REPUBLIC OF RWANDA

MINISTRY OF INFRASTRUCTURE

National Policy & Strategy
for
Water Supply and Sanitation Services

February 2010

Contents

Part I – POLICY

Acronyms

CBEHPP	Community Based Environmental Health Promotion Programme
Ecosan	Ecological Sanitation
EDPRS	Economic Development and Poverty Reduction Strategy (2008 – 2012)
ELECTROGAZ	Public water and power utility (since 2009: RWASCO)
FEA	Fonds de l'Eau et de l'Assainissement (pilot Water and Sanitation Fund)
GoR	Government of Rwanda
HAMS	Hygiène et Assainissement en Milieu Scolaire (School Sanitation)
KDS	Kampala Declaration on Sanitation
KIST	Kigali Institute of Science and Technology
LID	Low Impact Development
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MINALOC	Ministry for Local Government, Good Governance, Community Development and Social Affairs
MINECOFIN	Ministry of Finance and Economic Planning
MINEDUC	Ministry of Education, Science, Technology and Research
MINIRENA	Ministry of Natural Resources
MININFRA	Ministry of Infrastructure
MINISANTE	Ministry of Health
MIS	Management Information System
MoU	Memorandum of Understanding
MVK	Kigali City Council (Mairie de la Ville de Kigali)
NEPAD	New Partnership for Africa's Development
NGO	Non Governmental Organization
O&M	Operation and Maintenance
OBA	Output-Based Aid
PCU	Programme Coordination Unit
PEAMR	Rural Water and Sanitation Project – Projet d'alimentation en Eau et Assainissement en Milieu Rural
PHAST	Participatory Hygiene And Sanitation Transformation
PNEAR	National Rural Water Supply and Sanitation Programme - Programme National d'alimentation en Eau potable et Assainissement en milieu Rural
PPP	Public Private Partnership
RBS	Rwanda Bureau of Standards
REMA	Rwanda Environment Management Authority
RWASCO	Rwanda Water And Sanitation Corporation
RURA	Rwanda Utilities Regulatory Agency
SWAp	Sector-Wide Approach
UNICEF	United Nations Children's Fund
WATSAN	Water and Sanitation (equivalent to WSS)
WHO	World Health Organization
WSF	Water and Sanitation Fund

WSP	Water and Sanitation Program (World Bank)
WSS	Water Supply and Sanitation (equivalent to WATSAN)

1 Introduction

1.1 Rationale for an updated policy document

Rwanda has committed itself to reaching very ambitious targets in water supply and sanitation, with the vision to attain 100% service coverage by 2020. The importance of adequate water supply and sanitation services as drivers for social and economic development, poverty reduction and public health is fully acknowledged in Rwanda's flagship policy documents and political goals.

This policy presents the sector's approach on how to achieve the Vision 2020, MDG and EDPRS objectives and breaks them down into concrete principles, objectives and statements. It is not meant to be a document of the Ministry of Infrastructure alone. Achieving the sector targets implies coordination of all key players including in particular the districts, the Ministry of Health, the urban water and sewerage utility (RWASCO), the Rwanda Utilities Regulatory Agency (RURA) and the Ministry of Natural Resources, as well as the development partners.

The policy document is formulated with a strong view to implementation: The objectives and statements are formulated in a way to be directly translated into activities, implementation responsibilities and associated indicators. These implementation details are provided in the Strategic Action Plan (part 2 of this document).

The need to update the relatively recent WSS policy of 2004 mainly arose from the fact that significant institutional reforms have substantially changed the sector context. The decentralisation of responsibilities for rural WSS services, private sector participation and the emerging Sector-Wide Approach (SWAp) had all been envisaged in the 2004 policy but have gained decisive momentum since. Other institutional changes are yet to come, in particular the creation of a sector Authority as the implementing arm of MININFRA with operational autonomy. The WSS policy will thus remain a dynamic document in the future.

The policy's scope has changed by focusing on water and sanitation services. It no longer covers water resources management, which is now under a different Ministry (MINIRENA). On the other hand, the current policy defines sanitation in a broader sense by including solid waste and storm water management.

1.2 The updating process

The present policy document is the result of a comprehensive discussion and stakeholder consultation process led by a dedicated Tasks Force created to this end. Two sector retreats, two provincial workshops and a national validation workshop were held to ensure adequate participation of all sector stakeholders, including those external to the sector.

At the national level, the following government institutions were consulted in the preparation of this policy: Ministry of Finance and Economic Planning (MINECOFIN); Ministry of Health (MINISANTE); Ministry of Natural Resources (MINIRENA); Ministry of Education, Science, Technology and Research (MINEDUC); Ministry for Local Government, Good Governance, Community Development and Social Affairs (MINALOC); Rwanda Utility Regulatory Agency (RURA); Rwanda Environmental Management Agency (REMA); Rwanda Water and Sanitation Corporation (RWASCO).

1.3 Note on terminology regarding future sector institutions

To be consistent the following denominations will be used throughout this document: The **Authority** is the planned water and sanitation implementation unit with substantial operational autonomy (see section 4.9.3, page 27, for details). The **Utility** is the publicly owned operator of urban water supply and sewerage infrastructure (currently RWASCO, formerly ELECTROGAZ; see chapter 4.3, page 19).

1.4 Scope of the policy: Definitions

Water supply services means the abstraction from a water resource, conveyance, treatment, storage and distribution of potable water, including all the organizational and sensitization arrangements necessary to ensure sustainable services and benefits. This includes domestic water supply (drinking water and other household uses) as well as the provision of water for economic activities through public piped networks.

Sanitation encompasses, according to the 1997 Kampala Declaration on Sanitation (KDS), "the isolation/management of excreta from the environment, maintenance of personal, domestic and food hygiene, safe disposal of solid and liquid wastes, maintaining a safe drinking-water chain and vector control". For the purpose of this policy, sanitation as part of WSS services is understood as the collection, transport, treatment and disposal or reuse of human excreta and domestic and industrial waste, both liquid and solid, as well as storm water. The Ministry of Health will continue as the lead actor in the promotion of individual sanitation at the community level.

The link between WSS services and **water resources management** is obvious, through water abstraction and discharge/pollution, and an integrated view is strongly supported. However, with the separation of WSS services (under the Ministry of Infrastructure) from water resources management (Ministry of Natural Resources) the different mandates have become clear: WSS services are focused on service provision (in terms of water supply and waste disposal), and basically represent one sector of use of the water resources, comparable with the use by other sectors (such as agriculture or energy), even if drinking water supply is a use of very high priority.

2 Policy Context and Background

2.1 WSS services and development

Water supply and sanitation (WSS) affect broad areas of human life. The provision of adequate WSS services plays a crucial role in preventive health care and is more generally a pre-requisite and indicator for socio-economic development. Access to drinking water is also a basic amenity, ranked among the highest priority public services by Rwanda's population[1]. It reduces time spent on fetching water and has a positive impact on school attendance, in particular for girls. Women's life is strongly affected by unsafe, distant water supply and poor sanitation as women are generally responsible for water collection and handling, for household hygiene and caring of the sick.

On the other hand, the health impact of improved water supply alone is known to be limited without adequate attention for sanitation and hygiene awareness. Safe management of liquid and solid waste as well as storm water is an issue of both environmental health and the protection of water resources.

Closely interlinked with other development sectors, the provision of adequate WSS services is therefore a core element of development strategies and indicators, including Rwanda's Vision 2020 and EDPRS as well as the international Millennium Development Goals (MDG). It is well known that several MDGs, not just the targets directly related to WSS, are linked to the improvement of water supply and sanitary conditions.

Providing access to at least basic water supply and sanitation services is in the public interest and should be affordable for the entire population. While the primary responsibility for WSS services provision rests with local governments and the Utility, central Government has an obligation and interest to make sure that these institutions are able to comply with these responsibilities.

[1] Source: EDPRS, para 2.42

2.2 Status of Rwanda's WSS sector

2.2.1 Progress towards the flagship targets

In 2008 **access to improved[2] sources of drinking water** has reached about 74% (rural: 71%, urban: 88%), according to the national inventory[3]. While this definition of access is in line with the usual definitions used for MDG monitoring it should be noted that these access figures do not necessarily imply regular functionality and compliance with water quality standards.

After a period of stagnation (before 2005)[4] coverage is currently rising at a rate which is close to the value needed to stay on track towards the flagship targets (EDPRS, MDG, Vision 2020). However, to meet the targets it will have to continue to rise for another 4 percentage points every year. Given that population growth partly compensates the efforts to raise coverage this is equivalent to supplying on average 460,000 additional people every year (until 2012)[5].

In **sanitation**, coverage is estimated at 45% (rural: 44%, urban: 54%)[6] for 2008. It should however be noted that the reliability of the available access figures is limited. This is due to the difficulties to correctly classify the private pit latrines used by the vast majority of the population, while individual sanitation is generally more difficult to assess than public infrastructure. Total latrine (or toilet) coverage in Rwanda is 96%, according to the IDHS[7] of 2007-08.

2.2.2 Water Supply

32% of Rwandans use piped water, but only 3.4 % have access to it within their house or plot (urban: 17%, rural: 0.9%)[7]. On average, households – women and children – spend 29 minutes per day on fetching water in rural areas (9 minutes in urban areas)[7]. Daily per capita consumption is of the order of 6 to 8 litres per day in rural areas, a figure by far lower than the envisaged standard consumption of 20 litres. Where water is accessible from easily and freely available unprotected sources (unprotected springs, open wells, surface water bodies) an (unknown) part of the population tends to use these sources, at least for purposes other than human consumption (drinking and cooking).

The sustainable operation and management of rural water supply infrastructure is one of the key challenges of this sub-sector. Approximately one third of the existing infrastructure (about 850 rural water systems) needs rehabilitation. However, the situation has changed significantly with the delegation of service responsibility to the districts and the introduction of delegated management. The percentage of schemes managed by private operators is rising fast (attaining about 28% in 2008[8]) and the first evaluations, in terms of improved functionality, are encouraging.

Urban water supply services in 14 towns, including the City of Kigali, are provided by a public utility operating on a commercial basis[9]. Service coverage within the contiguous built-up urban area is generally reasonable while peri-urban areas are not always well served. In Kigali major investments have managed to secure adequate

[2] See Strategy, section 6.2, for a definition of improved water sources

[3] The national inventory conducted in 2009 is based on questionnaires filled at the sector level. Full title of the study: Monitoring/Evaluation and Management System of Water and Sanitation Sector and National Inventory of Water Supply and Sanitation Infrastructures. MININFRA / AAW Consulting Engineers, October 2009

[4] According to the EDPRS document coverage remained at about 64% between 2000 and 2005. The reason was that the number of people supplied every year was of the same order as population growth.

[5] 340,000 people to raise coverage by 5%, plus 90,000 to partly compensate for the population growth of 2.7%

[6] Source: Sector Performance Report 2008; estimate based on JMP figures of 2004, which were 38% (rural) and 56% (urban).

[7] Source: Interim Demographic and Health Survey 2007-08, National Institute of Statistics of Rwanda, April 2009

[8] Source: MININFRA. Water and Sanitation Sector Expenditure Review 2008

[9] RWASCO, formerly ELECTROGAZ

supplies from a variety of sources (surface water, springs, and groundwater / bank filtration).

2.2.3 Sanitation – liquid waste and excreta

Open defecation has practically been eradicated and most of Rwandan households have already financed and built their on-site private sanitation premises, albeit only about half comply with the international standard definitions of an improved sanitation facility. Very few Rwandan households have installed flush toilettes. The prevailing practice remains that water is used for cooking and washing (grey water, discharged mostly on surface) while the excreta are disposed with waterless latrines, which is a rational solution considering the scarcity of the average water supply.

The country has not yet invested in collective (water-borne) sanitation systems for densified urban areas, except 3 small sewerage systems in Kigali for about 700 households altogether. Major hotels, hospitals and some industries have installed their own (pre-)treatment systems. A conventional sewerage and treatment system for Kigali's centre is in the planning process.

Rwanda's schools benefit from the HAMS program (since 2000) which focuses on behaviour changes in hygiene practice including considerations for menstrual hygiene.

2.2.4 Sanitation – storm water management

The runoff impact of unmanaged storm water on people and environment is manifold. Missing or badly maintained infrastructure causes erosion of usable land, increases flooding, and endangers private and public infrastructure. Combined with poor liquid and solid waste collection in urban settlements, runoff also carries pollutants such as hydrocarbons, heavy metals, bacteria, sediment, pesticides and fertilizers into streams or groundwater threatening environmental health. The ongoing urban growth in Kigali and other centres increases storm water volumes, erosion risks and the danger of inundations.

2.2.5 Sanitation – solid waste

Today, no national policy or harmonized regulatory framework addresses solid waste management, leaving the task to households, communities, NGOs, the private sector, community associations and district authorities operating with limited technical and financial means. However, Kigali and other towns are undertaking considerable efforts to maintain the urban environment clean and plastic bags are forbidden within the country.

Problems arise at all stages of waste collection and disposal. Kigali's waste contains still 70% of organic, biodegradable waste and in rural areas this portion of waste may reach more than 95%. However, waste sorting, composting and recycling activities are at the very beginning and until now, Rwanda did not invest in environmentally safe landfills. The only operating dumpsite in Kigali receives about 400 tons per day of solid, not sorted waste or 140'000 tons per year. Deep seated fires, methane explosions, landslides and leachates threatening rivers and groundwater are some of the common problems of such basic dumpsites.

2.3 Key sector issues and concerns to be addressed

Rwanda's WSS services sector is generally dynamic: Coverage rates are increasing (from a relatively high level at African scale) through successful large implementation programmes. The sustainability of infrastructure management is improving since decentralisation and the introduction of public-private partnership, with independent regulation being assured by a regulatory agency. Growing donor confidence is demonstrated by the fact that an increasing percentage of external aid is being disbursed through government systems including budget support. Sector harmonisation is making significant progress and has prepared the ground for a Sector-Wide Approach (SWAp). International organisations are supporting sector reforms and related studies.

But much remains to be done. This section will highlight selected issues and concerns the sector policy undertakes to address, as well as successes to build on.

2.3.1 General / institutional issues

One of the key achievements is the development of a successful national, harmonised approach for the implementation of rural WSS projects. The institutional umbrella for this implementation approach is still missing but is to be created by the expected WSS Authority.

Generally the institutional situation is not yet consolidated, not surprisingly given the scope of the recent and ongoing sector reorganisation. It is urgent to develop a detailed concept regarding the institutional roles and responsibilities. This is particularly palpable for sanitation, a sub-sector which is shared with the Ministry of Health and where adequate operational arrangements for cooperation are vital for success. In urban areas and grouped settlements one of the key coordination issues to be resolved is joint planning between local governments (MVK, districts) and the Utility.

Changing habitat patterns, in particular the policy to promote grouped settlement in rural areas, are both an opportunity and a challenge for the sector: An opportunity, because it is easier to provide service to people living together; a challenge, because considerable efforts have to be made to meet the expectations.

The sectors' monitoring & evaluation and performance measurement framework needs to be strengthened, with a view to create the basis for results oriented management, planning and budgeting. Disaggregated data need to be collected to capture effects on children and women.

Capacity building requirements need to be addressed in a systematic manner and at all levels. District capacities and ownership are generally growing as the decentralisation process progresses. However, the nature of WSS projects involves activities and levels of technology that call for specific expertise, if the high implementation standards developed by the national rural WSS programmes are to be maintained. Therefore, decentralised implementation will be supported by sector-specific backup and training arrangements that will eventually replace the existing project implementation units.

2.3.2 Water Supply

The key challenge in infrastructure development is to preserve the achievements and good practices of the national rural water programmes while strengthening decentralized implementation capacities. Sector financing is still fragmented, with a variety of different financial management arrangements. A harmonised sector financing mechanism is desirable in order to streamline the flow of resources, reduce the transaction costs and reporting requirements and facilitate monitoring.

Delegated management through private operators is seen as the main strategy to enhance the sustainability of rural water supply infrastructure. However, recent studies on PPP and tariffs[10] have shown that the regulatory oversight of PPP arrangements – selection criteria, contract management and compliance monitoring, accounting practices, tariffs, etc. – is still deficient. This is expected to improve with the increasing involvement of RURA in rural water supply but support and guidance by the sector institutions are also needed.

A key issue for the success of the PPPs is to ensure its financial viability by setting appropriate tariffs and regulating the amount and usage of the fees collected by the Districts. Viable water tariffs in rural areas tend to be relatively high, in particular where pumping is involved. This poses a challenge for rural households and encourages the use of alternative, unsafe sources of water supply. Among the options to be considered to achieve cost recovery while keeping tariffs affordable are the selection of appropriate technologies, grouping of

[10] Les performances du PPP pour la gestion des adductions d'eau rurales au Rwanda, June 2009; and: Tariff Recommendation for the Rural Water Sector in Rwanda, August 2009. Both studies: Hydroconseil / WSP

individual schemes as well as targeted subsidies.

Private operators acting in rural areas are often not yet fully professional. District staffs may have appropriate levels of education, but are short of specific PPP and WSS field experience. This situation calls for a comprehensive capacity building programme addressing both district and private operator staff.

The role of consumers and user associations needs to be reconfirmed, as these are not a contractual party in the delegated management contracts between districts and private operators.

Private sector investments in water supply infrastructure are still rare. Short-term contracts of private operators fail to initiate private investments in extensions or service level upgrades.

Finally, water quality control remains an unmatched challenge in rural areas. While the quality of water resources is generally good the risks are mainly related to local contamination (household unsafe handling and storage, inadequate protection, reservoirs, broken pipes). Surveillance arrangements to systematically detect these contaminations and initiate action are yet to be developed.

The main challenges in urban water supply are cost recovery and improved planning: Water tariffs, which used to be cross-subsidised from the electricity sector, covered only 58%[11] of the production costs in 2008. Urbanisation and infrastructure development need to be planned in collaboration between the Utility and the urban authorities. Long-term strategic planning is required to orient and mobilise the considerable investments needed to satisfy the fast growing demand of Kigali and other towns. Finally, dedicated efforts are needed to raise service levels (less than 20% of the urban population have household connections) and to ensure service delivery to the urban poor.

2.3.3 Sanitation

Unhygienic sanitary facilities for excreta disposal, poor management of solid and liquid wastes and inadequate hygienic practices are responsible for a large portion of Rwanda's disease burden. Sound environmental health conditions are a key prerequisite to enhance quality of life, to impact positively on sustainable economic growth and to reduce poverty. This policy on water supply and sanitation infrastructure fully recognises the existing National Environmental Health Policy adopted by Cabinet in July 2008.

To increase sanitation coverage the policy can build upon scalable sanitary achievements. Most Rwandans households have already financed and built their waterless sanitary facilities, even if not yet fully complying with the sanitary definitions of the MDGs, and adhere to basic principles regarding garbage disposal. The decentralization process provides an adequate framework for community participation and sensitization. Large programmes – CBEHPP and HAMS – have been launched to improve domestic and school sanitation, respectively. Feasible and socially acceptable sanitation technologies are available but not affordable for all population segments yet. The key challenge is therefore to combine sensitization with targeted support for infrastructure development in order to bring sanitation coverage to scale.

The main constraints that could hamper the progress in achieving the Vision 2020 remain a suboptimal enabling environment, in terms of laws, regulations and institutional framework, the lack of awareness on hygiene practice, as well as the lack of financial means and capacity of both the public and private sectors.

2.4 Institutional responsibilities

The institutional sector framework and responsibilities are still evolving. The WSS sector is characterized by significant structural changes and reforms, either accomplished in recent years or still ongoing. Among the most important recent changes are the separation of water supply and sanitation services from water resources management in 2008; the transfer of the responsibility for WSS service delivery and implementation to the

[11] Source: "Standing of RWASCO in terms of Indicators", information sheet prepared by RWASCO, 2009

districts; the concentration of rural WSS project implementation capacities in a national Programme Coordination Unit; the systematic introduction of delegated management (PPP); the increasing involvement of the Rwanda Utilities Regulatory Agency (RURA) in the WSS sector; and the on-going transformation of ELECTROGAZ into a new Utility that will be separate from energy services but will also be in charge of urban sewerage.

The reformulation of institutional responsibilities and coordination mechanisms is thus itself a key policy issue (see section 4.9.2). Institutional sector reform will involve the establishment of a dedicated WSS Authority with substantial operational autonomy, while the Ministry of Infrastructure will confine its role to policy formulation and follow-up, oversight and evaluation. The will be in charge of sector planning and operational coordination and will operate a harmonized financing mechanism, the Water and Sanitation Fund (WSF). Districts are in charge of water and sanitation service delivery in rural areas while the new Utility will ensure urban water supply and sewerage services. The Ministry of Health takes the lead in household sanitation and hygiene promotion.

Details regarding the institutional roles and responsibilities for the implementation of this policy will be provided in the Strategic Action Plan (see section 8.2 as well as tabular indication of responsibilities per activity in chapter 7).

3 Principles and Objectives

3.1 Pillars and principles

The formulation of this water and sanitation services policy is guided by a number of central tenets. These are:

Priority to basic services: Each person and community has equal right to access basic water services. Priority will be given to "some for all" rather than "all for some", until the Vision 2020 goal of access to safe drinking water for all is reached. Due attention will be given to affordability considerations.

Decentralization: The responsibility for service delivery is vested at the decentralized level. The water and sanitation sector is committed to building and strengthening decentralized planning, implementation and management capacities.

Community participation: The beneficiaries of water supply and sanitation services shall be actively involved in planning, decision making and oversight throughout the project implementation cycle. In particular, they will choose the service level that responds to their needs and capacities.

Cost recovery and financial sustainability: Operation and maintenance costs of water supply and sanitation infrastructure shall be born by the users, in order to ensure sustainable service delivery. Affordability shall be addressed by the choice of appropriate technologies and by enhancing efficiency, not usually by granting subsidies. The **polluter-pays** and **user-pays** principles are to be applied in sewerage and waste management.

Private sector participation: The sector will continue to promote delegated management through private operators, which is the key strategy to enhance the sustainability of rural water infrastructure. The private sector will also be encouraged and supported in developing capacities for investment, construction and service delivery in water supply, sanitation and solid waste management.

Operational efficiency and strengthening of accountability are seen as priorities in both urban and rural infrastructure development and management, in order to improve financial viability, minimize fiduciary risk (checks and balances) and optimise the use of the available resources.

Emphasis on sanitation and hygiene: The sector recognizes the critical importance of sanitation and hygiene behaviour change for the achievement of sustainable health benefits. Sanitation and hygiene activities and projects shall be developed through strategic cooperation with the health and education sectors. Any water supply projects shall systematically consider sanitation implications and hygiene education requirements.

Interests of women and children: The crucial roles and the particular interests of women and children are fully acknowledged. All sector activities shall be designed and implemented in a way to ensure equal participation and representation of men and women, and to pay due attention to the viewpoints, needs and priorities of women (see section 4.10.2 for details on the implication).

Grouped settlements: The water and sanitation sector gives preferential consideration to service delivery in grouped settlements, taking into account the changing habitat structure.

Environment and water resources protection: Water supply and sanitation services will be developed in close coordination with water resources management, based on an integrated approach. Water use should be rational and sustainable and shall abide with environmental regulations and safeguards. Waste disposal shall be planned and managed with a view to minimize environmental impact and ensure the protection of water resources.

Inclusive programme approach: The water and sanitation sector aims to develop a consistent, national approach, to harmonize financing and implementation modalities and to optimize stakeholder coordination. The Sector-Wide Approach (SWAp) as well as the sector's capacity building efforts will consider all sector stakeholders, including NGOs and the private sector. National structures and capacities will be developed to replace project implementation units in the short to medium term.

