# POLICY AND INSTITUTIONAL FRAMEWORKS

## 5.1 Introduction

The environmental, health and economic benefits of safe drinking water and sanitation in Africa are clear and well documented. Unpolluted ecosystems are better able to deliver their much-needed services of providing freshwater, food and genetic resources; regulating climate and natural hazards; providing a habitat for various species; and providing spiritual enrichment, recreation and aesthetic values. The availability of clean water and basic toilets, coupled with good hygiene practices, drastically reduces mortality rates in children under the age of five, who are at high risk of death from diarrhoeal diseases resulting from poor sanitation, poor hygiene practices or unsafe drinking water. Improved health in both children and adults translates to reduced direct and indirect health costs, which in turn reduces the financial burden on health. Less time spent on collecting water and looking for sanitation facilities allows more time to be spent on other productive activities - a gain mostly experienced by women and children. Clean water resources reduce treatment costs of water for domestic, agricultural and industrial processes, while improved water storage capacity provides more resilience to rainfall variability and provides more certainty and efficiency in productivity. Clean water resources also provide additional holiday destinations for tourism purposes, resulting in additional income for countries.

Providing access to safe drinking water and sanitation facilities remains a persistent challenge for the majority of countries, with a large proportion of the population on the African continent still not serviced. Nearly half of all people using unimproved sources of drinking water live in sub-Saharan Africa and 54 per cent of the



Access to adequate sanitation is a challenge for many in Africa

population in 47 African countries still lack adequate sanitation facilities (African Ministers' Council on Water [AMCOW] 2014). The numerous efforts by continental bodies, regional associations, national governments, local communities and other stakeholders in the past two decades to address these limitations and increase coverage and quality of basic water and sanitation facilities in Africa have largely been outweighed by high rates of population growth, rapid urbanization (especially the unplanned informal settlements), desertification and increased industrialization, as well as drought, floods and other effects of climate change. Inadequate levels of funding, inappropriate technology and poor infrastructure and maintenance have also been identified as major limitations to achieving regional targets for water, sanitation and wastewater management.

It is clear that concerted efforts are required to tackle the root causes of inadequate access to safe and adequate water and sanitation services for all in Africa. Much more needs to be done to ensure that the many policy documents that have been developed and adopted and the laws that have been enacted are implemented and enforced. This is necessary in order to provide clean water and sanitation services to households and communities so that the health of people, water resources and ecosystems are no longer at risk and no longer a threat to the continent's economic development.



While policies against illegal dumping are in place in most countries, the practice is prevalent across Africa

## **5.2 Continental Policy and Institutional Responses**



There are SDG targets to promote life on land and below water

Under Sustainable Development Goal (SDG) 6, governments are committed to targets for clean water and sanitation by 2030, including universal and equitable access to safe and affordable drinking water, sanitation and hygiene. Since SDG 6 is also linked with the other goals as Figure 5.1 shows, its success will contribute towards their success.

The fact that water, sanitation and hygiene (WASH) is the subject of dedicated targets within SDG 6 is testament to its fundamental role in public health and therefore in the future of sustainable development. The agreement of the SDG 6 target of universal access to water, sanitation and hygiene by 2030 requires a fundamental change in the way the



Figure 5.1. The relationship of SDG 6 with other SDGs

sector has been managed. With the recognition that access to safe water and sanitation is a human right, collective fulfilment of the right to achieve the target requires well-resourced and capable institutions to deliver services, while also changing behaviour in appropriate and resilient ways. Delivering positive change in sector performance necessitates a systemwide approach that tackles all dimensions – policy, financing, institutions and other key building blocks – of the WASH sector as a whole (Aguaconsult et al. 2015). This will require a reform agenda based on a sound understanding of the political economy at relevant levels of decision-making, from village/ community, city or district to national and global.

The African policy framework comprises a number of advanced declarations and resolutions to develop and use water resources in the region for socioeconomic advancement, regional integration and the environment (United Nations World Water Development Programme [WWDP] 2016). They include Agenda 2063 – The Africa We Want, the Africa Water Vision 2025 and its Framework of Action, and the N'gor Declaration on Water and Sanitation. These policy instruments have associated strategies and programmes such as the New Partnership for African Development Programme and the Programme for Infrastructure Development in Africa.

In addition, institutions created at all levels provide the necessary political engagement and further elaborate and implement the various policies and decisions of the African Union. Using their convening power, they provide an important networking platform and bring together African governments and other stakeholders to deliberate and develop common positions on issues and programmes to be implemented at national and local levels. These institutions also engage in awareness-raising and knowledge management and dissemination programmes within their areas of operation and review and monitor programmes at local, regional, sub-regional and national levels.

#### 5.2.1 Agenda 2063

Africa's strategic framework for the socioeconomic transformation of the continent, Agenda 2063, provides a collective vision and road map for development, clearly emphasizing the central role of integrated economic, social and environmental aspects in continental aspirations. Specific mention of access to safe water supply and sanitation is made under Aspiration 1 – A prosperous Africa, based on inclusive growth and sustainable development. Water and sanitation are recognized among the "basic necessities for life" and indicators of performance in global quality of life measures (African Union Commission 2015). Agenda 2063 also calls for Africa's natural resources, environment and ecosystems to be healthy, valued and protected and specifically for Africa's water resources to be used equitably and sustainably for socioeconomic development, regional cooperation and the environment.

#### 5.2.2 The Africa Water Vision 2025

The Africa Water Vision was developed as the continent's response and overall policy framework to address the key challenges facing the water sector. Echoing the call in Agenda 2063, the Vision aims to stimulate a change in approach towards equitable and sustainable use and management of water resources for poverty alleviation, socioeconomic development, regional cooperation and the environment. To this end, it provides very specific policy guidance to countries to develop and implement programmes aimed at strengthening governance of water resources; improving the wise use of water; meeting urgent water needs, including expanding safe water supply and sanitation services to meet basic human needs; and strengthening the financial base for the desired water future.

## **Box 5.1.** Policy statements in the Africa Water Vision 2025

- Sustainable access to a safe and adequate water supply and sanitation to meet the basic needs of all
- Water inputs towards food and energy security are readily available
- Water for sustaining ecosystems and biodiversity is adequate in quantity and quality
- Water-resources institutions are reformed to create an enabling environment for effective and integrated management of water in national and transboundary water basins, including management at the lowest appropriate level
- Water basins serve as a basis for regional cooperation and development, and are treated as natural assets for all within such basins
- There is an adequate number of motivated and highly skilled water professionals
- There is an effective and financially sustainable system for data collection, assessment and dissemination for national and transboundary water basins
- There are effective and sustainable strategies for addressing natural and human-made problems affecting water resources, including climate variability and change
- Water is financed and priced to promote equity, efficiency, and sustainability
- There is political will, public awareness and commitment among all for sustainable management of water resources, including the mainstreaming of gender issues and youth concerns and the use of participatory approaches

Source: Africa Water Vision

#### 5.2.3 African Ministers' Council on Water

Formed in 2002, the African Ministers' Council on Water (AMCOW) aims to promote cooperation, security, social and economic development and poverty eradication among Member States through effective management of the continent's water resources and the provision of water supply services (AMCOW n.d.). As the Specialized Committee for Water and Sanitation in the African Union (AU), AMCOW provides the sectoral leadership at continental level needed to tackle the water challenge in Africa and to this end has included sanitation as one of the strategic pillars in the AMCOW Strategy 2018–2030. The AMCOW is also mandated to develop and follow-up on an implementation strategy for achieving the vision and commitments expressed in the N'gor Declaration on Sanitation and Hygiene (N'gor Declaration).

A major initiative of AMCOW is the Africa Conference on Sanitation (AfricaSan) which has developed into a strong movement that blends political support, technical advancement and knowledge exchange to drive the momentum for improved sanitation in Africa. AfricaSan5, which was held in Cape Town, South Africa, in February 2019, focused on progress towards achieving the vision and commitments of the N'gor Declaration. The Conference noted the slow progress that has been made in achieving the N'gor Commitments and called on Heads of State of the AU "to declare an Africa-wide state of emergency on sanitation and hygiene" (AfricaSan 2019).

### 5.2.4 The N'gor Declaration on Sanitation and Hygiene

The N'gor vision and commitments, adopted by the fourth AfricaSan Conference in 2015, aim to accelerate the achievement of water and sanitation goals in Africa. The commitments are framed around issues such as inequalities in access and use, support to the sector at the highest political level, financing and human resource needs, waste management and government-led monitoring and evaluation of national initiatives. The building blocks necessary to achieve the commitments, and which form the framework within which implementation is evaluated, are the existence of an enabling environment and sanitation and hygiene service delivery targets, which countries set for themselves.

