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Comparative assessment of sanitation and hygiene policies and institutional frameworks in Rwanda, Uganda and Tanzania

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ACRONYMS AND ABBREVIATIONS

CB0	Community-based organizations
DWD	Directorate of Water Development
DAWASA	Dar es Salaam Water Supply and Sanitation Authority
EDRS	Economic Development and Poverty Reduction Strategy (Rwanda)
EIA	Environmental Impact Assessment
EWSA	Energy, Water and Sanitation Authority
JMP	Joint Monitoring Programme
JSR	Joint Sector Review
JTR	Joint Technical Review
JWSR	Joint Water Sector Reviews
LGA	Local government authorities
MDG	Millennium Development Goal
M&E	Monitoring and evaluation
MFPED	Ministry of Finance, Planning and Economic Development
MLG	Multi-level governance
MoEVT	Ministry of Education and Vocational Training
MoWE	Ministry of Water and Environment
MoH	Ministry of Health
MoES	Ministry of Education and Sports
MINEDUC	Ministry of Education
MININFRA	Ministry for Infrastructure
MINISANTE	Ministry of Health (Rwanda)
MINALOC	Ministry of Local Government
MINECOFIN	Ministry of Finance and Economic Planning
MoHSW	Ministry of Health and Social Welfare
WA	Water Act
NEMA	National Environment Management Act
NWSDS	National Water Sector Development Strategy
PHA	Public Health Act
SIM	Sector Investment Model (Uganda)
SSIP	Sector Strategic Investment Plan (Uganda)
SDGs	Sustainable Development Goals
SSA	Sub-Saharan Africa
SWG	Sector Working Group
SWAp	Sector Wide Approach
UNICEF	United Nations Children's Fund
VIP	Ventilated improved pit latrine
WHO	World Health Organization
WPC	Water Policy Committee
WSDP	Water Sector Development Programme
WSSA	Water Supply and Sanitation Act
WUGs	Water User Groups

EXECUTIVE SUMMARY

Sanitation has attracted increasing political attention in the global development agenda during the last two decades. National governments, development and donor agencies have been rethinking pathways to achieving sanitation and hygiene for all, in developing countries in particular.

The importance of sanitation for human development was emphasized by the inclusion of a sanitation target in the Millennium Development Goals (MDGs). Following the MDGs, countries in sub-Saharan Africa (SSA) including Rwanda, Uganda and Tanzania have also set national targets to accelerate progress in sanitation services coverage. During the last decade, some countries in SSA have drafted separate policies for sanitation, which disentangles it from water supply and creates a separate institutional framework and funding mechanism for sanitation.

Policies are considered critical for creating an enabling environment for improving access to sanitation and hygiene services. There are, however, certain requirements that policies must meet for them to be coherent and supportive. This paper presents a comparative assessment of the sanitation policy and institutional frameworks in Rwanda, Uganda and Tanzania based on a set of recommended criteria that comprehensive and supportive sanitation policies should meet.

This assessment finds that the policies in Rwanda, Uganda, and Tanzania meet many of the recommended criteria, but are still lacking key aspects to adequately cater for sustainability of services and functionality of facilities. Further, policies should reflect the needs and preferences of people. This is usually not the case because policies are very ambitious and hard to fully translate to action. Despite the existence of policies, the implementation process is flawed in many ways, and two key gaps are the lack or inadequate financing for sanitation, and serious lack of technical capacity, especially at the district level. Furthermore, the assessment shows that the policy and institutional framework for sanitation and hygiene differs from country to country. Rwanda and Uganda have separate sanitation and hygiene policies while Tanzania is still in the process of developing a separate sanitation policy. The paper also shows that even though there are still serious shortfalls shortfalls that hindered the achievement of the sanitation MDG in Uganda and Tanzania in particular, major reforms in the sector have undoubtedly contributed to improved sector performance in all the three countries. Regionally, access to improved sanitation in SSA is on a gradual increase while the practice of open defecation is decreasing. On a country level, however, there are significant variations in performance between countries, with countries like Rwanda making remarkable progress in sanitation and hygiene coverage.

The paper highlights the fact that the roles and responsibilities for promotion and provision of sanitation and hygiene services in Rwanda, Uganda and Tanzania are generally widely spread among different government agencies, non-governmental organizations (NGOs) and private operators from related sectors with different strategies of intervention. In most cases, the roles and responsibilities for sanitation and hygiene are not clearly defined thus creating overlapping interventions and confusion among actors or the multitude of key stakeholders.

In addition, the paper emphasizes that coordination of actors or key stakeholders and their activities at different levels of society is ineffective and is a major challenge in transforming the sanitation sector and translating sanitation and hygiene policies into practice in Rwanda, Uganda and Tanzania. There is, however, an increasing understanding of the above challenges and efforts are being made in the three countries to clarify, redefine and reassign roles and responsibilities, and improve coordination in the sector.

1 INTRODUCTION

The World Health Organization (WHO) and United Nations Children's Fund (UNICEF) 2015 update, and Millennium Development Goal (MDG) assessment show that less than half the population of in sub-Saharan Africa (SSA) was using improved sanitation in 2015 (WHO/UNICEF 2015). Sanitation in this context generally refers to the provision of services and facilities for the collection, handling, treatment, disposal and/or use of mainly human excreta, and the related hygiene and health behavioural aspects. An improved sanitation facility, which is considered a proxy for safe sanitation, is defined by the WHO/UNICEF Joint Monitoring Programme (JMP) as one that hygienically separates human excreta from human contact. Lack of this basic facility and poor hygiene practices have severe implications for human and environmental health (Prüss-Üstün et al. 2002; Bos et al. 2005; Fewtrell et al. 2005; Prüss-Üstün et al. 2008; Bartram and Cairncross 2010) and restrict development (UNDP 2006).

Despite the increased attention paid to this issue in recent the years, including goals set at the global and national levels and huge amounts of financial aid (ECA 2012) to provide sanitation facilities and promote behaviour change in SSA, progress has been slow and limited. Most countries in the region missed the sanitation target on environmental sustainability in MDG 7 (WHO/ UNICEF 2015), to halve the proportion of people without sustainable access to basic sanitation facilities by 2015.

As we enter the age of the Sustainable Development Goals (SDGs), sanitation provision and hygiene promotion in SSA still pose numerous challenges, many of which are related in one way or another to governance. Governance entails ongoing dialogue between public and private sanitation stakeholders in order to better understand expectations and problems, and the best way to develop a common and shared understanding of the results required. The biggest governance challenges identified as retarding progress in many countries in the region are: an absence of policy (Elledge et al. 2002); poor implementation of policy, where it exists (Seppälä 2002); fragmented policy and institutional frameworks (Morella et al. 2008); poor prioritization of sanitation and hygiene (ECA 2012; Ekane et al. 2014); implementation failures characterized by an emphasis on numbers of toilets rather than their functionality (Kvarnström et al. 2011); poor coordination of actors and activities (ECA 2012; UN-Water 2012; Ekane et al. 2014); too much emphasis on technological solutions (hardware) rather than behaviour change (software) (Morella et al. 2008; Curtis et al. 2011); and inadequate financial and technical capacity to drive meaningful change. Part of the problem is that approaches to implementing sanitation on the ground have predominantly been top-down and supply-driven (Jewitt 2011). This has ingrained different forms of path dependent behaviour in stakeholders with regard to the implementation of sanitation and hygiene projects and programmes (Ekane et al. 2014). Improving understanding of the above issues is key to any meaningful progress on SDG 6, the sanitation goal. SDG 6, target 6.2 aims to provide access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations, by 2030.

Well formulated policies have the potential to create an enabling environment for planning and supporting the actions required to close the gap in coverage of sanitation facilities and to instil proper hygiene behaviours. Much remains to be done in many countries in SSA, however, in terms of policies and institutional arrangements for sanitation and hygiene: First, there is a lack or absence of clear and comprehensive policy that directly addresses sanitation and hygiene. Elledge et al. (2002) describe the absence of supportive policies for planning and implementing sanitation projects and programmes as a missing link in improving sanitation coverage. Second, there is little effective translation of sanitation and hygiene policies into actions on the ground. Seppälä (2002) concludes from a review of the water and sanitation policies in four developing countries that translating policies that appear adequate on paper is often unsuccessful due to unrealistic and impractical actions. Furthermore, measures to include the perspectives and values of local stakeholders involved in sanitation provision and hygiene promotion in the processes of policy.

formation and decision-making are still inadequate in many countries. As a result, such policies poorly reflect the wishes of many stakeholders and hence lack legitimacy.

