual
		Number of schools with on-site access to an improved water source	EMIS (LGAs, MoEVT)	Annual
		Number of health facilities with at least one client latrine	HMIS (LGAs, MoHSW)	Annual
		Number of health facilities with on-site access to an improved water source	HMIS (LGAs, MoHSW)	Annual
	Outcomes	<b>Number of pupils per improved latrine (girls and boys)</b>	EMIS (LGAs, MoEVT)	Annual
Water Resource Management	Outputs	<b>number of water resource monitoring stations regularly producing reliable data</b>	BWOs, MoWI	Annual
		number of applications for water use permits received	BWOs, MoWI	Annual
		<b>number of water use permits issued</b>	BWOs, MoWI	Annual
		number of BWOs fully operational and implementing an approved plan for integrated basin management.	BWOs, MoWI	Annual
	Outcomes	<b>Number of water use/quality conflicts identified and resolved</b>	BWOs, MoWI	Annual
		% groundwater monitoring stations with declining water levels	BWOs, MoWI	Annual

*Summary version with headline indicators only*

	Outputs			Outcomes		
	<i>Indicators</i>	<i>Source</i>	<i>Periodicity</i>	<i>Indicators</i>	<i>Source</i>	<i>Periodicity</i>
<b>Rural Water Supply</b>	Number of public improved waterpoints	NRWSIMS, data from LGAs	Annual	% Household using improved sources for drinking water	Household surveys (NBS)	1-2 years
	Annual functionality rate	NRWSIMS, data from LGAs	Annual			
<b>Urban Water Supply</b>	No. of water supply connections supplied by utilities in regional centres, including Dar es Salaam	EWURA Utility Database	Annual	% Households using piped sources for drinking water	Household surveys (NBS)	1-2 years
	No. of water supply connections supplied by utilities in small towns	EWURA Utility Database	Annual			
<b>Household Sanitation</b>				% rural households with access to an improved latrine	Household surveys (NBS)	1-2 years
				% urban households with access to an improved latrine	Household surveys (NBS)	1-2 years
				% households with a designated place for handwashing with soap and water present	Household surveys (NBS)	1-2 years
<b>Institutional WASH</b>	Number of school latrines (girls and boys)	EMIS (LGAs and MoEVT)	Annual	Number of pupils per improved school latrine (girls and boys)	EMIS (LGAs and MoEVT)	Annual
<b>Water Resource Management</b>	number of water resource monitoring stations regularly producing reliable data	BWOs, MoWI	Annual	Number of water use/quality conflicts identified and resolved	BWOs, MoWI	Annual
	number of water use permits issued	BWOs, MoWI	Annual	% groundwater monitoring stations with declining water levels	BWOs, MoWI	Annual

**Definitions**

Public improved waterpoints:	public standpipes, boreholes, protected wells, protected springs and rainwater harvesting
Functionality rate:	% of all waterpoints that are able to produce water on a specific date
Annual functionality rate:	average functionality rate of four specific dates during the year
Improved source (rural):	public or private piped supplies, boreholes, protected wells, protected springs and rainwater harvesting
COWSO (Community Owned Water Supply Organisation):	Body legally constituted by a community to own, manage, operate and maintain the water supply systems on behalf of a rural community. This can include water user groups, water user associations, trusts, societies and private companies.
Piped sources:	Piped water supply to a household, yard or plot or to a communal kiosk or standpipe
Water supply connection:	Piped connections into household, premise, yard or plot, supplied by a regulated utility
Public water kiosks:	Public standpipes providing water supplied by a regulated utility
Protected source:	Public or private piped supplies, boreholes, protected wells, protected springs and rainwater harvesting
Small towns:	<i>not yet clearly defined</i>
Household sewerage connection:	Utility piped sewerage direct from the household
Improved latrine:	Flush or pour-flush to piped sewer, septic tank or pit latrine; ventilated improved pit (VIP) latrine; pit latrine with slab; or composting toilet
Basic latrine:	An improved latrine or a traditional pit latrine (without slab)
WR monitoring station	River gauging stations, met stations, rainfall stations, sediment sampling stations, groundwater monitoring stations and water quality monitoring stations.
Monitoring station producing reliable data:	Monitoring stations with functioning equipment, staffed, producing data at least monthly and regularly checked for accuracy.
Fully operational BWO:	Fully staffed, equipped and has a functional monitoring network
Declining water levels:	Average water levels for the past 2 years are below the average for the previous 5 years.