According to the 2019 AMCOW review, progress towards the commitments is slow, and countries will need to act quickly to speed up implementation if they are to meet SDG targets.

#### **Enabling environment**

Generally, countries have made significant efforts to establish leadership and coordination structures. However, this is not the case for the key commitments to eliminating inequality of

#### **Box 5.2.** The N'gor Declaration on Sanitation and Hygiene – Commitments

- Focus on the poorest, most marginalised and unserved aimed at progressively eliminating inequalities in access and use and implement national and local strategies with an emphasis on equity and sustainability
- Mobilize support and resources at the highest political level for sanitation and hygiene to disproportionately prioritize sanitation and hygiene in national development plans
- Establish and track sanitation and hygiene budget lines that consistently increase annually to reach a minimum of 0.5 per cent of GDP by 2020
- Ensure strong leadership and coordination at all levels to build and sustain governance for sanitation and hygiene across sectors, especially water, health, nutrition, education, gender and the environment
- Develop and fund strategies to bridge the sanitation and hygiene human resource capacity gap at all levels
- Ensure inclusive, safely-managed sanitation services and functional hand-washing facilities in public institutions and spaces
- Progressively eliminate untreated waste, encouraging its productive use
- Enable and engage the private sector in developing innovative sanitation and hygiene products and services especially for the marginalised and unserved
- Establish government-led monitoring, reporting, evaluation, learning and review systems
- Enable continued active engagement with AMCOW's AfricaSan process

access and use, improving waste management and establishing budgets for sanitation and hygiene. The worst performing of the commitments is that of eliminating untreated waste and encouraging its productive reuse. Overall, the enabling environment for sanitation and hygiene services needs to be strengthened.

#### **Country targets**

Monitoring of country targets is generally weak, as more than half of the countries have made little progress in establishing the enabling environment to facilitate this. For instance, no country has made sufficient progress in establishing the enabling environment for eliminating untreated wastewater to report on targets.

## **5.3 National Initiatives**

Policymaking and regulation are typically a function of government and there have been efforts made by national governments to develop policies and laws that specifically address access to water and sanitation. Aspects addressed at national level include public services regulation, water quality management, the quality of water and sanitation service provision, recognition and entitlements, allocation and availability, physical accessibility, non-discrimination and attention to marginalized and vulnerable groups, participation in and access to information, monitoring and complaints procedures and definition of the broad institutional framework for service delivery.

#### 5.3.1 Institutional types and levels

One of the goals and targets of SDG 6 is to ensure sustainable access to WASH for everyone by 2030. Expediting the acceleration, scalability, universality, equity and sustainability of WASH service delivery underpinning SDG 6 entails a paradigm shift in our thinking and implementation processes. WASH services should be led by governments and offered as an all-inclusive, long-term, cross-sectoral partnership across the public, private and nongovernmental organizations (Crocker et al. 2016). The WASH sector enabling environment comprises a set of related functions that help governments, public and private partners to collaborate on effective and sustainable WASH service delivery.

Rapid population growth, inadequate water supply and poor sanitation services have resulted in a strong emphasis on the construction of new facilities by national governments, development partners and NGOs. In some cases, this has been at the expense of properly and efficiently managing the current systems and installations. This results in both groundwater and surface water contamination from dry and wet sanitation systems. When water provision and sanitation facilities are developed, they are not always properly maintained. This is evidenced by the high percentage of dysfunctional hand pumps in rural areas and the high water losses in urban water reticulation systems (Gumbo 2004). Poorly managed facilities lead to declining service levels that in turn reduce the chances of cost recovery – resulting in service demand outpacing investment in service delivery (Chitonge 2014).

#### **National level institutions**

At the national level, government ministries such as those responsible for water, agriculture, environment, local government, energy and health may all have a mandate to deal with some aspects of water and sanitation issues. A clear definition of institutional roles and responsibilities and a consensus on which organization leads water and sanitation programmes is required. This will minimize



One of the targets of SDG 6 is to ensure sustainable access to water, sanitation and hygiene for everyone by 2030



Poor enforcement of laws is blamed for illegal dumping, especially in urban areas

duplication of efforts and, in some cases, inaction due to overlapping and conflicting mandates. It will also ensure proper coordination and harmonious supply of resources to priority areas. In some countries, such as Zimbabwe, a statutory instrument is gazetted at the formation of a new government outlining the clear roles and responsibilities of each Ministry. In addition, one Ministry is mandated to take a leading role on coordination of the WASH sector and to be accountable for the sector (Figure 5.2). This involves coordination of efforts by cooperating partners and NGOs. The coordination structure also extends to the local level.

Egypt's institutional framework for water supply and sanitation is centralized (Mumssen and Triche 2017). Key functions of policymaking, regulation, planning and investment are done at the national level by the Ministry of Housing, Utilities and Urban Communities. National

#### Organogram of water resources management, water supply and sanitation in Zimbabwe



**Figure 5.2.** Organogram of water resources management, water supply and sanitation in Zimbabwe

works and also planning and implementation of capital investments are delegated to the National Organization for Potable Water and Sanitary Drainage and the Cairo Alexandria Potable Water Organization. Assets, billing and revenue collection are managed by the Holding Company for Water and Wastewater through its local subsidiaries, the water and sanitation companies. The Holding Company for Water and Wastewater is a public sector company providing 25 water and sanitation companies with administrative, technical and financial assistance to deliver water supply and sanitation services.

Some governments have delegated water supply and sanitation to government agencies or parastatals, which are created and governed by an act of parliament. Examples of this include the Directorate of Environmental Health and Sanitation under the Government of Sierra Leone and the Water and Sanitation Corporation of Rwanda. These are normally dominated by engineers and are strong on the supply side of delivering infrastructure, although criticisms have been made regarding their tendency to focus more on water supply than on sanitation infrastructure. Mobilizing communities to pay for water supply is easier than mobilizing sanitation services (Brikké and Bredero 2003).

Countries such as South Africa have very strong Departments of Water Affairs and regional water authorities. These again tend to be strong on water supply and water resources management. The sanitation function is often delegated to local municipalities and district authorities in rural areas. Other countries have urban housing development agencies such as the Botswana National Housing Corporation that deal with site services, of which sanitation is an integral part.

Institutions responsible for delivering such services can be public, private or cooperatively owned and managed entities, as well as entities that collaborate between these sectors. Service providers are responsible for establishing, maintaining and upgrading the water supply and sanitation systems, which typically involves collection, treatment, distribution, quality control, sewage treatment, disposal and reuse.

#### Local level institutions

Governance at local level is critical to translate national policies into action. An important component of this is achieving devolution of responsibility to the local level, where capacity to implement and manage service delivery might be weakest and support from national level institutions

The principle of subsidiarity depends on strong local leaders and leadership. In other words, institutional decentralization cannot happen without having people at the local level who are willing and show capacity at taking action in the context of water governance.

- Global Public Policy Network on Water Management



Non deterrent penalties result in the failure to properly manage waste

## **Box 5.3.** South African service delivery standards for basic sanitation and for basic water supply services

#### **Basic sanitation**

The minimum standard for basic sanitation services is:

- a) the provision of appropriate health and hygiene education; and
- b) a toilet which is safe, reliable, environmentally sound, easy to keep clean, provides privacy and protection against the weather, well ventilated, keeps smells to a minimum and prevents the entry and exit of flies and other disease-carrying pests.

#### **Basic water supply**

The minimum standard for basic water supply services is:

- a) the provision of appropriate education in respect of effective water use; and
- b) a minimum quantity of potable water of 25 litres per person per day or 6 kilolitres per household per month –
  - i) at a minimum flow rate of not less than 10 litres per minute;
  - ii) within 200 metres of a household; and
  - iii) with an effectiveness such that no consumer is without a supply for more than seven full days in any year.

Regulatory bodies must provide a clear legal and policy framework so that communitymanaged water supply and sanitation is held to the same standards and legislation that applies to other kinds of service providers.

- Global Water Partnership

## **Box 5.4.** Institutions must be accountable, efficient, responsive and sustainable

#### Accountability

In the process of carrying out its mandate, each institution must be able to explain and take responsibility for their actions. Clear obligations for each institution should be defined by the appropriate legislative and executive powers. Without genuine recognition and backing of their legal status, institutions cannot function properly.