South Africa, Nepal and Uganda were some of the countries found by Elledge et al. to have sanitation policies in 2002. Today, many more countries in the region have such policies, which indicates recognition of the problem and the political will to tackle it. Galan et al. (2013) used country level data from 34 countries in SSA to show that 18 had national sanitation policies prepared by the government and endorsed by parliament. However, their findings show that the presence of national sanitation policies and a budget allocation for sanitation do not necessarily lead to concrete action or investment on the ground. For instance, despite the fact that it has no national sanitation policy endorsed by parliament, no public sector budget and less than 0.1% of GDP invested in sanitation, Angola is reducing open defecation by much more than Kenya, Niger and Sierra Leone, which have national sanitation policies endorsed by parliament and public sector budget lines of up to 0.5% of GDP. This echoes the gap reported by Seppälä (2002). Evidently, little has changed in this respect.

Furthermore, policy challenges exist at different societal levels – from the macro to the micro levels (Ekane et al. 2014). While these challenges are known about (Elledge et al. 2002; Seppälä 2002; ECA 2012; Ekane et al. 2014), there is still a lack of understanding of how these can be addressed in different circumstances, and of which policies, institutional arrangements and approaches would contribute to the desired increase in coverage of sanitation facilities and changes in hygiene behaviour. This paper focuses on aspects related to sanitation and hygiene policy, and institutional frameworks to identify the key elements that a sanitation policy should possess to enable effective action on the ground.

1.1 Rationale and scope

The aim of this assessment is to help to build a much-needed knowledge base on sanitation policy and institutional frameworks at the macro-level, and to allow comparisons of different implementation strategies to be put in place in order to improve performance in sanitation service delivery at the meso- and micro-governance levels.

Since the socio-cultural, economic, political and environmental conditions, as well as the challenges in improving sanitation facilities and changing hygiene behaviours and practices differ from country to country, policy responses will need to differ accordingly. As case studies for this comparative assessment, we selected three neighbouring countries in SSA with different records of progress in sanitation coverage: Rwanda, Uganda and Tanzania. The aim was to improve understanding of the different aspects that sanitation and hygiene policies address and the institutional arrangements that enable action on the ground. This assessment may, at a later stage, be linked to an assessment of the sanitation and hygiene conditions at the community and household levels to allow for a discussion of the effectiveness and impact of policies in improving sanitation coverage and promoting hygiene behaviour change. This would assess the extent to which national sanitation policies and strategies can be identified as having influenced outcomes in communities and households.

There is no blueprint for an adequate sanitation policy. However, there are certain key factors or elements that a comprehensive sanitation policy should arguably contain to provide an enabling framework for effective action. For example, the target group(s) should be clearly stated; human and environmental health implications need to be stated; and a legal framework should back up proposed actions and implementation plans. In addition, visions and ambitions should be supported by financial commitments, and the roles and responsibilities of actors need to be clearly defined. The above-mentioned elements are in line with those outlined in the Guidelines for the assessment of national sanitation policies. These Guidelines are the outcome of work undertaken by an expert group in collaboration with, and reviewed by, key actors in the sanitation and

hygiene sector as part of the Environmental Health Project (Elledge et al. 2002). They were used by WEDC (2005) to assess sanitation policies in nine countries in different developing regions of the world: Bangladesh, Cambodia, Ghana, Indonesia, Mozambique, Nepal, Nigeria, South Africa and Uganda. The WEDC study found that:

- none of the policies specifically quantified targets or identified resources to be budgeted for sanitation
- the country situation was not adequately presented in some policies
- the specific needs of the target groups, such as the urban poor, were not adequately specified in some policies
- minimum levels of service were not specified in all the policies
- no specific ministry was identified to be responsible for policy formulation
- health and environmental considerations were key elements in all policies, but the magnitude of sanitation-related environmental problems were not specified in all policies
- most policies allow for subsidy of capital costs but only some policies included the costs of meeting sanitation needs
- most policies highlight the need to fund hygiene education, but only one country (South Africa) specified the source of this funding and defined how it should be allocated
- most policies identified lead agencies for coordinating implementation of policy but only one country (South Africa) outlined clear roles and responsibilities for line ministries, and
- most policies stressed the need for both technical and social aspects of sanitation provision, although some emphasized the latter (WEDC 2005).

2 METHOD

We carried out an extensive review of key sanitation and hygiene policy documents in Rwanda, Uganda and Tanzania between 2013 and 2014. The documents reviewed were the:

- national sanitation and hygiene policies, plans and strategies that set the direction
- key laws and operational guidelines, which serve as tools for implementation by, for example, devolving responsibilities and setting standards, tariffs or subsidies, and
- programme documents outlining government strategies to devolve responsibilities to certain institutions.

Much emphasis was placed on policies at the national level, while also considering the linkages to subnational policies and the roles of the subnational actors. The inclusion of documents was sometimes restricted by lack of accessibility, but we judge that the key documents have been included. The documents reviewed are listed in appendix 1.

As a basis for this assessment, we use the key elements for examining sanitation policies and their adequacies (Elledge et al. 2002). These elements are relevant and flexible, although not exhaustive, and serve as a practical tool for the assessment. The key elements constitute a range of issues recognized as important components of good sanitation policies, and also encompass multi-sector and multi-stakeholder interactions. The following key elements were selected for the assessment:

- *Institutional roles and responsibilities*: division of responsibilities (planning, financing, regulation, implementation, operation and maintenance, monitoring and evaluation) and their coordination mechanisms. This is key for coherent and efficient policy implementation and for accountability.
- *Legal framework*: Policies should be grounded in national laws and regulations, and have appropriate enforcement mechanisms. To ensure legitimacy, it is important that policies do not violate norms or fail to serve their intended purpose.
- *Population targeting*: Policies should specifically address the problems of vulnerable or underserved groups, that is, those with inadequate sanitation and hygiene services. These groups include rural populations, the urban poor, women and refugees.
- *Levels of service*: This is determined by a number of factors, such as service costs; economic status of communities and households, and the willingness of users to pay for services; the availability of water and cleaning agents; comfort and convenience; and perceived health impacts. The recommended options may include indoor flush toilets, detached pour-flush toilets, ventilated improved pit latrines (VIPs) or pit latrines, and are determined by economic, social and environmental factors.
- *Health considerations*: Human health is a key factor that sanitation policies should address.
- *Environmental considerations*: Environmental health is another important factor that sanitation policies should address.
- *Financial considerations*: Sanitation programmes and projects should be backed by appropriate budgetary support from national governments, local governments, external donors and users.

Also part of the above list are political will and the acceptability of policies The perceptive data needed to assess such elements is difficult to obtain from a review of policy documents, however, so these two key elements were not included in the assessment.

The findings from this review were presented, discussed and validated at a regional sanitation governance workshop in Kampala, Uganda in 2014. Different sanitation and hygiene stakeholders in Uganda, Rwanda and Tanzania participated in the meeting.

3 THE SANITATION CHALLENGE AND THE POLICY RESPONSE IN RWANDA, UGANDA AND TANZANIA



Figure 1. Map of Africa showing Rwanda, Uganda and Tanzania

3.1 Sanitation status and visions

This section outlines the sanitation and hygiene status in the three countries and the challenges that policies must address. We use WHO/UNICEF (2015) data to show the trend in sanitation coverage in Rwanda, Uganda and Tanzania over the past two decades. This trend is summarized in Table 1. On-site sanitation facilities are predominant in the three countries, and mainly consist of traditional pit latrines of varying standards (Morella et al. 2008). Morella et al. (2008) evaluated progress from open defecation to use of on-site sanitation and reported that Rwanda, Uganda and Tanzania meet six sanitation indicators in the sanitation index.¹ This index is a simple scoring system used to evaluate the progress of reforms and focuses specifically on on-site sanitation systems. The five main indicators are: existence of a hygiene promotion programme; existence of an accepted definition of sanitation; existence of a specific fund for sanitation; involvement of utilities in on-site sanitation; and clear cost recovery policies for on-site sanitation.

Even though the practice of open defecation is generally declining in most of the developing regions, this practice remains quite widespread in SSA, and is still practiced by about 23% of the population (WHO/UNICEF 2015). In Rwanda, Uganda and Tanzania, the trends in the practice of open defecation are quite different (see Table 1.). While there has been a decrease in open defecation in Rwanda and Uganda since 1990, the practice has increased in Tanzania over the same period. Rwanda has almost eradicated open defecation. It is worth noting that during the period 1990–2015, the countries experienced different demographic changes. In Tanzania and Uganda, which are relatively larger countries, the population doubled during this period and access to improved sanitation in both countries has merely kept pace with population growth. In Rwanda, a relatively small country in terms of both size and population, the population changed only slightly over the same period (WHO/UNICEF 2015). Despite the gloomy trend in sanitation coverage for

¹ Sanitation Index: A simple scoring system that can be used to evaluate progress with reform. This index focuses specifically on on-site sanitation systems since these are used by the vast majority of people in SSA. AICD WSS Survey Database, 2007.