## **8.2 Summary of Recommended Actions**

- In both urban and rural water supply, a much clearer separation should be made between outputs and outcomes, by ending the practice of using data on outputs (waterpoints, household connections, piped networks, etc.) to estimate household access. Data on infrastructure should be monitored through routine monitoring systems and data on access monitored only through household surveys.
- More detailed disaggregation of indicators on rural and urban water supply should be conducted, breaking down the existing indicators into “improved supplies” and “supplies within 30 minutes” for rural water supply and into “piped supplies”, “piped and protected supplies”, and “supplies within 30 minutes” for urban water supply.
- Finalise development of the National Rural Water Supply Infrastructure Monitoring System (NRWSIMS) and ensure that routine monitoring data is collected and fed into the database, including data on functionality, in order that the NRWSIMS can become the main source of routine monitoring data for this sub-sector.
- Utilities should continue to report to EWURA, where the utility database should continue to be based. Communications and networking should be improved in order to ensure that MoWI has full-time access to the database. EWURA should also take over responsibility for the preparation of the annual performance report for urban water supply and sewerage authorities.
- Strengthen the relationship between MoWI and NBS by inputting into consultation processes for future surveys and encouraging NBS participation in the Thematic Working Group for Performance Monitoring. In particular, MoWI should liaise with NBS to ensure that future household surveys include the same full set of survey questions and response options. This includes questions on the type of water source, collection time, type of latrine, the presence of handwashing facilities in households and on handwashing at critical times. A proposed standard set of questions is included attached as Annex 6. The recently developed National Panel Survey (an annual survey) presents an ideal opportunity for MoWI to engage with MBS and to ensure suitable data is available more regularly for use by the sector.
- Adopt more sensitive monitoring of household sanitation and hygiene – focusing on improved rather than basic latrines (using the JMP definition) and by exploring the options for monitoring household hygiene facilities and practices
- Conduct more thorough monitoring and reporting of water supply and sanitation in schools and health facilities. To operationalise this will require MoWI to liaise with MoEVT and MoHSW to ensure that all necessary data can be collected through the education and health sector routine monitoring systems.
- Continue discussions on performance monitoring in WRM, using the indicators proposed here as the basis of discussions. As part of this, it would be beneficial to strengthen the involvement of WRM stakeholders in ongoing debates on performance monitoring in the Thematic Working Group for Performance Monitoring.

## REFERENCES

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- Cap-Net and UNDP, 2008. *Indicators. Implementing Integrated Water Resource Management at River Basin Level*
- EWURA. *Water Utility Database*.
- GWP, undated. *Monitoring and Evaluation Indicators for IWRM Strategies and Plans*
- Ministry of Education and Vocational Training, 2009. *Basic Education Statistics in Tanzania (BEST) 2005-2009 National Data*
- Ministry of Health and Social Welfare, 2009. *Annual Health Statistical Abstract Tanzania Mainland 2008*
- Ministry of Water and Livestock Development, WaterAid, East African Statistical Training Centre and the National Bureau of Statistics, 2002. *Water and Sanitation in Tanzania: Poverty monitoring for the sector using national surveys*
- Ministry of Water, 2006. *Water Sector Development Programme 2006-2025*
- Ministry of Water, 2006. *Situational Analysis of the Water Sector in Tanzania*
- Ministry of Water, 2007. *Annual Water Sector Status Report – 2006/2007*
- Ministry of Water and Irrigation, 2008. *Water Sector Performance Report for the Year 2007/2008*
- Ministry of Water and Irrigation, 2008. *Proceedings of the Joint Water Sector Review, 2008*
- Ministry of Water and Irrigation, 2009. *Annual Report for Urban Water Supply and Sewerage Authorities Financial Year 2007/08*
- National Bureau of Statistics (NBS), 2002. *Household Budget Survey, 2000-01*
- National Bureau of Statistics (NBS), 2003. *Population and Housing Census 2002*.
- National Bureau of Statistics (NBS), 2005. *Demographic and Health Survey 2004-05*
- National Bureau of Statistics (NBS) and Macro International, 2007. *Tanzania Service Provision Assessment 2006*.
- National Bureau of Statistics (NBS), 2009. *Household Budget Survey, 2007*
- National Bureau of Statistics (NBS), 2009. *Demographic and Health Survey 2009/10 Draft Questionnaire*
- TAWASANET, 2008. *Water: more for some ... or some for more?*
- UNICEF, undated. *Monitoring the Likelihood that Correct Handwashing Takes Place*. Mimeo
- United Republic of Tanzania, 2002. *National Water Policy*
- United Republic of Tanzania (URT), 2005. *Poverty and Human Development Report 2005*
- United Republic of Tanzania, 2006. *National Water Sector Development Strategy*. Circulation draft
- United Republic of Tanzania (URT), 2007. *Poverty and Human Development Report 2007*
- United Republic of Tanzania (URT), forthcoming. *Poverty and Human Development Report 2009*
- USAID, 2004. *Assessing Hygiene Improvement: Guidelines for household and community levels*