#### Efficiency

Economic efficiency calls for serving more people with equity and minimum waste. Appropriate price regulations and standards for limiting the damage to the environment should be specified in that sense.

#### Responsive and sustainable

In order to be responsive and sustainable, policies must deliver what is needed on the basis of demand, clear objectives and evaluation of future impact and – where available – of past experiences.

Global Water Partnership (2004)

may be necessary to achieve sustainability. In Senegal, for instance, the Government created the Rural Wells Office, which is responsible for monitoring equipment and providing support to operators at local level (Jaglin et al. 2011). In Zimbabwe, the District Development Fund, in conjunction with the District Administrator, leads and resources the District Water Supply and Sanitation Committee and works closely with NGOs to facilitate sanitation projects. In sanitation, in particular, they train local technicians and public health extension workers on the construction of ventilated improved pit (VIP) latrines, school sanitation systems and hygiene services. For water supply, they train well diggers on deep well construction and protection, spring capture, borehole pump maintenance and repair, rope and washer pump installations, and other appropriate technologies. The District Water Supply and Sanitation Committee is also replicated at ward level in the form of the Ward Water Supply and Sanitation Committee, led by the ward councillor. This allows for the decentralization of sanitation issues to the local level.

Communities at the local level normally create a water user association (WUA) to manage water supply and sanitation services. These institutions can either exist independently or form part of a larger regional or national water user association. Strategic partnerships can also be formed with other entities such as government departments and NGOs that can provide useful assistance in establishing the water user associations (organizational, financial and others). In other countries, these are essentially cooperatives which can be registered and regulated by the ministry in charge of cooperatives. Cooperatives can report to the local council through a ward councillor or directly through the Department of **Community Services.** 

#### Box 5.5. Supporting the development of the sanitation chain in Maputo, Mozambique

In Maputo, the capital of Mozambique, more than 95 per cent of the population relies on on-site sanitation systems (Rietveld et al. 2016), typically latrines (Water and Sanitation Program [WSP] 2014) that are often abandoned when full, with most of its content - faecal sludge - not being adequately treated (Bäuerl et al. 2015). This situation poses a serious threat to the environment and to urban dwellers alike (Marques Arsénio et al. 2018), with two different studies in the city concluding that children were found to be highly infected by enteropathogens and parasites (Rappelli et al. 2005; Fonseca et al. 2014) which underlines the poor environmental hygiene (Rappelli et al. 2005). This made other researchers look into the impact of well-managed on-site shared sanitation and population densities in urban contexts on the risk of enteric infections in children (Lofrano and Brown 2015), with yet another group associating the presence of a household toilet with lower risk of bacterial and protozoal enteric infections (Berendes et al. 2017).

To overcome this precarious situation, several projects have been implemented throughout the city, including capacity-building of local sanitation entrepreneurs and communitybased organizations and support to modernize local government institutions and to improved management and regulation mechanisms for the sanitation sector in the city. One of such projects is Water and Sanitation for the Urban Poor (WSUP)'s programme to support the construction of sanitation infrastructure, to develop faecal sludge management services and to promote sanitation at the community level (Drabble and Parente 2018).

Regarding sanitation infrastructure, a total of 50 communal sanitation blocks and 400 shared latrines were constructed between August 2014 and March 2016, covering the 11 wards of the Nlhamankulu Municipal District – one of the poorest and most densely populated in Maputo (WSP 2014) – and improving the living conditions of almost 9,000 people.

The main objective of the various partners with this project was to eradicate traditional latrines, which are used by around 10 per cent of the city's households (WSP 2014) and push for improved latrines – something that is also included in the municipal sanitation guidelines (Postura de Saneamento). Interestingly, the infrastructure built belongs to the municipality and is added to the municipal registration system, but the project "aimed to put the processes of toilet construction and maintenance and hygiene promotion and monitoring in the hands of communities" (Drabble and Parente 2018), following a regulation put in place by the municipality.

This means that despite not being enforced by the municipality, maintenance activities are advocated through the various authorities at the neighbourhood level. In particular, since all built infrastructure allows emptying, in accordance with the municipal sanitation guidelines, the families are reminded to empty their systems on a regular basis - once every two to three years – making use of the capacity existing at neighbourhood level following other project activities. Furthermore, the users that best manage their systems are also awarded a prize. Larger maintenance interventions can be supported by the municipality and/or donor funding. However, the poor condition of recently visited communal sanitation blocks, shared by large number of families (50+ people) calls into question the sustainability of the current management system in the long term, given the low capacity of the municipality to support maintenance works, and the reliance of NGOs on donations in projectbased approaches that often lack funds for long-term maintenance. Anecdotal evidence shows that social conflicts have been on the rise due to improper maintenance of these shared facilities, for example, once households stop contributing to the maintenance (such as cleaning) as initially agreed.

Local level institutions are involved in all aspects of providing water supply and sanitation services – from formulating and designing schemes, to constructing the collection and treatment facilities, connecting homes to a sewer system and operating these systems. This model entails beneficiary ownership and therefore the maintenance and operations of facilities is typically managed with oversight of the respective communities themselves. Increasing the sense of ownership works not only to facilitate stakeholder engagement but also to help minimize project costs and increase programme efficiency

Apart from building and operating the actual water supply and sanitation networks, local level institutions can also provide assistance to social service programmes, for instance, with disseminating knowledge of national sanitation and hygiene strategies. In order to achieve this level of active coordination and collaboration, close contacts between these institutions and governments, especially at the local level, need to be maintained. For instance, in order to disseminate information and effect behavioural change, the Ministry of Rural and Urban Hydraulics of Chad entered into agreements with district community radio stations to air programmes on handwashing and community led total sanitation (CLTS) (Rheingans et al. 2006).



There is increased involvement of private players in the provision of drinking water

#### 5.3.2 Institutional frameworks

Appropriate institutional arrangements are important to ensure social equity, economic efficiency and ecological sustainability in sanitation management, in line with the integrated water resources management (IWRM) philosophy (Savenije and Van der Zaag 2008). These three key elements of IWRM are interrelated and complementary. Institutional arrangements rely on a conducive enabling environment to be effective and sustainable, and the necessary management instruments cannot be fully attained without the appropriate system of institutions, especially stakeholder participation (Seppälä 2002). Unlike the traditional vision, institutional arrangements that are founded on IWRM principles work towards a more long-term goal while fulfilling their own respective institutional functions. In IWRM, institutions strive to orient their specific individual functions in ways that best serve the broader community objectives. They do not regard themselves as separate and/or dominant players but, rather, as components of a team.

Despite significant increases in resources spent on water supply and sanitation infrastructure investments to achieve SDG 6, water supply and sanitation service delivery in Africa has failed. Those who have access to water supply and sanitation services normally have to survive with poor service quality such as intermittent supplies (Saltiel 2016).

Peters (2011) defines an institutional framework as a set of formal organizational structures, rules and informal norms for service provision. A good institutional framework is a precondition for successful implementation of many other sanitation and water management intervention tools. An institutional framework for sanitation and water management consists of a range of organizations established to develop or manage water resources and to deliver water and sanitation services. A robust institutional framework is required for sustainable sanitation and water management.

Developing a sustainable institutional framework in water and sanitation management involves plainly indicating the mandates of service institutions for various functions of the sector (International Ecological Engineering Society [IEES] 2006). Institutional arrangements can be different for countries but should have instruments to support dialogue and coordination. A balance is required between providing a fully integrated approach in which specific issues may lose value due to the absence of required expertise or interest, and a sectoral approach in which different policies are pursued without adequate coordination (Global Water Partnership [GWP] 2008). Poor institutional frameworks are the root cause of numerous cases of poor service delivery and unsuccessful water and sanitation projects (WSP 2002). Such institutional weakness mainly results from unclear institutional mandates for planning and management, and limited capacity within institutions to coordinate and manage initiatives. The obvious outcome is deteriorating services, resulting in poor cost recovery and ultimately failed investments that cannot meet current or future demand (Scott et al. 2003).