Results-based management: Monitoring and evaluation systems will be developed in conjunction with planning and budgeting procedures, involving decentralised actors (in particular the districts), in order to ensure that the activities and investments are in line with the defined sector objectives and priorities.

3.2 Coherence with development flagships

Rwanda is politically committed to achieve long term aspirations and targets in sustainable socio-economic development. The related targets and principles are defined in the following, so-called development flagships.

3.2.1 Millennium Development Goals

The international Millennium Development Goals (MDGs), to which Rwanda is committed, include a target directly referring to water and sanitation services:

> *"Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation."*

Assuming a baseline around 2000[12] the target for safe water supply coverage is 82% (source: EDPRS), to be reached by 2015. The EDPRS targets below, to be reached by 2012, are more challenging.

3.2.2 Vision 2020

The 2020 Vision aspiration is that all Rwandans will have access to safe drinking water in 2020. The directly relevant paragraphs of Vision 2020 are quoted below.

> *17. Water: All Rwandans will have access to safe drinking water. Water resource management will be rationalized, integrated and in harmony with the national land-use master plans in all water dependant domains.*
>
> *18. Waste management: At least 80% of the Rwandan population will have easy access to adequate waste management systems and will have mastered individual and community hygiene practices.*
>
> *91. By 2020, the rural and urban areas will have sufficient sewerage and disposal systems. Each town will be endowed with an adequate unit for treating and compressing solid wastes for disposal. Households will have mastered and be practicing measures of hygiene and waste disposal.*

3.2.3 EDPRS (2008–2012)

The Water supply and Sanitation policies will be coherent with the Economic Development and Poverty Reduction Strategy (EDPRS), Rwanda's medium term framework for achieving its long term development aspirations. There will be a close link with the EDPRS planning and monitoring framework.

Quote from EDPRS statement 3.40, page 42:

> *During the EDPRS period, the sector aims to increase the proportion of the population accessing safe water from 64% to 86%, and the proportion with sanitation services from 38% to 65%. It is also planned to increase the proportion of the rural population living within 500m of an improved water source from 64% to 85%, and to raise the proportion of the urban population residing within 200m of an improved water source from 69% to 100%. (…)*

[12] The usual baseline year of 1990 is not considered to be appropriate for Rwanda; the target would be 80% if the 1990 baseline was used.

As regards sanitation, the sector plans that the proportion of schools with latrines complying with health norms will rise from 10% to 80%, and that the corresponding proportion for rural households will increase from 38% to 65%.

3.3 Global objective (goal)

The global objective for the Water Supply and Sanitation Sector is to:

Ensure sustainable and affordable access to safe water supply, sanitation and waste management services for all Rwandans, as a contribution to poverty reduction, public health, economic development and environmental protection.

3.4 Specific objectives

Specific objectives are formulated in a way to be directly used for strategic planning and monitoring. Each sub-sector objective will be associated with its indicators, time-bound targets and implementation responsibilities.

Water Supply

Rural - coverage	1. Raise rural water supply coverage to 85% by 2012 and to 100% by 2020 by assisting the Districts to plan, design, finance and implement infrastructure projects
Rural - functionality	2. Ensure sustainable functionality of rural water supply infrastructure by developing effective management structures and well-regulated public-private partnership (PPP) arrangements.
Urban	3. Ensure safe, reliable and affordable urban water supply services for all (100% service coverage by 2012) while strengthening the financial viability of the Utility.

Sanitation

Individual sanitation	4. Raise household sanitation coverage to 65% by 2012 and 100% by 2020, and promote hygiene behaviour change.
Institutional Sanitation	5. Implement improved sanitation for schools, health facilities and other public institutions and locations.
Collective sanitation	6. Develop safe, well-regulated and affordable off-site sanitation services (sewerage and sludge collection, treatment and reuse/disposal) for densely populated areas.
Storm water drainage	7. Enhance storm water management to mitigate impacts on properties, infrastructure, human health and the environment
Solid waste Management	8. Implement integrated solid waste management in ways that are protective to human health and the environment.
Institutional Sector Framework	9. Develop the sector's institutional and capacity building framework.

4 Policy Statements

4.1 Objective 1: Raise rural water supply coverage by assisting the Districts to plan, design, finance and implement infrastructure projects

The policies outlined in this section focus on the core objective of the water supply sub-sector, the attainment of the coverage targets set in Rwanda's overarching policy and strategy documents. Essentially these targets will have to be reached in rural areas as still more than 80% of the population is rural and the current level of service coverage is already higher in urban areas.[13]

The following policy statements are therefore centred on the investment planning, financing and implementation requirements for rural water supply (basic service coverage). The proposed policies conform to the government's decentralisation policy and build on the guiding principles of community participation and priority to basic services.

4.1.1 Implement an ambitious, decentralised rural WSS programme based on harmonised procedures

Reaching the flagship objectives means to increase water supply coverage by 4 percentage points each year, and to supply about 460,000 people every year. The bulk of the necessary investments will continue to be funded by grants, through the government budget and external aid.

An ambitious rural WSS programme is therefore needed that relies on decentralised implementation but with funding, support and quality assurance to be provided by the Agency. Districts will take the leading part in planning and implementation and will collect and transmit the data needed for progress monitoring. Funds will be channelled through a harmonised financing mechanism (see below) and will be linked to specific plans and criteria that ensure equitable targeting as well as policy compliance. The existing 'Harmonised Procedures Manual' sets out a well-established framework defining the implementation arrangements and best practices for this national programme.

Communities will be involved in project planning and monitoring and will contribute in cash or in kind to promote ownership.

4.1.2 Establishing a harmonised financing mechanism linked to district-led implementation

The sector is committed to establishing a dedicated Water and Sanitation Fund (WSF) for pooled funding of district-led and district-implemented projects. The WSF's organisational structure shall be closely linked to the Authority and replace existing project implementation units without increasing overhead structures and costs.

The WSF is expected to channel most (rural) WSS sector financing from different sources including the government budget, earmarked donor funding and possibly other internal sources of revenue. Financial management and reporting will follow the same government procedures, irrespective of the source of funding.

The WSF shall have a close link to implementation and dispose of appropriate mechanisms for project appraisal, technical support and compliance monitoring. The fund will also be linked to the sector's overall planning, reporting and performance monitoring framework.

Districts will be the project owners and are expected to use their regular planning, procurement, contract management, financial and reporting procedures for implementation and monitoring. The role of the WSF will be facilitative, supporting districts to comply with their responsibilities under performance contracts and to implement their District Development Plans.

[13] Policies for improving the access of urban poor are also relevant for attaining full basic service coverage but are placed in the section on urban water supply policies (4.3) for practical reasons.

The WSF approach has been successfully piloted in two districts of Rwanda[14] and builds on the best practices of the country's large national sector programmes[15].

4.1.3 Prioritize water supply service delivery in grouped settlements

Special efforts will be made to provide water services in grouped settlements in rural areas, such as imidugudu and small towns or trading centres. One of the key objectives of the rural habitat policy, which aims at 65% of the population living in agglomerations and villages by 2015, is to improve access to adequate services, including safe water supply. To provide an appropriate response the WSS sector will aim be involved in the identification and development of sites at an early stage, as coordinated planning might significantly reduce the costs of service delivery, both in terms of investment and running costs.

4.1.4 Strengthen decentralised implementation capacities through technical support and capacity building

The transfer of implementation responsibilities to Districts will be supported by both a capacity building programme and institutional arrangements for technical support. Since the establishment of the new districts in 2006 significant progress has been made in terms of implementation capacities; however, there is a lack of specific WSS sector experience and permanent support arrangements are needed to provide a framework for targeted specialist support by the Agency.

The elements of the strategy are:

- Establishment of a capacity building programme addressing district and sector officials;
- Establishment of regional support units of the WSS Authority/ financing mechanism, covering several districts each;
- Support and monitoring provided in conjunction with grant financing (see harmonised financing mechanism, above);
- Targeted 'on demand' support from specialised public bodies, such as the Utility.

4.1.5 Support the preparation of WSS development plans for all Districts

The sector will support the preparation of detailed investment master plans for water supply and sanitation development in each district. Draft master plans shall be submitted to the Authority for approval. Once approved, they will be the basis for releasing grant financing of projects through the harmonised financing mechanism.

The will provide guidelines, minimum requirements and recommended planning parameters for the master plans. Coordination of the plan with water resources planning will be one of the essential requirements, in order to ensure integrated water resources management.

4.1.6 Develop a range of affordable technology options for rural areas

The choice of affordable technology, appropriate design and good workmanship are important prerequisites for the sustainability and financial viability of rural water infrastructure. The Authority will therefore develop and continuously update a technical implementation manual that provides guidance for districts, the private sector, NGOs and other parties involved in the development of rural water systems.

The manual will provide planning tools, design and quality standards for a range of technologies, service levels, types of settlement (habitat structure) and natural environment (climate, geology), with a clear preference for low-cost technologies such as gravity schemes. In general, technical solutions and service levels shall be

[14] FEA – Fonds de l'Eau et de l'Assainissement, piloted in the two districts of Nyamagabe and Nyaruguru since 2007.
[15] PNEAR and PEAMR

selected by involving the beneficiaries, including the poor, and explaining the financial implications.

The use of solar power as an alternative to diesel pumping will be piloted in collaboration with the private sector. Rainwater harvesting will be considered as a solution for supplying areas that could otherwise only be supplied by pumping at excessive costs (e.g. hilltop locations, lava region). Rainwater catchment systems will also be promoted as a complementary source of water for both households and public buildings.

The potential to use groundwater will be explored in cooperation with MINIRENA. As a priority, better understanding for groundwater availability (sustainable yield, quality) shall be developed for the areas of Eastern Province where natural springs are lacking.

The implementation manual will also include guidance on environmental, social and gender issues to be taken into account during all stages of planning and execution, and on measures to ensure that local residents are not deprived of their right to access the existing natural sources of water.

4.1.7 Promote household connections to improve service levels, increase water consumption and improve the financial viability of water supply schemes

Rural water supply schemes in Rwanda have few household connections, other than those of public institutions. This leads to very low consumption, typically of the order of 5 litres per capita per day. This situation is not desirable from a hygiene promotion point of view and keeps the revenue base for scheme operation at a very low level. Schemes are designed and planned based on far higher per capita consumptions.

The construction of private connections shall therefore be actively encouraged at the planning stage, and one-off subsidies to make the connection costs affordable shall be considered.

4.1.8 Encourage and mobilise private sector investments in new infrastructure

Private investments in WSS infrastructure shall be encouraged and supported. The WSS sector shall consider options to leverage private capital investments by providing low-interest loans, through output-based aid (OBA) or co-financing. The importance of this type of models is expected to grow in the future, once the sector develops beyond basic service delivery. The available options shall be studied and piloted as soon as possible, in cooperation with Rwanda Development Board (RDB) and other stakeholders.

Among the types of non-government investments to be encouraged and co-financed are:

- Investments by private operators (in particular system extensions, rehabilitations and service level upgrades);
- Investments by religious communities that are in the public interest;
- Community self-help initiatives (e.g. to install rainwater harvesting facilities, self-supply), to be financed through micro-finance schemes.

Private investments will be subject to the same standards and regulations as public investments with respect to service standards, tariffs (affordability), consumer protection, water resources use, etc.

4.2 Objective 2: Ensure sustainable functionality of rural water supply infrastructure by developing effective management structures

Full water supply service coverage can only be reached if the existing infrastructure continues to function sustainably and the available resources can be used for extending the coverage to the unserved population rather than for rehabilitating the existing infrastructure. In the past, insufficient O&M arrangements led to a short life span of the infrastructure and to cyclic rehabilitation efforts. Still today a major part of the existing rural water schemes needs rehabilitation.

Sustainability of infrastructure functionality depends on several factors, including the choice of technology, the quality of design and execution, adequate user involvement (ownership), and the sustainable use of water resources. However, this section will focus on the institutional, management and cost recovery requirements to ensure sustainable functionality.

4.2.1 Bring delegated management to scale while optimising the PPP model

The sector aims to reach a functionality rate of piped water schemes of 90% by 2012. To achieve this delegated management through private operators (PPP) is promoted as the standard way to operate piped water supply schemes in rural areas. Experience has shown that, as a rule, community based management and revenue collection not based on metered consumption are not adequate to ensure the sustainable functionality of piped water infrastructure. If other types of management arrangements are chosen this needs to be justified by demonstrably good performance indicators and will be subject to the same standards and regulations in terms of cost recovery, accountability, service standards and operational efficiency.

Sector institutions, in particular the Authority and RURA, will coordinate their roles. The Authority will actively support the further development of delegated management by providing advisory support, model contracts, benchmarking and training. The existing PPP models and contracts shall be reviewed and refined in order to optimise the arrangements and identify best practices. RURA, on the other hand, will focus on independent regulation.

Contractual models other than short-term service contracts will be piloted and, if successful, promoted in order to encourage private investments in extensions, service level upgrades etc.

4.2.2 Enhance regulation for better performance in PPP

To address the deficits revealed in the preparatory study "PPP performance for the management of rural water schemes in Rwanda" the sector will make better regulation one of its priorities. This involves cooperation between the Agency, the districts and RURA to ensure:

- a more competitive selection of private operators;
- adequate supervision and regulation of operators, including contract compliance monitoring;
- a clear definition of the responsibilities of local authorities;
- the definition of minimum requirements in terms of service standards;
- transparent financial management in accordance with accounting standards;
- the prevention of corruption.

User associations/committees shall be involved in the oversight and shall have the role to represent consumer interests and user rights; their rights and obligations will be firmly established in the contractual and regulatory arrangements.

4.2.3 Develop and implement a comprehensive capacity building programme

For a successful PPP both the public and the private partners need adequate skills in relevant matters such as business planning and asset management.

The Authority shall therefore set up a capacity building programme for all actors involved in the management and oversight of rural water supply systems, including district and private operator staff as well as user committee members. The programme will comprise different module addressing technical, managerial, regulatory, asset management, financial management and reporting aspects.

4.2.4 Develop tariff guidelines that take into account financial viability and affordability considerations

To reconcile the concerns of sustainable cost recovery and affordability the Authority will (1) prepare tariff guidelines in cooperation with RURA, and (2) consider targeted (cross-) subsidy arrangements in cases where financial viability cannot be reached with affordable tariffs. To avoid this situation the choice of expensive technologies, such as diesel powered systems serving a small rural customer community, will be generally discouraged.

Tariff guidelines will recommend, as a general rule for rural water supply schemes, to aim at cost recovery at a level to recover the running O&M costs as well as the repair and replacement of electro-mechanical equipment, but excluding the depreciation of the initial capital investment. The guidelines will also provide guidance on the amount and use of the earmarked reserve to be set aside by the districts for major repairs, refurbishments and extensions. Specific exemptions will be recommended for vulnerable households.

Where exceptionally high production costs cannot be avoided it will be considered to regroup several schemes of different characteristics in order to obtain a cross-subsidy effect. If direct subsidies have to be granted this will be done in an explicit, transparent way, based on clear criteria and without jeopardising the general principle of sustainable cost recovery.

4.2.5 Strengthen community based maintenance system for rural point water sources

Community management will continue to be the most common approach to ensure the O&M of point water sources, such as protected springs and boreholes equipped with hand pumps. Communities and user committees shall be supported and supervised by the Districts, with technical assistance from the WSS Authority if required, and shall have access to capacity building programmes.

4.2.6 Develop a water quality surveillance system for rural water supply

The concerned sector institutions – the Agency, RURA and the Ministry of Health – will cooperate to develop and implement a system for rural water quality control. This involves the clarification of responsibilities, the definition of standards, the development of viable operational procedures and the creation of decentralised laboratory capacities.

4.3 Objective 3: Ensure safe, reliable, financially viable and affordable urban water supply services for all

This section is based on the assumption that the public Utility will remain the main operator for urban water supply services in the medium term. Formally its institutional status does not provide a monopoly and does not preclude other operators. Therefore, wherever reference is made to 'the Utility' in the following statements this implies a focus on public service provision but would also apply to any other operators involved in urban water and sewerage services.

4.3.1 Consolidate the status of the Utility and the contractual basis for its operations

As a prerequisite for a successful development of the restructured Utility a well-defined contractual framework for its operations will be established. This involves:

- a long-term convention with Government for the delegation and management of assets
- a performance contract linked to a financial model
- a customer chart
- license/regulatory control by RURA
- a framework for joint planning between the Utility and the City of Kigali, respectively the districts in charge of other urban areas;

- clarification of the abstraction/discharge rights for the water resources used, in line with the environmental standards.

4.3.2 Move towards full cost recovery for urban water services

The costs of urban water services should be fully covered by user fees, in order to redirect public funds to extending service coverage (or, if need be, to rural areas where financial viability is more difficult to achieve).

In the short term, the operational costs of the Utility for water supply are to be fully covered by the tariff (without cross-subsidising as in the past). Tariffs will be set accordingly but will offer social tariffs to ensure affordability. The Utility will operate on a commercial basis and charge for its services (including technical support services to third parties).

Investments are to be funded by a mix of public grants, loans and internal cash generation as per a financial model. While external aid will still account for a large share in the short and medium term the Utility will endeavour to access loans and increase the share of investment financed by internal cash generation.

4.3.3 Improve service levels by encouraging household connections and developing pro-poor services

In order to increase the revenue base, raise the standard of living and promote hygiene (by raising water use to international standards) it is desirable to increase the percentage of individual household connections: Less than 20% of the inhabitants of urban areas are currently served by individual connections.

The WSS sector shall therefore encourage and support efforts of the Utility (or other service providers) to increase the number of household connections, and shall consider targeted subsidy schemes such as social connection programmes.

Special care will be taken to provide affordable services to low-income households, including those living in informal settlements even without legalized land ownership. An inventory shall be made to establish the current service coverage in these areas. The policy and practice for the management of public tap stands shall be reviewed to optimise service quality and customer satisfaction.

4.3.4 Improve operational efficiency and reduce unaccounted-for water

The Utility will strive to optimise its operational efficiency in order to deliver high-quality services at affordable tariffs, without depending on public subsidies.

To this end, the Utility will aim at international performance benchmarks and will minimise non-revenue water by reducing both physical water losses (leakages) and unbilled consumption.

4.3.5 Develop production and distribution capacities

The Utility will prepare a long-term strategy for the staged development of the urban production capacities and distribution systems. This will include sequencing of the sources of supply and a programme to monitor the water quality and quantity of the envisaged sources.

Technologies and sources of supply that minimise the use of imported consumables for water purification will be preferred in order to avoid negative impacts on O&M costs, consumer tariffs and the national economy.

The options to mobilise private investment for bulk water production, treatment and the extension of distribution systems will be evaluated.

4.4 Objective 4: Raise household sanitation coverage to 65% by 2012 and 100% by 2020, and promote hygiene behaviour change.

Sanitation is an important contribution to many aspects of Rwanda's human and economic development. The first priority, on which the MDG definition of basic sanitation is based, is to prevent risks and hazards on people's health and safety at the household level.

Unfortunately, unlike for water supply, collective demand for sanitation is low. By nature, people's expectation focuses on getting rid of the liquid waste out of the private premises, while concern about the impact on public domain comes second.

The first priority is therefore to create demand and leverage private investment for affordable and sustainable household sanitation. Individual on-site systems will remain the sanitary solution for the large majority of Rwandan households in reaching the overall coverage objective. *Modern individual sanitation* shall be designed, implemented and operated in order to provide affordable and high standings of services.

4.4.1 Establish a cooperation framework for a comprehensive inter-sectoral programme to promote improved household sanitation and behaviour change

A firm, permanent framework of cooperation will be established to coordinate the interventions of the different government institutions involved in sanitation and health promotion – essentially the Ministry of Health, the WSS Authority and the Districts. As stated earlier the Ministry of Health will continue to be the lead in the promotion of individual sanitation at the community level, essentially through its national Community Based Environmental Health Promotion Programme (CBEHPP). The WSS Authority, on the other hand, will be responsible for the development, evaluation and support of adequate technical sanitation solutions. Sanitation and hygiene components shall also be incorporated in each water supply project.

The Water and Sanitation Fund (WSF) will be one of the sources of funding of the joint programme.

4.4.2 Raise sanitation coverage by enhancing the demand for sanitation through a combination of promotion measures

Over the next years, Rwanda intends to improve, replace or build every year about 150'000 (mostly individual) sanitation facilities. Households are today the country's largest financiers of sanitation devoting substantial resources to developing their own on-site facilities. Thus, ownership and behaviour change are critical steps for sustainably increasing sanitation coverage and improving hygiene practices. Government institutions shall therefore focus on promotion and facilitation, while households will remain the main investor. Well designed sanitation programs have shown leverage ratios of up to 1:10 between public and private investments.

The demand for improved sanitation shall be promoted through a combination of measures:

(i) awareness campaigns related to visible and non-visible health impacts of poor sanitation and aiming at behaviour change;

(ii) marketing the sanitation offer, targeting on people's expectations and preferences such as comfort, status, health benefits, value or safety;

(iii) education and training in schools and universities;

(iv) provision of limited material incentives or subsidies to accelerate the improvement, construction or replacement of sanitary facilities;

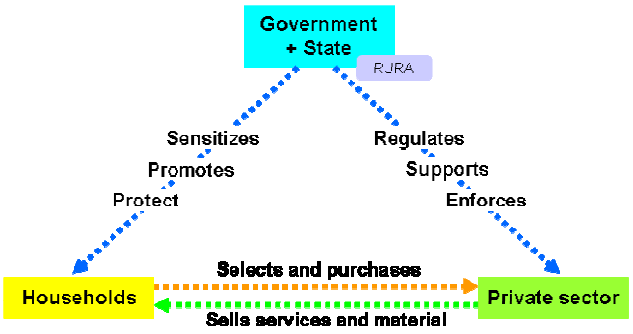
(v) using the provision of water supply services as an incentive and opportunity to improve sanitation facilities.

In line with Rwanda's rural Habitat Policy, incentives for new or improved sanitary facilities shall be targeted to

the population in densified and actual or planned Imidugudu settlements.

4.4.3 Develop private sector capacities for improved sanitation

The joint sanitation programme shall foster enabling conditions for the development of the private sector, which will produce building material, construct facilities and provide services such as sludge removal. Among the approaches to be considered are vocational and commercial training programmes, the Labour Intensive Local Development Programme and output-based aid (OBA).



Repartition of roles for the development of individual sanitation projects

4.4.4 Develop, pilot and demonstrate a range of individual sanitation technologies for different standings

The joint sanitation programme shall promote systematic research and development of affordable hygienic on-site individual sanitary solutions, including the provision of manuals. For rural and urban households without individual water connections the programme shall prioritize waterless excreta disposal or solutions using grey water while strongly promoting the use of water for hygienic purposes such as hand washing. Technical solutions may include composting facilities such as alternating twin-pit VIP latrines, fossa alterna, ecosan, arbour loo and pour-flush toilets as well as rainwater harvesting and reuse of waste water. Collective[16] latrines including biogas facilities are considered feasible solutions in densified settlements.

Practical field testing, construction of sanitary showrooms, dissemination of knowledge and scaling-up shall be done at District level and involve Rwanda's academic and professional sector as well as the international community. The RBS shall be involved in the standardization of sanitation technologies.

4.5 Objective 5: Implement improved sanitation for schools, health facilities and other public institutions and locations

Sanitary facilities of public institutions, in particular schools and health centres, shall demonstrate a clear exemplary function for the population.