WaterAid Tanzania, 2005. *Water and Sanitation in Tanzania: An update based on the 2002 Population and Housing Census*. WaterAid Tanzania

WaterAid Tanzania, 2009. *Monitoring Progress in Water and Sanitation: What does the 2007 Household Budget Survey tell us?*

WaterAid Tanzania, 2009. *National Rural Water Supply Infrastructure Monitoring System: A proposal*

World Health Organisation (WHO) and UNICEF, 2006. *Meeting the MDG drinking water and sanitation target: the urban and rural challenge of the decade*

World Health Organisation (WHO) and UNICEF, 2008. *Joint Monitoring Programme for Water and Sanitation: Coverage Estimates*

World Health Organisation (WHO) and UNICEF, 2008. *Moving Ahead in Monitoring Drinking Water and Sanitation*. Presentation to Stockholm Water Week, August 2008.

## **ANNEXES**

Annex 1	Terms of Reference
Annex 2	List of Stakeholders Consulted
Annex 3	Questions on Water Supply in Recent Household Surveys
Annex 4	Questions on Household Sanitation in Recent Household Surveys
Annex 5	Proposed Standard Survey Questions for Future Surveys
Annex 6	WSDP Performance Monitoring Framework for WRM
Annex 7	Proposed Indicators and Targets for the MKUKUTA Review

## ANNEX 1 – TERMS OF REFERENCE

### TERMS OF REFERENCE FOR CONDUCTING A COMPREHENSIVE REVIEW OF THE SECTOR MONITORING FRAMEWORK

#### 1. BACKGROUND

Water is fundamental to life and sustaining the environment, and plays a central role in the social and economic development because it touches all spheres of life including domestic, agriculture, livestock, fisheries, wildlife, industry, energy, recreation and other social and economic activities. Because of its pivotal role in poverty alleviation; water has been included among priority sectors in the National Strategy for Growth and Reduction of Poverty (NSGRP/MKUKUTA). After approval of the National Water Policy in 2002, the sector prepared the National Water Sector Development Strategy (NWSDS) 2005-2015, which provided guidance in preparing the Water Sector Development Programme (WSDP) 2006-2025.

The Water Sector Development Programme is designed under SWAP to address shortfalls in urban and rural water supply infrastructure, to improve water resource management primarily through upgrading the country's nine Basin Water Offices (BWOs), and to strengthen the sector institutions and their capacities. Small towns and rural settings of the towns, municipalities and cities have been included in the RWSS component. Separate details pertaining to each and every small town are contained in a separate chapter for easy identification of interventions during programme implementation.

According to the Local Government Reform Policy, monitoring and Evaluation on performance of water sector is amongst core functions to the Ministry. Accurate and reliable data is among the essential tools for sound water sector planning and budgeting. Hence, accurate data is an important tool for guiding informed policy decisions on investments and strategic interventions.

#### 2. RATIONALE

Water sector data is currently sourced from two types of systems; routine data collected by Utilities, LGAs and BWOs reported to EWURA and the Ministry of Water and Irrigation; and the survey data collected through Census and surveys conducted from time to time under the National Bureau of Statistics (NBS). These data are both used to show water supply and water resources progress in the country. However, the two approaches are different from one another, the shortfall that brings results which are different as shown in the table below.

*Table: Discrepancy of data collected from two approaches (Routine and Survey)*

Data Source	Urban Water Supply Coverage in %	Rural Water Supply Coverage in %
HBS-2007	80	40
DHS-2004/5	79	-
Census-2002	85	-
MOWI-2008	83	-
MOWI-2008	76*	

*Source: WaterAid Presentation, February 2009*

*Note: \* Coverage includes Dar es Salaam*

These discrepancies in data results have been confusing not only to other stakeholders, but also to the government in terms of correctness, consistency and reliability. It is envisaged that conducting the comprehensive review of the water sector monitoring framework in collaboration between MoWI, EWURA, NBS and other stakeholders will come out with a new monitoring framework that will clear these water sector data discrepancies and inconsistencies. The collaboration between the MoWI, EWURA and NBS is not only expected in participating in the review process but also the two institutions will continue working together in ensuring that regular monitoring and evaluation of the performance of water sector basing on the results of this important review are carried out in a manner that will provide accurate and reliable data.

### 3. OBJECTIVES

#### 3.1 General objective

To conduct a full review of the Monitoring Framework and systems, so as to ensure consistency of definitions and accuracy of data in measuring performance of water sector.