Appropriate management models for sanitation are required to ensure that service delivery is sustainable beyond the implementation of infrastructure projects (Moriarty et al. 2013). In general, the capacity to provide sanitation services efficiently and effectively is critical for the long-term sustainability of service provision. Accelerated delivery of service is mostly constrained by capacity problems at provincial and municipality levels (Koma 2010). A good institutional framework for sustainable water supply and sanitation at the national level requires a number of organizations and actors to be established, as shown in Table 5.1.

| Table 5.1. Essential organizations and actors at national level to ensure sustainable sanitation and water mana | igement |
|---|---------|
|---|---------|

| Organizations and actors  | Form or role  | Examples from Africa   |
|---|---|--|
| Service providers   | These include government departments, municipal<br>councils, public corporations, private sector companies,<br>community-based organizations, farmers' groups and<br>others.  | NAMWater in Namibia;<br>Zimbabwe National Water Authority;<br>National Water and Sewerage Corporation in Uganda;<br>Johannesburg Water in South Africa<br>Egypt's Water Supply and Sanitation Sector   |
| Regulatory and enforcement bodies   | These establish roles and ensure effective application of tools required for sustainable sanitation and water management.   | National Water Supply and Sanitation Council for water supply<br>and sanitation and Water Resources Management Authority for<br>water management in Zambia;<br>Rwanda Utility Regulatory Authority   |
| The private sector  | These play a crucial role in financing sustainable sanitation<br>and water management and they include commercial<br>banks and other financial institutions, financing both<br>public- and private-sector service providers.  | Development Bank of Southern Africa;<br>Infrastructure Development Bank of Zimbabwe<br>Private emptiers and transporters e.g. in Ghana, Benin,<br>Senegal, Uganda<br>Sanivation, Kenya<br>Fortifer Production Plant (Tema, Ghana)<br>Safi Sana Plant (Ashgiman, Ghana) |
| Local authorities   | These play a key role in overseeing the execution of<br>sanitation and water management activities within their<br>boundaries, and local and regional watersheds. They<br>regulate, provide services, and can raise funds.  | Durban Wastewater Recycle Project<br>Decentralised service delivery across Africa, e.g. Ethiopia,<br>Burkina Faso, Benin, Mali, Tunisia and Uganda   |
| Civil society institutions<br>Non-governmental<br>organizations<br>Community-based<br>Organizations | They play an advocacy role in the formulation and<br>communication of sanitation and water management<br>policies. They are concerned with nature and<br>environmental protection, development and testing<br>of new models and tools for sanitation and water<br>management. They raise awareness and mobilize local<br>communities. | Plan International;<br>WaterAid;<br>World Vision;<br>SuSanA;<br>Institute of Water and Sanitation Development, Zimbabwe;<br>National Community Water and Sanitation Training Institute,<br>South Africa;<br>Water Trusts in Zambia                                     |

Source: Modified from Peters (2011) and Gupta and Pahl-Wostl (2013).

## 5.4 Sanitation Governance

## 5.4.1 Context of good sanitation governance

The current sanitation crisis in developing countries is believed to be mainly a crisis of governance, water scarcity and water pollution (Rogers and Hall 2003). Sanitation governance is therefore defined as a range of political, economic, social and administrative institutions required to manage and develop sanitation sustainably (Tropp 2007). Governance goes beyond narrow political and administrative terms. Good governance requires that all institutional actors (local communities, organizations and private entities) are actively engaged in managing sanitation work in harmony. Poor governance worsens social and political risks and institutional disasters and also reduces capacity to efficiently deliver. According to GWP (2018) good sanitation governance requires a flawless legal framework, comprehensive water policies, practical and enforceable regulations, functional institutions, smooth execution, stakeholder-driven systems of accountability and very strong interactions between these entities. In practice, sanitation problems could emanate from outside of the WASH sector, therefore good governance in general rather than simply good sanitation governance is required (GWP 2018). This means that effective sanitation governance is likely to exist in a general environment characterized by good governance. GWP (2018) identifies several key approaches and principles that are important foundations to establishing institutional arrangements that support good water governance (Box 5.3).

Rogers and Hall (2003) emphasizes the need for institutions to be efficient, responsive, accountable and sustainable in operating and performing their respective mandates. Accountability and transparency are key to ensure that each institution can explain and take full responsibility for actions taken. Obligations for each institution should be clearly defined by the appointing authority as

## **Box 5.6.** Key approaches and principles for good water governance

- Institutions should be transparent and accountable on policy decision-making and finances
- Systems of communication and inclusiveness should play an active part, as they ensure that the maintenance of stakeholder engagement complements these transparency mechanisms
- WASH issues are dynamic and complex with time, so policies should also evolve to maintain interconnectedness between different actors and various stakeholders
- Various systems in sanitation governance should work towards ethical and equitable solutions, fairness, and gender equality.

they cannot function properly in the absence of genuine recognition and backing of their legal status. Economic efficiency requires serving more people with equity and minimal waste. Proper and appropriate pricing standards and regulations for limiting environmental damage should be specified to achieve this. In order to be responsive and sustainable, sector policies must also deliver what is required on the basis of demand, clear objectives and evaluation of future impact and past experience.

The governance of urban wastewater treatment works goes beyond the daily maintenance and upkeep of such systems (Meissner 2015). The governance includes all interested and impacted stakeholders, even beyond those in the immediate vicinity of the plant. Individuals and communities located downstream from such infrastructure and scientists could also become part of governance, by default or voluntarily. There exists a wide range of stakeholders involved in the governance of wastewater infrastructure. There is therefore a need to understand and appreciate how and to what extent the stakeholders influence governance. It will also be important to study the consequences of their actions as they directly or indirectly govern wastewater infrastructure (Nguyen, Skitmore and Wong Kwok 2009).

## 5.4.2 Contextual factors in sanitation governance

The main worldwide wastewater problems include the lack of functional wastewater treatment facilities and improper management of the existing ones. The implementation of wastewater treatment policies faces varying challenges given the various different contexts (Flores et al. 2017). Contextsensitive approaches are therefore required from a governance perspective. According to Flores et al. (2017), the governance context could constrain the implementation of wastewater treatment policies. Future reforms should thus consider the top-down nature of the policy implementation processes.

About 70 per cent of wastewater in high-income countries is normally treated. This is in stark contrast to an average 28 per cent treated in lower-middleincome countries (United Nations World Water Assessment Programme [UNWWAP] 2017). This poor performance has negative consequences on human health and the environment and has high cost implications. One response to this problem is the construction of technically effective but lowcost wastewater treatment plants (WWTPs). Flores et al. (2017) analysed the governance context of WWTPs in central Mexico by employing the Contextual Interaction Theory and the Governance Assessment Tool. The main conclusions were that the existing context generally restricts WWTP policy implementation and that integrated water resources management implementation and decentralization are only symbolic. The most restrictive instance was found to be where the participation of the state government was particularly limited. As such, strengthening the role of the government and improving mechanisms that currently limit the impact of political gamesmanship could be instrumental in increasing the support offered by the governance context (Flores et al. 2017).

Local contextual factors determine the appropriateness of different institutional models (Table 5.2). The ultimate institutional matrix in any country therefore depends on national priorities, experience and needs. An appropriate institutional framework for sustainable sanitation may include organizations at international, regional, national and local levels; with the political and legal complexity decreasing with each level. Decentralization could be a challenge in some countries due to a lack of local structures acceptable to the central government (Massoud, Tarhini and Nasr 2009). If decentralization is not possible, an institutional framework at local level is not applicable.



Access to water is a challenge, especially in arid regions

Table 5.2. An analysis of the scope, advantages and disadvantages, and examples of different institutional structures for sanitation provision in Africa