4.5.1 Implement a joint programme to provide hygienic sanitary facilities and promote hygiene in all schools, health centres and other public institutions

The proportion of schools and health centres with hygienic latrines shall rise to 80% in 2012 and to 100% by 2015. The role of the school hygiene and sanitation (HAMS) programme shall be reinforced and all educational

[16] The definition of a "collective" latrine refers to a facility used by a restricted group of known people, and is opposed to a "public" latrine, which is open to all. A school latrine is collective, but not public.

and health infrastructure projects and programs shall include a sanitation part addressing both constructive and soft elements such as awareness promotion.

Well built public toilets in places of high frequencies such as markets shall allow promoting public health and lowering risks of disease. Special emphasis must be given to the proper management of public latrines.

All types of institutional collective and public latrines will be eligible for funding through the Water and Sanitation Fund (WSF).

4.6 Objective 6: Develop safe, well-regulated and affordable off-site sanitation services for densely populated areas

In general, off-site *collective sewerage* shall be confined to areas where it can be demonstrated that it is more favourable than individual sanitation, considering affordability, technical feasibility (settlement density, water consumption, infiltration rate) and environmental requirements.

Collective sanitation services combine infrastructure elements (e.g. sewerage systems, treatment plants) as well as service functions (e.g. sludge collection) that involve public and private actors and different sectors (infrastructure, environmental health, and environment). Adequate institutional interfaces and regulations are yet to be developed.

4.6.1 Establish an effective regulatory and institutional framework for collective sewerage and sludge management

The development of an effective regulatory framework will start with a review and harmonization of the existing laws, standards and regulations, including the contractual framework for the Utility and other operators (see 4.3.1).

Intensive consultations will be held with the health and environment sector institutions as well as the regulatory agency (RURA) with a view to develop concrete, operational guidelines and procedures. The executive responsibilities and cooperation modalities will be clarified by defining and separating regulatory, operational and supporting roles down to District and sector levels and shall include the supporting capacity building concept.

4.6.2 Promote viable, low cost approaches for collective sewerage schemes

In order to deliver an affordable public service in line with demand in Kigali and densified urban centres with piped water, the following off-site technology options for collection and treatment technologies shall be prioritized:

1. Simplified, condominial or small-bore (solid free) sewerage systems, depending on the situation;
2. Off-site collection of grey water (through sewerage) and on-site collection of excreta where existing toilets or waterless latrines are already providing a safe level of service;
3. Conventional sewerage with separate collection of domestic wastewater (separate from rainwater drainage).

In addition, innovative management models shall be encouraged, such as community or privately operated decentralized sewerage systems.

Wastewater treatment technologies and classified effluent standards shall be implemented in phases, based on a careful evaluation of environmental and financial viability criteria. Innovative technologies and approaches for the reuse and recycling of side products (sludge in agriculture, treated wastewater for irrigation) shall be piloted and replicated.

4.6.3 Implement cost recovery for collective sewerage systems

Based on the *user-pays principle*, the Utility and other commercial operators shall recover costs for urban wastewater services by user fees. The principle shall be applied progressively starting to recover the full operating costs for wastewater collection networks and treatment plants. The recovery of depreciation or replacement costs of the fixed assets shall commence in a later stage taking into account the economic capacity of the polluters.

Communities shall be involved in project planning, construction and maintenance of simplified sewerage systems with the option to contribute in kind to reduce costs (lower tariffs).

Industries normally enjoy a higher financial capacity than households and the polluter-pays criterion shall be fully enforced. Tariffs shall consider both waste water volumes and the nature and level of toxicity. Requirements regarding the standards of wastewater (pre-) treatment will be defined depending on the local conditions and enforced over time taking the financial capacity of the industry into account.

Financing for collective sewerage shall be based on the Utility's financial model for water supply (see 4.3.2).

4.6.4 Prepare sanitation master plans for all urban areas

In cooperation with the respective districts/the City of Kigali and other institutions concerned the WSS sector will prepare or update sanitation master plans for all urban areas and grouped settlements.

These sanitation master plans will

- identify zones for on-site sanitation and collective, off-site sewerage;
- focus on simplified, affordable solutions for collective sanitation;
- outline solutions for septic tank emptying services and sludge disposal;
- identify critical polluters such as industries, hospitals and slaughterhouses, and suggest solutions for treatment;
- identify type and locations of sludge disposal facilities and, if applicable, of treatment plants;
- outline a storm water and solid waste concept (see below).

4.7 Objective 7: Enhance storm water management to mitigate impacts on properties, infrastructure, human health and the environment

Storm water runoff causes a range of negative impacts including erosion of lands, damages to infrastructure, environmental health hazards and pollution of water resources. Improvements in storm water management need cooperation with other sectors in the fields of urban planning, erosion control and environmental health.

4.7.1 Build the institutional and regulatory framework for cooperation and support in storm water management

MININFRA will take the initiative to establish a framework for joint action involving the main actors of the sub-sector, i.e. the City of Kigali, the districts, and other Ministries or agencies concerned. This includes the clarification of responsibilities for preventive and emergency actions, the harmonization of laws and regulations, the identification of gaps, and the initiation of joint planning and coordination mechanisms.

The key issue is the integration of preventive measures in storm water management in urban and land use planning. Damages and expensive constructions (e.g. large drainage systems) and remedial measures shall be minimized by preventive soft concepts, such as the Low Impact Development (LID) approach, which aims to manage storm water close to its source and treat it as a resource rather than a waste product. Additionally, rainwater collection at building level shall be promoted as another mean to decrease risks of runoff impacts and

to increase water availability for hygienic purposes.

4.7.2 Support districts and the City of Kigali in planning and design

The preparation of storm water management plans for urban settlements shall be part of the district sanitation master plans. These shall identify measures to reduce storm water runoff (LID approach), avoid stagnant water (vector control), prevent erosion and sediment accumulation, and minimize the pollution of water resources. MININFRA will assist with the development of planning and design guidelines.

4.8 Objective 8: Implement integrated solid waste management

Poor management of solid waste from households or businesses can undermine endeavours of economic development and spread disease and discomfort. Priority shall be given to the minimization of waste and the implementation of an integrated solid waste management in urban areas. Today, a wide array of technologies is available for waste collection, treatment and disposal. However, implementing activities shall be based on concepts, and technologies are to be evaluated within the integrated policy framework in terms of social acceptance and financial and technical feasibility.

4.8.1 Minimize waste as a national priority

The economic development tends to increase the production of "waste" if manufacturers/sellers and consumers are not held accountable for the waste generated.

Minimization of the amounts and toxicity of waste shall be recognized as the most favourable option on the waste hierarchy, in contrast to the traditional downstream waste management focusing on processing waste after it is created. However, minimization policy shall differentiate between waste that can be reused or recycled and waste that has little or no value.

Awareness initiatives shall address the potential and acceptability to increase the avoidable waste fractions among the Rwandan population and business sectors. Accountability shall be implemented step-by-step and in line with the capabilities to afford such costs.

4.8.2 Develop an integrated approach for solid waste management in Rwanda

Integrated solid waste management (ISWM) provides an international accepted framework for understanding and tackling the problem. ISWM means the integration of (i) all stakeholders, (ii) the technical waste system elements such as prevention, reuse and recycling, collection and disposal, as well as (iii) less obvious aspects such as socio-cultural behavioural patterns, environmental, institutional, political and legal issues to be taken into account when implementing and managing the system.

To develop ISWM MININFRA shall work in close coordination with public, private and NGO stakeholders and in particular with the Ministries responsible for environment and environmental health. ISWM strategies, master and implementation plans shall mobilize all stakeholders and be established at district level, with a differentiated approach for rural and urban areas and a special focus on Kigali.

4.8.3 Recover value from waste and promote safe collection and reuse/recycling systems involving the private sector

Segregation of waste at household or business level shall be promoted through awareness raising campaigns as the first step for effective waste management. Households, public and business entities shall compost up to 70% of its organic waste until 2020.

Waste collection relies largely on the formal and informal private sector, for both investments and service

delivery, and economic market demand determines the level of reuse and recycling of waste.

MININFRA shall coordinate with other government to regulate and professionalize these activities, including support to local associations. Regulatory and promotional activities shall aim to enhance the enabling market conditions for briquette production and for glass, paper and plastics recycling while improving the conditions of work.

4.8.4 Ensure safe disposal of residual waste and improve existing dumpsites

Both the rehabilitation of existing dumpsites and the creation of new sanitary landfills shall be identified and planned in the context of the sanitation master plans, which shall include both solid and liquid waste as well as storm water management.

Incineration shall be introduced selectively with a priority on elimination of hazardous and highly toxic waste.

4.9 Objective 9: Develop the sector's institutional and capacity building framework

The WSS sector is undergoing significant institutional changes including the establishment of a dedicated sector Authority and a new financing mechanism, the reorganisation of the Utility in charge of urban WSS service provision, the systematic introduction of delegated management (PPP), the emerging role of RURA in regulation, and last but not least the transfer of implementation responsibilities to the districts. In addition to ensuring the smooth cooperation of government entities the sector is also developing mechanisms to consult and involve non-government stakeholders, and to ensure sector-specific monitoring and knowledge management.

This section subsumes the institutional undertakings needed to make this emerging sector framework functional.

4.9.1 Promote sector harmonisation and aid effectiveness by developing a SWAp

The implementation of the present policy for WSS services shall be based on a sectoral approach (Sector-Wide Approach/SWAp). Formally agreed between MININFRA and its key development partners (multilateral agencies and bilateral donors), the SWAp is understood as an inclusive process involving all relevant stakeholders including government institutions, civil society (NGOs), the private sector, and user communities.

In developing the SWAp a gradual approach will be adopted, based on successive steps depending on the readiness of key partners and aligned with the build-up of national and decentralised capacities. Harmonised action will be advocated on the basis of its added value to sector stakeholders (efficiency, lesser transaction costs, coherent monitoring etc.), but with a medium-term focus on the creation of sustainable structures and capacities, reducing parallel implementation arrangements and modalities.

Partners agree on joint objectives, principles and operating procedures. A joint financing mechanism based on government systems will be created but does not exclude other aid modalities as long as the agreed principles are observed.

4.9.2 Re-define and consolidate institutional roles and coordination mechanisms

The recent or undergoing changes of the sector's institutional setup call for a redefinition of each actor's roles and responsibilities, as well as for the establishment of effective coordination mechanisms. In particular, the sector undertakes to clarify the following aspects and initiate the related formal arrangements, such as MoUs and standards of application:

- Cooperation modalities with district local governments, including technical and financial support and monitoring arrangements;
- Operational cooperation arrangements for sanitation, to be agreed with the Ministries of Health and Education;

- Responsibilities and complementarities between the urban WSS Utility and the new sector Authority in urban and in rural areas;
- Cooperation with RURA regarding the regulation and oversight of PPP arrangements and surveillance of tariffs;
- Roles of REMA/MINIRENA in authorising water abstractions, setting water quality and discharge standards as well as environmental impact assessments;
- Coordination with urbanisation, housing and other land use plans, including in particular the development of imidugudu and cooperation between KCC and the Utility in Kigali.

4.9.3 Establish a dedicated WSS Authority with substantial operational autonomy

The new institutional setup of the WSS sector is centred on the establishment of a WSS Authority that will bundle the existing implementation expertise and staff and create the institutional framework for sector planning, coordination, monitoring and implementation support. The Authority will have substantial autonomy in terms of administrative and financial operations as well as human resources management.

The Authority will be in charge of implementing the government policies for WSS services in both rural and urban areas. It will focus its operational activities in areas not served by the Utility. It will depend on the budget and will not charge for its services.

Among its functions will be to:

- plan and coordinate sector strategies, programmes and investment plans
- host and manage a pooled financing mechanism, the WSF (see section 4.1.1)
- ensure day-to-day cooperation with districts, external partners and other national institutions involved in sector implementation and regulation
- provide technical support and policy advice to decentralised actors, i.e. districts, operators and users associations, in a systematic manner
- support and harmonise the preparation of district WSS investment plans
- plan and coordinate capacity building, training and applied research
- plan and coordinate sector M&E and performance measurement activities
- prepare sector guidelines and standards for technologies, procedures and contracts
- coordinate the implementation of multi-district schemes and projects
- oversee and regulate PPP models, in cooperation with RURA.

4.9.4 Improve communication, consultation and coordination in a multi-stakeholder environment

The WSS sector attaches importance to creating a sector community that involves all stakeholders including, but not limited to, central and local government institutions, development partners, NGOs, user communities, researchers and the private sector. Communication will be maintained through regular Sector Working Group meetings and annual joint sector reviews as well as by a dedicated web-site with a non-public community space. All sector actors, including NGOs, shall adhere to joint reporting standards and requirements.

The communication strategy addressing the general public will include messages on good practices, hygiene awareness and user rights and responsibilities, to be disseminated through different media and specific materials for schools.

4.9.5 Develop a reliable and robust M&E and performance measurement framework

Development of a comprehensive M&E and performance measurement system is a sector priority and a basis for

consistent results oriented management. The system shall be linked to the overarching, cross-sectoral M&E systems (EDPRS / Common Performance Assessment Framework) on the one hand, and to district systems on the other hand. A small set of representative 'golden' indicators will be defined to facilitate the communication and monitoring of overall sector performance. All relevant information, including in particular a database of rural water supply facilities, will be held in the Management Information System (MIS).

To compile the necessary information a reliable data collection and reporting system will be set up in cooperation with the districts, aligning as far as possible to their regular reporting mechanisms. A reliable baseline will be established by conducting a national inventory of existing infrastructure. Definitions and calculation methods will be agreed with the National Institute of Statistics to make administrative data collection comparable with national household surveys. Particular attention will be given to the definitions and data collection procedures for sanitation, to be developed in consultation with the health sector.

4.9.6 Develop professional training and education in WSS relevant fields

An overall concept for professional education and training will be developed based on an assessment of training needs for the different sector actors. Among the levels to be considered are

- Technical training for district and private sector staff (design, building and operation of WSS facilities)
- Training of trainers for participatory mobilisation and sensitisation activities
- Advanced training for WSS sector officers (Agency, RURA, District Engineers etc.)
- Academic education in engineering, environmental health and other relevant fields at universities and research institutions (KIST)

The concept will be based on cooperation with existing training and educational institutions (such as KIST, COFORWA and vocational training schools).

4.9.7 Promote innovative technologies / approaches and develop knowledge management

The challenging sector targets have to be met with limited resources, using affordable technologies and in a sustainable way, while complying with environmental standards. To achieve this it is crucial to use optimal, low-cost technologies and well-adapted implementation approaches.

Therefore the WSS sector strives to develop, test and adapt innovative technologies and approaches. National universities and research institutions will be involved in applied research and development activities, under the overall coordination of the Agency.

To enhance knowledge management pilot experiences and case studies will be evaluated and documented systematically in order to establish the results and actual impacts and inform further decision making.

4.9.8 Seek exchange of lessons learned and good practices through regional and international cooperation

Many of the concerns and potential solutions in Rwanda's WSS services sector are also found in other countries, in particular neighbouring countries. It is therefore important to exchange the lessons learned. On the other hand, countries with emerging economies have developed approaches that may be more appropriate than those in high-income countries. International organisations are engaged in benchmarking, documentation of good practices, organising forums for debate and exchange, and regional capacity building.

Rwanda's WSS sector shall therefore seek international exchange, both within and outside of the East Africa region, and will play an active role in selected regional and international organisations to seek the exchange of experience and to catch interest of new actors and investors by presenting Rwanda's issues and successes.

4.10 Policy statements on cross-cutting issues

4.10.1 Environment and Water Resources Management

Water extraction and the discharge or disposal of liquid and solid waste are intrinsically linked to environmental impacts. The extent of impacts and related risks varies considerably with the scope and type of intervention.

The WSS sector will ensure that all WSS projects and programmes abide by the relevant water resources and environmental laws of Rwanda. It will set up procedures and safeguards to make sure that all measures comply with the standards, permits and regulations defined by the Ministry in charge of water resources management (MINIRENA) and the Rwanda Environment Management Authority (REMA) with respect to: (i) the rational and sustainable utilization of water resources; (ii) environmental protection and conservation of water resources; and (iii) safe disposal of grey water, excreta and solid waste.

For medium to large size projects REMA will require an Environmental Impact Assessment (EIA). For smaller projects the water sector will develop guidelines defining environmental safeguards, to be approved by REMA. For larger interventions collaboration with REMA will also include monitoring of real impact during works and operations.

As a matter of policy, environmental friendly technologies will be preferred and actively promoted.

4.10.2 Gender

In the water and sanitation sector a gender-conscious approach assumes special significance because, according to the traditional division of labour, women are in charge of providing water in the household, hygiene and healthcare. Women are therefore most affected when water supplies fail and sanitation is poor. On the other hand, women are typically under-represented in decision making, in the management of water and sanitation infrastructure and in training and educational activities.

In general water supply and sanitation interventions are known to have a positive impact on women, by improving living conditions, reducing the work load (time to fetch water, caring of the sick), improving the hygienic conditions at schools and potentially enhancing women's participation and empowerment. On the other hand, a strong involvement of women tends to be beneficial for the sustainability of water and sanitation infrastructure since for the cited reasons women have a strong and immediate interest in reliably functioning facilities.

The WSS sector undertakes to ensure by appropriate guidelines and indicators that

- women are adequately represented in decision making processes as well as in training programmes;
- participation of women in committees and in the management of water schemes, including in high-level positions, is promoted;
- the needs, priorities and interests of women are taken into account in all planning processes, implementation strategies, training materials, etc.;
- local implementation partners are sensitised and trained on gender issues;
- the sanitation approach considers menstrual requirements for woman and adolescent girls with emphasis on educational premises.

4.10.3 Social inclusion and HIV/AIDS

WSS sector development implies social responsibility, as access to safe water and basic sanitation concerns human rights and affects the living conditions of all. The planning and implementation guidelines will therefore take these implications into account rather than focusing on monetary or efficiency criteria alone.

The WSS sector will endeavour that all population groups, including vulnerable households, children, elderly and

disabled persons benefit from its interventions. This implies that due attention is given to the aspect of affordability and that the specific needs of these disadvantaged population groups are taken into account.

The sector will actively provide adequate water supply and sanitation services to health institutions and schools, in cooperation with the ministries concerned.

WSS interventions will contribute to socio-economic development by creating jobs in the private sector and by improving living conditions (in particular in rural areas, thus making them more attractive for investors, professionals, etc.). Implementation guidelines will promote local job generation.

HIV/AIDS patients will benefit from better health services made available through water supply facilities. Awareness campaigns related to water and sanitation activities shall include messages related to HIV/AIDS when explaining the links between water/sanitation, hygiene, and different types of diseases. Prevention measures for construction projects, such as the sensitisation of workers and arrangements to avoid long periods away from home, shall be incorporated in the implementation guidelines.

Part II – STRATEGIC ACTION PLAN

Acronyms

CBEHPP	Community Based Environmental Health Promotion Programme
Ecosan	Ecological Sanitation
EDPRS	Economic Development and Poverty Reduction Strategy (2008 – 2012)
ELECTROGAZ	Public water and power utility (since 2009: RWASCO)
FEA	Fonds de l'Eau et de l'Assainissement (pilot Water and Sanitation Fund)
GoR	Government of Rwanda
HAMS	Hygiène et Assainissement en Milieu Scolaire (School Sanitation)
KDS	Kampala Declaration on Sanitation
KIST	Kigali Institute of Science and Technology
LID	Low Impact Development
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MINALOC	Ministry for Local Government, Good Governance, Community Development and Social Affairs
MINECOFIN	Ministry of Finance and Economic Planning
MINEDUC	Ministry of Education, Science, Technology and Research
MINIRENA	Ministry of Natural Resources
MININFRA	Ministry of Infrastructure
MINISANTE	Ministry of Health
MIS	Management Information System
MoU	Memorandum of Understanding
MVK	Kigali City Council (Mairie de la Ville de Kigali)
NEPAD	New Partnership for Africa's Development
NGO	Non Governmental Organization
O&M	Operation and Maintenance
OBA	Output-Based Aid
PCU	Programme Coordination Unit
PEAMR	Rural Water and Sanitation Project – Projet d'alimentation en Eau et Assainissement en Milieu Rural
PHAST	Participatory Hygiene And Sanitation Transformation
PNEAR	National Rural Water Supply and Sanitation Programme - Programme National d'alimentation en Eau potable et Assainissement en milieu Rural
PPP	Public Private Partnership
RBS	Rwanda Bureau of Standards
REMA	Rwanda Environment Management Authority
RWASCO	Rwanda Water And Sanitation Corporation
RURA	Rwanda Utilities Regulatory Agency
SWAp	Sector-Wide Approach
UNICEF	United Nations Children's Fund
WATSAN	Water and Sanitation (equivalent to WSS)
WHO	World Health Organization
WSF	Water and Sanitation Fund
WSP	Water and Sanitation Program (World Bank)
WSS	Water Supply and Sanitation (equivalent to WATSAN)

Part II – Strategic Action Plan

5 A Strategic Action Plan to Implement the National WSS Policy

To be effective policies need to be translated into strategic action, with direct links to planning and budgeting processes as well as monitoring & evaluation. "A policy proposal should therefore always include a clear implementation plan, outlining in detail how, when and by whom the intended policy proposal will be implemented, how it will be monitored and evaluated and by whom to ensure that it is effectively dealing with the issue it was designed to solve."[17]

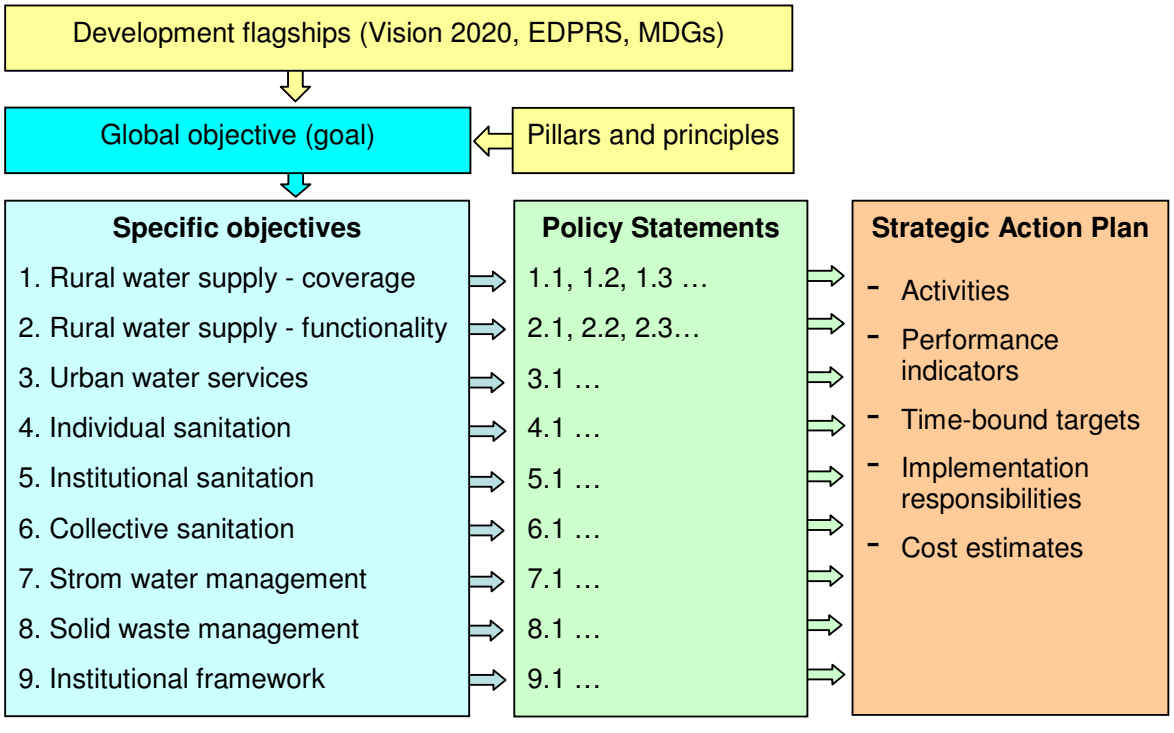
The present Strategic Action Plan should is the implementation plan of the National Policy for Water Supply and Sanitation Services.