#### 3.2 Specific objectives/Tasks

- (i) To develop the necessary tools (questionnaires) to undertake such a review. The consultant will provide the MoWI, PMORALG, MoHSW, MoEVT, the NBS, EWURA and the water sector performance monitoring thematic working group with draft of these tools for review and comments;
- (ii) To review the current monitoring framework definitions, assumptions and methodologies to determine areas that can improve the monitoring framework;
- (iii) To review the reporting formats for all implementing agencies;
- (iv) To review of performance monitoring indicators/targets;
- (v) To develop the new Water Sector Monitoring Framework that suits stakeholder expectations;
- (vi) To carry out a sample test check of the proposed framework
- (vii) To conduct stakeholder seminars and workshops to discuss the draft new monitoring framework;
- (viii) To incorporate stakeholder comments and produce final new water sector monitoring framework document; and
- (ix) To submit the report to the Permanent Secretary, MoWI before 30<sup>th</sup> September 2009.

#### 3.3 Qualifications of the Consultant

This work will be done by a consultant who will be procured basing on the following qualifications:

- (i) At least a Postgraduate qualification at Masters degree level;
- (ii) Must have experience evaluating M&E systems for reform projects or programmes;
- (iii) Must have worked previously with a team of government experts so as to utilize his/her knowledge and skills to build the capacity of MoWI staff who will be working with him/her during the review;
- (iv) He/she must have experience of working for water sector development in Tanzania or in Less Developed Countries, particularly in the areas of monitoring and evaluation;

#### 3.4 Mode of Work and Scope

The consultant will work in collaboration with a multidisciplinary team of experts from the MoWI, EWURA, PMORALG, MoHSW, MoEVT, NBS, WaterAid and the donor community in the whole review process so as to ensure that sufficient capacity building is built throughout the activity. A thorough analysis of the current monitoring framework including the shortfall in various different systems used to monitor progress in the water sector will comprehensively need to be reviewed in collaboration with stakeholders who will be guiding the activity through the dialogue structures namely the Performance Monitoring Thematic Working Group and the Water Sector Working Group who will have a substantial input into discussion and participate in the decision meetings on which a final framework will be adopted.

#### 3.5 Methodology

Review of the monitoring framework will be done by collecting primary information covering selected technical officers in the MoWI, PMORALG, EWURA, LGAs, UWSAs, BWOs, NBS, MoFEA, MoHSW, MoEVT, NGOs and Private Sector in Tanzania Mainland through making direct visits to their offices, holding discussions with them guided with a checklist. Also, various reports and studies related to the monitoring framework will be reviewed to benefit from secondary sources of information gathering. Before finalizing the outputs, a sample field test check will be done in sampled areas to test the suitability of the proposed monitoring framework, followed by the thematic working group meeting, stakeholder seminar and a workshop to discuss the draft reports for more stakeholder advices and comments.

### 4. EXPECTED OUTPUT

The consultant will produce a final report (in soft and hard copy) including a proposed Monitoring Framework. This should include:

- (i) A simple framework of clearly defined and harmonised indicators monitoring outputs and outcomes in water resources management, water supply and sanitation sub-sectors;
- (ii) Details of how this monitoring should be conducted, using data from which sources, collected by which agencies, and how regularly; and
- (iii) Recommendations for any further work required to operationalise the proposed new monitoring framework.

A draft report should be circulated among members of the Performance Monitoring Thematic Working Group for comments, giving members a minimum of two weeks for submitting comments before incorporating these into the final report.

## **5. TIME FRAME**

The assignment will be carried for five months from May, 2009 to September, 2009.

## **6. FINANCING**

Financing will be sourced from:

- i) WSDP funds for:**
  - a) Government experts who will be involved in the activity (payments of DSAs with respect to attending retreats or any travel costs including cars that will be used by these experts);
  - b) Payments with regard to halls for holding meetings, seminars, workshops and retreats; and
  - c) Costs related to facilitating the government team of experts with working equipments like laptops.
  
- ii) Water Aid for:**
  - a) Payments of WaterAid experts who will be involved in the activity (including consultants - if any - who will be contracted by WaterAid to facilitate the undertaking); and
  - b) Payments for stationery and other soft equipments used by WaterAid experts for the purpose of accomplishing the tasks.