| Service provision model and description   | Strengths and weaknesses   | Examples  |
|---|--|---|
| 1. Municipal service provision<br>The provision of water supply and sanitation<br>typically carried out within a dedicated<br>municipal department, or through a separate<br>water board run by the municipality or group of<br>municipalities  | <ul> <li>Offers potential of exploiting significant economies of scale, especially in billing and accounting</li> <li>Can coordinate activities among various city departments</li> <li>Faces numerous legal, political, financial and institutional constraints, making the provision of high-quality service challenging</li> <li>Political interference in human resources management may divert the attention away from poor neighbourhoods in preference to those yielding more political influence</li> <li>The pressure to keep service costs low, with reduced transfers for public services, potentially leaves the municipality with barely sufficient funds to maintain the WASH infrastructure and much less funds for extending services to unserved areas</li> </ul> | District assemblies,<br>Ghana;<br>Urban local governments,<br>Zimbabwe;<br>County governments,<br>Kenya   |
| 2. Small-scale independent providers<br>These are normally self-employed<br>entrepreneurs who provide WASH services to a<br>portion of the municipal population.<br>They include both simple services, such as<br>delivering water in jerricans on carts and<br>bicycles, and more sophisticated services, such<br>as emptying septic tanks with suction tanks.   | <ul> <li>They invest using their own resources which gives them a strong incentive to provide reliable, responsive services</li> <li>They play an important role in unreticulated low-income neighbourhoods and in smaller towns</li> <li>Their price of water is typically much higher than municipal networks – even in competitive markets</li> <li>Small-scale independent providers are generally not formally registered companies, so they do not pay taxes and are difficult to regulate</li> <li>Small-scale independent providers such as water vendors and sweepers could be the largest provider of services to the poor, but it is often difficult to protect them</li> </ul>   | Private operators who<br>supply water to small<br>communities and poor<br>districts in Burkina Faso,<br>Mali, Mauritania and<br>Senegal;<br>Private operators also<br>collect and dispose of faecal<br>sludge in countries like<br>Ghana, Kenya and Senegal |
| 3. Non-governmental organizations (NGOs) and<br>community-based organizations (CBOs)<br>They may be managing communal water<br>facilities or toilets. They sometimes partner with<br>the municipalities to provide services such as<br>education, the management of public water<br>points or toilets, or community development.  | <ul> <li>They are important partners in bringing improved water supply and sanitation services to poor neighbourhoods</li> <li>They tend to be better known and respected by the poor than the local municipalities</li> <li>Most have limited resources and a narrow focus, so their impact tends to be small in relation to the scale of the problems of inadequate service</li> </ul>   | Community Water<br>Alliance, Dialogue on<br>(Water and) Shelter in<br>Malawi, Zambia and<br>Zimbabwe  |
| 4. Private sector participation<br>These range from service contracts for<br>single functions such as billing and revenue<br>collections to concessions that perform full<br>operations, maintenance and expansion of the<br>infrastructure network. Private companies may<br>have citywide mandates for particular functions<br>or may have mandates for specific geographic<br>areas such as public latrine management in a<br>central business district. | <ul> <li>Private companies normally have reasonable access to capital compared to public agencies</li> <li>They also operate along commercial lines with an emphasis on cost-reduction, giving them an incentive to source technical and institutional innovations to ensure cost effectiveness</li> <li>Private companies' focus on commercial principles could be detrimental to poor households unless they are given incentives to do so (for example, regulation or subsidies)</li> <li>Private operators are less interested in serving poor neighbourhoods where the potential for revenues is regarded to be low</li> </ul>  | Private utilities and private sector participation  |
| 5. Partnerships<br>Varieties include a municipality collaborating<br>with small-scale independent providers, civic<br>organizations or private companies for water<br>supply or sanitation services.<br>The municipality normally retains the primary<br>responsibility of managing the piped network<br>and uses partnerships to extend services or to<br>improve the quality of specific functions such as<br>health education or billing.                | <ul> <li>Partnerships could bring alternative technologies, credibility among poor communities (NGOs and CBOs), access to lines of credit (private companies), or other comparative advantages</li> <li>Partnerships have the potential to benefit poor consumers. Typically, partnerships with small-scale independent providers or civic organizations may assist municipalities to improve WASH services for neighbourhoods that cannot be supplied by a reticulated network</li> </ul>   | Abidjan; Cote d'Ivoire  |
| 6. Individual<br>Self-provision varies from paying a vendor<br>to deliver water to a house or paying for the<br>use of a toilet facility to constructing a private<br>borehole or latrine. Individuals who invest<br>in WASH services should source their own<br>financial resources, arrange for any required<br>private sector services and maintain their own<br>infrastructure.   | <ul> <li>Self-provision delivers better services and is a viable alternative to inadequate service provided by the municipality</li> <li>The cumulative effect of numerous households abstracting groundwater, pumping supplementary water from municipal pipes and illegal connections to the network could be quite devastating for service delivery management at the municipal level</li> <li>There are no economies of scale for individual service provision</li> </ul>  | Ghana; Nigeria;<br>Zimbabwe<br>This is happening almost<br>throughout Africa, with<br>varying coverage of the<br>stages of the service chain  |

Table 5.2. An analysis of the scope, advantages and disadvantages, and examples of different institutional structures for sanitation provision in Africa (continued)

| Service provision model and description   | Strengths and weaknesses  | Examples               |
|---|---|------------------------|
| 7. Regulator<br>WASH services are monopolistic by nature,<br>which makes competition prohibitively costly.<br>A regulator provides incentives for efficiency<br>improvements that a service provider faces in<br>a competitive market. A regulator is involved in<br>decisions about service pricing, service quality<br>and network extension. | <ul> <li>Price regulation helps to ensure that services remain affordable, while regulations related to coverage expansion and service quality could help poor households gain access to water and sewer networks</li> <li>Effective regulation requires the regulator to be fairly independent of the service provider and of the political wing</li> <li>In some countries there are no regulators and city councils, or state legislatures have authority over service prices and standards</li> </ul> | Rwanda; Uganda; Zambia |

## 5.4.3 Socioeconomics and political context

The question of social acceptability of reusing treated wastewater and faecal sludge in agriculture relates to how receptive farmers and consumers will be to the process and the resulting product quality (Keraita and Drechsel 2015). Interest and technical capacity to reuse water has grown in response to increasing water security concerns. There are more than 3,300 water recycling projects for non-potable end uses in the world (Rodriguez et al. 2009), but wastewater reuse remains limited to regions suffering water scarcity. The main obstacles to wider uptake are acceptance problems (especially regarding health), institutional and political issues and economic concerns (Moss et al. 2016). The distribution of benefits and the burden of resource use is determined by policy actions that are strongly linked with what is possible at different levels of economic development (Fernanda and Inés 2017). Water reuse for agriculture has been practised for thousands of years (World Water Assessment Programme 2017). While the understanding of and concern for - the safety of reusing wastewater is growing, its practice is important in addressing water scarcity and continuously increasing water demand. The most intensive and increasing reuse seems to be occurring in water-scarce countries in north Africa. According to Sato et al. (2013), over half of the treated wastewater in these areas is being used for irrigation. Several countries in Africa have proactive policies and monitor water scarcity and reuse (Adewumi et al. 2010).

While the earliest and most common use of recycled water is agriculture, the range of areas for reuse widens with economic diversification. Possible areas of intervention are industrial and commercial use, urban landscape irrigation, recharging groundwater, environment and recreation, energy production and advanced treatment for potable use (Angelakis and Gikas 2014). The major barrier to change in urban water management relates to the characteristics of existing urban water management technologies – centralized, large-scale, capital-intensive and durable (Domènech 2011). These barriers are compounded by governance factors arising from existing social and political institutions and dominant values and beliefs. Although significant progress has been made, it seems the influence of governance on the adoption of technological innovations in urban water management in Africa, as well as technical or economic factors, are still not well understood.

In Africa, the public acceptance of sanitation technologies, from toilets to reuse and disposal, are shaped or affected by the socio-cultural and religious dynamics of the people or communities concerned. For instance, the use and reuse of wastewater or faecal sludge for agricultural purposes is strongly denied in most parts of Africa, whereas in other regions such as Asia, the practice is well recognized as economic and ecological (Helmer, Hespanhol and the World Health Organization [WHO] 1997). In Islamic communities, the reuse of wastewater is acceptable if, for example, the wastewater undergoes some form of purification or dilution procedure prior to reuse. However, due to the wide variety of religious and cultural beliefs, the acceptance of a practice or technology may not be the same across the board and differs depending on the community and its beliefs. In Africa, every sanitation project must give serious consideration to socio-cultural and religious dimensions to ensure that the solutions provided are relevant, well-integrated and in accordance with these dimensions (Jiménez Fernandez de Palencia et al. 2014).

## 5.4.4 Institutional roles and coordination

The current global, regional and industrial challenges resulted from many systems at different levels. There are global systems that affect the environment and natural resource security, and economic systems that lead to inequality and poverty. The regional systems could affect the fortunes of countries, while the industrial systems could determine the effectiveness of supply and demand. The inability to correctly prioritize and invest in localized disaster resilience hampers development gains, worsens poverty and entraps susceptible communities in a brutal cycle of exposure, poverty and risk. Strong local leadership and an effective enabling environment are therefore key to overcome these challenges and ensure sustainable sanitation services in Africa.

Based on Rogers and Hall (2003) and Organisation for Economic Co-operation and Development [OECD] (2015), Table 5.3 identifies four main institutional functions that are essential to achieving strong institutional arrangements and are thereby also deemed conducive to good sanitation governance.