5.1 Coherence between Policy and Strategic Action Plan

The policy document and this Strategic Action Plan have been prepared back-to-back and share the same structure. Each policy statement provides the basis for related actions, responsibilities and resources as well as time-bound monitoring indicators and milestones, which are detailed in the present Strategic Action Plan.

The figure below illustrates the coherence between the overarching development goals, the objectives and statements defined in the policy and the strategic action plan.

Coherence of Goals, Objectives, Policy Statements and Strategic Action Plan



[17] Cabinet Manual, Office of the Prime Minister, March 2009; page 49

To avoid repetition, the Strategic Action Plan does not provide the full context and rationale regarding the overarching development goals, policy principles and statements. It should therefore be read in conjunction with the policy document where more justification or background is needed.

5.2 Time Horizon

The present Strategic Action Plan is meant to provide guidance for the achievement of both the EDPRS and Millennium Development Goals. Its time horizon has therefore been set to 2015. The requirements for the period up to 2020 are taken into consideration but without providing implementation details.

The annual targets refer to financial years (July to June) in order to match Rwanda's new budget cycles.

5.3 Structure of the Strategic Action Plan

The Strategic Action Plan (SAP) consists of three main parts.

In the following chapter a set of key performance indicators and targets are defined to describe and monitor the sector's progress towards the goals.

Thereafter, the main part of the SAP provides implementation details – indicators, targets, responsibilities and cost estimates – for each of the nine fields of action, which correspond to the specific objectives of the policy.

The final chapter provides further implementation-related information. It highlights the critical implementation issues and challenges, provides an overview of the institutional responsibilities and cooperation requirements, and summarizes the funding requirements for achieving the targets set.

6 Sector Targets and Performance Indicators

6.1 Selection of indicators

Overall sector performance will be assessed by a small set of indicators and intermediate targets that have been defined for each of the nine fields of action (specific objectives) as well as for the cross-cutting issues.

Individual performance indicators cannot capture the full range of issues to be addressed in sector development. They can however aggregate the information in a meaningful way and represent overall progress. This type of concise information is needed for joint sector performance monitoring in the SWAp context; for informing Rwanda's larger planning, performance assessment and budgeting systems; as well as for communication with other government bodies, development partners and the general public.

The indicators selected here (chapter 6) focus on outcome, as opposed to direct output indicators that will be used for operational purposes such as action planning and monitoring (see chapter 7).

Outcome:

The likely or achieved short-term and medium-term effects of an intervention's outputs.

Outputs:

The products, capital goods and services which result from a development intervention; may also include changes resulting from the intervention which are relevant to the achievement of outcomes.

Source: OECD/DAC Glossary of Key Terms in Evaluation and Results-Based Management 2002

6.2 Definition of access to safe water supply and basic sanitation

The coverage indicators – access to safe water supply and basic sanitation – are the single most important indicators of the WSS services sector. They are international MDG indicators and represent the sector in Rwanda's flagship development documents (EDPRS, Vision 2020).

It is therefore important to provide a clear definition of these indicators. The following definitions are used in Rwanda, which are based on the international definitions used for MDG monitoring:

Access to safe water supply: % of people with access to an improved source of drinking water within 500 meters in rural areas and 200 meters in urban areas. This access should be reliable, affordable, and provide an adequate quantity (minimum 20 l/person/day) within reasonable time. Improved water sources are piped water, protected wells and springs, as well as rainwater collection. Water quality is assumed to be acceptable for improved water sources but shall be tested for compliance with national and WHO standards for potable water.

Access to basic sanitation: % of people with 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 ecosan toilet.

It should be noted that the above definition is for practical monitoring purposes. The broader definition of full sanitation coverage should not only include hygienic latrines available to all, but also the use of such latrines by all, proper maintenance for continual use and improved hygienic practice.

Apart from agreeing on definitions it is essential to develop a viable and sustainable monitoring system, including reliable data collection and calculation methods. It is particularly important to ensure that the definitions and questionnaires used by the National Institute of Statistics are in line with the above definitions.

6.3 Targets and Indicators – Water Supply

Performance Indicator	Baseline 2009	Target 10/11	11/12	12/13	13/14	14/15
Rural water supply – coverage						
1. Raise rural water supply coverage to 85% by 2012 and to 100% by 2020 by assisting the Districts to plan, design, finance and implement infrastructure projects						
% of rural population within 500m of an improved water source	71 (2008)	81	85	87	89	90
% of rural water supply funding channelled through decentralized, harmonized mechanism	48 (harmonized projects)	50	55	60	70	75
Rural water supply – functionality						
2. Ensure sustainable functionality of rural water supply infrastructure by developing effective management structures and well-regulated public-private partnership (PPP) arrangements.						
% of rural water points functional at the time of spot check	75	78	81	84	86	88
% of public rural water supply systems managed through performance contracts, according to regulatory and accounting standards	n/a[18]	20	40	50	60	70
% cost recovery (revenue / O&M costs) for rural water supply schemes	n/a	80	90	100	110	120
Urban water supply						
3. Ensure safe, reliable and affordable urban water supply services for all (100% service coverage by 2012) while strengthening the financial viability of the Utility.						
% of urban population within 200m of an improved water source	76	80	90	100		
% non-revenue water	30	28	26	24	22	21
% cost recovery (revenue / production costs)	58					

[18] Baseline not available. The total percentage of schemes managed through private operators was about 30% in 2009, albeit not necessarily according to regulatory and accounting standards.

6.4 Targets and Indicators – Sanitation

Performance Indicator	Baseline 2009	Target 10/11	11/12	12/13	13/14	14/15
Individual sanitation and behaviour change						
4. Raise household sanitation coverage to 65% by 2012 and 100% by 2020 and promote hygiene behaviour change.						
% of households with improved sanitation facilities	45	55	60	65	70	73
Institutional sanitation						
5. Implement improved sanitation for schools, health facilities and other public institutions and locations						
% of - schools - health centres with toilets / latrines and hand-washing facilities as per standards	n/a n/a			80 80		
Collective Sanitation						
6. Develop safe, well-regulated and affordable off-site sanitation services (sewerage and sludge collection, treatment and reuse/disposal) for densely populated areas.						
% of urban households in dense areas with access to piped water and collective sewerage services	2	2	2	*15*	*25*	*35*
% of households with on-site improved sanitation facilities or septic tank have access to a sludge disposal service	n/a	*20*	*40*	*60*	*70*	*75*
Storm Water Management						
7. Enhance storm water management to mitigate impacts on properties, infrastructure, human health and the environment.						
% of urban population in areas covered by master plans with storm water considerations	n/a	*40*	*60*	*80*	*90*	*95*
Solid Waste Management						
8. Implement integrated solid waste management in ways that are protective to human health and the environment.						
Non organic solid waste grows less than Kigali's urban population in %	n/a	*-10%*	*-15%*	*-20%*	*-20%*	*-20%*
% of domestic non-organic waste properly disposed in urban areas / grouped settlements	n/a	*20*	*30*	*40*	*60*	*70*

6.5 Targets and Indicators – Institutional Framework and Cross-Cutting Issues

Performance Indicator	Baseline 2009	Target 10/11	11/12	12/13	13/14	14/15
Institutional Sector Framework						
9. Develop the sector's institutional, capacity building, M&E and knowledge management framework; promote applied research and the international exchange of experience.						
WSS Authority and harmonized financing mechanism in place		X				
No. of districts with at least one qualified WSS engineer	n/a	5	10	20	30	
Cross-Cutting Issues						
Environment	Indicator to be defined					
Gender	% women represented in key positions of user committees	n/a				
Social Inclusion	Equity indicator to be defined	n/a				

7 Strategic Action Plan to Achieve Specific Objectives

7.1 Rural Water Supply – Coverage

Objective 1:	Raise rural water supply coverage to 85% by 2012 and to 100% by 2020 by assisting the Districts to plan, design, finance and implement infrastructure projects.

Increasing access to safe water supply

The key targets of rural water supply, regarding access to safe water supply, have been set to very ambitious values. An increase of coverage of 4 percent points every year is necessary to reach the EDPRS target of 85% rural water supply coverage (which is equivalent to a national water supply coverage of 86%).

National Inventory of Water and Sanitation Infrastructure

In 2008 a new baseline was established in the context of the development of a monitoring / evaluation and management information system[19] for the water and sanitation sector. The inventory is based on questionnaires filled by district and sector staff, with training and formal validation provided by technicians but without physical field validation.

According to this inventory, national water supply coverage (at 500 m for rural areas and 200 m for urban areas) is 73.8% (70.8% rural, 87.5% urban). The lowest district average reported is 48%. The average coverage of Rwanda's 30 least well-served sectors is as low as 24% (within 500 m).

The inventory included institutional and public sanitation facilities but not household sanitation coverage.

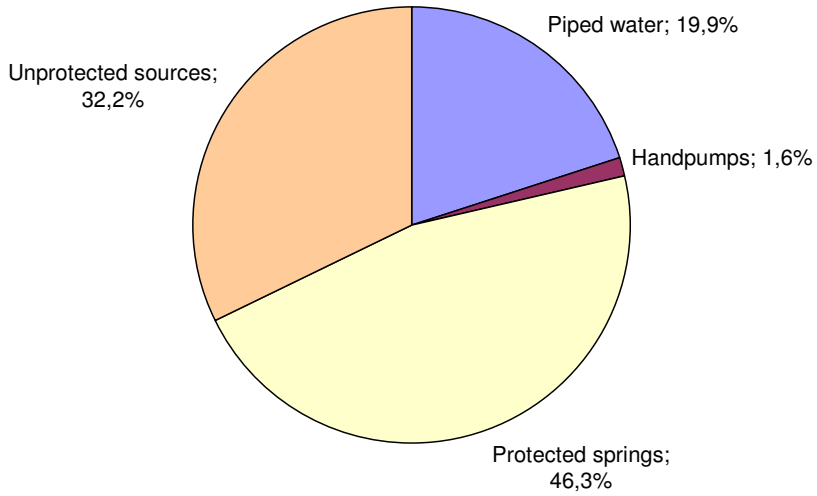
The 70.8% rural water supply coverage resulting from the National Inventory is higher than the latest estimate of the WHO/Unicef Joint Monitoring Programme (JMP), which is 61% (2006, published in 2008). However, the JMP value is strongly influenced by the very low result of the Demographic and Health Survey (DHS) of 2005 (54%), which is characterised by methodological and definition problems[20].

In 2007[21] 78% of Rwanda's rural population used natural sources of supply (springs and surface water), 20% piped water, and less than 2% used boreholes or wells equipped with a hand pump. Of the natural sources, 46% are protected springs which are considered a safe source of supply. The figure below shows this distribution, which gives a plausible picture of the overall situation even if the total of improved water sources (68%) is somewhat lower than according to the new National Inventory.

[19] Establishment of a Monitoring / Evaluation and Management System of Water and Sanitation Sector and National Inventory of Water Supply and Sanitation Infrastructures; MININFRA / AAW Consulting Engineers, October 2009

[20] For instance, the DHS 2005 indicates that only 25% of the rural population are supplied by protected springs, while 14% use "open public wells", which are very rare in Rwanda.

[21] Year to be verified, source to be added



Sources of rural water supply[22]

Given that the population grows at about 2.7% annually the efforts to raise coverage are partly compensated by demographic growth. Thus, between 2000 and 2005 coverage had not increased (remaining at a level of about 64%) although a significant number of people were being supplied every year. On the other hand, the existing infrastructure has often extra capacities as the design capacity is not yet reached[23], while others use protected natural springs that can serve more people than currently. Assuming that half of the demographic increase occurs in areas that are already served by functional existing infrastructure; the coverage target translates into the following numbers of people to be served:

360,000 people to be served to increase rural coverage by 4 percent points

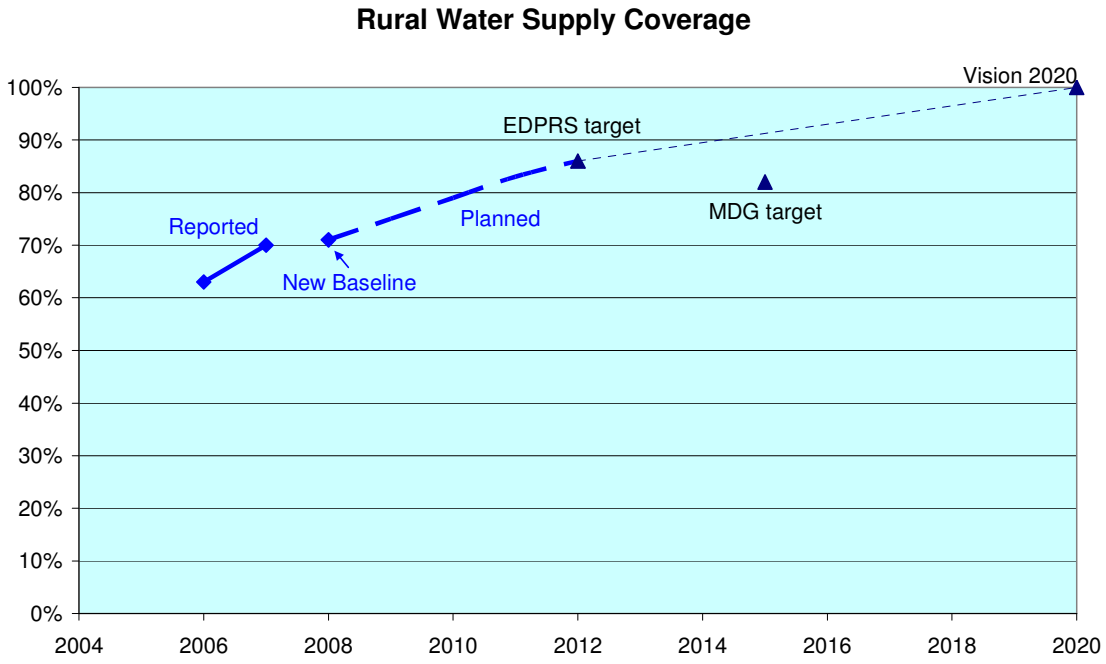
100,000 people to be served to compensate for half of the population growth

460,000 people to be served every year.

Since 2005 this number of additional people to be served was exceeded every year[24]. On the other hand, it is estimated that today about 30% of the existing rural water supply infrastructure needs rehabilitation.

The chart below shows that the achievements of the years since 2006 were adequate to achieve the EDPRS target; however, with a slight downward correction of the baseline in 2008 the efforts have to remain at the same level to stay on track.

[22] Source: Hydroconseil report (reference to be completed)
[23] Actual water consumption is typically considerably less than the design capacity of 20 litres per capita per day.
[24] Source: Water and Sanitation Sector Expenditure Review 2008, June 2009



Sources used: 2006 – CPAF baseline; 2007 – calculated from national coverage of 71%, reported by MININFRA;
2008 – National Inventory; Targets according to EDPRS

On the other hand, access to safe water is not a mathematical exercise. Achievements need to be sustainable, and the definition of access (see above, page 35) includes other criteria than living at less than 500 meters of an improved water point:

- Access should be reliable, while many of the existing water points are not functional;
- Access should be affordable, while water tariffs are relatively high and poor people tend to use free, unsafe sources of water even if an improved source of water is nearby;
- The water source should provide adequate quantity within reasonable queuing time;
- Water quality is assumed to be according to standards, even if this is demonstrably not always the case and a water quality surveillance system is not yet in place.

The current reporting system is not able to provide all this information.

Estimation of funding requirements

The below estimate of funding requirements to achieve the rural coverage targets are indicative and cannot replace a detailed financial model and investment plan.

The cost estimates for new infrastructure are based on the following assumptions:

A relatively high per capita investment rate of 45,000 RWF has been chosen assuming that most people will be supplied by piped water. Given that the habitat structure is changing it is assumed that few people (or imidugudu) can be served by protected springs. It is further assumed that half of the annual population growth has to be served by new infrastructure while the other half can be served by existing systems. User contributions have been neglected as they do not represent a substantial saving on capital investment.

Rehabilitation and renewal investments have been taken into account by the following approach: The level of funding should at least compensate the deterioration (depreciation) of the existing infrastructure. It is assumed

that depreciation will not be covered by user tariffs during the time period covered by this strategy. Rehabilitation requirements are thus calculated as the total annual depreciation of the existing and new infrastructure, on the basis of a system lifetime of 25 years and hence an annual depreciation of 4% of the total estimated value of the infrastructure.

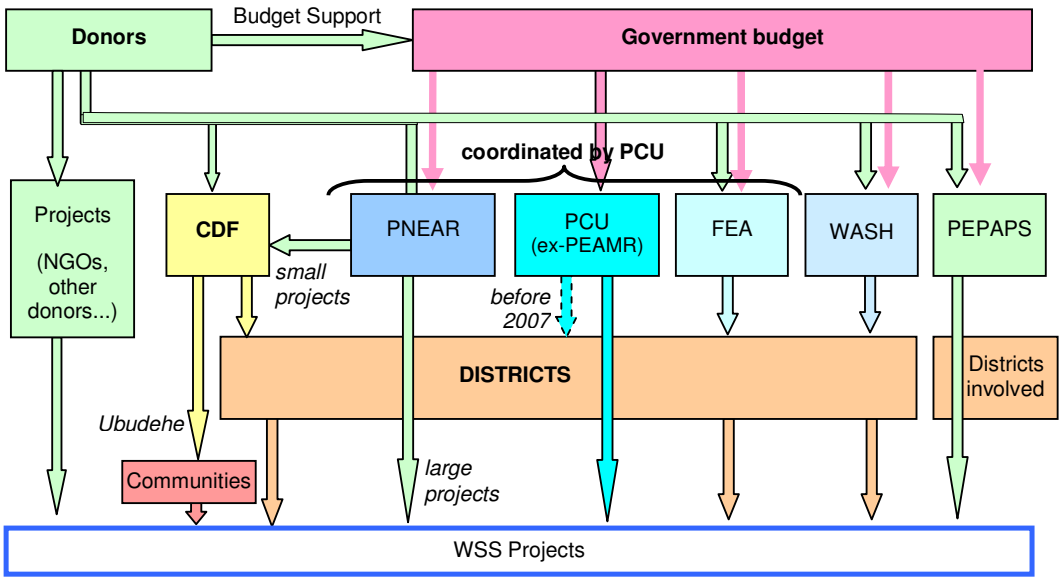
Establishing harmonised, decentralised financing and implementation mechanisms

Supplying approximately 500,000 people every year requires the mobilisation of sufficient funding as well as an effective implementation framework.

One of the key achievements of the sector is that a successful implementation approach for rural water supply infrastructure has been developed through the cooperation and increasing harmonisation of several large projects and programmes. The national implementation unit created in this context is to become the nucleus of the future Agency.

The two remaining challenges are essentially that: (i) sector financing is still fragmented, with a variety of different financial management arrangements; and (ii) that the implementation approach needs to be decentralised, that is, work through the District who will own the infrastructure.

The figure below provides an impression of the current situation (arrows represent flows of funds).



Existing financing arrangements for rural WSS infrastructure (2009)

Creating a Water and Sanitation Fund

To achieve the challenging sector targets it will be necessary to maintain high funding levels, by using all sources and different modalities of funding, while in the same time ensuring value for money and sustainability of the funded infrastructure. The sector therefore intends to establish a Water and Sanitation Fund (WSF), as a harmonised financing mechanism that provides sufficient flexibility to handle monies from different sources including the government budget, earmarked donor funding and possibly other internal sources of revenue, and to offer (co-)funding modalities addressing the private sector. The choice described above has been made through a comparative study of financing options, including international comparisons and extensive stakeholder consultations, and builds on the implementation best practices of two of the largest programmes.

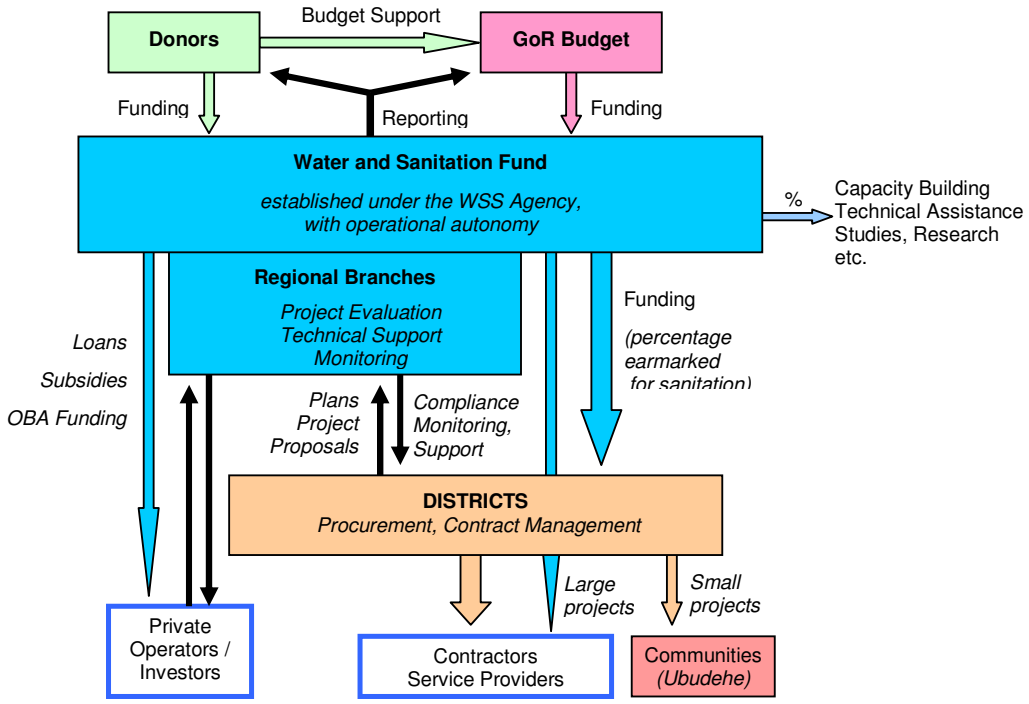
The WSF designed to become the main instrument for channelling targeted financing and related support services to the districts, based on the positive experience of the large national rural water and sanitation programmes. Sector financing will thus be harmonised and decentralised while linking it to the implementation of approved district development plans. The approach is to provide, in addition to funding, sector specific targeting, quality assurance and policy compliance monitoring.

The WSF will handle government and donor funds using the same procedures and implementation modalities, based on the existing harmonised procedures but with a stronger role of the districts, in line with the decentralisation policy. The WSF model has been piloted during three years by FEA, a regional project that is co-funded by two donors and the government, coordinated by the national implementation unit and implemented through the districts, with a regional office providing technical support.

The WSF will be closely linked to the Authority and its implementation support and monitoring procedures. Together, the future Authority and the WSF will replace the existing project funding structures and implementation units. It will thus not lead to a lasting increase of overhead structures and hence running costs. Start-up costs will be mainly related to initial transaction costs and capacity building.

Mainly designed to handle public grant funding, the WSF will also include financing modalities for mobilising and leveraging private investment.

The conceptual structure of the WSF is visualised in the schematic below. Details of the institutional setup, staffing and legal establishment will be defined during the detailed design phase of the WSF.



Flow of funds and key functions for the proposed WSF setup

The existing 'Harmonised Procedures' manual sets out a common implementation framework for rural WSS projects, including the project cycle, administrative, and financial management arrangements. It compiles the best practices developed by the large national implementation programmes. The manual shall be updated on a regular basis to reflect institutional changes and the procedural requirements defined by the Ministry of Finance

and Economic Planning and other agencies.