## ANNEX 2 – LIST OF STAKEHOLDERS CONSULTED

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## ANNEX 3 – QUESTIONS ON WATER SUPPLY IN RECENT HOUSEHOLD SURVEYS

<i>Survey</i>	<i>Question asked</i>	<i>Response options</i>
Population and Housing Census (2002)	What is the main source of drinking water for your household?	<ul style="list-style-type: none"> <li>• Piped water</li> <li>• Protected well</li> <li>• Open well</li> <li>• Protected spring</li> <li>• Unprotected spring</li> <li>• River/stream</li> <li>• Lake</li> <li>• Rainwater</li> <li>• Water vendor</li> <li>• Other (specify)</li> </ul>
Demographic and Health Survey (2004/5)	What is the main source of drinking water for members of your household	<ul style="list-style-type: none"> <li>• Piped water (into dwelling; into yard/plot; public tap; neighbour's tap)</li> <li>• Water from open well (in dwelling; in yard/plot; public well; neighbour's well)</li> <li>• Water from covered well or borehole (in dwelling; in yard/plot; public well; neighbour's well)</li> <li>• Surface water (spring; river/stream; pond/lake; dam)</li> <li>• Rainwater</li> <li>• Tanker truck</li> <li>• Water vendor</li> <li>• Bottled water</li> <li>• Other (specify)</li> </ul>
	How long does it take to go there, get water and come back?	<ul style="list-style-type: none"> <li>• ... minutes</li> <li>• on premises</li> </ul>
Household Budget Survey (2007)	What is the main source of drinking water for members of your household	<ul style="list-style-type: none"> <li>• Piped water (into dwelling; into yard/plot; public tap; neighbour's tap)</li> <li>• Water from open well (in dwelling; in yard/plot; public well; neighbour's well)</li> <li>• Water from covered well or borehole (in dwelling; in yard/plot; public well; neighbour's well)</li> <li>• Surface water (spring; river/stream; pond/lake; dam)</li> <li>• Rainwater</li> <li>• Tanker truck</li> <li>• Water vendor</li> <li>• Bottled water</li> <li>• Other (specify)</li> </ul>
	How long does it take to go there, get water and come back?	<ul style="list-style-type: none"> <li>• ... minutes</li> <li>• on premises</li> </ul>
Demographic and Health Survey (forthcoming)	What is the main source of drinking water for members of your household	<ul style="list-style-type: none"> <li>• Piped water (into dwelling; into yard/plot; public tap; neighbour's tap)</li> <li>• Water from open well (in dwelling; in yard/plot; public well; neighbour's well)</li> <li>• Water from covered well or borehole (in dwelling; in yard/plot; public well; neighbour's well)</li> <li>• Surface water (spring; river/stream; pond/lake; dam)</li> <li>• Rainwater</li> <li>• Tanker truck</li> <li>• Water vendor</li> <li>• Bottled water</li> <li>• Other (specify)</li> </ul>
	Who is providing water at your main source?	<ul style="list-style-type: none"> <li>• Authority</li> <li>• CBO/NGO</li> <li>• Private operator</li> <li>• Don't know</li> </ul>
	How long does it take to go there, get water and come back, including waiting time?	<ul style="list-style-type: none"> <li>• ... minutes</li> <li>• on premises</li> </ul>

## ANNEX 4 – QUESTIONS ON HOUSEHOLD SANITATION IN RECENT HOUSEHOLD SURVEYS

<i>Survey</i>	<i>Question asked</i>	<i>Response options</i>
Population and Housing Census (2002)	What kind of toilet facility does your household have?	<ul style="list-style-type: none"> <li>• Flush toilet</li> <li>• VIP latrine</li> <li>• Traditional pit latrine</li> <li>• No facility</li> <li>• Other</li> </ul>
Demographic and Health Survey (2004/5)	What kind of toilet facility does your household have?	<ul style="list-style-type: none"> <li>• Flush toilet</li> <li>• VIP latrine</li> <li>• Traditional pit latrine</li> <li>• No facility / bush / field</li> <li>• Other</li> </ul>
	Do you share these facilities with other households?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
Household Budget Survey (2007)	What kind of toilet facility does your household have?	<ul style="list-style-type: none"> <li>• Flush toilet</li> <li>• VIP latrine</li> <li>• Traditional pit latrine</li> <li>• No facility / bush / field</li> <li>• Other</li> </ul>
	Do you share these facilities with other households?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
Demographic and Health Survey (forthcoming)	What kind of toilet facility do members of your household usually use?	<ul style="list-style-type: none"> <li>• Flush / pour flush to piped sewer system</li> <li>• Flush / pour flush to septic tank</li> <li>• Flush / pour flush to pit latrine</li> <li>• Flush / pour flush to elsewhere</li> <li>• Ventilated improved pit (VIP) latrine</li> <li>• Pit latrine with slab</li> <li>• Pit latrine without slab / open pit</li> <li>• Composting toilet / Ecosan</li> <li>• Bucket</li> <li>• No facility / bush / field</li> </ul>
	Do you share these facilities with other households?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
	How many households share this toilet facility?	