Effective coordination, clear mandates and responsibilities for all actors are vital to achieve a good functioning institutional framework (Rogers and Hall 2003). Institutions and actors should therefore work transparently and in consultation with each other. It is sometimes very important to build partnerships based on basic policies accepted by all parties (Peters n.d.). According to the Department of Water Affairs and Forestry (2003), a good institutional framework should be accountable, transparent, stable and based on the rule of law. In addition, it should respect basic human needs and ecosystems protection, promote local empowerment and adopt good cost recovery approaches. For new local institutional frameworks, it is recommended to build on and strengthen the existing systems instead of starting from scratch (IEES 2006). The promotion of extensive institutional reform could be appropriate in some cases and could include lending support to a range of different sustainable initiatives in the sanitation sector (Table 5.4).



The infrastructure for safe drinking water is often lacking in many African countries

Table 5.3. Four main institutional functions for good sanitation governance and examples in Africa

| Key institutional function  | Responsible areas  | Examples where applied in Africa   |
|---|--|--|
| Sector regulation and enforcement   | Standards compliance, equity and quality of service, competition, environmental protection, tariffs and service sustainability   | National Water Supply and Sanitation Council in Zambia;<br>Rwanda Utility Regulatory Authority in Rwanda   |
| Service provision   | Provision of public, private and community-based water supply and sanitation services  | Water and sanitation utilities in Ghana, Kenya, Morocco, Namibia,<br>Rwanda, Uganda and Zambia;<br>Urban and rural local authorities in Egypt, Nigeria and South Africa;<br>Housing corporations and cooperatives in Botswana and Zimbabwe |
| Regional, national and local coordination, facilitation, monitoring and reporting | Sector coordination, transboundary water<br>management, national agencies, civil society<br>organizations, river basin organizations and impact<br>assessment committees | Southern African Development Community (SADC) water sector<br>coordination unit;<br>Nile Basin Initiative (NBI);<br>Zambezi Watercourse Commission (ZAMCOM);   |
| Research and capacity-<br>development   | Sector capacity-development of institutions,<br>professionals, technicians, etc<br>Research and development of sanitation technologies                                   | Regional level, such as WaterNet and Nile Basin Capacity Building<br>Network and regional SADC Groundwater Management Institute;<br>Inter-University Council of East Africa  |

Table 5.4. Institutional reforms for sustainable sanitation and water management

| Institutional options   | Reform process description and rationale   | Examples and references  |
|---|--|--|
| Organizational<br>restructuring through<br>bundling or unbundling<br>of functions | <ul> <li>The allocation and nature of functions, processes, activities, roles and responsibilities within an organization should be revamped for efficient management.</li> <li>The roles and responsibilities at different levels of government, community-based organizations and the private sector should be clearly defined, recognized and established and the necessary support provided.</li> <li>Fragmentation and overlapping mandates between different organizations and stakeholders should be avoided.</li> <li>The roles of regulation and operation should be clearly separated and preferably executed by separate institutions.</li> </ul> | Department of Water Affairs and Forestry 2003<br>Many water sectors in Africa have been<br>undergoing restructuring and reforms –<br>Kenya, Rwanda, Uganda, Morocco, Burkina<br>Faso, etc. |
| Strengthening regulatory and enforcement bodies                                   | <ul> <li>There must be a sound body monitoring and enforcing laws, rules,<br/>structures, responsibilities and partnership agreements.</li> </ul>  | National Water Supply and Sanitation Council<br>in Zambia;<br>Zambia Water Partnership   |
| Decentralization  | <ul> <li>Decentralization brings government closer to local communities. It is also<br/>an encouraging factor for better services and use of local capacity.</li> </ul>  | International Ecological Engineering Society 2006<br>Many countries in Africa have decentralised<br>services delivery – Ethiopia, Uganda, Burkina<br>Faso, Mali, Benin, Tunisia)           |
| Improving cost recovery   | <ul> <li>Cost recovery is key in generating funds for maintaining and extending<br/>services and meeting existing and future demands.</li> </ul>   | Zambia Water Partnership/Ministry of Energy<br>and Water Development 2008  |
| Building Public-private<br>Partnerships (PPPs)                                    | • Governments could benefit from private-sector expertise in PPPs such as<br>in the preparation of guidelines, technical assistance, planning, design<br>and contract supervision, construction, preparation of communications<br>materials, training and capacity-building, materials supplies, financing,<br>among others.   |  |
| Privatizing some parts of the water and sanitation sector                         | <ul> <li>The introduction of private-sector incentives and management skills<br/>and efficiency to deal with service provision challenges can catalyse<br/>change.</li> </ul>  | Zambia Water Partnership/Ministry of Energy<br>and Water Development 2008<br>Private emptiers and transporters associations<br>e.g. in Ghana, Uganda, Benin, Senegal.                      |
| Nationalizing some parts of the water and sanitation sector                       | • It is sometimes better to transfer some responsibilities to the local or national government to protect the poor and vulnerable and make the sector work efficiently and at reduced cost.  | Zimbabwe National Water Authority  |
| Human resources<br>upgrading  | <ul> <li>This is required to give support to improved capacity in all the above-<br/>mentioned aspects.</li> </ul>   |  |



Proper waste management is difficult in overcrowded places such as informal settlements

#### 5.4.5 Regulation of the sanitation sector

The fragmented, complex and disconnected nature of arrangements within and between sanitation infrastructure provision and service delivery sectors, along with increasing interdependence between sectors, is reshaping business models of infrastructurebased services, prompting the emergence of new approaches to regulation and governance. The sanitation cityscape conceptual framework separates the urban sanitation system into three components (Scott 2019) as shown in Figure 5.3:

- The living environment (i.e. the household and surrounding area and the peri-domestic area)
- The service delivery environment (i.e. the service delivery chain)
- The enabling environment

Some sub-Saharan African countries are under continuous stress due to the incidences of waterborne disease and water pollution. This situation is mainly the result of poor design, performance and maintenance of the dominantly used on-site sanitation systems such as septic tanks and cesspools. In addition, faecal sludge, which has to be emptied from these on-site sanitation systems, is not properly managed. There are hardly any rules and regulations on faecal sludge management for utilities.

The role of a utility regulator is defined by the scope of its coverage, its role in relation to ministries, and its role in relation to other regulatory entities such as the competition agency or agencies which deal with the environment, energy, telecommunications, or other sectors

#### The sanitation cityscape conceptual framework Service delivery environment Services LIVING ENVIRONMENT Demand People Tenure Demand Services and infrastructures Tenure Housing unit Institutional arrangements Services and infrastructures Neighbourhood Policy and strategy Housing unit Neighbourhood Service delivery environment Sanitation Water Sector planning and monitoring LINVING ENVIRONMENT Solid waste Drainage Other ba (telecoms, educati ervices ealth, transport...) **Enabling environment** Context Budgeting and finance Demand Tenure Services and infrastructures Housing unit Neighbourhood Source: Scott (2019) GRID-Arendal/Studio Atlantis

Figure 5.3. The sanitation cityscape conceptual framework

(Smith 1997). Some countries use multi-industry agencies covering everything from power and water to transport (for example, Rwanda). Multiindustry agencies allow scarce expertise to be pooled and greatly reduce the risk of industry and political capture. They also decrease the risk of inconsistency in regulatory approaches across sectors and help to deal with the blurring of sector boundaries as utilities enter one another's markets (Smith 2000). Some governments may be reluctant to relinquish political control over regulatory decisions and some may guestion whether independent agencies are feasible in all country settings. Ideally, the regulatory agencies should have closer relationships with regulated firms, consumers and politicians and they should also have the funding and expertise to sustain such independence. The funding for a regulator is normally provided by the regulated parties through various fees and levies. This provides for independence from government influence.

The design of a regulator's decision-making structure covers issues relating to the number of decision makers, the basis for selection, the role of stakeholders and the regulatory and appeals processes. The correct selection of the regulator is critical, more so for countries that have not yet established a reputation for competence and reliability. For regulators to be independent, the selected board members should possess the personal qualities necessary to exercise independent judgement and to resist undue pressures. An appeals process should be set up to ensure that the regulator does not stray from its mandate and that it remains accountable.

Decision-making within a stand-alone regulator is carried out by a board, which normally has between five and nine members appointed for their skills and experience in the water sector. The main functions of a regulator can typically be summarized under the following headings:

- Technical regulation (performance monitoring, benchmarking, dam safety, registration of qualified dam engineers and drilling firms)
- Economic regulation (licencing of water service providers, tariff approvals for water supply and sanitation, tariff approvals for raw water, outreach on economic regulation)
- Consumer relations (water watch groups, complaints handling, public relations, capacitybuilding of water service authorities and water service providers)
- Rural WASH (monitoring, benchmarking, technology approval, information dissemination)
- Day-to-day administration of the regulator (dayto-day operations, accounting, human resources management)

The main sources of funding for the regulator are licence application fees and annual licence fees. These are paid by the water service providers from revenues collected from their customers. Increasingly, some new and innovative ways of financing infrastructure for sanitation are being explored, as shown in Box 5.7. Regulators are also centres of knowledge and excellence in the water sector. An important general function in this regard is to provide advice to government and parastatals and capacity-building to water service authorities and providers.