Changing habitat patterns: both an opportunity and a challenge for the sector

A particular challenge arises from the fact that Rwanda's settlement structure is changing through the promotion of grouped settlement. A typical grouped settlement, umudugudu, is planned for between 100 and 200 families who should have access to adequate services, including safe water supply; this is part of the raison d'être of the concept.

Supplying all grouped settlements – imidugudu, small towns and trading centres – is a challenge, because efforts have to be made to meet high expectations and to keep pace with the changes of the habitat patterns. Service levels and, hence, per capita investments are expected to be higher than in dispersed settlement. Additional investments will be needed to adapt existing water supply infrastructure to match the new settlement structures.

On the other hand, people living in grouped settlements are easier to supply, in particular with respect to the distance criterion (less than 500 metres from an improved water source). It will thus be easier to approach full service coverage as envisaged in Vision 2020.

The sector will prioritize service delivery in rural centres. Technical approaches and manuals shall be adapted to provide solutions for the new habitat structures. The WSS sector will aim to be involved in site development at an early stage and will actively participate in joint planning mechanisms.

Developing decentralised implementation capacities

The transfer of implementation responsibilities to the Districts calls for building decentralised capacities.

The two pillars to create adequate capacities are

1. a comprehensive capacity building programme, and
2. the establishment of decentralised technical support units by the Agency.

The capacity building programme will mainly address district officials as well as the private sector involved in implementation. It assumes that all districts will be staffed with at least one skilled water and sanitation engineer.

However, even when districts are adequately staffed and training programmes are implemented there will be need for sector-specific backup and support arrangements. Districts cannot be expected to develop specialist skills for any type of technical solution or policy issue to be addressed.

The response is to establish regional support units that will eventually replace the existing project implementation units. Each unit will be in charge of several districts. The area of intervention should be small enough for efficient operations, i.e. for travelling to the site of intervention, doing the work and returning the same day.

Complementary, specialist on-demand support may also be provided by the Utility, for a fee.

District water supply and sanitation development plans

The sector will actively support the preparation of sound investment plans for each District, and will provide guidelines and minimum standards for these plans. The plans need approval by the Authority and will be the basis for the release of grant financing of projects through the harmonised financing mechanism (Water and Sanitation Fund).

District WSS development plans will pay prepared with due attention to water resources management issues, in collaboration with the Ministry in charge of water resources management.

The plans will also address policy issues such as equity, community participation and respect for the special priorities and needs of women, children, and vulnerable households.

Technology options: Standardisation and innovation:

The choice of appropriate technologies and service standards, sound planning and high-quality execution are important prerequisites for cost efficiency, sustainability and financial viability. The sector will address this by providing guidance and design standards for a range of technology options, and by exploring innovative options.

Affordability is a main concern in rural water supply. In general, technical solutions and service levels shall be selected by involving the beneficiaries, explaining the financial implications. Low-cost technologies shall be preferred wherever possible.

The Authority will prepare and disseminate a technical standardisation manual, to be updated on a regular basis. The manual will consider different service levels, different types of habitat and different natural or physical situations (in terms of climate, geology and soils).

Low-cost technologies will be preferred to achieve basic service coverage for all at an affordable price. Gravity systems will be preferred wherever feasible, even if the initial investment cost is higher than for a pumped system. Spring protection is the most cost-effective solution, in terms of per capita investment. Districts will therefore be encouraged to protect all springs that are used for human consumption. Spring protection for piped water schemes will be optimised to be make full use of the available discharge and to avoid decreasing yields.

Rainwater harvesting is an interesting option given that rainfall is relatively abundant in most regions of Rwanda. It will mainly be promoted as a complementary source of water. However, rainwater is a safe source of drinking water supply if properly collected and managed and will be considered as a low-cost option for locations that could otherwise only be supplied by diesel pumping (for instance, parts of the lava region). Rainwater harvesting techniques and options (individual vs. collective) shall be studied, appropriate design guidelines shall be produced (for each climatic region of Rwanda) and pilot projects shall be launched and evaluated.

Solar pumping will be piloted as an alternative to diesel pumping, which causes excessive fuel and maintenance costs. To be sustainable, introduction of solar pumping will have to be done in a systematic way, considering the needs for spare part supply, support capacities, etc.

Solar panels used for the energy supply of water pumps

Promoting household connections

Less than 1% of Rwanda's rural population have access to water within their premises (household connection), according to the Interim Demographic and Health Survey of 2007-08. Actual water consumption is therefore of the order of 6 to 8 litres per capita per day. This is inadequate compared to the international standard of 20 litres per capita per day, and poses a threat to the financial viability of rural water supply schemes as water sales are very low (sales at public tap stands: typically 3 to 5 litres). In addition, public standpipes cause relatively high personnel costs as the remuneration of tap attendants represents a considerable part of the total fee.

The sector will therefore consider ways to increase the number of household connections (such as subsidised connection fees, promotion of private connections at the planning stage) and will consider the promotion of yard taps (several families sharing a connection).

Mobilising private sector investments in rural water infrastructure

The potential for private investment in new rural water supply schemes, where high upfront investments are required while the revenue and costumer base is small, is limited.

The situation is more promising when it comes to extensions or rehabilitations of existing schemes and service level upgrades. The type and duration of delegated management contracts shall be reviewed to mobilise this type of investments by private scheme operators.

Given the economic reality in rural areas it must be expected that subsidies of 80-90% of the investment will be required while only a small fraction can be recovered from the future users. However, even if the origin of funds is essentially public it is worthwhile to consider PPP modalities of finding, in particular output-based aid (OBA). The OBA scheme is a form of PPP that requires the private sector to design, implement and co-finance investments, and operate the built infrastructure during a certain number of years. Instead of contracting a private operator after commissioning of the scheme, a package consisting of design, construction and operation will be procured. Under this arrangement the successful bidder is the one requesting the lowest public subsidies. Subsidies are paid based on the delivery of the agreed output (hence the name).

It is critical to ensure that the necessary regulatory framework is in place before piloting build & operate contracts. Private infrastructure will have to comply with the same standards, policy requirements, tariff and consumer protection regulations as public investments.

As the existing commercial bank system does not offer appropriate conditions (long-term low-interest loans) the available loan financing options will be explored, in cooperation with Rwanda Development Board (RDB). The Water and Sanitation Fund will incorporate mechanisms addressing private sector investments.

In the future, once the sector develops beyond basic service delivery, more and more demand can be expected for this type of financing.

Other types of non-government investments to be encouraged and co-financed are:

- Investments by religious communities, who are often ready to co-finance public systems that supply their infrastructure;
- Community self-help initiatives (e.g. to install rainwater harvesting facilities, self-supply), to be financed through micro-finance schemes.

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
1.1 Implement an ambitious, decentralised rural WSS programme based on harmonised procedures							
Additional people supplied by new or rehabilitated water infrastructure	450k	470k	300k	310k	220k	new: 80,000 rehab: 45,000	Agency Districts
1.2 Establishing a harmonised financing mechanism linked to district-led implementation							
WSF formally legally established	X					10	Agency MINECOFIN MINALOC
Detailed design of WSF procedures	X					25	
WSF staffed and operational		X					
1.3 Prioritize water supply service delivery in grouped settlements							
% of imidugudu with water supply services according to standards	n/a					25 (inventory, planning, standard design)	Agency MINALOC Districts
1.4 Strengthen decentralised implementation capacities through technical support and capacity building							
No. of regional support units of the WSS Authority/ financing mechanism (1 per 2-3 districts)	5	8	12	12	12	2,000 (staffing & operation)	Agency Districts
1.5 Support the preparation of WSS development plans for all Districts							
No. of rural districts with approved water supply master plans	3	18	27			2,900	Districts Agency
1.6 Develop a range of affordable technology options for rural areas							
Technical standardisation manual prepared and disseminated		X				50	Agency Districts
Rural households supplied by new rainwater harvesting systems	15k	15k	15k	20k	20k	5,000	
Pilot projects on solar pumping		4				220	
1.7 Promote household connections to improve service levels, increase water consumption and improve the financial viability of water supply schemes							
No. of new rural household connections	10k	10k	10k	10k	10k	1,800 (subsidies)	Agency Districts
1.8 Encourage and mobilise private sector investments in new infrastructure							

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
Study on potential and options to leverage private capital investments (loans, OBA, co-financing, affermage contracts etc.)	X					30	Agency RDB Districts
Mechanisms addressing private sector investments incorporated in harmonized financing mechanism			X				

7.2 Rural Water Supply – Functionality

Objective 2:	Ensure sustainable functionality of rural water supply infrastructure by developing effective management structures and well-regulated public-private partnership (PPP) arrangements.

Focus on sustainability

Full water supply service coverage can only be reached if the existing infrastructure continues to function sustainably and the available resources can be used for serving the unserved rather than for rehabilitating the existing infrastructure. In the past, insufficient O&M arrangements led to a short life span of the infrastructure and to cyclic rehabilitation efforts. Still today a major part[25] of the existing rural water schemes needs rehabilitation.

The main prerequisites for sustainable service delivery are

- clear institutional responsibilities;
- adequate management capacities and technical maintenance skills;
- financial viability and affordability of the chosen service level;
- tariffs allowing for cost recovery;
- effective fee collection based on consumption;
- accumulation of funds for major repairs and the replacement of equipment.

The sector's strategy to achieve this is delegated management through public-private partnerships, including the development of an effective regulation system. Other management models are not excluded but will be subject to the same regulation and operational efficiency criteria.

Status quo

In 2009, Rwanda's rural population was served by 856 piped water systems and about 19,500 improved point water sources (protected springs or boreholes and wells with hand pumps), according to the National Inventory of Water and Sanitation Infrastructure. About 100 of the piped water schemes involve pumping, while the remaining are gravity systems. 27 systems have a length of more than 40 km.

About 30% of the piped systems were being managed by private entities, including 59 that are operated by non-government institutions (such as religious organisations or factories) but not based on a formal management contract between government and a private operator.

The introduction of delegated management for rural water supply schemes makes good progress, given that only 14 delegated management contracts existed before 2006. There is a variety of private operators including private companies, individuals, cooperatives, associations and religious communities. On average, three schemes are managed by one private operator. Typically contracts stipulate that the operator is in charge of day-to-day operation and maintenance, including fee collection, while the district is in charge of system extensions and major repairs. The delimitation between both responsibilities and the conditions for tariff adjustments are usually not well defined. Payment is based on consumption (water meters, per jerry can sold) and the private operator's remuneration depends on the revenue collected. Districts keep a variable percentage of the fee ('redevance') which is often not kept apart from other district funds. Contract duration is typically between 2 and 5 years.

However, two studies conducted in 2009 revealed that the regulatory framework and guidance on tariffs need to

[25] 30 % of the existing infrastructure need rehabilitation, according to an estimate provided in the Water and Sanitation Expenditure Review Report 2007 (May 2008)

be strengthened. The box below highlights some of the key findings and recommendations:

Highlights from the Study on the Performance of PPP in Rural Water Systems Operation[26]

Findings

- Overall performance is difficult to evaluate as the start of PPP is recent and most of the schemes managed by private operators are still relatively new.
- The majority of consumers interviewed said to be satisfied with the services provided.
- Per capita consumption (water sold) is less than 5 litres per day for the majority of schemes.
- Functionality rates tend to improve, but one quarter of the studied schemes had a functionality rate of less than 50% for public standpipes.
- While Districts are generally aware of their responsibilities there is a serious lack of oversight and contract management capacities and experience at the District level.
- Quality of delegated management contracts is improving but still needs enhancement.
- Many water operators do not hold precise accounts.
- There is both need and demand for professional training of private operator staff.
- Water quality is usually not monitored on a regular basis.
- Investments by private operators are not encouraged by short duration service contracts.

Recommendations

- Longer contract durations, more responsibilities to the operator to mobilise investments;
- More competitive selection of operators;
- Put in place a system for the effective supervision and regulation of operators;
- Implement a comprehensive capacity building programme for both district staff and private operators.

In summary, the PPP model of delegated management is promising but still far from consolidated.

Cost recovery

Three levels of cost recovery shall be distinguished:

Levels of Cost Recovery

Level 1: running costs for operating the water system (staff, energy, consumables)

Level 2: running costs + all repairs (including replacement of electro-mechanical equipment)

Level 3: running costs + all repairs + depreciation of assets

Rural water supply shall aim at cost recovery at level 2. Level 1 would not ensure the sustainability of operations while level 3 would not be affordable in terms of tariffs.

Under the current delegated management contracts usually the private operator is in charge of running costs (level 1) while the district is supposed to pay for major repairs (level 2) and system extensions. There is need (i) to clearly define the mutual obligations and the thresholds, and (2) to regulate the fee paid to the districts and its use (to be earmarked or kept on separate accounts).

[26] Les performances du PPP pour la gestion des adductions d'eau rurales au Rwanda, Rapport final, Juin 2009

Progress towards cost recovery will be measured by two (related) indicators:

1. Level 1 cost recovery: I_1 = collected revenue as percentage of level 1 running costs
2. Level 2 cost recovery: I_2 = funds used or accumulated for level 2 repairs, as percentage of level 1 running costs

For instance, a rural water supply system with annual running costs of 10 million RWF and an annual revenue of 12 million RWF has a level 1 cost recovery indicator of I_1 = 120%. The level 2 indicator is 0% if the excess of 2 million RWF is fully used for the operators' profit and/or the district's general expenditures. If 1 million is used or set aside for level 2 repairs the level 3 indicator is I_2 = 10%. This would mean that 1 million has been spent on replacing equipment, or that 1 million has been accumulated on a separate, ring fenced account for this purpose.

Districts and private operators will be instructed to report on these two indicators.

The tariff study[27], which was prepared back-to-back with the abovementioned PPP performance study, showed that even cost recovery at level 2 may be difficult to achieve for systems involving diesel pumping. These types of systems will be avoided by promoting electrical or solar pumping. In certain cases subsidies or cross-subsidies may be needed to keep local tariffs affordable. Among the options to be considered is grouping of schemes in larger contracts, thus combining schemes with different cost characteristics, and targeted subsidies on consumption.

Many rural households are extremely poor and water tariff represent a heavy burden for them, hence the very low volume of water consumed. The average rural water tariff charged in Rwanda is about 1 US$ per m³ (549 RWF/m³) but a maximum of 2.24 US$/m³ has been recorded[28]. More importantly, the average cost of water at public tap stands (the source of supply of most rural consumers) is 1.23 US$/m³ on average (14 RWF per jerry can) but reaches up to 3.52 US$/m³ (40 RWF per jerry can) for certain pumped systems.

From a pro-poor point of view a maximum social tariff for public standpipes, as suggested in the tariff study, would be desirable. It is in the interest of public health as well as of the financial viability of the rural water schemes to encourage water consumption. However, this will only be feasible if linked to a well-designed subsidy (or cross-subsidy) scheme. Otherwise, as most consumers use public stand posts, a reduction of stand post tariffs would automatically jeopardize the financial viability of the systems with higher production costs.

Taking delegated management to scale

The sector will continue to promote delegated management until all public piped water schemes are managed based on performance contracts. There is a range of eligible operators (firms, associations, individuals, etc.) but all will have to comply with the same regulatory, accountability and cost recovery standards.

Contracts will be reviewed and enhanced based on the above recommendations. Longer-term contracts of the affermage type will be piloted as soon as the regulatory framework is fully operational.

The Agency, in consultation with RURA, will play a supporting role by developing standard contracts, providing advice on procurement requirements (terms of reference, evaluation criteria) and contract management issues. It will help to clarify the mutual responsibilities between local authorities, private operators and consumers. It will also keep a database on scheme characteristics and operational performance, to be used for follow-up and benchmarking.

Establishing delegated management for older existing schemes is more challenging than for new schemes. The Authority will support the District's efforts by providing or subsidising water meters (including bulk water

[27] Tariff Recommendation for the Rural Water Sector in Rwanda, Final Report, August 2009
[28] PPP Performance Study: Les performances du PPP pour la gestion des adductions d'eau rurales au Rwanda, Rapport final, Juin 2009

meters to measure total production) and assisting with inventories of existing infrastructure.

Regulation and Consumer Protection

Regulation will include tariffs, minimum service standards, PPP contract oversight and consumer protection.

RURA will be the main regulatory body. It will ensure independent regulation of both sides (public and private) while the Authority will provide hands-on support and backstopping. Both will consult and coordinate on technical matters.

It will supervise the competitive selection and adequate supervision of private operators, and enforce proper accounting.

The role of users and beneficiary communities will be strengthened by ensuring that their elected representatives (associations, committees) are recognised as contract stakeholders who represent consumer rights and interests; they can refer to the regulatory agency.

Capacity Building Programme

Both main actors of the PPP model – Districts and private operators – will benefit from a comprehensive capacity building programme. Private operators, in this context, are any operators working under delegated management contracts, not necessarily private companies.

The programme will include the following modules:

For Districts	For Private Operators
1 Organisation delegated management in rural water supply (structures, procedures and responsibilities)	A Technical management of rural water supply systems (operation and maintenance)
2 Procurement of delegated management contracts	B Administrative and financial management of rural water supply systems
3 Monitoring and supervision of private operators (contractual obligations, reporting, performance monitoring, auditing, etc.)	C Commercial management and customer relations

Source: PPP Performance Study[29]

The training modules will include joint sessions (e.g. at the Province level) as well as individual sessions in each of the 30 Districts.

District sessions will include consumer / user committee representatives.

Tariff guidelines

The Agency, in consultation with RURA, will prepare tariff guidelines based on the recommendations and financial model of the tariff study. It will aim to reconcile the interests of (1) cost recovery, (2) affordability for the rural poor, and (3) attractiveness for private operators

Address the following issues

- Level of cost recovery, financial model to be used
- Cost components and minimum accounting standards

[29] Les performances du PPP pour la gestion des adductions d'eau rurales au Rwanda, Rapport final, Juin 2009

- Grouping of schemes with different cost structures
- Subsidies and cross-subsidies
- Mechanisms for tariff adjustments
- Amount, earmarking, accumulation and use of the reserve ('redevance') to be set aside by the districts for major repairs, refurbishments and extensions.

Point water sources

Combining the management of rural point water sources – protected springs, boreholes and wells equipped with a handpump – with the management of piped water schemes is not recommended. Delegated managed contracts are at the limit of financial viability and should not be burdened by additional tasks.

Point water sources will therefore be managed either through specific contracts, or by strengthening the community-based maintenance system, to be supervised by the district. Districts shall choose their preferred approach.

Water quality surveillance

At present, the water quality of rural sources of drinking supply is usually verified at the time of planning or commissioning but not monitored later on. The dominant problem is local contamination (damaged spring protection, lacking protection of the catchment area, lack of drainage, reservoirs, broken pipes, etc.), while the general quality of ground water resources is good. To detect local contaminations it is mandatory to set up a water quality monitoring system.

Water quality standards and the sampling system (frequency, number of parameters to be measured) should be realistic, that is, affordable. Field inspections should combine water sampling (at different points of the water systems) and physical inspections of the local conditions (catchment area, distance of latrines, fencing, drainage, etc.).

The Agency, in cooperation with the Ministry of Health and RURA, undertakes to develop a concept, standards and field capacities for regular water quality surveillance. This could be done by (involve) creating regional water quality control laboratories at the province level, or through cooperation with the Utility in charge of urban water supply services.

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
2.1 Bring delegated management to scale while optimising the PPP model							
% of rural water supply systems managed by private operators	45	50	55	65	75	120 (support & monitoring)	Agency Districts RURA
Standard contracts approved and disseminated	X						
Provision of water meters for existing schemes	2,000	3,000	4,000			1,100	
2.2 Enhance regulation for better performance in PPP							
No. of field visits of RURA per rural district per year	2	2	2	2	2	450 (sensitization, regulation,	Agency Districts

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
No. of private operators complying with accounting standards	20	40	50	60	75	auditing)	RURA
% of rural water schemes with active user committee	n/a						
2.3 Develop and implement a comprehensive capacity building programme for delegated management							
Number of personnel trained for delegated management of water schemes	150	180	210			140	Agency Districts
2.4 Develop tariff guidelines that take into account financial viability and affordability considerations							
Tariff guidelines approved and disseminated	X					15	Agency Districts RURA
2.5 Strengthen community based maintenance system for rural point water sources							
% of water points with active user committees	20	30	40	50	60	300 (sensitization. & training)	Agency Districts
2.6 Develop a water quality surveillance system for rural water supply							
No. of rural water schemes with regular water quality control	n/a					750 (standards, sampling, analyses	Agency RWASCO MINISANTE Districts RURA
% of water spring catchments protected according to national standard	50	55	60			500	

7.3 Urban Water Supply

Objective 3:	Ensure safe, reliable and affordable urban water supply services for all (100% service coverage by 2012) while strengthening the financial viability of the Utility.

Status of urban water supply services

Urban water supply services in Rwanda are provided by a public utility operating on a commercial basis (RWASCO, the successor of former ELECTROGAZ). The institutional status and mandate were under revision at the time of writing, water supply being split from energy services while urban sewerage will become an additional responsibility of RWASCO. As the name of RWASCO may change again, depending on the final institutional arrangement, reference is made to 'the Utility' when referring to future strategies or activities. Formally, the Utility has no monopoly on urban water supply and other operators may also provide urban water

production or distribution services. It is however assumed that the Utility will remain the main operator for urban water supply services in the medium term.

In 2009 RWASCO's services covered 13 towns including the City of Kigali. People were served through more than 700 public tap stands (kiosks) and (2008) 57,424 private connections.

The table below provides an overview.

Characteristics of RWASCO's Water Production and Distribution System (2008)

No.	Station	Water Treatment Plant	Average Water Production (m^3/day)	Non-Revenue Water (%)	Total Network Length (km)	Total Connections (nr.)	New Connections 2008 (nr.)
1	Kigali	Kimisagara	24.157	33%	1,465	34.757	7.108
		Karenge	8.714				
		Nyabarongo	2.541				
2	Huye	Kadahokwa	3.113	38%	250	3.099	392
3	Rwamagana	Muhazi	1.121	-12%*)	140	2.057	786
4	Ngoma	Rwasaburo	770	6%	121	968	156
5	Gicumbi	Nyamabuye	844	22%	65	1.572	272
6	Rusizi	Cyunyu	1.039	27%	116	2.036	324
7	Karongi	Kanyabusage	532	42%	55	832	94
8	Nyanza	Mpanga	749	17%	95	1.380	200
9	Rubavu	Gihira	4.879	31%	261	3.972	669
10	Musanze	Mutobo	3.083	19%	151	2.657	385
11	Muhanga	Gihuma	1.494	32%	174	2.851	402
12	Nyamagabe	Gisuma	620	21%	63	1.030	117
13	Nyagatare	Nyagatare	582	41%	15	213	164
	TOTAL		**54.236**	**30%**	**2,971**	**57.424**	**11.069**

**) Note: Part of the water supplied by Karenge plant (Kigali) is billed by Rwamagana station*

Table compiled from: ELECTROGAZ Annual Report of Activity – Water Department, Year 2008

The 'Non-Revenue Water' column in the above table is calculated from water billed / water supplied.

Urban water supply coverage

100% access to safe water supply in urban areas is one of the EDPRS targets, to be attained by 2012. Unfortunately, the baseline is not precisely known as the available figures on urban water supply coverage are contradictory[30]. The recent National Inventory provides a value of 87.5% for "average water accessibility" of

[30] The EDPRS baseline for urban water supply coverage is 69% (2006). Several recent sector documents quote a coverage of 76% while the Sector Performance Report 2008 (issued March 2009) assumes a baseline of only 44% for 2005. A much higher coverage of 92% is given in the JMP report of 2004 (WHO/UNICEF: Meeting the MDG Drinking Water and

urban areas, and 96.8 for Kigali City (urban areas), which seems very high.