## ANNEX 5 – PROPOSED STANDARD HOUSEHOLD SURVEY QUESTIONS FOR FUTURE SURVEYS

<p>What is the main source of drinking water for members of your household</p>	<ul style="list-style-type: none"> <li>• Piped water into dwelling</li> <li>• Piped water into yard/plot</li> <li>• Piped water to public tap</li> <li>• Piped water from neighbour's tap</li> <li>• Open well in dwelling</li> <li>• Open well in yard/plot</li> <li>• Open public well</li> <li>• Open well in neighbour's yard</li> <li>• Covered well or borehole in yard/plot</li> <li>• Covered public well</li> <li>• Covered well in neighbour's yard</li> <li>• Protected Spring</li> <li>• Unprotected spring</li> <li>• River/stream</li> <li>• Pond/lake/dam</li> <li>• Rainwater</li> <li>• Tanker truck</li> <li>• Water vendor</li> <li>• Bottled water</li> <li>• Other (specify)</li> </ul>
<p>Who is providing water at your main source? (Urban households only)</p>	<ul style="list-style-type: none"> <li>• Authority</li> <li>• CBO/NGO</li> <li>• Private operator</li> <li>• Don't know</li> </ul>
<p>How long does it take to go there, get water and come back?</p>	<ul style="list-style-type: none"> <li>• ... minutes</li> <li>• on premises</li> </ul>
<p>What kind of toilet facility do members of your household usually use?</p>	<ul style="list-style-type: none"> <li>• Flush / pour flush to piped sewer system</li> <li>• Flush / pour flush to septic tank</li> <li>• Flush / pour flush to pit latrine</li> <li>• Flush / pour flush to elsewhere</li> <li>• Ventilated improved pit (VIP) latrine</li> <li>• Pit latrine with slab</li> <li>• Pit latrine without slab / open pit</li> <li>• Composting toilet</li> <li>• Bucket</li> <li>• No facility / bush / field</li> </ul>
<p>We would like to see the place where members of your household most often wash their hands? May I see this place?</p>	<ul style="list-style-type: none"> <li>• Place for hand washing observed</li> <li>• Movable object used for hand washing (kettle, bucket, basin, container)</li> <li>• No specific place or movable object for hand washing</li> <li>• No permission to see</li> </ul>
<p><i>(Observation)</i> Is water present at the place for hand washing? <i>If there is a tap or pump at the specific place for hand washing, open the tap or operate the pump to see if water is coming out. If there is a bucket, basin or other type of water container, examine to see whether water is present in the container. Record observation.</i></p>	<ul style="list-style-type: none"> <li>• Water available</li> <li>• Water not available</li> </ul>
<p><i>(Observation)</i> Is soap or detergent present at the specific place for hand washing? <i>Record observation. Circle all that apply.</i></p>	<ul style="list-style-type: none"> <li>• Bar soap</li> <li>• Detergent (powder/liquid/paste)</li> <li>• Liquid soap</li> <li>• Ash, mud, sand</li> <li>• None</li> </ul>

<p>Do you have any soap or detergent in your household for washing hands?</p>	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
<p>Can you please show it to me? <i>Record observation. Circle all that apply.</i></p>	<ul style="list-style-type: none"> <li>• Bar soap</li> <li>• Detergent (powder/liquid/paste)</li> <li>• Liquid soap</li> <li>• Ash, mud, sand</li> <li>• Not able/Does not want to show</li> </ul>
<p>Have you used soap today or yesterday?</p>	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
<p>If you used soap today or yesterday, what did you use it for? <i>(tick all that apply)</i></p>	<ul style="list-style-type: none"> <li>• Washing clothes</li> <li>• Washing my body</li> <li>• Washing my children</li> <li>• Washing child's bottom</li> <li>• Washing children's hands</li> <li>• Washing hands after defecating</li> <li>• Washing hands after cleaning child</li> <li>• Washing hands before feeding child</li> <li>• Washing hands before preparing food</li> <li>• Washing hands before eating</li> <li>• Other</li> </ul>
<p>When is it important to wash your hands? <i>(tick all that apply)</i></p>	<ul style="list-style-type: none"> <li>• After defecation</li> <li>• After attending to a defecated child</li> <li>• Before feeding others</li> <li>• Before eating</li> <li>• Before preparing food</li> </ul>