Deregulation and new technology, including the advent of smart markets, have provided new opportunities for competition in power, water, transport and telecommunications. Options for competition include competition for the market (franchising), competition in the market (open access, pooling and timetabling), and competition among networks (Smith 1997). How network competition is introduced and how effectively and easily it is implemented will vary from one network industry to another. The more complex the network and the lower the sunk costs, the greater the value of introducing competition from other networks. The faster the rate of technical change, the greater the dynamic benefits from competition. And the lower the regulatory capacity, the more efficient it will be to opt for competition (Kahn 1988).

Egypt has established a specific water sector regulator solely dedicated to monitoring service provision. Challenges reported in this set up include overlapping responsibilities, lack of clarity and the need to strengthen the regulator's role (Mumssen and Triche 2017). The country has made concrete efforts since 2015 to establish the required institutional arrangements to enhance overall sector performance. These include establishing

#### Institutional framework of Egypt's water supply and sanitation sector



Figure 5.4. Institutional framework of Egypt's water supply and sanitation sector

#### Box 5.7. Innovative financing mechanisms for urban sanitation infrastructure – The case of Maputo, Mozambique

One project aimed at improving the sanitation services and infrastructure in the city of Maputo involves the financing of domestic sanitation systems through a revolving fund established with the support of local community-based organizations and the Municipality of Maputo, with funding from international NGOs.

A lump sum is initially provided to the participating communities and these are then responsible for managing the fund and providing interest-free loans. The loans are made available to families with a minimum monthly income of MZN 4,000 (US\$ 70) and are repaid in monthly instalments of MZN 1,250 (US\$ 21). As a comparison, the monthly expenditure of more than 60 per cent of families dependent on on-site sanitation in the city of Maputo is below MZN 6,000 (US\$ 100), with almost 35 per cent spending less than MZN 3,000 (US\$ 50) (WSP 2014). The project was initially devised to support the construction of improved latrines (MZN 5,000 or US\$ 84) but upon request from the families, was later expanded to allow for the first phase of construction of a septic tank and a leach pit at a cost of MZN 22,000 (US\$ 368). Infrastructure management, including faecal sludge removal, is the responsibility of the family, that can make use of the capacity existing at neighbourhood level. Regarding water availability - a prerequisite for the operation of septic tanks - the high coverage of domestic connections at household level, with the large public operator reaching almost 60 per cent of the city's households (CRA 2016), shows that water is not a limiting factor for Maputo.

The families in need are identified by the neighbourhood institutions in a process that takes into consideration the size and the condition of the existing infrastructure and the capacity to pay back the loan. Upon being authorized to receive the loan, the family is responsible for the transportation of the material, for doing the digging and for clearing and cleaning the premises, which includes removing old faecal matter and/or buried structures, for example, old latrine linings. The construction then takes around five days.

Since these are interest-free loans, the communitybased organizations' profits come from the margins associated with the economies of scale, such as from simultaneously building more septic tanks and making the exercise cheaper in the process. Some community-based organizations ask for personal goods such as televisions and freezers as collateral for the loans, with the amount of collateral demand depending on the sum that is loaned. Not all community-based organizations follow this approach due to legal concerns. Irrespective of this, when families cannot pay the loans, the community-based organization initially contacts the Neighbourhood Secretary who tries to solve the situation and if this does not work, the case then goes to the Neighbourhood Tribunal.

One of the local community-based organizations responsible for implementing the revolving fund in Maputo is Associação Comunitária de Ajuda e Desenvolvimento do Bairro Chamanculo (ACADEC). ACADEC is responsible for community education regarding sanitation and use and management of sanitary facilities. ACADEC has built 17 septic tanks since 2017, 10 of which were built in 2017 in Chamanculo, one of the poorest and more densely populated neighbourhoods in Maputo. The loan repayment rate is 100 per cent. In the same neighbourhood, for areas where several families were already sharing sanitation infrastructure – typically latrines – and where due to available space constraints private facilities cannot be built, shared infrastructure is favoured.

According to ACADEC, a major limitation of the revolving fund is that many families cannot afford the investment, either because they do not have the capacity to pay or because sanitation is not a priority for the family. The health impact of these projects is yet to be scientifically quantified (Lofrano and Brown 2015) but anecdotal evidence from household interviews seems to indicate that the number of cases of diarrhoea is falling. The households that were interviewed were very positive about the project, as it "gave them the opportunity to build sanitation infrastructure that they would not have been able to afford".

Finally, given that septic tanks require physical space that is often not available in densely populated areas such as Chamanculo and the costs involved with the construction, operation and maintenance of septic tanks, it can be concluded that only a small fraction of the population can be reached with similar projects. To reach more of the population, subsidization schemes would be necessary.

a dedicated management team in the Ministry of Housing, Utilities and Urban Communities (Figure 5.4), and tariff reforms to improve financial sustainability. A new Water Law clearly spells out mandates and strengthens the regulator and the regulatory framework. A capacity-development programme for the regulator was also developed.

### 5.4.6 Gender and stakeholder involvement

Women have primary responsibilities in the management of household water supply, sanitation and health in most societies in Africa. Unfortunately, efforts to improve the management of water supply and sanitation systems and extending access often overlook this crucial role played by women. WHO/UNICEF (2019) figures show that about 521 million people in sub-Saharan Africa have no access to improved sanitation. Poor water and sanitation, as well as unsafe hygiene practices, are the main causes of diarrhoea and one of the main child killers in the region. Each year, more than 250,000 children under the age of five die from diarrhoeal diseases in Africa (WHO/UNICEF 2018). Without

adequate sanitation, safe drinking water and hygiene facilities at home and in places of work and schools, it is disproportionately difficult for women and girls to lead safe, productive and healthy lives (UN-Water 2019). For girls and women, performing these roles often precludes any other activity or participation in education. Their marginalization is worsened by the indignity and insecurity of having nowhere private to go to the toilet. Addressing the needs of females in relation to water, sanitation and hygiene is a key driver in achieving gender equity and unlocking the potential of half of the global society.

In many countries, the presence or absence of improved sanitation facilities has a disproportionate effect on the lives of women and girls for two main reasons (Saleem et al. 2019). Women and girls are more vulnerable to abuse and attack while walking to and using a toilet or open defecation site. Women also have specific hygiene requirements during menstruation, pregnancy and child-rearing. At a local level, gender-sensitive approaches help to improve the suitability, sustainability and reach of sanitation services by both focusing on and involving women in the facilities' design, implementation and management. Embedding gender equity into WASH policy at all levels is crucial to achieving water and sanitation for all, which in turn will greatly help to advance many other parts of the SDG agenda, especially education and work.

The above highlight the need for gender tools and policies in water supply and sanitation. A guide can be derived from organizations such as Plan International Australia which has prepared the Gender and WASH Monitoring Tool of 2014. In Africa, Kenya launched the National Gender and Development Policy in 2001, embarked on national training programmes and launched the Gender Data Sheet in 2011. Water sector indicators captured included the distance travelled to reach the nearest water point (one way). A Gender Toolkit was developed and piloted for water service providers in Athi. Lake Victoria North and Coast water service boards. The toolkit guides water service providers in all its areas and activities such as developing new services, operations and policies.



The pace at which Africa is investing in water, sanitation and hygiene is not fast enough to match the growing population

The involvement of all stakeholders in water and sanitation provision and governance is very important for sustainability. This normally starts at a much lower level such as water point committees and water user associations and extends up to sub-catchment and catchment levels. However, most of these structures focus more on water supply than sanitation. However, countries such as Zimbabwe have ward and district water supply and sanitation committees, where sanitation plays a prominent role. Civil society advocacy groups are more visible in urban areas and these lobby for equity and accountability on behalf of residents. These can be in the form of resident associations or community water alliance chapters. Examples include Burkina Faso, Cameroon, Ghana and Zambia. Other key interest groups include industrialists and NGOs, CBOs, the disabled, academia and cooperating partners.