Country	Year	fear Population (x 1000)	% urban population	Percentage of population using improved sanitation facilities			Percentage of total population practicing open	Proportion of 2015 population that gained	
				Total	urban	rural	defecation	access since 1990 (%)	
	1990	7215	5	33	61	32	7	- 42	
Rwanda	2015	12428	29	62	59	63	2		
	1990	17535	11	13	28	11	20	- 13	
Uganda	2015	40141	16	19	29	17	7		
т.	1990	25485	19	7	6	7	9	10	
Tanzania	2015	52291	32	16	31	8	12	- 12	
554	1990	510118	27	24	39	18	36	17	
SSA	2015	988784	38	30	40	23	23	- 17	

Table 1. Trends in access to improved sanitation in Rwanda, Tanzania, and Uganda

Source: WHO/UNICEF 2015 update and MDG assessment

SSA as a whole, Stampini et al. (2011) report a number of high performers in the region. Rwanda is listed as one of these, with a good record of progress on the MDGs. There were also recorded improvements in Uganda and Tanzania, however, as is shown in Table 1.

In addition to the international sanitation MDG target, Rwanda, Uganda and Tanzania also set national sanitation targets. In relation to the MDG sanitation target, Rwanda's aim was to reach 65% sanitation coverage by 2015. The national water and sanitation policy was updated in 2010, and this was followed by the 2012 Economic Development and Poverty Reduction Strategy (EDPRS) which aimed to achieve 47% sanitation coverage by 2012. The ambitious Vision 2020 sets a target of 100% sanitation coverage by 2020. Uganda's national target was 80% sanitation coverage by 2015. However, different figures on progress towards this target have been presented by key national and international actors in the sector. Furthermore, progress towards the national sanitation target differs from that reported by the JMP. In Tanzania, the National Strategy for Growth and Reduction of Poverty (NSGRP) had a target of 45% of urban population with improved sanitation by 2015 (Ministry of Health and Social Welfare, 2011).

3.2 Investments in sanitation

The Sector Investment Model (SIM) and the Sector Strategic Investment Plan (SSIP) were put in place in Uganda to monitor investment in the sanitation sector. Public investment was shown by the SSIP to be insufficient to support the attainment of Uganda's 80% national sanitation target. In Tanzania, national targets were proposed for specific areas in the National Strategy for Growth and the Reduction of Poverty II (Mkukuta). Specific targets were set for rural settings, small towns, urban settings and the capital. The combined national target in Tanzania was 71% coverage by 2015. A number of international donors provided financial assistance to Tanzania to the tune of USD 1 billion for investment in water and sanitation infrastructure over a period of five years. This investment was carried out as part of the Water Sector Development Programme (WSDP) launched in 2007 (WSP 2011c). Estimates of the overall and annual per capita investment requirements to improve rural and urban sanitation in Rwanda, Uganda and Tanzania are summarized in Table 2.

Table 2 shows that Tanzania stands out as the country with the highest overall investment requirement in the sanitation and hygiene sector. However, it is difficult to estimate public investment in sanitation and hygiene in Tanzania since a clear distinction is not made between investment in

	I	Rural	Urban		
	Total (USD)	Per capita (USD)	Total (USD)	Per capita (USD)	
Rwanda (CSO2 ² costing)	28,200,000	43	9,510,000	74	
Uganda (SSIP, CSO2)	44,900,000	12	24,200,000	34	
Tanzania (CSO2)	150,000,000	36	55,500,000	52	

Table 2: Overall and per capita investment requirement for sanitation, by 2011

Source: WSP 2011a, b, c

the water supply and investment in sanitation. In Rwanda, an annual capital investment of about USD 38 million per year was required to improve access to sanitation for less than half a million people each year in order to meet the national sanitation target (WSP 2011a). In Uganda, the plan was to invest USD 10 million per year in urban sanitation, consisting mainly of sewers, and USD 3 million per year on sanitation in the rural areas (WSP 2011b).

3.3 Policy development

Sanitation and hygiene policy development in the countries of SSA generally occurs at the central ministry level. Responsibility for implementation generally lies with actors that have little or no capacity or resources for effective implementation or monitoring of sanitation facilities and hygiene practices. Several actors can be involved in the provision of sanitation facilities and the promotion of hygiene through complex multi-level processes that lack clear accountability or sector leadership (Morella et al. 2008). The roles and responsibilities of different actors, and the coordination of projects and programmes at different levels are often confused (Ekane et al. 2014). These structural challenges and the many layers of policy interpretation make it difficult to ensure that clear messages are conveyed, in particular to the local or household levels where the implementation of sanitation mainly occurs. In most cases, responsibility for the construction of on-site sanitation facilities rests with households, NGOs, community-based organizations (CBOs) and private sector actors (Morella et al. 2008). Ekane et al. (2014) argue that a multi-level governance (MLG) approach is needed to understand and overcome the above-mentioned challenges. MLG theory considers the policy and decision-making processes involved in the simultaneous mobilization of public authorities at different jurisdictional levels, as well as in dispersing power to the private sector, NGOs and social movements. It is useful in explaining complex governance patterns (Hooghe and Marks 2001; Hooghe and Marks 2003).

Reforms have been undertaken in several countries in SSA to improve performance in providing sanitation and promoting hygiene. A number of countries now have policies or guidelines that address sanitation and hygiene, either separate from or in combination with water supply. The sanitation sectors in Rwanda, Uganda and Tanzania have undergone strategic reforms since 1990 in order to improve policies and institutional frameworks. Generally, there has been a trend towards decentralization and community participation as well as increased private sector involvement. In addition, the coordination of actors has been greatly improved, and new roles, institutional frameworks and approaches have emerged as a result.

The national decentralization process in Rwanda was launched in 2000, but increased attention on sanitation only took effect from 2004. Rwanda has successfully adopted policies and strategies

² The country status overview (CSO) was published for the first time in 2006 (CSO1). It benchmarked the preparedness of the sanitation sectors in 16 countries in SSA for achieving the water and sanitation MDG using the mediumterm spending plans and a set of 'success factors' selected from regional experience. CSO2 is the second round of the status overview.

that are clear and feasible, with well-defined deliverables and a working institutional framework (WaterAid 2012a). A Sector Wide Approach (SWAp) was adopted in 2008 to harmonize procedures for both technical and financial aspects of project implementation (WSP 2011a). The SWAp proved effective at harmonizing major donor activities. The new institutional framework shifted implementation responsibilities and service delivery to the district level and private sector operators. Ownership of facilities by citizens is promoted and private operators are held accountable for service delivery (National Strategy and Policy). Despite these promising changes to the policy landscape and coordination mechanisms, however, considerable budget gaps and a lack of fund-ing remain the main obstacles to action and progress on the ground.

Sector reforms in Uganda have also focused on decentralization of service delivery. There have also been increased private sector participation and improved coordination as a result of a shift from project-based approaches to a SWAp. This shift was implemented as part of national institutional and economic reforms, which greatly improved the relationship between development partners and the government. The government-led reforms were implemented in a participatory process (WSP 2002). The role of the government has shifted from service provider to policymaker. The SSIP, which sets out appropriate policies, strategies, action areas and related costs, was developed as part of the reform process. An Integrated Sanitation and Hygiene Strategy were put in place in 2006, with specific emphasis on the enforcement of by-laws. This strategy has facilitated major activity on the ground, which had previously been difficult. However, the extent to which actions on the ground translate into sanitation outcomes will need to be determined (WSP 2011b).

A new regulatory framework has been established in Tanzania, which emphasizes a separation between sanitation, and water policies and investments plans; and focuses on improved coordination between the actors delivering sanitation and hygiene services. New roles and responsibilities have been devised. Most notably, the role of the government is shifting from service provider to coordinator, policy formulator and regulator, thereby separating the roles of regulatory bodies from the actors providing services on the ground. Responsibility for service delivery has been shifted to lower administrative levels, the private sector and commercial operators. This shift took effect in 2007 under the WSDP, which is part of the SWAp adopted in 2005. Table 3 summarizes the guiding pillars of the sanitation and hygiene policy frameworks in Rwanda, Uganda and Tanzania.

Rwanda	Uganda	Tanzania
Decentralization; Community participation; Private sector participation; Priority to basic services; Emphasis on sanitation and hygiene in development; Cost recovery and financial sustainability; Sector-wide Approach (SWAp).	Community participation; Include NGOs, CBOs and private sector in planning and implementation; Inter-sectorial collaboration; Balance between promotion, facilitation and law enforcement; Prevention is better than cure; Equity, rights-based, needs-based; SWAp.	Increased ownership by communities of operation and maintenance; Increased private sector involvement; Establishment of an efficient and equitable service delivery system; Clarification of the institutional framework; Strengthened system for monitoring and evaluation; SWAp.

Table 3. Guiding pillars of sanitation and hygiene policies in Tanzania, Rwanda and Uganda

4 COMPARATIVE ANALYSIS OF SANITATION AND HYGIENE POLICY FRAMEWORKS

In Rwanda, Uganda and Tanzania, policies and institutional frameworks have evolved to address the challenges of sanitation provision and hygiene promotion. This section assesses the key elements of the current sanitation policy frameworks in more detail, and analyses common patterns and their implications.