## ANNEX 6 – WSDP PERFORMANCE MONITORING FRAMEWORK FOR WRM

### *National Level Performance Measurement Framework*

<b>Objective 1: To develop a sound water resources management and development framework in all nine water basins</b>	
Outcome 1: Strengthened Basin Water Resources Management Framework	Number of BWOs fully operational
	Number of 5-year business plans prepared
	Number of BWOs having and adhering to annual business plans
	National Water Board established and functional
	Number of sub-catchment fully functional
	Number of Water User Associations fully functional
	BWO capturing essential IWRM information
	Number of approved Integrated River and Lake Basin Development and Management Plans.
	BWOs adopt national sustainable financing options for IWRM.
	Number of watersheds legally gazetted as protected areas.
	Number of groundwater recharge areas legally gazetted as protected areas.
% of smallholder irrigation schemes with improved water use efficiency	
<b>Objective 2: To promote good governance of water resources through empowering water users, encouraging participatory and transparent decision making, developing ownership to the user level, and granting secure water rights with responsibilities to the water users, community groups, local government and Basin Boards</b>	
Outcome 2: Enhanced participation of legitimate representatives of key stakeholders (including water users) in the decision-making process on water resources based on IWRM principles and good practice guideline	Number of key stakeholders actively engaged in water resources management and decision making
	BWOs granting, monitoring and enforcing water rights and pollution control.
<b>Objective 3: To strengthen the capacity of BWOs to address trans-boundary water resources issues.</b>	
Outcome 3: Enhanced capacity of BWOs in managing Trans-boundary water resources to implement NAWAPO based on IWRM principles	Number of initiatives executed in support of trans-boundary issues

### *Basin Level Performance Monitoring Framework*

<b>Objective 1: To develop a sound water resources management and development framework in all nine water basins</b>	
<b>Outcome 1: Strengthened Basin Water Resources Management Framework</b>	
Output 1.1: Roles and functions of BWOs, BWBs and User Groups strengthened and partnership and dialogue processes initiated and functioning	Number of WUGs formed and operational
	Number of meetings conducted
	Number of conflicts reported
	Number of conflicts resolved
	% of conflicts resolved
	Number of MoUs signed
	Number of partnership consultative meeting held

Output 1.2: Training in basin planning, administration, and financial management conducted and knowledge applied by all Basin Water Office staff	Number of staff trained in business plan, administration and financial management
	Business plan in place
	Number of reports accepted by BWBs /MoWI
Output 1.3: Study of financing options for water resources management conducted (i) recommendations in use and operational application of the various user charges and levies to finance WRM implemented, (ii) sustainable financing options for River and Lake Basin management developed and adopted, (iii) revenues from water use increased.	Study report in place
	% increase in Water User Fees collection
	Recommendations adopted
Output 1.4: Water resources monitoring stations established and operational to provide water resources information base for planning, design, operations and management	Number of water resources monitoring stations rehabilitated/constructed
	River gauging stations
	Met stations
	Rainfall stations
	Sediment sampling stations
	Groundwater monitoring stations water quality monitoring stations
Output 1.5: Existing water resources assessment procedures and methods, procedures and protocols for enforcing compliance reviewed and updated	Water Resources Guidelines
Output 1.6: Assessment of Basin water resources and use by catchment conducted	Water resources assessment report
Output 1.7: Linkages between the various institutions (regional laboratories, BWOs, environmental agencies, and the water supply sub-sectors) established	Consultation framework developed
Output 1.8: Training for strengthening regulation and control of pollution conducted	Number of trainings
	Strategy document in place
Output 1.9: Water Quality Management and Pollution Control Strategy (WQMPCS) prepared and implemented	Strategy document in place
	Water quality reports in place
Output 1.10 River condition classification system that will measure the health of river systems, and provide for a systematic way for determining and tracking changes in water quality and degradation of water conditions established	River health report
Output 1.11: Studies to identify vulnerable and threatened water sources conducted	Number of vulnerable sources identified as per study
	Number of Reports
Output 1.12 Delineation of important surface and groundwater sources (including watersheds, wetlands and groundwater recharge areas) conducted	Number of surface and groundwater sources delineated
Output 1.13: Legally binding protection of threatened water resources instituted in collaboration with relevant Government Agencies	Number of gazetted sources
Output 1.14: Monitoring of environmental quality implemented	Number of Reports
Output 1.15: Public education and awareness campaigns to improve understanding about water use, options available to improve water use, social, economic, environmental and	Number of Trainings/ campaigns