The latest urban coverage figure provided by the WHO/Unicef Joint Monitoring Programme (JMP) is based 82% (for 2006, published 2008). However, as for rural coverage this figure is strongly influenced by the result of the Demographic and Health Survey (DHS) of 2005, which was 76% while the earlier statistical surveys had coverage rates close to 90%[31].

Given that reliable information on one of the key sector targets is needed it is urgent to establish a new baseline on urban water supply coverage as soon as possible. One of the issues to be resolved is the definition of urban and rural areas, which is to be harmonised with the National Institute of Statistics.

Status and reform of the Utility

The institutional and legal status of the Utility, RWASCO, was being revised at the time of writing. The Utility will remain a public institution operating on a commercial basis, with legal personality, administrative and financial autonomy.

The status of the Utility needs to be consolidated, not only with respect to its status, internal structures and procedures, but also in terms of regulation, customer relations and cooperation with other public entities. The sector undertakes to create a sound contractual framework by 2011.

This includes a convention regulating the ownership, delegation and management of infrastructure assets as well as a performance contract linked to a financial model and a customer chart describing the mutual rights and obligations. Independent regulatory control of the Utility's operations will be ensured be RURA, supported by the Ministry of Health in the field of water quality surveillance.

An important issue is the creation of a framework for joint planning between the Utility and the City of Kigali, respectively the districts in charge of other urban areas. Urbanisation and WSS service delivery shall be planned in conjunction. The Utility shall thus be involved in urban planning and project development at an early stage.

Finally, the abstraction rights and conditions shall be clarified for all water resources used, in cooperation with and in line with the guidelines prepared by the Ministry in charge of water resources management and environmental protection.

While the Utility will remain the main operator for urban water supply services other operators will not be precluded. The sector will define the conditions and requirements to foster engagement of private operators in urban water supply (bulk water production, treatment, and distribution).

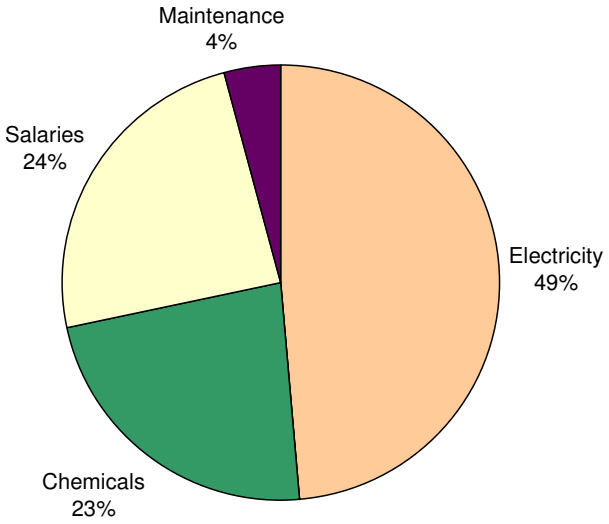
Cost recovery for urban water supply services.

Urban water services should not need continuous subsidising. International experience shows that it is feasible to achieve cost recovery in an urban setting. Subsidies, if any, shall be targeted towards services for the urban poor, and possibly towards rural systems where financial viability is much more difficult to achieve and tariffs are already considerably higher than in urban areas.

Until present urban water supply services are being cross-subsidised from the energy sector: As ELECTROGAZ combined water and electricity services the energy used for pumping water did not have to be paid. The figure below shows that electricity costs account for about half of RWASCO's recurrent budget.

Sanitation Target, 2006). The results of Demographic and Health Surveys cannot be used directly as the 200 m distance criterion is not used and the definitions of water sources are not clear. RWASCO has the number of connections but not the numbers of consumers using the connections, nor the number of people living within 200 m of the connections.

[31] DHS 2005 suffers from definition problems; for instance, it indicates that 12% of the urban population take water from "open public wells", which is not plausible.



Composition of ELECTROGAZ Recurrent Budget, 2008

Figures from: Sector Performance Report for the Joint Water and Sanitation Sector Review of 2008, March 2009

The RWASCO tariff of 2008, on average 587 RWF (1.03 US$) per m³ billed, covers only 58% of the production costs[32]. The current social tariff of RWF 240 / US$ 0.42, which is applicable for a large part of the consumers, covers less than the direct production costs (recurrent costs: essentially staff, energy and chemicals).

Tariff levels shall gradually move towards full cost recovery in the medium to long term. Social tariffs will be maintained to ensure affordability for the urban poor. Options to limit the effects of sudden tariff increases, such as tax exemptions, shall be considered.

Eventually the proportion of investments funded through loans and cash generated from RWASCO operations should increase.

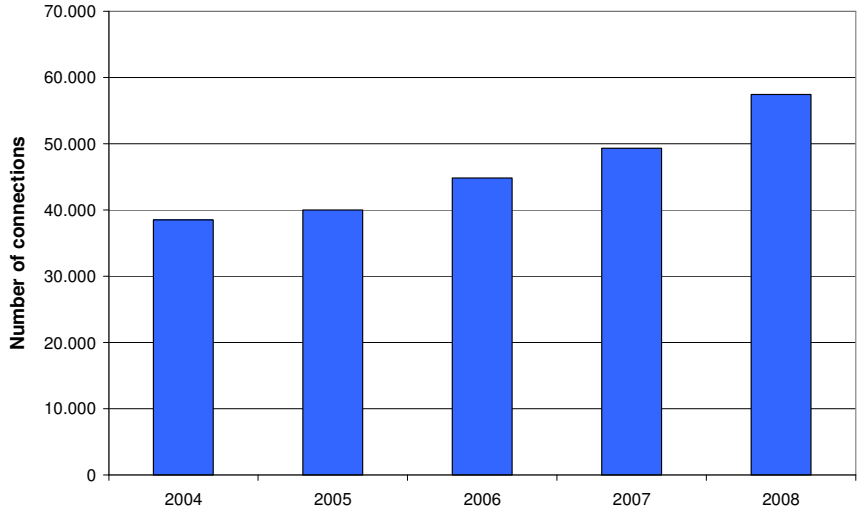
Upgrading service levels and extending services to the urban poor

Within the built-up area of the City of Kigali most people have access to water within acceptable distance, but only about 20% have water within their premises. Other towns and peri-urban areas are less well served.

Today the majority of the urban population is served by public tap stands (kiosks). It is intended to increase the share of people served by private household connections and yard connections (shared by several families).

Since 2005 the total number of connections served by RWASCO has been increasing rapidly: From 40,000 connections in 2005 it reached more than 60,000 in 2009 (see figure below). The sector will continue supporting this trend through social connection programmes.

[32] Source: "Standing of RWASCO in terms of Indicators", prepared by RWASCO, 2009.



Increase of connections 2004 to 2008 (total, 13 urban networks)

Sources: National Inventory (2004 – 2006), ELECTROGAZ Annual Reports (2007 – 2008)

Particular efforts will be made to extend water supply services to low-income households. Where extensions to poor peri-urban areas are demonstrably not financially viable public subsidies will be considered.

As mentioned earlier, urban service coverage at a distance of not more than 200 metres is not precisely known and will be established as a first step to plan further improvements.

The policy and practice for the management of public tap stands (water kiosks) shall be reviewed and optimised.

Operational efficiency and loss reduction

The total of 30% non-revenue water (see table above) are made up of 18% technical losses and 12% commercial losses (unbilled consumption), according to RWASCO. The Utility will continue its loss reduction programme considering all types of losses.

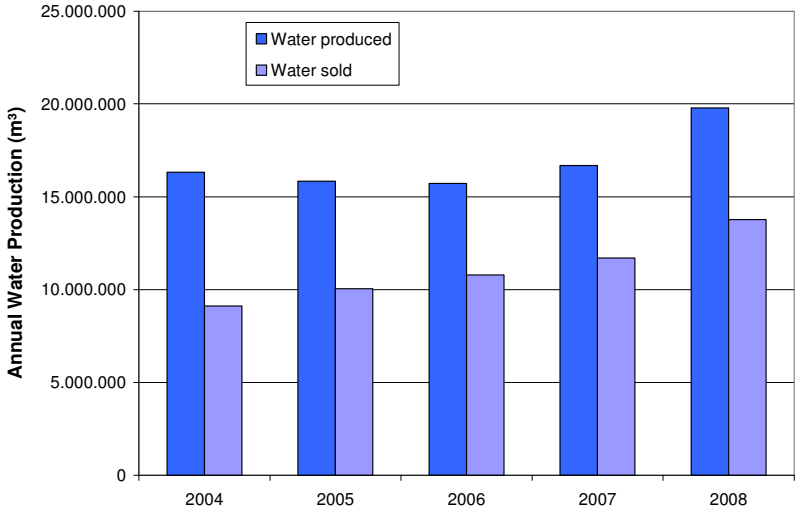
Collection rate was as low as 63% for ordinary consumers, in 2008.

The Utility will set up a programme with clear indicators and targets, derived from international benchmarking, to continuously enhance its operational efficiency.

Increasing production and distribution capacities

The rapid growth of Kigali City and other towns needs continuous development of RWASCO's production and distribution capacities

Since 2004 RWASCO was able to raise its annual water sales by 50%, both by reducing losses and by increasing production capacities (see figure below).



Development of annual water production and sales, 2004 to 2008 (total, 13 urban networks)

Sources: National Inventory (2004 – 2006), ELECTROGAZ Annual Reports (2007 – 2008)

However, the existing capacities are still insufficient to cover the fast growing demand in the urban centres. The current demand is estimated at 80,000 m³/day[33], compared to an average of 37,700 m³/day sold in 2008. Thus, to meet the demand production capacities will have to be doubled in the short term.

The new Nyabarongo groundwater treatment plant is designed for a production of 35,000 m³[34]. Two other major projects to serve the capital area of Kigali are being studied: A second groundwater project involving pumping from the Nyabarongo valley near Kanzenze bridge, and a long distance pipeline project to convey water from Mutobo spring at Musanze (up to 120,000 m³/day). It is intended to involve private investors.

Coordination between urban planning and water supply services is a key issue. To implement the necessary extensions of production and distribution capacities it is essential to prepare water supply master plans for each of the towns, and most importantly for Kigali City. These plans will outline the staged development of sources of supply, and will include a monitoring programme to survey these sources prior to its development. Alternative sources and technologies will be ranked to minimise the costs for energy and imported chemicals.

Beyond a one-off planning exercise a permanent institutional framework for joint planning between RWASCO, Kigali City Council and the districts concerned shall be established.

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
3.1 Consolidate the status of the Utility and the contractual basis for its operations							
Contractual basis established for - asset management - performance contract						150	Agency RWASCO RURA

[33] Source: Water and Sanitation Sector Expenditure Review 2008, June 2009

[34] At the time of writing, December 2009, it was not yet operating at full capacity due to water quality concerns (unexpectedly high manganese levels found).

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
- customer chart - regulatory control - joint planning framework - water resources use	X						Kigali City/ Districts RURA MINIRENA
3.2 Move towards full cost recovery for urban water services							
% operating cost recovery (revenue / production costs)	60	65	70	80	90	50 (financial model, tariff study)	RWASCO Agency
3.3 Improve service levels by encouraging household connections and developing pro-poor services							
No. of household connections	75k	85k	100k			650 (subsidies)	Agency RWASCO Kigali City/ Districts
Baseline of service coverage at 200 meters established	X					25	
Additional people supplied by network extensions	n/a					500 (pro-poor network extensions)	
3.4 Improve operational efficiency and reduce unaccounted-for water							
% technical losses	18	17	16	14	12	750 (electronic meters)	RWASCO Agency RURA
% collection rate (normal customers)	65	70	75	80	85	45 (staff training)	

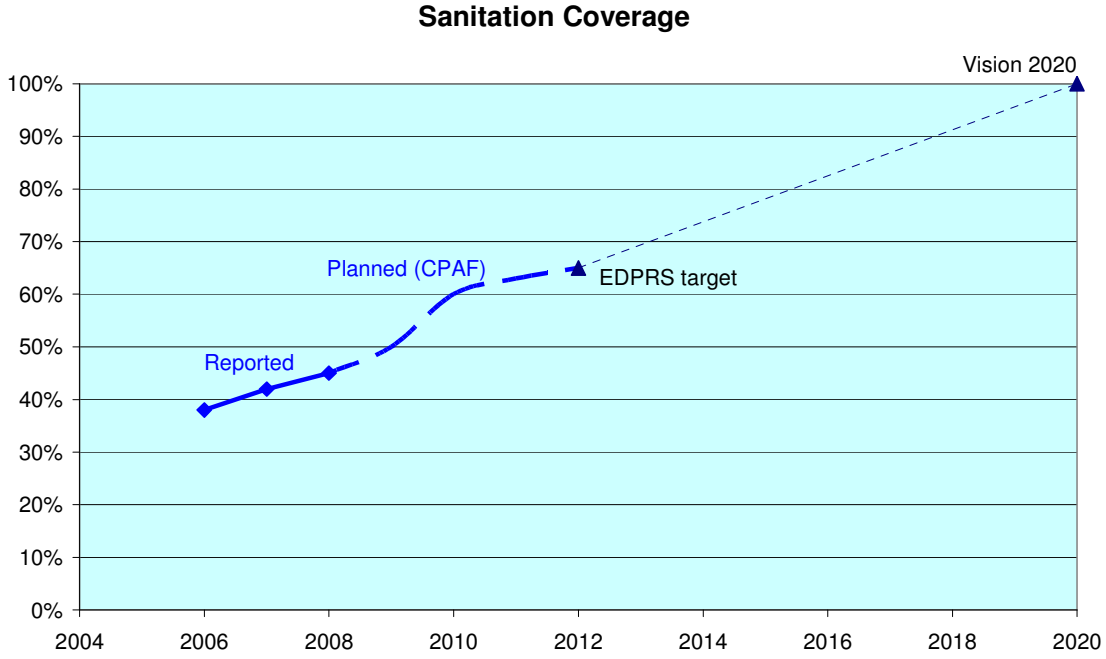
Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
3.5 Develop production and distribution capacities							
Total urban water production capacity (m³ per day)	65k	75k	85k	95k	105k	35,000 (new capacities) 4,600 (rehabilitation/ expansion)	Agency RWASCO MINECOFIN Kigali City/ Districts
No. of cities/towns with a water supply master plan (up to date and coordinated with urban planning)	3	8	13			650	

7.4 Individual Sanitation and Behaviour Change

Objective 4:	Raise household sanitation coverage to 65% by 2012 and 100% by 2020, and promote hygiene behaviour change.

Background and Rationale

Today, 96% of Rwandan households[35] have financed and built their own private toilets or latrines, albeit quality standards and hygiene practices remain suboptimal. Sanitation coverage with safe and hygienic conditions is estimated at 45% for 2009. The figure below indicates that progress seems to be on track. It should however be noted that the reliability of the available access figures is limited – partly due to the difficulties to define the adequacy of the pit latrines used by the vast majority of the population –, and that reporting on household sanitation coverage is still deficient.



Data source:
Joint Sector Review 2009; targets according to Common Performance Assessment Framework and EDPRS

In the absence of collective sewerage systems, the country's challenge is not only to continue to improve, replace or build about 150'000 new improved on-site sanitation facilities every year to reach full coverage, but also to change hygienic behaviour of the population[36].

Sanitation is primarily about health. An improved or hygienic latrine is defined as a sanitation facility the use of which effectively breaks the cycle of disease transmission. However, full sanitation coverage should include: hygienic latrines available to all, use of such latrines by all, proper maintenance for continual use and improved hygienic practice.

[35] Interim Demographic & Health Survey 2007-08

[36] The National Urban Housing Policy, MININFRA 2008, estimates the annual new housing needs for Rwanda's urban areas alone at 25.000 units (90% in unplanned settlements and built with "impermanent" materials) in order to meet natural population growth and cope with the migratory flow.

The Joint Monitoring Programme for Water and Sanitation[37] (UNICEF/WHO) defines improved sanitation hardware as follows:

Improved sanitation facilities	Unimproved facilities
Use of following facilities in home/compound: o Flush / pour-flush to: ▪ piped sewer system ▪ septic tank ▪ pit latrine o Ventilated improved pit (VIP) latrine o Pit latrine with slab o Composting toilet	o Use of following facilities anywhere: ▪ Flush / pour-flush to elsewhere ▪ Pit latrine without slab / open pit ▪ Bucket ▪ Hanging toilet or latrine o Use of a public facility or sharing any improved facility o No facility, bush or field (open defecation)

WHO / UNICEF definitions of sanitation facilities

Sanitation is by nature a cross-cutting issue and involves construction works, provision of services and enhancement of hygiene awareness. The support of individual or on-site sanitation services will address mainly private owners as financiers, builders and operators, which is different from addressing and monitoring large public infrastructure facilities (cf. objective 6).

Thus, the main actors of on-site sanitation will continue to be private households and the informal construction sector[38]. To shift from the actual project-based to a nationwide coordinated sanitation approach, governmental entities and other stakeholders must develop the appropriate new functions and responsibilities in this sub-sector. State regulation, well designed sensitization and marketing programs shall foster efficient public spending and mobilize a multiple thereof through private investments.

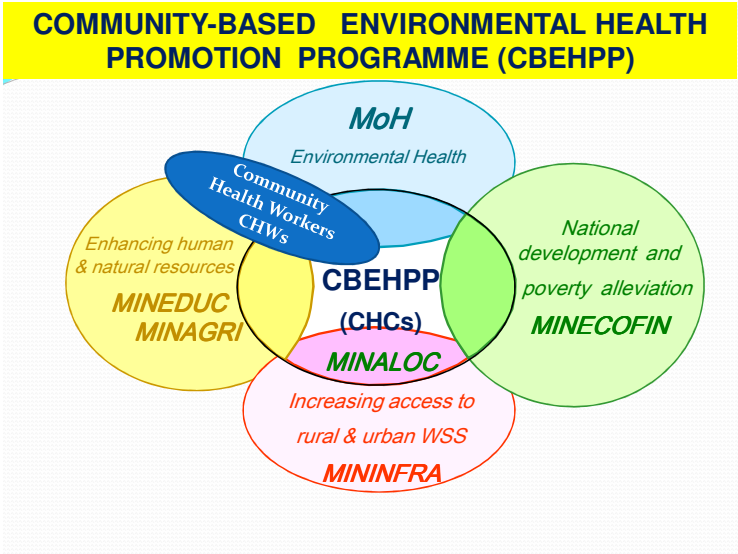
The role of the district administrations is crucial for scaling up the sanitation effort and its sustainability. Rwanda's progressing decentralisation is reflected in the increasing expenditure for sanitation and environmental health executed at district level. This shift of responsibilities requires strengthening the operative capacity of the districts. In the future, districts must assume distinct responsibilities for (a) the coordination of the *individual sanitation supporting programs* as well as eventually (b) for the implementation and management of *collective sanitation systems*. While the latter can be hosted within an infrastructure department, individual sanitation requires the establishment of a new special supporting unit that coordinates its efforts with MINSANTE (CBEHPP) and takes into account both sanitation hard- and software. The new district sanitation programs shall prioritize urbanized areas and grouped settlements (imidugudu)[39].

Response

Successful on-site sanitation programs combine and optimize a range of activities covering the following domains:

- *Sensitization or creating demand*: Environmental health promotion must enhance awareness of the Rwandan population about the invisible risks related to excreta and waste and generate or enhance demand to a higher level of hygiene practice and sanitation improvements. MINSANTE's CBEHPP with its community health club methodology will be the strategic vehicle for systematic nationwide promotion of environmental health outcomes. The program will address improved personal and domestic hygiene and sanitation: safe excreta disposal, hand washing with soap, safe water handling, food hygiene, indoor air pollution and vector control. The intersectoral collaboration scheme is outlined below:

37 http://www.wssinfo.org/en/122_definitions.html
38 The National Urban Housing Policy, MININFRA 2008
39 National Human Settlement Policy, MININFRA, 2009



Source: MININSANTE[40]

- *Marketing of technical options*: Once demand is manifest, the market must respond and offer affordable and safe sanitation technical options to thousands of households and business for both upgrading and construction of new on-site facilities. The offer requires both comprehensive "product" information and the full supply chain including advice, construction services, materials and access to finance. Sanitary improvements are mandatory, but successful sanitation practice has shown that the initiative of the clients is the strongest prerequisite for ownership and sustainability (demand oriented and household centred approach).

- *Financing*: Traditional pit latrines certainly have an economic value, but often they have been built without cash outlay by the household using family labour and locally available material for the construction. On the other hand, improved sanitation facilities require cash for some industrially produced materials and sometimes for qualified craftsmen. Subsidies can boost sanitation demand and should be considered for the following reasons: (a) Expenditures in sanitation generate an impressive return on investment and subsequent health benefits are a foundation for economic development and poverty reduction. (b) Even willing to improve, rural and peri-urban households do seldom have sufficient cash or savings to invest upfront. Credit mechanisms[41], subsidised or not, allow spreading payments (reimbursements) over time in accordance with local monetary income conditions.

  Additionally, subsidies may support households in difficult environmental conditions and for which the construction costs of latrines will be higher than the average cost. Pro-poor subsidies shall be designed for limited periods, allow for full impact accountability and effectiveness evaluated annually.

  As a rule of thumb, subsidies are most efficient if they create incentive for the realization of latent demand, the mobilization of household efforts, the promotion of a specific type of sanitation system, and the conformity of the works with improved sanitation standards. Output base aid[42] schemes (OBA) do

40 Improving national health and poverty reduction outcomes through a community-based environmental health promotion program, Orientation note, Environmental Health Desk, MINISANTE, 2009

41 Under Rwanda's financial market conditions and for households not able to provide any guarantee, e.g. property deed, access to small credit can be regarded itself as a form of subsidy.

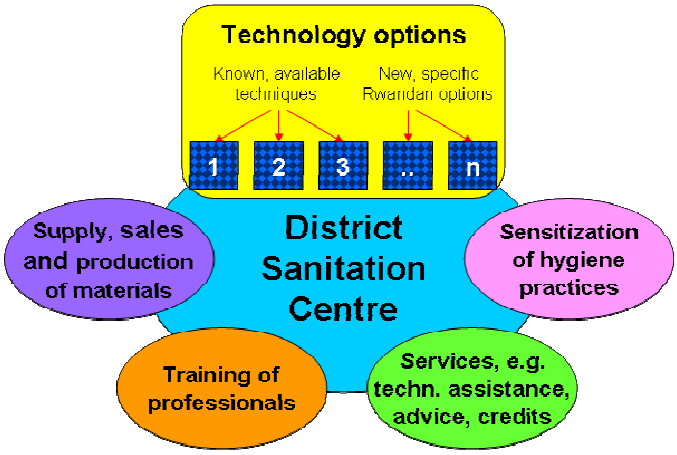
42 Relative to more conventional pre-funded input systems, an OBA scheme ties the disbursement of (public) funding to the delivery of measurable deliverables or services (output) by private firms of NGOs. OBA schemes are explicit; they ensure recognition *why* the subsidy is being provided, *who* is receiving the subsidy and who is providing it, and *what* is being subsidized – both the activity and the financial sums involved.

strengthen demand but shall support above all the development of the professional construction sector at district level, for both individual and collective sanitation works.

- *Private sector development*: Investments in construction have an important multiplier effect on income and employment. Putting in place the national sanitation strategy, Rwanda's construction sector will experience substantial growth. The private formal and informal construction sector will be challenged to rapidly enhance its service and production capacity to meet demand for the new on-site sanitation improvements.