Criterion 1: Institutional roles and responsibilities

Since 2008, responsibility for water supply and sanitation in Rwanda has been shared between the Ministry for Infrastructure (MININFRA) and the Ministry of Health (MINISANTE). MININFRA is responsible for national policies, guidelines and strategies, enhancing human resource capacity at the district level and the monitoring and implementation of government policies. It also leads on sector stakeholder coordination. MINISANTE leads primarily on the promotion of sanitation at the community level and provides preventive, curative and rehabilitative services. MINISANTE also promotes hygiene behaviour change. The Ministry of Education (MINEDUC) is involved in implementing hygiene programmes at the local level. Other ministries involved include the Ministry of Finance and Economic Planning (MINECOFIN), which is responsible for budgeting and financing sanitation, the management of external funds and external aid coordination, and the Ministry of Local Government (MINALOC), which coordinates local actors and ensures effective service delivery on community development and socio-economic development. MINALOC also funds small-scale water supply and sanitation projects. The districts (local government) and CBOs are responsible for providing access to basic sanitation services at the local level. Private sector actors operate under contracts with the district governments and play a major role at the local level. In 2014, the responsibility of managing water and sanitation services in Rwanda was transferred from the Energy, Water and Sanitation Authority (EWSA) created in 2010 to The Water and Sanitation Corporation (WASAC). WASAC is the new name for ELECTROGAZ, a utility company that has existed for a number of decades. WASAC is a profit-making company owned by the government of Rwanda.

In Uganda, the 1964 Public Health Act (PHA) states that provision of sanitation is the responsibility of households, thereby delegating responsibility to private actors. Generally, the current approach to sanitation provision and hygiene promotion can be described as private-sector led, with government responsibilities limited to policy formulation and regulation. Responsibilities in the sector are split across the national, district, municipal/urban council, sub-county and local levels. At the national level, three ministries are responsible for policy formulation, standards and strategies: the Ministry of Water and Environment (MoWE), the Ministry of Health (MoH) and the Ministry of Education and Sports (MoES). A Water Policy Committee (WPC) provides advice to MoWE. This committee is made up of district level decision makers, NGOs and private sector actors (Water Statute 1995; National Water Policy 1999). Sub-county level authorities play a key role in setting local priorities, and in monitoring and evaluation. Their duties also include health inspection and enforcement of sanitary laws. Municipalities/urban councils are mentioned in the National Water Policy (1999) as "large stakeholders", but their responsibilities remain unclear. District councils help to coordinate work on water, community development and health at the district-level (National Water Policy 1999). Local authorities can organize the formation of Water User Groups (WUGs) and Associations within their jurisdiction (Water Statute 1995). WUGs exist at the community level, and are represented by individuals and households surrounding a source of water supply in an area. The executive body of this group is responsible for promoting sanitation and hygiene in the area. NGOs, the private sector and interest groups are seen as partners with the government in achieving development efforts (National Water Policy 1999), and are often included in decision-making processes. NGOs and CBOs supplement the efforts of the public sector and help to ensure that the concerns of the economically disadvantaged are incorporated into the national development process (National Water Policy 1999). The government is committed to working with NGOs and CBOs in the sanitation sector, but their role is to a

large extent determined by the communities in which they work. The private sector is increasing in importance and is involved in a variety of areas, including design and construction, operation and maintenance, training and capacity building, and commercial services (National Water Policy 1999). This split of responsibilities across many ministries and levels makes integration and coordination a challenge. Local governance of service delivery is particularly weak and the main responsibility for access to sanitation facilities and promoting hygiene has remained with households (Morella 2008; Ekane, et al. 2014).

In Tanzania, responsibilities for sanitation and hygiene are spread over different sectors, such as water, health and education. The Ministry of Health and Social Welfare (MoHSW) is developing a National Sanitation and Hygiene Policy. MoHSW provides guidelines and technical assistance to councils, and prepares acts, regulations and standards for monitoring, regulating and supporting councils and other stakeholders. The Ministry of Education and Vocational Training (MoEVT) is responsible for coordinating sanitation and hygiene in schools, while the Prime Minister's Office leads the implementation of school sanitation and hygiene activities. The Prime Minister's Office is responsible for local government authorities (LGAs), which are in turn responsible for providing on-site sanitation in consultation with MoHSW. LGAs report to the Prime Minister's Office, regional administrations and local government. There are urban water supply and sewerage authorities at the municipal or town council levels, and a number of district urban water and sewerage authorities. These are responsible for sewerage services but not on-site sanitation, which is found predominantly in rural areas (Morella 2008). A separate authority, Dar es Salaam Water and Sanitation Authority (DAWASA) provides water supply and sewerage services for the Dar es Salaam area. The 2007 National Water Sector Development Strategy (NWSDS) addresses the overlapping roles and responsibilities of different actors, which is considered to be one of the major reasons for the inefficient use of resources (human and financial), duplication of efforts and gaps in service provision. Since a separate sanitation policy is not yet in place, coordination between the different ministries responsible for different aspects of sanitation remains a challenge.

Table 4 shows that the institutional arrangements in the three countries are not all that different from each other. The similarities include, for example, that the ministries of water and health are responsible for planning and policy formulation, and that implementation and operation, and maintenance are the responsibility of local government agencies in all three countries. These responsibilities are often shared with CBOs and private sector operators. Budget responsibilities rest with the ministries of health, water and finance, and subnational government. On country-specific arrangements, Rwanda has a separate regulatory agency and Uganda a directorate within the Ministry of Water, while in Tanzania regulation has so far remained with the Ministry of Water—along with overarching responsibility for service delivery. Furthermore, responsibility for monitoring and evaluation (M&E) rests with the Ministry of Natural Resources in Rwanda; and the Ministry of Water and Environment, Ministry of Health and Ministry of Local Government in Uganda. In Tanzania, Annual Joint Water Sector Reviews (JWSRs) have been performed since 2006 to assess sector performance. Table 4 summarizes the roles and responsibilities of the key actors in the sector in Rwanda, Uganda and Tanzania.

In sum, roles and responsibilities can sometimes be unclear in the complex institutional set-up that characterizes the sanitation sector in the three countries. Changes to the institutional framework, however, have improved the separation of roles. The level of involvement of the government and the private sector varies, but there is a trend in all three countries towards decentralization and privatization. Perhaps the most important gap is the unclear separation between service delivery and regulation/monitoring/evaluation. This limits the checks on actors delivering services and hampers efforts to improve performance in the sector.

INSTITUTIONAL ROLES AND RESPONSIBILITIES	RWANDA	UGANDA	TANZANIA
Planning/policy formulation	Ministry for Infrastructure, Ministry of Health Sector Working Group	Ministry of Water and Environment, Ministry of Health, Ministry of Education and Sports, Communities	Ministry of Water, Ministry of Health and Social Welfare, Ministry of Vocational Training, National Sanitation and Hygiene Steering Committee
Financing	Ministry of Finance, Ministry of Health, Ministry of Infrastructure, private sector, Ministry of Local Government	Ministry of Water and Environment The Ministry of Finance, Planning and Economic Development (MFPED)	Ministry of Health and Social Welfare, Ministry of Water, Ministry of Regional Administration and Local Government, Ministry of Education and Vocational Training
Regulation	Rwanda Utility Regulatory Agency	Urban Water Supply Regulation Unit" within the Directorate of Water Development (DWD)	Ministry of Water, Ministry of Education and Vocational Training
Implementation	Local government (district level), private operators, Ministry of Education,	Local government, District Health Departments, Public Health Departments Ministry of Education and Sports	Local government authorities, Prime Minister's Office
Operation and maintenance	Community-based organizations (CBOs), private operators, households/landlords	CBOs (water and sanitation committees), Private operators, NGOs, households/landlords	Local government authorities, private operators, households/ landlords
Monitoring and Evaluation	Ministry of Natural Resources (Rwanda Environmental Management Agency) Ministry of Infrastructure	Ministry of Water and Environment, Ministry of Health, sub-county/urban councils, local governments, Ministry of Local Government. Joint Sector Reviews (JSR) and Joint Technical Reviews (JTR)	Tanzania Water and Sanitation Network (TAWASANET); Annual Joint Water Sector Review (JWSRs); twice annual WSDP

Table 4: Roles and responsibilities of key actors in Rwanda, Uganda and Tanzania

Coordination

One of the major drivers of the reforms that have taken place in Rwanda, Uganda and Tanzania in recent years is the need to improve coordination between actors and activities in the sector.

In Rwanda, institutional reforms in 2008 introduced a shift from a project-based to a nationwide approach to coordination. Progress towards national targets is now discussed in a Sector Working Group (SWG) framework. The need has been recognized for improved coordination across key ministries, government agencies, international development partners and NGOs. Key ministries and development partners signed a Memorandum of Understanding on a SWAp in the water supply and sanitation sector in 2009. Signatories to the Memorandum commit themselves to support a common programme in which strategy, policy planning, development, monitoring, review and capacity building are carried out as a joint effort through consultation between the government and signing partners. The coordination mechanism consists of a SWAp secretariat, meetings of the Sector Working Group and an annual Joint Sector Review. WaterAid (2012a) reports that these efforts have improved coordination and transparency between the government and development partners.