In its new policy, Ghana incorporated the relevant stakeholders who need to be involved in the sanitation sector. There has been considerable involvement of the private sector in the provision of sanitation services, which through publicprivate partnerships has brought change to sanitation service provision in Ghana. The country has also recognized community partnerships in order to help solve problems in the sanitation sector (Amoah 2009).

#### 5.4.7 Legal and policy provisions

Sanitation policies and the right to sanitation AMCOW has been piloting the development of sanitation and hygiene policies. With its assistance, Zimbabwe developed and launched its National Sanitation and Hygiene Strategy 2011-2015 in September 2011. A successor to this policy was also developed, abandoning the traditional technology-based supply approaches and adopting a demand-driven approach centred on behaviour change and services responsive to community and consumer demand. Sanitation issues are also embedded in other policy documents such as the 2013 National Water Policy and the Public Health Act (Chapter 15:09). Zimbabwe has a budget plan for financing of sanitation and hygiene projects but struggles to implement it because of economic challenges. The

investment by Government in water resources, water supply and sanitation infrastructure as a percentage of total budget expenditure in recent years has averaged 2.1 percent, well below the Sanitation and Water for All commitment of 7 percent per year (UNICEF 2019). The WASH infrastructure investments as a percentage of GDP has averaged 0.5 percent between 2010 and 2018 (United Nations Children Fund (UNICEF) 2019).

According to the Bawa (2019), 10 countries in the West Africa region had a national sanitation policy, while another six were still in progress. After the eThekwini Municipality Agreement, the region was seen to respond positively to coming up with sanitation policies, plans and strategies. Most countries in the Central Africa region were in the process of developing and implementing sanitation policies and national sanitation plans, with the Central African Republic and the Democratic Republic of the Congo both having already prioritized the development of a national sanitation policy (WSP 2011). In East Africa, most countries in the region either had a sanitation policy or were developing one in 2008.

The Human Right to Water and Sanitation was recognized by the United Nations General Assembly on 28 July 2010. In South Africa, the right to water is protected by the Constitution and is implemented by ordinary statutes. However, the right to adequate sanitation is rarely mentioned and is undermined by the right to water. In the absence of an international body to enforce it, the Human Right to Water and Sanitation relies upon the activity of national courts.

#### Sanitation service standards

African countries have defined their sanitation service standards differently for both urban and rural areas. The focus in rural areas has mainly been on on-site sanitation technologies that countries find acceptable. Figures show that most rural areas are served by pit latrines, in line with Millennium Development Goal (MDG) targets and specifications (Munamati, Nhapi and Misi 2015). However, other unimproved technologies tend to dominate rural Africa, resulting in poor performance in rural sanitation (WHO/UNICEF 2018). In urban areas, the non-waterborne systems still dominate the sector (Munamati, Nhapi and Misi 2015). However, in countries such as South Africa and Zimbabwe, the insistence has been on more advanced technologies such as the VIP latrines in rural areas and flushing toilets in urban areas. The countries which insisted on high standards did not do well in the MDG era, although South Africa had better resources.

In urban areas, service standards have been developed at various levels – by governments, urban councils, utilities or utility partnerships. The Africa Water Utility Partnership has been less visible on the continent over the years but had the following services covered through their service standards:

- Household latrines with on-site pit or septic tank disposal
- Household toilets with off-site conventional sewer systems
- With off-site small-bore (small pipe) sewerage (solid-free)
- With off-site condominial (shallow) sewerage
- Shared household latrines on- or off-site disposal
- Public latrines/toilets on- or off-site disposal
- Emptying services for pits or septic tanks

The performance of a water and sanitation utility is indicated by service equity or access, efficiency and sustainability. The following are also some of the performance indicators that have been used by African countries that are on the International Benchmarking Network:

- Coverage of toilets
- Coverage of sewerage network services
- Efficiency of collection of sewage
- Adequacy of capacity for treatment of sewage
- Quality of sewage treatment
- Extent of recycling or reuse of sewage
- Efficiency of satisfactory response/reaction to customer complaints
- Efficiency of cost recovery in sewage management
- Efficiency of collection of sewage charges
- Maintenance coverage ratio



Infomal settlements often lack adequate sanitation

#### **Effluent disposal standards**

Human waste must be properly collected, treated and disposed of in order to protect public health and the environment. The level of wastewater treatment required depends on the method of disposal which can be broadly classified into two categories: surface water discharge and land application. Sewage disposal to surface waterbodies such as rivers, lakes, estuaries and oceans is the most common approach in the world (Tchobanoglous et al. 2003). In land application systems, wastewater is applied on land and naturally drains to groundwater or surface waters. Two types of effluent standards for municipalities are generally set by regulatory agencies: technology-based standards or effluent discharge standards used in some countries; and water quality-based limits, or in-stream or environmental standards in some countries. A technology-based standard is simply a minimum level of technology and pollutioncontrol performance that must be achieved by municipal wastewater treatment plants. A water quality-based limit is based on the water quality standards applicable to receiving water and are more stringent than technology-based standards (see Table 5.5 on typical effluent standards). This limit may be necessary to protect a waterbody's designated uses, such as contact recreation and aquatic life, by which the discharged effluents are then regulated to avoid exceeding the selfpurification capacity of the receiving water bodies. A look at some of the regulations in Africa shows inconsistencies in what is covered. This may be due to the individual priorities of the different countries.

In Kenya, the National Environment Management Authority (NEMA) has standards for effluent or wastewater before it is discharged into water or land. The maximum permissible levels are provided in the National Environment Standards for discharge of effluent into water or on land under the regulations SI No. 5/1999. The Nigerian standards are based on types of activities.

Table 5.5. Typical Effluent Disposal Standards used in Selected African Countries

| Parameter                         | Kenya   | Tunisia | Nigeria | Zimbabwe  |
|-----------------------------------|---------|---------|---------|-----------|
| Ammonia (N), mg/l                 | 10      |         |         | ≤0.5      |
| Nitrite-nitrogen, mg/l            | 20      |         |         | ≤3        |
| Nitrogen Total (N), mg/l          | 10      |         |         | ≤10       |
| Boron (B), mg/l                   |         |         |         | ≤0.5      |
| BOD5, mg/l                        | 50      | 30      | 20      | ≤30       |
| COD, mg/l                         | 100     | 90      |         | ≤60       |
| Conductivity (µS/cm)              | 7,000   |         |         | ≤1,000    |
| DO, % saturation                  |         |         |         | ≥60       |
| FC (#/100 ml)                     |         |         | 400     | ≤1,000    |
| Helminth eggs (#/100 ml)          |         |         |         | ≤1,000    |
| lron (Fe), mg/l                   | 10      |         | 20      | ≤1        |
| Lead (Pb), mg/l                   | 0.1     |         | 1.0     | ≤0.05     |
| Oxygen absorbed, mg/l             |         |         |         | ≤10       |
| pH (pH units)                     | 6.0-8.0 | 6.5-8.5 | 6.0-9.0 | 6.0 – 9.0 |
| Total-PO <sub>4</sub> - (P), mg/l | 10      |         | 5       | ≤0.5      |
| Potassium (K), mg/l               |         |         |         |           |
| TDS, mg/l                         | 1,200   |         |         | ≤500      |
| Temperature deg. C                | 20-35   |         |         | ≤35       |
| Total heavy metals, mg/l          |         |         | 3.0     | ≤2.0      |
| TSS, mg/l                         |         | 30      | 30      | ≤25       |
| Turbidity (NTU)                   | 300     |         |         | ≤5        |

Sources: Government of Kenya (1999), Institut National de la Normalisation et de la Propriété Industrielle [INNORPI], (n.d.), Government of Nigeria (1991) and Government of Zimbabwe (2007).

## **5.5 Conclusions and recommendations**

Most countries in Africa need to strengthen their WASH enabling environments by establishing resilient institutional frameworks, transparent governance systems and their associated instruments. In particular, the coordination of the sanitation sector needs to be strengthened so that sanitation receives equal attention to water supply.

A number of countries are yet to establish sanitation and hygiene strategies to guide their sanitation sectors. These are required to define the technologies and approaches most suitable to the sector and to ensure the participation of all stakeholders. Besides the water and sanitation policies and strategies, specific programmes should focus on gender issues and sanitation for vulnerable groups, including the disabled.

A small fraction of wastewater from African cities is receiving treatment, leading to the pollution of downstream water bodies. Suitable effluent disposal standards should be adhered to by each country to ensure environmental sustainability.

The sanitation sector needs to be efficiently regulated. There are still quite a number of countries where regulation is spread across different ministries and government agencies.





A polluted stream in Nairobi