  Thus, the sector requires training of more qualified craftsmen such as masons and adequate sanitary technology know-how should be introduced in the curriculum of vocational schools and universities. The increase in demand for industrial or semi-industrial material may give the opportunity to develop and promote local production and substitute imports. Temporarily, government may need to coordinate imports of material to avoid shortage, speculation and subsequent price distortions hampering the strategy implementation.

Sanitation is still a wallflower, but must become visible and tangible: Given the magnitude of private sanitation improvements planned, each district shall dispose of a powerful marketing and communication tool in form of a *"District Sanitation Centre"*[43] including a showroom. The concept is to be implemented in each district and will thus be able to reach about 300'000 inhabitants each.



The manifold dimensions of a District Sanitation Centre *(Ecopsis©)*

A "District Sanitation Centre" (including ideally a showroom of technical solutions) is not a recipe and has to be adapted to the context. It can integrate and focus on all key supporting activities for individual sanitation described above in a modular way. It can support the dissemination of technical know how, visualize comfort and price options, provide services and material supplies, and support technology development and training opportunities.

The content of a showroom will vary in function of the local focus and priorities. First of all, it shall visualize different technical options of sanitation and hand washing facilities to visiting households and professional builders. As any other shop, the sanitation centre shall inform visitors about techniques, construction methods, prices and conditions.

[43] Alternatively "PromoSan", Center for the promotion of Sanitation

Technical solutions may include composting facilities such as alternating twin-pit VIP latrines, fossa alterna, ecosan, arbour loo and pour-flush toilets as well as rainwater harvesting. Collective latrines including biogas facilities are considered feasible solutions in densified settlements. An adequate set may include both waterless latrines and flush toilets, covering preferences of all rural and urban inhabitants. If conceived and built like an exhibition sanitation park, Rwandan technicians can improve existing and develop new technical low cost solutions, and show it to the public.

The "District Sanitation Centre" can serve for the training of awareness trainers or to link environmental health awareness campaigns with discovering feasible physical sanitation solutions, thus optimizing the sensitization impact. The "District Sanitation Centre" may be conceived as a centre hosting other related services such as exposition, production and sales of materials, transportation logistics, credit and subsidy approval agency, or as a training facility for professionals. Some district may even integrate the offices of their new sanitation services in the sanitation centre.

A "District Sanitation Centre" can be operated by the district or under a PPP scheme, e.g. with a distributor of construction material, or be located within a vocational school.

A national Sanitation Steering Group integrating the main State stakeholders under must ensure coordination and regulation of the new sector approach.

All districts should implement their own sanitation service for the supporting activities for on-site sanitation within their territories.

Progress of health improvements as a result of improved hygiene practice and sanitation are difficult to measure without comprehensive impact analysis and over short periods. The number of households with improved or hygienic latrines or toilets is an overall indicator of achievements but interpretation shall consider the other indicators in this section.

The number of districts with CBEHPP and marketing campaigns rolled out and subsidy systems in place will provide clear indication of the overall progress of the strategy. The same applies to the indicator on the development of the private sector: training courses accomplished should be directly correlated to the increase in national coverage. However, the relevance, efficiency and impact of these activities are to be evaluated at district levels.

Annual workshops at provincial or national level will gather and discuss manifold lessons learned from sanitation centres, public and private projects about adequate on-site sanitation technologies, dissemination and support practices. Cost reduction of technologies shall be a major concern in sanitation R&D and improved, low cost[44] on-site latrines, such as VIP, ecosan or pit latrine with a slab, must be made available for less than RWF 200.000 (full cost at market price).

At a later stage more data may be available and allow measuring the efficiency of State activity supporting individual on-site sanitation: public spending related to the growth of improved sanitation facilities and health indicators.

Performance Indicator	Target	Cost estimate	Implementation

[44] The National Urban Housing Policy, MININFRA 2008, estimates that the average expenditure of an adult person is still below RWF 60,000 per year (category poor) and about RWF 250,000 per year (category “non poor”).

	10/11	11/12	12/13	13/14	14/15	(million RWF)	responsibility
4.1 Establish a cooperation framework for a comprehensive inter-sectoral programme to promote improved household sanitation and behaviour change							
National Sanitation Steering Group operational	X						MININFRA MINISANTE MINILOC AGENCY Districts
Number of districts with sanitation services staffed and operational (responsibilities and tasks defined)	3	10	30			1.000 (staff & operation)	
4.2 Raise sanitation coverage by enhancing the demand for sanitation through a combination of promotion measures							
% of rural households with hygienic (improved) on-site latrines	55	60	65	70	75	16.000 (incentives)	MININFRA MINISANTE Districts
% of urban households with hygienic (improved) on-site latrines	55	60	70	75	80	4.800 (incentives)	
Number of districts with roll out of the CBEHPP approach implemented and operational	9	24	24	30		8.000	MININSANTE MININFRA Districts (NSCEH)
Number of districts with marketing campaign promoting suitable technical sanitary solutions executed	2	7	20	30		600	MININFRA Districts
Number of on-site sanitary construction incentives / OBA schemes tested and implemented at district level	2	7	20	30		2.000 (e.g. credit scheme)	MININFRA Districts Credit Agency
% of sanitation and environmental health expenditure executed by districts	30	35	40	45	50		MINECOFIN MININFRA MINISANTE Districts
4.3 Develop private sector capacities for improved sanitation							
Number of technical and commercial training courses accomplished at district level	10	30	60	60	60	660	PSF, Districts MINEDUC MININFRA
Distribution of construction tools & materials promoted at district level	X	X	X	X		100	PSF MINICOM Districts

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
4.4 Develop, pilot and demonstrate a range of individual sanitation technologies for different standings							
Annual workshop on appropriate sanitation technologies and results disseminated	X	X	X	X	X	200	MININFRA MINISANTE Districts
Number of private or public sanitation "District Sanitation Centre" built in Districts (for demonstration, exposition, training, point of sale)	1	4	8	12		240	MININFRA Districts PSF
4.5 Capacity building under CBEHPP of extension workers, Community Health Workers, Community Hygiene Clubs and Environmental Health Desk							
Community Hygiene Clubs Training Materials in Kinyarwanda developed	X					90,000,000	MINISANTE
Number of orientation workshops organized	X	X				73,000,000	MINISANTE
Number of meetings and messages for advocacy, Mobilization and Community sensitization	X	X	X	X	X	600,000,000	MINISANTE
Number of training sessions for environmental health officers (EHO's), school teachers, community health workers and hygiene clubs organized and done.	X	X	X	X		3,596,000,000	MINISANTE
Number of motorcycles for EHOs to reach all villages purchased.	X	X	X			150,000,000	MINISANTE
Rapid assessment of Household hygiene practices organized.	X	X	X			20,000,000	MINISANTE
Monitoring & Evaluation by MoH 'Core Team' organized.	X	X	X	X	X	23,000,000	MINISANTE
Capacity building support to Environmental Health Desk to execute CBEHPP	X	X	X			30,000,000	MINISANTE
Number of 4WD Toyota Helix double cabin for CBEHPP supervision purchased		X	X	X		150,000,000	MINISANTE
Construction of Health							

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
Posts/Community Hygiene Clubs Centers		X	X	X	X	1,000,000,000	MINISANTE, MININFRA

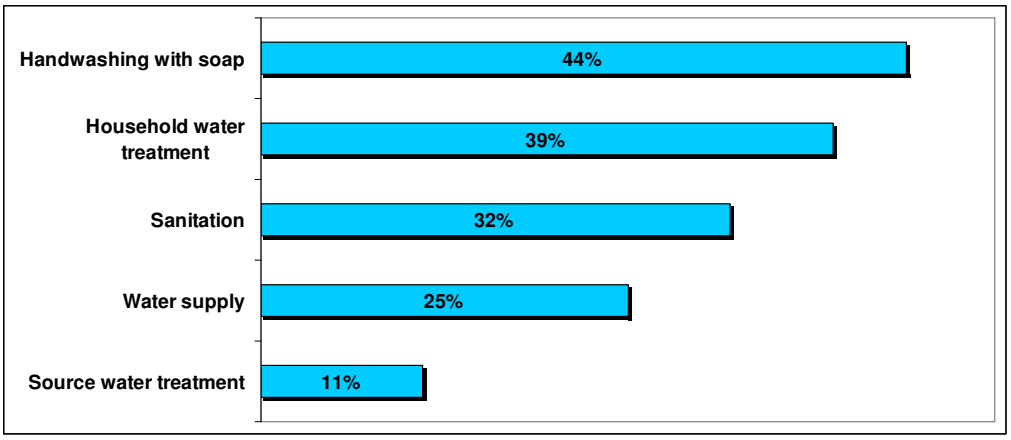
7.5 Institutional Sanitation

Objective 5:	Improve sanitation for schools, health facilities and other public institutions and locations.

Background and Rationale

It is estimated that 88% of diarrhoeal disease in Rwanda is caused by unsafe water supply, and inadequate sanitation and hygiene. Children, patients and care-takers in schools and health centres are particularly vulnerable and people using poor public sanitary toilets are facing similar health risks.

Safe water supply, hygiene education, and child and patient friendly hand washing and sanitary facilities are of particular importance to significantly reduce (diarrhoeal) morbidity[45]:



% reduction in morbidity from diarrhoeal disease

Children learn some of their most important hygiene skills at school, and for many this is where they are introduced to hygienic practices that may not be promoted or possible in the home. Schoolchildren shall learn and practice life-long positive hygiene behaviours and they can be effective messengers and agents for change in their families and the wider community. In order to fully leverage the exemplary function of improved public sanitation services, in particular among the young generation, such provision must be understood as being part of a cross-cutting environmental health program. The balance between hygiene education, water supply and sanitation facilities is a crucial foundation of this goal and its impact goes way beyond the convenience of having improved facilities.

Rwanda has started a specific school hygiene and sanitation program (HAMS) already in 2000. HAMS aims at

[45] Fewtrell, Lorna, Rachel B Kaufamnn, David Kay, Wayne Enanoria, Laurence Haller and Jr, John M Colford, 2005. Water, sanitation, and hygiene interventions to reduce diarrhoea in less developed countries : a systematic review and meta-analysis. The Lancet Infectious Diseases, Vol 5, Issue 1, January 2005.

decreasing water and sanitation related diseases and its main objective is to speed up behaviour change in terms of sanitation and hygiene via the school population. The approach includes sensitization and mobilization of the Rwandan community to live hygiene culture, and sustainable improvements of water and sanitation infrastructures. Without its own budget, the program operates under the umbrella of other water and sanitation projects.

For similar reasons, health facilities and other public institutions countrywide shall demonstrate best practices in hygiene and sanitation including menstrual requirements for women. Public places with poor water, sanitation and hygiene conditions, and intensive levels of person-to-person contact remain high risk environment for the population. Construction or rehabilitation programs of public facilities shall therefore always include an environmental health promotion component.

Response

The Authority shall promote HAMS as well as the construction of sanitary facilities in public buildings. It will develop and support affordable and adequate technical options to be implemented by MINEDUC, MINSANTE and the districts under their respective programs.

Strong emphasis has to be given to the management of public sanitary facilities e.g. at market places. All too often operation and maintenance are neglected putting users of well built facilities at high risk. If districts or sectors do not have the management capacity, such facilities can be leased out to NGOs or the private sector for better operation under a PPP arrangement.

All institutions shall give clear priority to guaranteed safe water for drinking and hand washing facilities while excreta disposal can be either water-borne toilets or waterless latrines.[46]

HAMS shall continue to be operated under the umbrella of all school related water supply and sanitation programs. The corresponding hygiene and sanitation committees at sector and school level are of particular importance for the implementation of this combined soft- and hardware strategy, additionally providing learning from failures and success stories.

The first indicator used, the number of public (and private) schools with improved sanitary facilities, shall reflect not only the physical achievements but, combined with the following indicator (HAMS), shall reflect the improvement of the overall environmental health conditions. The HAMS indicator of actively functioning committees shall demonstrate to what extent the objective of accelerating behaviour change has been reached by operating, monitoring and evaluating school committees.

Sanitary facilities at health centres shall be improved in accordance with the stipulations of the National Environmental Health policy. The indicator on the number of health facilities with improved sanitary conditions shall demonstrate the physical evidence while the soft component on hygiene promotion is assumed to be covered by MINISANTE's own activities.

Of particular interest are the sanitary improvements in public places or buildings such as administrations, stadiums and market places, which are partially under the responsibility of districts. Albeit this indicator does not refer to the total number of public places to be built, the quantity achieved is to be understood as a first step towards lowering public health risks.

[46] Rwanda's Building Control Regulation, 2009, stipulates already that schools and workplaces without sewer system and less than 75 litres per person per day, the disposal of foul water shall be by waterless latrines.

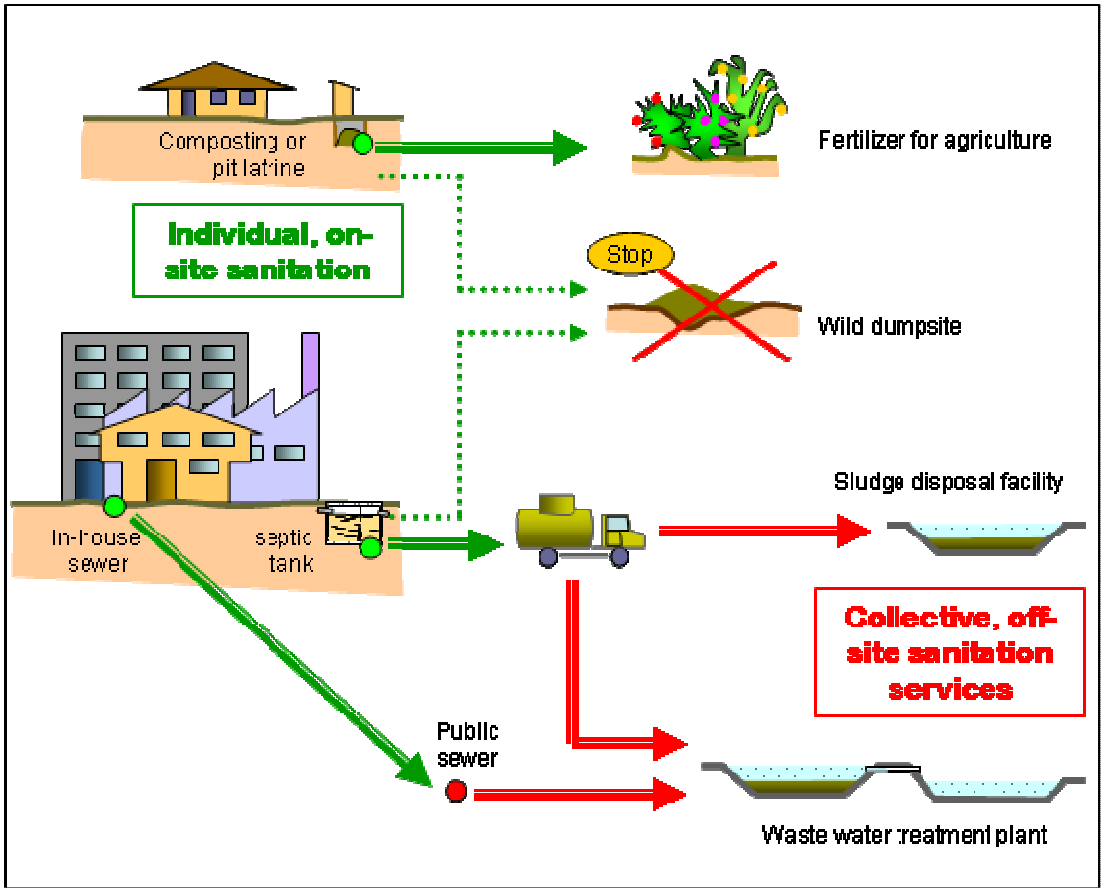
Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
5.1 Implement a joint programme to provide hygienic sanitary facilities and promote hygiene in all schools, health facilities and other public institutions							
% of schools with latrines or toilets as well as hand washing facilities (HWFs) as per standards	60	70	80	90	95	(-)	MINEDUC MINISANTE Agency
% of HAMS in schools with actively functioning committees	60	70	80	90	95	(-)	
% of health facilities with latrines or toilets as well as HWFs as per standards	45	60	80	90	95	(-)	MINISANTE Agency
Number of hygienic public latrines in public areas with HWFs (markets, administration buildings, stadiums, bus stations)	450	600	1000			2.500	Agency MINISANTE MINALOC Districts

7.6 Collective Sanitation

Objective 6:	Develop safe, well-regulated and affordable off-site sanitation services (sewerage and sludge collection, treatment and reuse/disposal) for densely populated areas.

Background and Rationale

In most urban areas, water supply will not be capable to provide more than 50 litres per person per day and the majority of domestic sanitation services in Rwanda will remain individual on-site solutions. However, in some urban areas collective alternatives are needed and can even be cheaper than improved on-site solutions. The State has to complement private endeavours and promote and provide directly or indirectly sludge emptying services and sewerage systems.



Collective and individual sanitation systems *(Ecopsis©)*

Today, only a few hotels, hospitals and 3 small residential areas in Kigali have constructed sewers and wastewater treatment plants[47]. Domestic and industrial sludge is seldom disposed in a safe manner and the country has little experience in planning, regulating, enforcing, financing and providing collective sanitation services. Specific institutional structures have to be in place at national and district level in order to guide these activities and to create mechanisms to develop and strengthen the sector progressively and to successively learn from failures and successes.

Sanitation development is essentially multi-sectoral. Successful delivery of collective sanitation requires a clear understanding of the roles and responsibilities of the various actors, both in terms of their mandates and their inputs. Under the leadership of MININFRA / the Agency, the institutional structures concerned include other ministries, regulating, financing and implementing agencies, local government structures and utilities responsible for sanitation, hygiene promotion and water supply, as well as NGOs and communities.

The private sector will have a crucial role in the construction, provision and eventually financing of collective sanitation services[48]. With regard to operation, the private sector may perform as private operators or under a PPP scheme.

Collective sanitation often requires substantial upfront investments for public infrastructure and cost efficiency

47 This proofs that a sanitation demand and commitment exists. However, the Rwandan offer or supply side is still weak and most of these entities had to seek foreign engineering advice..

48 Rwanda National Construction Policy, MININFRA 2008; Government shall decrease involvement of the public sector in actual service delivery and effectively disengage from the implementation of physical infrastructure construction. Capacity building, the use of appropriate technologies and access to credit facilities are among the main objectives.

must be a major concern. As it is the case in other sectors, overall costs are a function of the balance between costs of construction, equipment, operation and maintenance and organizational skills. The more efficient the organization, the lower the hardware costs can be kept or, with a given budget, the higher coverage can be achieved. The State must create the enabling environment, including capacity building and financing to optimize and fully leverage public sanitation expenditures in terms of local job creation, technology development and improvement of sanitation service delivery. High-tech turnkey options built by foreign contractors may not contribute much to develop Rwanda's own collective sanitation capacity unless carefully configured under this perspective.

Collective (and individual) sanitation is the responsibility of many different agents. It is therefore necessary to regulate sanitation in order to ensure that the recipients of sanitation get the same benefits and that the objectives of the various agencies are met by all public and private service providers. The harmonization und updating of the regulatory framework, norms and standards for effluents, sanitation services and facilities shall be done in realistic steps, ensuring above all that the necessary enforcement capacity is implemented in parallel. The Agency, RURA and REMA shall coordinate their regulative and enforcing activities in sanitation.

Response

As it is case for the promotion of individual sanitation, the new attempt to enhance collective off-site sanitation conditions must address soft- and hardware aspects, hygiene education as well as infrastructure.

Sludge emptying services: Septic tanks need periodic emptying of the sludge. Manual tank emptying and uncontrolled dumping of the sludge constitute a major risk for public health. Kigali's city administration provides a mechanized sludge emptying service to public institutions only and the sludge is discharged at the waste dumpsite of Nyanza. Other urban centres do not have a service yet.

While the provision of the sludge emptying service and disposal sites can be operated by public and/or private operators, the administration must develop the regulatory, enforcing and supporting framework, e.g.: Inventory of premises with septic tanks, certification of public and private operators, standards for equipment and protection, service pricing (tariffs), inspection, professional training of operators, labour safety regulations, building standards for sludge disposal sites, effluent standards for different uses of treated wastewater[49], operational and effluent control of sites.

All sanitation master plans must reference sludge disposal site and services. Sludge disposal sites shall be constructed in all major urban areas with premises using septic tanks for waste water. The Authority shall prepare guidelines for construction as well as for operation and maintenance favouring low cost, gravity based technologies without energy consumption. Disposal sites can be built as stand-alone solutions or in connection with wastewater treatment plants.

The guidelines shall also indicate cheap and easy to execute alternative techniques for temporary safe sludge disposal until full studies have been carried out and funding made available. Private sector investments shall be encouraged, e.g. by facilitating access to financing (investment only), import or other tax reductions and training opportunities.

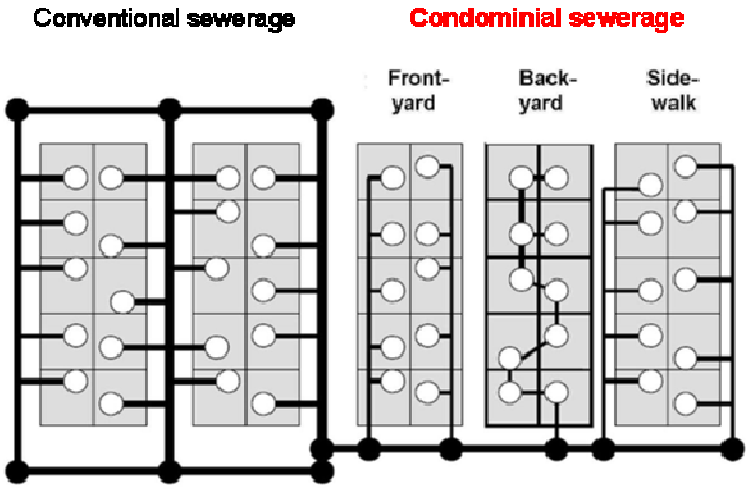
Collective sewerage systems: There are few collective sewerage technology options available and all are water borne systems: Condominial (including simplified), small bore (or settled or solid-free) and conventional sewerage. Cost being a crucial factor, conventional sewerage can normally be eliminated from further consideration on the grounds of its very high costs per connection[50].

Condominial sewerage was developed in Brazil and it has gained ground in Latin America, South Africa and

[49] E.g. based on the WHO guidelines for the safe use of wastewater, excreta and greywater, WHO 2006, vol. 1 - 4

[50] Or, within a given investment budget, the condominial approach then allows for more connections.

Asia. The condominial approach combines a technical and a social dimension resulting (a) in 50 - 80% lower capital and operating costs[51] than conventional gravity sewers and (b) in higher ownership and hygiene behaviour changes due to community involvement.



Comparison of conventional and condominial sewerage

"Condominiums" are the "neighborhood" units and the social dimension means that the service provider must interact with the beneficiary communities from the very beginning of the planning process, and these contribute to the project with delivering constructions permits for networks on private or community owned lots.

Communities can participate in the design process, in the construction and maintenance, thereby lowering their monetary monthly costs for the wastewater service. The preparatory community involvement is the ideal opportunity to promote not only hygiene practice and sanitary education but also to address drainage and solid waste issues.

Condominial sewerage is technically a network of small diameter pipes laid at shallow depth, mostly on private ground before joining the public primary network[52]. It becomes affordable and even cheaper than on-site solutions in areas with a density of more than 150 people per ha but needs a waste water generation of not less than 40 – 50 litres per person per day[53]. Due to multiple design options and easy construction, the highly flexible system works for poor and rich areas and it has turned out to be often the only solution to provide sanitation services in unstructured, very high density settlements in difficult topographic situations.