In Uganda, the three ministries that formulate national policies, standards and strategies signed a similar Memorandum of Understanding in 2001 to clarify their various roles. This Memorandum stipulates that the Water Policy Committee (WPC), which consists of district level decision makers, NGOs and private sector participants, should provide advisory support to MoWE (National

Water Policy 1999). The shift from project-based approaches to SWAp to planning, construction and management, as well as changes in the role of the government from service provider to policymaker and decentralized service delivery are key to efforts to improve coordination and performance in the sector.

In Tanzania, the SWAp is primarily operationalized through the WSDP, which includes rural sanitation, urban sewerage and water resources management programmes. Key ministries signed a Memorandum of Understanding in 2010 to harmonize guidelines, definitions and standards relating to sanitation and hygiene, including water, sanitation and hygiene in schools. A National Sanitation and Hygiene Steering Committee meets at least twice a year to provide policy direction. There is also a National Sanitation and Hygiene Technical Committee to support policy and strategy work programmes, the coordination of technical guidelines and information dissemination. Technical working groups have also been established under the Memorandum. Coordination has improved following changes in the institutional framework, whereby water supply and sanitation have been separated from water resources management.

In sum, the three countries are addressing the complex institutional set-up and the often unclear roles by establishing mechanisms for improved coordination. They have all adopted SWAps to improve sector overview, as well as opportunities to coordinate and align sanitation efforts. The approaches vary to some extent: in Rwanda coordination efforts focus on joint monitoring of progress and policy development; in Uganda the focus is on clarifying roles and coordinating budgets; while in Tanzania the focus is on harmonizing guidelines, definitions and standards.

Criterion 2: Legal framework

The legal framework in Rwanda is described as sub-optimal and a limiting factor on the enabling environment for implementing the Vision 2020 goals (Water and Sanitation Policy). The Organic Law on Environmental Protection, Conservation and Management sets out the overarching legal framework to environmental protection and management in Rwanda. Regulations stipulate the requirement for an Environmental Impact Assessment (EIA). The responsibilities of the Rwanda Environment Management Authority (REMA) are determined by Law no. 16 (see appendix 1). Regulatory tools include a number of ministerial orders and regulations on matters such as fees for public utilities. The government has also instituted performance contracts (imihigo), which have been effective at improving sanitation service delivery. Performance contracts are signed between the President of Rwanda and local government institutions and line ministries. These bind the respective institutions to the targets they set for themselves (ODI 2012).

A comprehensive set of laws, by-laws and regulations is in place in Uganda. The public health Act (PHA) outlines responsibilities with regard to the human health-related aspects of sanitation. The Water Act (WA) and National Environment Management Act (NEMA) address environmental health aspects. The legal framework does not give responsibility for sanitation to any one specific actor or institution, but distributes powers across ministries and levels of government. The role of the public sector in sanitation and hygiene is guided by the Constitution of the Republic of Uganda (1995), as sanitation is a key goal of the nation. The Local Government Act (1997) empowers local government to deliver sanitation services, but its role has remained weak. Weak enforcement of legislation at all levels is a major challenge for the sector in Uganda (Achiro 2009).

The previous legal framework for sanitation in Tanzania was contradictory, lacked clarity and differentiated between service provision in urban and rural areas. Furthermore, the framework was not properly harmonized with legislation at the local government level, and did not reflect more recent institutional changes. To address these gaps, a number of changes were made by the NWSDS to align the legal framework with the National Water Policy put in place in 2002. This resulted, inter alia, in the 2009 Water Supply and Sanitation Act (WSSA), which provides the legal foundation for implementing the key policy document on sanitation. The WSSA emphasizes

equal access to efficient and sustainable sanitation services through appropriate service delivery incentives, decentralizing management and ownership to the lowest level, ensuring that sanitation authorities are financially and administratively autonomous, and promoting public-private partnerships in the provision of sanitation and the promotion of hygiene. Moreover, in addition to outlining the institutional set-up, the Act emphasizes the establishment and enforcement of standards and regulations, the protection and conservation of water resources and the promotion of public health and sanitation. Other relevant legislation includes: the Local Government Act (District/Urban 1982), which outlines the powers of local government authorities; and the Dar es Salaam Water Supply and Sewerage Authority Act no. 12 (2001), which outlines roles and responsibilities in providing sewerage services in Dar es Salaam and the parts of Kibaha and Bagamoyo excluded from the 2009 Water and Sanitation Act; the 2001 Energy and Water Utilities Regulatory Act, which establishes the regulatory body for sewerage services; and the 2009 PHA, which guides sanitation from a health perspective in specific sectors such as hotels and swimming pools. The PHA identifies the need for a Sanitation and Hygiene Policy.

In sum, all three countries have a legal framework on environmental issues within which sanitation and hygiene are also addressed. However, none of the countries has separate legal provision for sanitation and hygiene. Hence, the current arrangements cannot directly support efficient monitoring and evaluation of sanitation and hygiene.

Criterion 3: Population targeting

In Rwanda, the 2010 National Policy and Strategy for Water Supply and Sanitation Services includes gender and social inclusion as cross-cutting issues and specifically emphasizes the interests of women, children and grouped settlements in the targeting of resources. The document stipulates that sector activities should be designed and implemented in such a way that ensures equal gender participation and representation. It also states that "due attention should be paid to the viewpoints, needs and priorities of women" (National Policy and Strategy 2010). The targets, goals and vision include the term "for all", with specific emphasis on vulnerable and deprived groups in society.

In Uganda, the 2005 National Environmental Health Policy stipulates that interventions should be planned and implemented on an equitable basis. This should follow an equitable share principle with "a rational view on urban versus rural interventions". The selection of areas in greatest need of improvements in services is based on needs-related criteria. In addition, resource allocation is based on the principle of "some for all" rather than "all for some". The policy also stipulates that interventions should respond to differing needs, and specifically highlights the central role of women in sanitation. Men and women's equal opportunity to participate in all aspects of community development is considered a guiding principle for the focus of activities in the sector (National Water Policy 1999).

In Tanzania, section 21 of the Sanitation Act stipulates that: "in the exercise of powers and the discharge of duties, a water authority shall take into account the existence and needs of economically disadvantaged persons when setting tariffs and other charges for water supply and sanitation services; and taking any action in any matter likely to have a negative effect on the economic well-being of such groups. The economically disadvantaged persons shall be identified by the water authority in collaboration with the local government authority". The National Water Policy sets goals for "improving services in low income and peri-urban areas and identifying vulnerable groups". The Draft Sanitation and Hygiene Policy proposes that "programmes supporting sanitation infrastructure and hygiene provision should consider the knowledge, beliefs, practices and needs of people of differing backgrounds, ages, cultures and ethnic groups". It emphasizes that gender issues and the rights and concerns of women as well as the disabled should be integrated into all levels of implementation and decision making on sanitation and hygiene services (Draft Sanitation and Hygiene Policy).

Another way to assess which groups are targeted for sanitation service delivery is to look at the expenditure frameworks. In Tanzania, the expenditure framework shows that resources are primarily allocated to urban areas for sewerage network expansion. This arrangement results in the wealthy being prioritized for service delivery (WSP 2011c). The lack of financial support or subsidies for sanitation services results in inadequate, or a total lack of, facilities in rural areas, and the inability of the urban poor to connect to sewerage networks (Draft Sanitation and Hygiene Policy). Similarly, in Rwanda there appears to be a discrepancy between the stated principles and the allocation of resources to those who are in greatest need. Aggregate figures on coverage, which have been used to measure progress on the MDGs, often hide regional inequalities. However, inequalities across regions led to budget reallocations in 2012/13. As in Tanzania, more resources are now being allocated to urban sanitation provision in Rwanda (WaterAid 2012b). In Uganda, shared budget lines make it difficult to assess how resources are targeted to which activities and groups. The sub-department in charge of sanitation at the MoH has no budget mandate. In addition, there is no department at the MoWE with overarching responsibility for sanitation and therefore no specific budget line/allocation (Ugandan Water Dialogues 2008). A 2004 review of resource allocation showed that about 75% of resources were allocated to schools and public facilities, and 25% to rural areas and the urban poor (Ministry of Health/WSP 2004).

In sum, gender, inequality and poverty are taken into consideration in allocating resources for sanitation in all three countries. The current framework in Tanzania highlights consideration of the disadvantaged, whereas consideration of the different knowledge levels, beliefs, practices, preferences and needs of people of differing backgrounds, ages, cultures and ethnic groups, as well as gender issues and the rights of the disabled, are still to be formally adopted through the Draft Sanitation and Hygiene Policy. In Uganda, the lack of budget monitoring is an obstacle to assessing the targeting of resources.