regulatory implications of over-use conducted	
Output 1.16 Development and implementation of programs to control and regulate upstream water uses of major infrastructures	Number of control and regulation programmes implemented
Output 1.17: Determination of the economic value of water for different uses, economic cost of water resources degradation to facilitate more economic allocation, and setting of tariffs to promote protection and conservation of water resources undertaken.	New tariffs set to manage demand
Output 1.18: Safe yields and groundwater recharge of aquifers determined	Number of groundwater recharge areas
Output 1.19: Groundwater use based on aquifer characteristics; and managing and controlling groundwater exploration and drilling activities promoted	Types of Aquifers and their respective uses determined.
	Permit system in place
	Exploration and drilling regulation in place
	Database of drilling companies
	Number of reports
Output 1.20: In heavily overused rivers, site-specific studies to assess perceived or anticipated river flow problems undertaken, and possible solutions identified and implemented	Number of awareness workshop for drilling companies
	Inventory of over-used rivers for each basin
	Number of site specific studies carried out
	Number of conflict resolved
Output 1.21: Integrated Water Resources Management Plans for all 9 basins prepared, negotiated and adopted (the plans will provide a roadmap for future investments in WRM and Development in the medium to long-term)	% of dry season river flow restored
	IWRM Plans in place
Output 1.22: Preliminary designs and pre-feasibility studies for selected priority investments identified in plans prepared	Number of Reports
Output 1.23: Criteria to guide selection of priority investments and clear rationale for support under WSDP developed and approved by Government/NWB	Criteria and guidelines in place
<b>Objective 2: To promote good governance of water resources through empowering water users, encouraging participatory and transparent decision making, developing ownership to the user level, and granting secure water rights with responsibilities to the water users, community groups, local government and Basin Boards</b>	
<b>Outcome 2: Enhanced participation of legitimate representatives of key stakeholders (including water users) in the decision-making process on water resources based on IWRM principles and good practice guideline</b>	
Output 2.1: Water User Associations and Catchment Organizations formed and are operational and areas of influence delineated	Number of District Facilitation Teams formed and trained to facilitate WUAs
	Number of Water users associations formed and operational
	Number of catchments organization formed and operational
	Maps of WUAs and catchments organization areas of jurisdiction
Output 2.2: BWO Management Information System (MIS) and WUA database established	MIS in place and used
Output 2.3: Strengthen enforcement: (i) register of water uses and water rights reviewed and updated and used in apportioning water and billing users, (ii) water permits for all those who do not possess legal rights to water granted, (iii) water well drillers registered, and uncontrolled drilling stopped, (iv) monitoring of compliance of water and	Updated water use and water rights register
	Number of Water permits granted
	% reduction of unauthorized drilling
	Number of Inspection reports
	Number of trainings in conflict resolution and negotiation

discharge permit conditions undertaken, (v) training in conflict resolution and negotiation skills for BWOs conducted.	skills.
Output 2.4: Training on Decision Support System (DSS) developed and implemented in all 9 basins	Training modules/materials
	Number of people trained on DSS
Output 2.5: Training on IWRM conducted	Number of Training, workshops on IWRM
<b>Objective 3 To strengthen the capacity of BWOs to address trans-boundary Water resources issues.</b>	
<b>Outcome 3: Enhanced capacity of BWOs to address trans-boundary water resources.</b>	
Output 3.1: BWOs trained on essentials of trans-boundary water resources management	Number of staff trained
Output 3.2: BWOs participate in basin-wide communication, information exchange and trans-boundary opportunities for cooperative development identified	Number of consultative meetings held
Output 3.3: Trans-boundary dimension in the NAWAPO 2002 in the respective basins addressed	Number of dialogues
	Number of trans-boundary issues addressed
Output 3.4: Basin specific trans-boundary water resources needs identified	Needs assessment reports

**ANNEX 7 – PROPOSED INDICATORS AND TARGETS FOR MKUKUTA REVIEW**

<i>Sub-sector</i>	<i>Indicator</i>	<i>Notes</i>	<i>Source</i>	<i>Baseline (and year)</i>	<i>Target (2015)</i>
Rural Water Supply	Number of public improved waterpoints		Routine data (NRWSIMS)	44,297 (2007)	65,000
	Annual functionality rate		Routine data (NRWSIMS)	54% (2008)	75%
	% Rural households using improved sources for drinking water (no time limit)	To be monitored through surveys only	Household surveys (NBS)	40% (2007)	67% (MDG target)
Urban Water Supply	No. of water supply connections supplied by a regulated utility in regional centres, including Dar es Salaam		Routine data (EWURA)	229,574 (2008)	500,000
	No. of water supply connections supplied by a regulated utility in small towns		Routine data (EWURA)	No data yet available	-
	% Urban households using piped sources for drinking water (no time limit)	To be monitored through surveys only	Household surveys (NBS)	80% (2007)	94% (MDG target)
Rural Sanitation	% households (urban / rural) with access to an improved latrine	Requires new survey questions	Household surveys (NBS)	No data yet available	-
Hygiene	% households (urban / rural) with a designated place for handwashing with soap and water present	Requires new survey questions	Household surveys (NBS)	No data yet available	-
School Sanitation	Number of pupils (girls / boys) per improved school latrine	Rather than % of schools	Routine data (EMIS)	Girls: 58 Boys: 64 (2008)	Girls: 40 Boys: 50
Water Resource Management	number of water use permits issued		Routine data (BWOs)	No data yet available	-
	% groundwater monitoring stations with declining water levels		Routine data (BWOs)	No data yet available	-