Criterion 4: Levels of services

In Rwanda, basic sanitation is defined in the 2010 Policy and Strategy as "access to a private sanitation facility of one of the following types: flush or pour-flush to piped sewer system, septic tank or pit latrine, ventilated improved pit latrine (VIP), pit latrine with slab, composting toilet, or other ecological sanitation systems". Modern sanitation must provide a high standard of service. Rwandan policies therefore emphasize private or individual sanitation facilities. Most households in Rwanda have on-site private sanitation facilities, but only about half comply with the recommended standards of an "improved facility". Waterless latrines are the most common and very few households have flush toilets. Twin-pit VIP latrines and pour-flush toilets are also common in households without a water connection. Biogas facilities exist mainly in schools. MININFRA now has national guidelines on usable toilets in Rwanda. This technical document outlines recommended designs for sanitation technologies and systems. Ecological sanitation is included as one of the recommended options.

The MoH in Uganda defines improved sanitation facilities as: covered pit latrines, VIP latrines and flush toilets. For safety reasons, latrine pits must be more than 15 feet (4.5 metres) deep and waste deposited 3 feet (1.2 metres) below the latrine hole. Privacy should also be guaranteed. In Tanzania, the MoHSW defines improved sanitation as "a latrine that is connected to a sewer, septic tank, VIP latrine, ecological sanitation systems, pour flush latrine or pit latrine with a washable floor and a complete super-structure".

The three countries have different definitions of improved sanitation facilities. There are technical guidelines on sanitation technologies and systems, and ecological sanitation is identified as an option. However, functionality, or whether the technologies and systems serve the purpose for which they are intended, is not emphasized.

Criterion 5: Health considerations

In Rwanda, an understanding of the importance of sanitation in the fight against poverty is reflected in the government's ambitious targets, strategies and national policies. The EDPRS and the National Policy and Strategy for Water Supply and Sanitation explicitly stress that healthy populations are key to economic growth. Access to improved sanitation is at the centre of the country's ambitious Vision 2020, which aims to achieve 100% household sanitation coverage by 2020.

In Uganda, recognition of the impact of inadequate sanitation and hygiene on health and the related burden of disease led the government to undertake a range of policy and institutional reforms in the sector. The 2002 PHA contains provisions for addressing infectious diseases, including those related to sanitation, sewerage, drainage, water and the food supply, and provisions on certain epidemic diseases.

Sanitation is framed primarily as a health issue in Tanzania. The Draft Sanitation and Hygiene Policy focuses on breaking the faecal-oral transmission chain. National Environmental Health and Sanitation Policy Guidelines are being prepared by the MoHSW. The NWSDS is aligned with the National Health Policy 1990, which recognizes that basic sanitation and improved hygiene practices are prerequisites for the health of individuals and communities.

From the above, it is clear that health is a major concern in the policies of all three countries.

Criterion 6: Environmental considerations

In Rwanda, environmental considerations are represented in the National Policy and Strategy for Water Supply and Sanitation as well as in the EDPRS. This policy dovetails with the Environmental Health Policy, which identifies sanitation as a high-impact intervention. Environmental Health Promotion focuses on accelerating access to a water supply and to sanitation facilities, as well as hygiene information. The Water Sector Strategic Plan states that sanitation is dependent on the environment and that the sector will respect environmental regulation. The National Policy and Strategy stipulates that "water use should be rational and sustainable, and shall abide by environmental regulations and safeguards. Waste disposal shall be planned and managed with a view to minimizing environmental impact, and ensuring the protection of water resources". The Organic Law on Environmental Protection specifies requirements for Environmental impact assessment.

Uganda has made a clean and healthy living environment for all its citizens in both rural and urban areas a priority. This is stipulated in the National Environmental Health Policy, which summarizes the 1997 Kampala Declaration on Sanitation. The declaration makes environmental sanitation a basic human right and a responsibility of every citizen. Tanzania has an Environmental and Social Framework intended to guide the integration of environmental and social considerations into the planning and implementation of Water Sector Development Programme activities. This Framework contains: a checklist on environmental and social considerations for project sites and activities; a step-by-step procedure for forecasting the main potential environmental and social impacts; an environmental management plan for addressing negative externalities in the course of project implementation; a monitoring system for the implementation of mitigation measures; and an outline of recommended capacity-building measures. There is an Environmental Health Unit within the MoHSW, which handles issues related to water safety, sanitation, hygiene, pollution control, occupational health and poor health services (Draft Sanitation and Hygiene Policy). Environment and Sanitation departments have been established by local government entities to improve environmental protection and sanitation in their jurisdictions. Before allocating resources, local government is expected to consider important environmental aspects in its plans and budgets.

All three countries have addressed environmental issues in their national policies. Environmental considerations are reflected in the Strategy for Water Supply and Sanitation as well as in the ED-

PRS in Rwanda; in the National Environmental Health Policy and the 1997 Kampala Declaration on Sanitation in Uganda; and in the Environmental and Social Framework in Tanzania.

Criterion 7: Financial considerations

In Rwanda, lack of funding is seen as a key constraint on improving sanitation and hygiene. The share of the national budget allocated to water and sanitation was slightly increased to support reaching the sanitation coverage targets by 2017. Nonetheless, the budget gap is estimated at US \$60 million (Wateraid 2012a).

Limited financing for the sector also prevents progress on the ambitious sanitation targets in Uganda. The current NDP expenditure framework allocates an average of 4.1% of the national budget to water and the environment, or around US\$220 million. This incorporates funds for the environment and natural resources as well as for water supply and sanitation. A 10-year Integrated Sanitation and Hygiene Strategy for Small Towns (urban) was put in place in 2006, followed by the consolidated SSIP for water supply and sanitation in 2009. In addition to the SSIP, the Government of Uganda has also developed a SIM.

In Tanzania, four ministries share budgetary responsibilities for sanitation and hygiene: MoHSW, MoWI, the Ministry of Regional Administration and Local Governments and MoEVT. The MTEF of the MoWI reports that a major weakness in the sector is inadequate allocation of resources for implementation, which limits budgets at the district level. Each LGA is responsible for sanitation services in consultation with the MoHSW and receives recurrent block grants for the implementation of planned activities. For sanitation and hygiene in schools, the MoEVT receives government funding through the national budget. Government contributions to this area are made from basket funds through MoHSW, MoEVT, MoWI and the Prime Minister's Office. However, the MoEVT reports in its strategic plan that funding is inadequate and that there are delays in fund disbursement (SWASH strategic plan). The SWASH plan estimates that the sum of USD 65.69 million, or \$495.987 per local government authority, is needed to achieve a 50% increase in toilet coverage in schools.

A funding gap resulting from insufficient budgets is a common problem in all three countries and is considered to be one of the reasons for poor performance in sanitation service delivery. In addition, since there is no separate authority responsible for sanitation in all three countries, the different budgetary responsibilities and implementation plans are not well coordinated.

Assessments of Rwanda, Uganda and Tanzania against the seven criteria are summarized and compared and in table 5. The results show remarkable similarities between their policy arrangements and governance challenges, and many of the core problems are the same in all three countries.

Criteria/Country	Rwanda	Uganda	Tanzania
Legal framework	Weak, sub-optimal framework	Key Act, complex framework	One document, straightforward framework
Institutional roles/ responsibilities	Shared roles and responsibilities Sector is mainly government-led all through sanitation chain	Shared roles and responsibilities Private sector plays a key role. Government restricted to policy formulation	Shared roles and responsibilities Policy formulation is led by one ministry
Coordination	Sector-wide approach and nationwide coordination SWAp focused on joint monitoring of progress against shared targets and policy development	Sector-wide approach and Memorandum of Understanding Focused on clarifying roles and responsibilities and coordinating budgets. SWAp shifted approach from project to programme-based	Sector-wide approach and Memorandum of Understanding on coordination SWAp focus on harmonizing guidelines, definitions and standards
Population targeting (factors explicitly mentioned to be respected and considered in targeting of resources)	The vulnerable and hard to reach, gender, women, children, grouped settlements, viewpoints, needs	Based on principle of individual need and "some for all rather than all for some", urban, rural, women	The economically disadvantaged, age, culture, ethnicity, knowledge, beliefs, practices
Acceptable level of services	Flush or pour-flush to piped sewer system, septic tank or pit latrine, VIP latrine, pit latrine with slab, composting toilet, or other ecological sanitation systems Adds private/individual as criteria for an improved facility	Presence of: covered pit latrine, VIP latrine, and flush toilets, at home Adds safety criteria: latrine pits must be >15 feet deep, and waste deposited 3 feet below the latrine hole, privacy must be guaranteed	Latrine connected to a sewer, septic tank, ventilated improved pit latrine, ecological sanitation, pour flush latrine or pit latrines with a washable floor and a complete superstructure
Health considerations	Clear link between sanitation, health and human well-being	Clear link between sanitation, health and human well-being	Clear link between sanitation, health and human well-being
Environmental considerations	Policy is in line with Environmental Health Policy, in which sanitation is identified as a high-impact intervention	Priority given to clean and healthy living environment in the National Environmental Health Policy, which is in line with the Kampala Declaration on Sanitation	Environmental and Social Framework guides integration of environmental and social considerations Environmental Health Unit is a Separate unit under MoHSW

Table 5: Comparative summary of policy assessment

5 DISCUSSION

From the above assessment of the policies and institutional frameworks in Rwanda, Uganda and Tanzania, it is clear that roles and responsibilities in the sanitation sector are widely spread among different government agencies, NGOs and private operators in all three countries, which causes overlaps in roles and responsibilities. This may be a response to the complex links between sanitation and hygiene and other related sectors such as water, health, the economy, education, and so on, but it places a big responsibility for effective coordination of the different actors and activities involved at different levels. Coordinating the actors in the sector has been highly challenging in all three countries. There is, however, an increasing understanding of the challenges involved, and attempts are being made to address them.

Since responsibilities for sanitation and hygiene are spread among different ministries in the Rwanda, Uganda and Tanzania, these issues are addressed in different national policies. This also makes coordination of the different stakeholders and their programmes and projects difficult. Further, as this analysis shows, sanitation and water are addressed together usually in the same policy. There is yet to be a separate policy for sanitation with a single ministry having full control or responsibility for it.

The three countries have either recently undertaken, or are still undergoing major sector reforms to support a shift towards decentralization, community participation and private sector involvement in promoting and providing sanitation and hygiene services. Efforts are being made in all three countries to clarify, redefine and reassign roles and responsibilities, primarily by adopting SWAps. However, the SWAps have a slightly different focus in the three countries: in Tanzania, they are primarily to harmonize content; in Rwanda they aim to coordinate monitoring efforts and joint policy development; while in Uganda the aim is to clarify roles. Policy coherence is another way in which clarity is provided.

Sanitation has tended to be overshadowed in combined national policies on water and sanitation, but all three countries seem to be moving towards a complete separation. Rwanda and Uganda each have a separate policy on sanitation and hygiene, while Tanzania is in the process of developing a new sanitation and hygiene policy. This is a clear indication of a new understanding that sanitation and hygiene need a separate framework from water, one that directly addresses the sanitation challenge and contributes to meaningful progress on improved sanitation coverage.

There are also efforts to separate funding streams, although shared budget lines currently make water and sanitation activities inseparable. Lack of funding for the sanitation sector is identified as a problem in all three countries, and may result in part from the shared budget lines, close association with the water supply sector and high levels of aid dependency. The water supply and sanitation sector receives a considerable amount of aid, but only a small share is directed to sanitation. Even though sanitation policies and strategies may be well written on paper, they are not usually backed by adequate budgetary support to enable efficient implementation. Political will is one of two key elements in national sanitation policies and inadequate budgetary support identified in all three countries.

Health and environmental considerations are well addressed in policy documents. Sanitation is predominantly framed as a health issue in all three countries, although the role of sanitation in overall economic development is highlighted in Rwanda's poverty reduction strategy. Highlighting linkages beyond health is a relevant framing given the close linkages of sanitation to human well-being and opportunities for productivity, but possibly also a strategic way to move sanitation higher up the agenda of donors and governments.

Shared budget lines also make it more difficult to track where resources are targeted and therefore risk hiding inequalities. While on paper the policies are equity-focused, it is worth investigating

the specifics of how target groups from among the most vulnerable, such as women and children, are treated as well as urban/rural disparities in the consideration of these groups. There are separate arrangements for sanitation provision in some urban areas, mainly the capital cities in Uganda and Tanzania. This is an indication of the urban/rural divide in service delivery in these countries. The view on acceptable service levels is similar in all three countries, although privacy and safety criteria are more prominent in Rwanda and Uganda. The slightly different definitions of acceptable levels of service bring the quality of sanitation facilities in focus, and highlight the inadequacy of only focusing on service coverage rates as a progress indicator rather than the functionality of these services.

It has been difficult to review the legal frameworks, as they have often evolved through amendments to key laws and acts. Tanzania and Uganda both have key pieces of legislation in the form of a water or water/sanitation act. The framework is more complex in Uganda. The situation in Tanzania is clearly aligned with a key policy document and has evolved in response to it. In Rwanda, the legal framework is weak and seems inadequately aligned with policies. Poor law enforcement emerges as a critical issue in all three countries. The capacity for monitoring and evaluation at the local level does not match that at the national level. Local government often faces challenges as a result of the limited resources allocated to sanitation and hygiene promotion and provision at the local level.

6 CONCLUSIONS

The sanitation and hygiene policies and institutional frameworks in Rwanda, Uganda and Tanzania are ambitious; and recent and ongoing reforms are encouraging. In particular, the ongoing efforts to improve coordination, clarify responsibilities and separate funding streams for water and sanitation are positive developments.

Based on the above assessment, the policy frameworks in Rwanda, Uganda and Tanzania contain most of the key elements of national sanitation policies recommended by Elledge et al. (2002). The major gap, however, remains the translation of these policies into practice. This is hampered by a number of factors related to budget allocation, funding for sanitation and hygiene, enforcement of sanitation and hygiene laws and by-laws, monitoring and evaluation of sanitation facilities, and functionality. Also, policies are not matched with adequate funds (hence the high dependence on subsidies and aid to roll them out); there are different and at times conflicting agendas of NGOs and other implementers (efforts are usually not scaled up when programmes and funding ends); performance contracts may result in staff manipulating figures for fear of consequences of failure (and focus on numbers rather than on function); and there is a serious lack of technical capacity, especially at the district level, to support communities, collect data and enforce regulations.

All three countries need separate sanitation and water policies and to create authorities solely responsible for sanitation and hygiene. This assessment improves understanding of the gaps in the various policies and institutional frameworks, and shows how some of these gaps are being addressed through sector reforms. In addition to the commendable efforts to decentralize activities, clearly define roles and responsibilities, and improve coordination in the sector, more needs to be done in terms of improving enforcement mechanisms, standardizing monitoring and evaluation systems, creating a separate budget line for sanitation and hygiene, and emphasizing functionality in sanitation facilities.

There is a need to develop the capacity of local governments, especially the capacity of extension staff, and to support community-based structures technically and financially. There is also a need for each government to increase its budget allocation for sanitation and hygiene.

The importance of sanitation for health and environmental reasons is recognized in all three countries. Both aspects are well represented in the existing policies of Rwanda and Uganda and the draft policy of Tanzania. Rwanda stands out in the entire region as a country that is making considerable progress in improving access to sanitation facilities. This can be partly attributed to the government's willingness to effectively translate policy into practice. The other two countries have made only limited progress in this respect.

Causal links between the adequacy of the policy and institutional frameworks in all three countries and sector performance cannot be assumed. Our assessment highlights the strengths of the policies and areas where improvement is needed in line with recommended key elements of sanitation policies.

REFERENCES

- Achiro, B. (2009). Constraints and prospects of law enforcement for improved sanitation in Kawempe Division, Kampala District. MSc. dissertation, Makerere University. 2009/HD14/15599U.
- Bartram, J. and Cairneross, S. (2010). Hygiene, sanitation, and water: Forgotten foundations of health. *PLoS Med* 7(11).
- Bos et al. (2005). 'Health benefits versus costs of water supply and sanitation', Water and Health. IWA Publishing, London.
- Cialdini, R. and Goldstein, N. (2004). Social influence: Compliance and conformity. *Annual. Review* of *Psychology*. 55. 591-621.
- Curtis, V. et al. (2011). Hygiene: new hopes, new horizons. *The Lancet Infectious Diseases*. 11(4). 312-321.
- Ekane, N., Fogde, M., Noel, S. and Kjéllen, M. (2012). Sanitation and Hygiene: Policy, Stated Beliefs and Actual Practice A Case Study in the Burera District, Rwanda. SEI Working paper 2012-07.
- Ekane, N., Nykvist, B., Kjellén, M., Noel, S. and Weitz, N. (2014). Multi-level sanitation governance: an approach to understanding and overcoming the challenges in the sanitation sector in sub-Saharan Africa. *Waterlines*. (Forthcoming).
- Elledge et al. (2002). 'Guidelines for the Assessment of National Sanitation Policies'. Strategic Report 2. Prepared for the Office of Health, Infectious Diseases and Nutrition, Bureau for Global Health, U.S. Agency for International Development, under EHP Project 26568/CESH.SANITA-TION. POLTOOL
- European Court of Auditors (ECA). (2012). 'European Union development assistance for drinking water supply and basic sanitation in sub-Saharan countries', Special report no. 13.
- Fewtrell, L. et al. (2005). 'Water and sanitation, and hygiene interventions to reduce diarrhoea in less developed countries: A systematic review and meta-Analysis', Lancet Infectious Diseases. 5.
- Franks, T. and Cleaver, F. (2007). Water governance and poverty. *Progress in Development Studies*. 7(4). 291–306.
- Galan, D. et al. (2013). Exploring changes in open defecation prevalence in sub-Saharan Africa based on national level indices. *BMC Public Health*. 13.
- Hooghe, L. and Marks, G. (2001). Types of multi-level governance. *European Integration online Papers*. 5(1d1).
- Hooghe, L. and Marks, G. (2003). Unravelling the central state, but how? Types of multi-level governance. *American Political Science Review*. 97(2). 233–43.
- Jewitt, S. (2011). Geographies of shit: Spatial and temporal variations in attitudes towards human waste. *Progress in Human Geography*. 35(5). 608-626.
- Kvarnström, E., McConville, J., Bracken, P., Johansson, M. and Fogde, M. (2011). The sanitation ladder: a need for a revamp? *Journal of Water, Sanitation and Hygiene for Development*. 1(1). DOI: 10.2166/washdev.2011.014
- Morella, E., Foster, V. and Ghosh Banerjee, S. (2008). Climbing the Ladder: The State of Sanitation in Sub-Saharan Africa. Background Paper 13 (Phase 1). Africa Infrastructure Country Diagnostic.

- Ministry of Health/WSP (2004). Strengthening budget mechanisms for sanitation in Uganda. http://www.wsp.org/sites/wsp.org/files/publications/af_strengtheningbudget_execsum.pdf
- Ministry of Health and Social Welfare (2011). Country programme Proposal. Tanzania Water Supply and Sanitation Collaborative Council, Global sanitation Fund \$5 million.
- ODI (2012). Rwanda: Performance Contracts (imihigo). Country Learning Notes. ODI Budget Strengthening Initiative.
- Prüss-Üstün, A., Fewtrell, L. and Bartram, J. (2002). Estimating the burden of disease from water, sanitation, and hygiene at a global level. *Environmental Health Perspectives*. 110.
- Prüss-Üstün et al. (2008). Safer Water, Better Health: Costs, Benefits and Sustainability of Interventions to Protect and Promote Health. WHO, Geneva.
- Seppälä, O. (2002). Effective water and sanitation policy reform implementation: need for systemic approach and stakeholder participation. **Water Policy.** 4(4).
- Sharpf, F.W. (1997). Games Real Actors Play. Westview Press, Boulder, Colorado.
- Stampini, M., Salami, A. and Sullivan, C. (2011). In A. Salami, M. Stampini and A. Kamara (eds) Development Aid and Access to Water and Sanitation in Sub-Saharan Africa. African Development Bank Group.
- Ugandan Water and Sanitation Dialogues (2008). Reviewing the institutional framework for Sanitation in Uganda: The case for new Sanitation Council. http://www.wsscc.org/sites/default/files/ publications/the_water_dialogues_reviewing_the_institutional_framework_for_sanitation_in_ uganda_2008.pdf.
- UNDP (2006). Beyond Scarcity: Power, Poverty and the Global Water Crisis, Human Development Report, New York: UNDP.
- UN Water (2012). UN-Water Global Annual Assessment of Sanitation and Drinking-Water (GLAAS) 2012 Report: The Challenge of Extending and Sustaining Services. UN-Water and World Health Organization (WHO), Geneva.
- WaterAid (2012a). Case Study: Financing of the Water, Sanitation and Hygiene Sector in Rwanda. http://www.wateraid.org/~/media/Files/UK/Keeping%20Promises%20case%20studies/ Rwanda%20the%20financing%20of%20the%20water%20sanitation%20and%20hygiene%20sector.pdf.
- WaterAid (2012b). Fact Sheet on Sanitation Financing: Tanzania. http://www.wateraid.org/~/media/Publications/Factsheet-on-financing-sanitation-Tanzania.pdf>.
- Weaver, K. (2014). Compliance regimes and barriers to behavioral change. Governance: An International Journal of Policy, Administration, and Institutions. (27)2.
- WEDC (2005). Comparing National Sanitation Policy Content: An Initial Review of Nine Country Profiles. Briefing Note: Review. WEDC.
- WHO/UNICEF Joint Monitoring Programme (JMP). (2015). Progress on sanitation and drinking water 2015 Update and MDG Assessment. UNICEF and WHO 2015.
- WSP (2002). Water and Sanitation Sector Reform in Uganda: A Government-led Transformation. http://www.wsscc.org/sites/default/files/publications/wsp_water_and_sanitation_sector_reform_uganda_2002.pdf.
- WSP (2011a). Water Supply and Sanitation in Rwanda: Turning Finance into Services for 2015 and Beyond. An AMCOW Country Status Overview. WSP programme, Africa region.

- WSP (2011b). Water Supply and Sanitation in Uganda: Turning Finance into Services for 2015 and Beyond. An AMCOW Country Status Overview. WSP programme, Africa region.
- WSP (2011c). Water Supply and Sanitation in Tanzania: Turning Finance into Services for 2015 and Beyond. An AMCOW Country Status Overview. WSP programme, Africa region.
- WSP (2011d) Water Supply and Sanitation in Rwanda, Uganda and Tanzania. Turning Finance into Services for 2015 and Beyond: An AMCOW Country Status Overview. WSP programme, Africa Region.
- WSP (2012). Africa: Economics of Sanitation Initiative. http://www.wsp.org/wsp/content/africaeconomic-impacts-sanitation.
- Yardly, S. (2010). Joining the Dots: Why Better Water, Sanitation and Hygiene are Necessary for Progress on Maternal, New-Born and Child Health. Tearfund, Teddington.

APPENDIX 1: RELEVANT ACTS, AGREEMENTS AND POLICIES ON SANITATION IN RWANDA, UGANDA AND TANZANIA

Rwanda

Vision 2020 (Ministry of Finance and Economic Planning)
Economic Development and Poverty Reduction Strategy (EDPRS 2) 2013/14-2017/18.
Rwanda Government 7-year Programme, 2010–17 (Government of Rwanda)
National Policy and Strategy for Water Supply and Sanitation Services, 4th revision (Ministry of Infrastructure)
*The strategic plan 2013-2017 updates the Strategy part of this document
Water and Sanitation Sector Strategic Plan 2013-17 (Ministry of Infrastructure)
Sector Wide Approach Memorandum of Understanding (2009)
Community-Based Environmental Health Promotion Programme (CBEHPP)
National Rural Drinking Water Supply and Sanitation Programme (PNEAR, 2009-2012)
Hygiene and Sanitation Presidential Initiative (HSPI)
Organic Law on Environmental Protection, Conservation and Management
Law No 16/2006 of 03/04/2006 Determining the Organisation, Functioning and Responsibilities of Rwanda Environment Management Authority.

Uganda

The Constitution of Uganda, 1995 The Public Health Act, 1964 (amended in 2000) Local Governments Act, 1997 National Gender Policy, 1997 National Water Policy, 1999 National Environmental Health Policy, 2005 The Water Statute, 1995 The Water Act, 1997 The Sewerage Regulations, 1999 The Waste Management Regulations, 1999 National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations National Environment (Waste Management) Regulations Operations Manual for the Water and Sanitation Development Facility (WSDF) Water and Sanitation Sector Sectorial Specific Schedules/Guidelines 2009/10 Ministerial Memorandum of Understanding for Sanitation, 2001 Performance contract between the government of the republic of Uganda and National Water and Sewerage Corporation (GoU - NWSC), 2003

National Development Plan (NDP), 2010/11-2014/15
*Formerly the Poverty Eradication Action Plan (PEAP), 2004-2008
District Development Plans (DDP) (for each 111 districts of Uganda
Rural Water and Sanitation Strategy and Investment Plan (RWS SIP 15) 2000-2015
Kampala sanitation program, 2012
Joint Water and Environment Sector Support Programme (JWESSP), 2013-2018 - Final Programme Document, 2013
Joint Water and Sanitation Sector Programme Support (2008-2012) - Programme Document 10-year Integrated Sanitation and Hygiene Strategy for Small Towns (urban), 2006
The water and sanitation pro-poor strategy, 2006
Water and Environment Sector Performance Report, 2012
Ministerial Policy Statement: Water and Environment, 2012/13 (Preliminary)

Tanzania

National Strategy for Growth and Reduction of Poverty (NSGRP/MKUKUTA) (Ministry of Finance and Economic Affairs) Tanzania National Development Vision 2025 (Planning Commission, GoT) 2002 National Water Policy (NAWAPO) (Ministry of Water and Livestock Development). National Water Sector Development Strategy 2005-2015 (NWSDS) (Ministry of Water and Irrigation) The Environmental and Social Management Framework (ESMF) National Sanitation and Hygiene Policy (Ministry of Health and Social Welfare) Medium term expenditure framework 2012-2017 National Strategic Plan for School Water, Sanitation and Hygiene, 2012-2017 (Ministry of Education and Vocational Training) Water Sector Development Programme 2005-2025 (WSDP) (Ministry of Water) Rural Water and Sanitation Programme (RWSSP) National Sanitation Campaign Water Supply and Sanitation Act (2009) DAWASA Act, Cap 273 Local Government Act (district and urban authorities) (1982) Public Health Act (2009) Dar es Salaam Water and Sewerage Authority Act, 2001 (Act No. 20 of 2001).

Energy and Water Utilities Regulatory Authority Act, 2001.

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