Rwandan hydraulic design standards shall be adapted to take into account best practice in condominial and simplified sewerage design such as sewer gradients and diameters.

Settled or small bore sewerage (solid-free): Settled sewerage is a sewer system that conveys only septic tank effluents or grey water. Without solid sewage, these less expensive sewers can be designed differently and executed where existing toilets (with septic tank) or waterless latrines are already providing a safe level of on-site

[51] Compendium of Sanitation Systems and Technologies, EAWAG-Sandec, 2008; and Water Supply and Sanitation Options for Small Urban Centres in Developing Countries, UN-Habitat, 2006.

[52] Simplified sewerage is designed, like conventional sewerage, to receive unsettled wastewater and the design procedure ensures its blockage-free operation by using a minimum tractive tension (rather than a minimum self-cleansing velocity) of 1N/m^2 which is achieved at least once a day at peak flow.

[53] The Rwanda Building Control Regulation, MININFRA, 2009, requires for all buildings with a piped water supply system capable of providing not less than 75 litres per person per day a water-borne system of excreta disposal and the adequate discharge.

service.

Wastewater treatment: Wastewater should be treated prior to surface discharge or reuse in agriculture and/or aquaculture. Treatment usually means a reduction in biodegradable organic material and suspended solids, and some nutrients such as nitrogen and phosphorous. However, the large centralized sewage facilities corresponding to full treatment standards require very high financial, material and human resources.

Rwanda's priority shall be on how to control pathogenic and hazardous/toxic material. Therefore treatment processes shall first be geared towards environmental health protection and then on natural resources protection. The overall level of environmental health and environmental protection is directly correlated to the standards that a country can afford to pay and maintain for liquid (and solid) waste treatment, which stresses the needs for clear priorities[54]. Low cost treatment options shall be implemented that have low operation and maintenance requirements and maximise the utilization of the potential resources, principally irrigation water and nutrients. Decentralized solutions shall be evaluated systematically as well as the optimization of energetic resources if possible.

Preliminary and primary treatment shall remove gross solids and reduce the polluting load. Anaerobic techniques are suitable secondary treatment stages for the treatment of pathogenic material with significant application potential for reuse of treated effluents in irrigation[55]. Tertiary treatment for removal of specific pollutants may be integrated into the planning concept but realized after environmental health protection objectives are met and operating sustainability is confirmed.

The overall approach for urban wastewater treatment shall take into consideration industrial effluent loads such as hydrocarbons and heavy metals and elaborate a concept including the necessary industrial pre-treatment options. The same applies to other heavy polluters such as slaughterhouses and hospitals. If these polluters are not connected to a sewerage system, adequate decentralized on-site solutions shall be implemented.

Project selection criteria: Sewerage and treatment systems shall be evaluated with regard to technical complexity and appropriateness, easiness of operation and maintenance, opportunities to include hygiene promotion, level of job generation and capacity building needs, and environmental impact. Comparative financial analysis of project options shall assess all capital and recurrent costs and be based on lifecycle cost calculation: 20 – 30 years for wastewater treatment plants and 50 – 60 years for sewer systems.

The Utility shall build the first public sewerage system in Kigali and develop Rwanda's sanitation O&M know-how. By achieving sound service delivery performance, including operating and financial efficiency as well as transparency and accountability also in its sewerage division, the Utility shall be able to source capital investments from Rwanda's domestic financial market by 2015.

Sanitation guidelines for imidugudu shall consider both on-site options as well as decentralized collective systems, e.g. for grey water with subsequent treatment for irrigation reuse.

Tariff structure for collective sanitation services: The determination of tariffs implies that sanitation service costs are known. Providers must put in place an analytical accountancy system and enforcement and audit procedures have to be implemented. The Authority shall provide accounting guidelines for sludge emptying/disposal services and sewerage operators.

Full *cost recovery* based on the user-pays principle shall be the target for collective service provision and means that beneficiaries will pay for construction, operation and maintenance costs. However, for similar reasons as for

[54] Usually between 1 – 2% of GDP.

[55] Example: The Valle Mezquital represents the world largest area of wastewater irrigated agriculture. 83,000 ha are irrigated using annually 1,900 million m^3 raw, untreated wastewater from the metropolitan area of Mexico City. Via the irrigation, the wastewater receives a natural land treatment, which is estimated to be equivalent or even superior to conventional secondary treatment. However, recent data on pathogen incidence underscore the importance of wastewater treatment before land application. (In Romero, H., 1997. The Mezquital Valley, Mexico)

on-site sanitation support, such as promotion of public health, cost recovery through monthly billing shall start to recoup sewerage operating costs only. This implies that capital costs are temporarily subsidised through taxes, donor grants or cross subsidisation amongst users in place. However, recovery of capital costs (depreciation or replacement costs) shall progressively be introduced over a period of 5 years after begin of operation.

Awareness campaigns to households on hygiene practice shall include information about investment and operating costs of sewerage in order to increase cost understanding and willingness to pay.

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
6.1 Establish an effective regulatory and institutional framework for collective sewerage and sludge management							
Legislation for sanitation, hygiene and environmental health updated		X				25	Agency MINISANTE MINIRENA
Regulatory framework, norms and standards guide for effluents and minimum standards for sanitary facilities defined and disseminated	X	X				70	Agency MINISANTE MINIRENA RURA, REMA RBS, WASCO
6.2 Prepare sanitation master plans for all urban areas							
Terms of References for sanitation master plans established	X					10	Agency MINALOC MINISANTE REMA RWASCO Districts
Kigali's integrated sanitation master plan reviewed/updated	X				X	30	
Number of Sanitation Master plans for other urban areas developed	1	3	5	8	15	750	
Sanitation guidelines for imudugudu developed and reviewed	X					20	
6.3 Implement viable, low cost approaches for collective sewerage services							
General approach defined, technology strategy and feasibility studies reviewed/carried out	*X*					20	Agency MINALOC RURA, REMA Districts (Kigali City) RWASCO
Number of urban areas with sludge disposal facilities + services operational		2	4	8	15	3,500	
Number of public collective sewerage services built in urban areas			1	2	4	10,000	
6.4 Implement cost recovery for collective sewerage systems							

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
Financial model and tariff structure for sludge disposal and sewerage developed and approved	X	X				20	Agency RURA Districts RWASCO

7.7 Storm Water Management

Objective 7:	Enhance storm water management to mitigate impacts on properties, infrastructure, human health and the environment.

Background and Rationale

Storm water is a subset of surface water resources. Urbanisation typically increases runoff rates due to increased impervious areas and replacement or filling up of natural watercourses and overland flows. Subsequent higher uncontrolled discharge of storm water can

- have a significant impact on water quality and public health: storm water runoff can include a variety of pollutants such as sediments, litter, bacteria, organic nutrients, hydrocarbon, metal, oil and grease, pesticides and acids;
- put people at risk, and cause erosion of land and damages to property and infrastructure.

The focus of the storm water strategy in urban areas must be on alleviating existing and preventing future problems through careful design, planning and only complementary drainage networks. Successful affordable management of storm water needs a long-term coordinated approach to integrate best practice as well as community and business involvement and education programmes.

Storm water shall be understood as a resource. Diversion of storm water has a series of advantages, including financial, over traditional approaches to storm water management, which usually gave priority to costly network constructions. “Water sensitive urban design” or “Low Impact Development” (LID) are approaches to urban planning and design which integrate management of the total water cycle into urban development. The approach also includes methods such as porous pavements, infiltration and rain harvesting systems, swale and wetlands, which shall be incorporated in development of new and upgrades of existing infrastructure.

Response

A national taskforce under the lead of MININFRA / the Authority shall formulate responsibilities and tasks, coordinate the relevant national and district stakeholders, set the objectives and implementation methods, revise or elaborate standards and norms, and develop guidelines for urban storm water management. Additionally the taskforce shall define the terms of reference for the storm water component in urban sanitation master plans considering its correlation with wastewater and solid waste management. Kigali’s 2008 storm water master plan[56] shall be updated with the perspective of the new guidelines.

Planning, design and implementation shall encompass the following elements:

a. *Risk Assessment*: A detailed analysis of the probability of natural events or system failures and the social, economic and environmental consequences of such events shall be carried out in urban areas. This allows identifying an overall risk profile of the catchment areas and basing priorities of intervention upon.

   Albeit the level of flood risk is mitigated by Rwanda’s topography and geology, an additional risk map of critical flood areas (flooding from rivers and storm water runoffs) shall be drawn to help local authorities to (a) understand the risks when considering where settlements, business and other developments should be built or relocated and (b) strengthen the country’s preparedness and response for emergencies. Analysis shall consider likelihood and consequences and magnitude of events.

[56] Plan d’assainissement du plan directeur des eaux pluviales et des eaux usées de Kigali, Electrogaz et MININFRA, 2008. Proposed investments until 2015: USD 18 million.

b. *Best practices for storm water design standards, land use and urban planning*: Water sensitive urban design offers an alternative to the traditional view of storm water merely as a nuisance. It seeks to minimise the extent of impervious surface and mitigate changes to the natural water balance, by temporarily storing the water close to where it falls and slowly releasing it into the ground or natural waterways.

Demand for new and improved drainage systems in the future will depend on activities such as urban consolidation, Greenfield developments and expansion of commercial and industrial areas, reducing the area of pervious surface available to soak up the water if no preventive provisions are taken.

By integrating major and minor flow paths in the landscape and adopting a range of low cost LID design techniques, the country can reduce the extent of the storm water drainage and the size of the pipes required. These techniques include detention and retention systems to lower peak flows, and grassed swale drain and vegetation to facilitate water infiltration and pollutant filtration. Costly construction shall remain 2nd option.

Drawing standards for storm water infrastructure need to be revised or formulated in line with adequate Rwandan standards and practice, i.e. in accordance with local coefficients of runoff, storm frequencies, socially acceptable risk levels and economically affordable standards[57].

Communities shall be involved in planning, building and maintenance of drainage systems.

c. *Water quality and environmental protection*: The increased flood volumes, peak discharges and higher water flows in urban areas cause a significant increase in the amount of pollutants carried by the water. Appropriate techniques to correct deficiencies of the storm water drainage system must be developed which also take into account concerns of litter, pollution and water quality.

d. *Network capacity and maintenance*: Age, level of maintenance and the increase in the density of residential development have a direct impact on the capacity of the existing storm water drainage system. The process of urbanisation replaces the absorbent soil surfaces with impervious roofs and pavements which leads to an increase in the volume of storm water runoff. An evaluation of the existing drainage system as the "last line of defence" shall assess the components having the highest risk of failure and the capacity to handle current and future demand. Based on this analysis, improvements, extensions and costs can be determined considering risks and updated design standards.

The regular and on-going maintenance of the drainage network is essential to maintain its efficiency and to reduce impacts. As highlighted by studies on Kigali's drainage system, litter easily obstructs the system in the valleys. Inspection and maintenance must be organized and shall involve the local communities.

e. *Awareness and education*: People need to recognise that human activities have increasing polluting consequences and other environmental sensitive impacts. Education and awareness programs should be directed to improve the understanding about storm water and encourage sense of responsibility. Schools shall be primary target audiences.

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
7.1 Build the institutional and regulatory framework for storm water management							

[57] Rwanda Building Control Regulations, MININFRA, 2009; Requirements for Building Applications.

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
National Storm Water Task Force operational	X					-	Agency MINALOC MINRENA REMA Districts
Strom water related legislation reviewed, standards and norms developed	X	X				25	
7.2 Support districts and the City of Kigali in planning, design and implementation							
Storm water management concept and guidelines for urban areas established and disseminated	X					25	Agency MINALOC MINRENA Districts Kigali City
Number of Sanitation Master plans for urban areas with storm water considerations integrated	1	3	5	8	15	-	
Implementation of upgrade and rehabilitation of storm water prevention in Kigali started (e.g. drainage)			X			1,500	Agency Kigali City

7.8 Solid Waste Management

Objective 8:	Implement integrated solid waste management in ways that are protective to human health and the environment.

Background and Rationale

Rwanda is facing significant challenges in relation to solid waste management. Waste generation is increasing, while a sizeable portion of it is disposed on improperly located and operated dumpsites, resulting in adverse impacts on environment and health. The country has a backlog in waste legislation enforcement as well as in coordination and promotion of existing efforts to recycle and dispose waste properly.

A National Task Force shall establish an affordable, integrated approach to solid waste management (ISWM) based on the international waste hierarchy of:

- Reducing the amount and toxicity of material entering the waste flow (minimization);
- Reusing as much material as practicable;
- Recycling the waste that cannot be used and recovery of resources;
- Residue disposed of in an environmentally sound way.

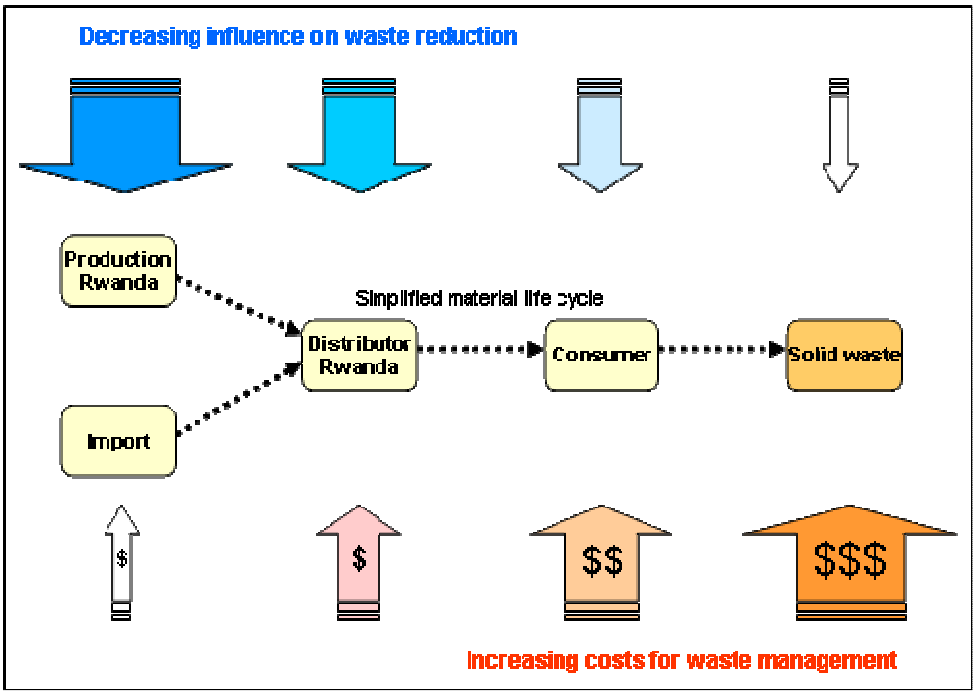
Thereto, ISWM must mobilize all public and private stakeholders and consider the relevant financial, technical, cultural, organizational and legal aspects. A clear division of responsibilities in terms of regulating, monitoring, promoting and operating functions shall be established among public entities at national and district level as well as among private business, communities and households.

Waste management shall aim at full cost recovery and encourage private and community initiatives for financing and operating waste management operations.

The existing legislation and regulatory framework shall be updated and establish minimum levels of service and environmental protection. Such levels can be scaled up over time, but shall remain realistic, i.e. technically, socially and economically enforceable at each stage of development. Enforcement should be accompanied by user-friendly advice and guidance and must address aspects such as operating licenses, producer responsibilities, landfill regulation, tariffs, disposal of hazardous, industrial and agricultural waste, illegal dumping, prosecution and recovery of clean up costs.

Response

Waste reduction, prevention, and minimization: Waste prevention is at the top of the waste hierarchy and number one priority for ISWM. It emphasizes the need to move waste management away from landfill towards more sustainable and less environmentally harmful practices and emphasises avoiding of waste generation, reducing the quantity and hazardous nature of waste at source and reusing products before they enter the waste stream.



Waste is generated at several stages in the production and consumption process: the earlier waste reduction is applied, the more efficient and sustainable results are achieved. (Ecopsis©)

The concept of "life cycle of materials" supports a broader consideration of how waste can be minimised and recovered at every stage of the process. In the transition towards efficient resource management, waste strategy needs to focus on those key stages of the life cycle which have the greatest influence on waste generation and recycling. The following categories shall be assessed: Commercial and industrial waste, construction, demolition and excavation waste, hazardous waste, agricultural waste, packaging, waste electrical & electronic equipment (WEEE), end of life vehicle, tyres, and batteries.

Two incentives shall sustain the minimization policy. At the very front-end, the "polluter-pays" principle holds that importers, manufacturers and distributors who profit from waste generating activities shall pay for the costs of pollution. The complementary incentive, the "user-pays" principle implies that those who use a service should pay for it proportionally.

Several initiatives can support legal enforcement and encourage business to accept increased liability and to lower waste generation such as setting prevention and reduction targets through voluntary agreements, partnerships with professional institutions and associations, targeted awareness campaigns, waste audits and promotion of the "clean production" concept.

On the other side, the mobilization of public and political support is as crucial to both financing waste management and keeping waste minimization as cost-effective as possible. Successful waste minimization relies upon support, acceptance and commitment from the community, individuals and organisations within the community. As for hygiene education, schools shall be a primary target group for waste education. This has to be addressed by developing a behaviour change model including resourcing education, research, awareness campaigns, reward schemes, dissemination of good practice and support for community initiatives and promotion.

Recycling: Recycling can reduce waste to landfill but also provide economic, environmental and social positives[58]. The State shall assist private sector and community initiatives in establishing markets for recyclable products with priority for materials which are currently being recycled and/or can find sustained market demand. Such support may include training and the provision of reimbursable funding or grants.

Complementarily, the segregation of waste at source and separate collection of recyclable and compostable waste must be promoted and shall implemented first within the institutional sector.

Recovery: Organic waste represents the majority of the waste to dumpsite. Additionally, an unknown portion of organics is composted or buried by households and business on their premises. At the dumpsite, organic garden waste and paper are the source of most of the damaging leachate, greenhouse gases and odours. But they also represent a valuable resource which should be recovered, e.g. composted or transformed into briquettes.

Advice, assistance, practical demonstration, pamphlets and educational material are means to promote benefits and techniques of home composting and worm farming as alternatives to disposal via the public collection. School children may cultivate their potager and learn about composting.

Collection: Due to high transportation costs, collection efficiency is crucial and shall be optimized through a system of kerbsides, transfer stations and adequate means of transportation for each stage. Kerbsides shall be equipped for waste separation and its management can be outsourced to local waste collectors. Private and community initiatives are to be encouraged also outside Kigali in secondary urban centres.

Landfill: A range of technologies is available to reduce the amount of waste at the landfill, including anaerobic digestion, composting, mechanical biological and thermal treatment. Some techniques allow energy recovering from waste and can contribute to meeting fuel demand.

Uncontrolled dumpsites shall cease to operate and be replaced with environmentally sound landfills. Identification of future landfill sites and technologies shall be undertaken based on selection processes considering technical, financial, social and operational criteria. A site shall host sufficient volume for a period of approximately 50 years. Priority shall be given to Kigali's dumpsite Nyanza: The current operation of Nyanza shall be improved and the site capped after construction of one or more safe recycling and landfill centres on new sites in Kigali.

[58] Recycling and recovery activities reduce waste to landfill, resulting in lower disposal treatment costs and parallel income generation and job creation.

New developments in low cost landfill technology and operation shall be continually investigated. Landfill operators shall establish partnerships with Rwandan scientific institutions for quality control and operational performance. Landfills shall monitor types and quantities of waste supplied from different sources, while general urban waste surveys can be carried out periodically.

Hazardous waste: Due to the elevated and often concentrated environmental risks, a map and register of hazardous industrial and medical waste producers and products shall be established and include actual techniques and equipment used for disposal e.g. incinerators. To comply with environmental legislation, guidelines are to be edited for safe waste handling, storage, transport, treatment and drop-off or disposal for each category of hazardous waste. A Technical Advisory Network shall be set up in collaboration with Rwanda's scientific institutions that, considering the level of risk, shall monitor premises and activities and establish emergency plans to remedy or mitigate adverse impacts.

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
8.1 Develop an integrated approach for solid waste management in Rwanda							
National Solid Waste Task Force operational	X					-	Agency MINALOC MINEDUC MINICOM REMA, RURA Districts Kigali City
Integrated solid waste management concept and master plan for Kigali established	X					25	
Emergency and transitional measures ready for implementation	X					25	
Number of Sanitation Master plans for urban areas with solid waste considerations integrated	1	3	5	8	15	-	
8.2 Implement minimization of waste as a national priority							
Tools developed and awareness campaigns on solid waste reduction executed	X	X	X	X	X	250	Agency MINICOM RBS
8.3 Recover value from waste and promote safe collection and reuse/recycling systems involving the private sector							
% of non-organic domestic waste collected in urban areas	60	80	100			250	Agency MINISANTE MINICOM Districts Kigali City
% of non-organic domestic waste reused or recycled in urban areas (e.g. paper, glass, plastic, metal)	10	20	40	55	65	250	
8.4 Ensure safe disposal of residual waste and improve existing dumpsites							
Number of controlled landfills constructed in urban area by district as	1	5	12	15	25	11,600	Agency MINISANTE

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
per minimum standard % of non-organic industrial waste collected and disposed in urban areas	50	60	70	80	90	50	REMA Districts Kigali City

7.9 Institutional Sector Framework

Objective 9:	Develop the sector's institutional and capacity building framework.

The Institutional Challenge

Implementing the sector policy and strategy requires a strong, effective institutional framework. Recent sector reforms have led to clear responsibilities – separation from water resources management, decentralisation of responsibilities to the districts – but have not yet created the necessary structures at the central level. Specific backup support structures will be needed to strengthen decentralised implementation and supervision capacities. In addition, a review and clarification of the institutional roles and coordination mechanisms is required.

In rural and urban water supply there are institutional structures to build on, but which are undergoing fundamental revisions: The creation of a sector Authority and a harmonised financing mechanism, splitting urban water supply services from energy supply while adding the responsibility for urban collective sanitation – are all major undertakings that will need some consolidation time until they become fully operational. A joint institutional umbrella will be created with the energy sector.

In sanitation – individual, collective and institutional sanitation, solid waste and storm water management – many of the basic coordination, implementation and regulation structures are yet to be developed.

Most of these institutional restructuring will have to take place in parallel with the conceptual development of the activities described in this policy and strategy, while in the same time the sector is expected to deliver very effectively in order to achieve the EDPRS and other sector targets.

Altogether this means a major institutional challenge to be met within very few years. It is therefore recommended to provide for external technical assistance during an initial start-up phase of three years.

Sector-Wide Approach

The water and sanitation policy and strategy shall be implemented through a Sector-Wide Approach (SWAp). A Memorandum of Understanding for the water supply and sanitation SWAp has been signed by the Government of Rwanda and key development partners in October 2009 (all quotes in this section are from the MoU text).

The SWAp is defined in the MoU as "a common approach and process adopted in partnership between the Ministry of Infrastructure (MININFRA) and its Partners in accordance with the partnership principles and objectives." Partners underline their commitment "to support a common program of work 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 SWAp is understood as the framework for the development and implementation of a sector strategy endorsed both by the Government and signing partners, based on "consensus as far as possible."

The SWAp implies a holistic approach, by addressing all aspects of the sector in an integrated way, and is inclusive as it explicitly acknowledges the role of non-governmental organizations, including community-based organizations and private enterprises.

Partners will "align and harmonize their own planning, and performance monitoring and reviewing activities with those processes and mechanisms established in the sector-wide approach", striving for an increasing number of joint and harmonised activities. Future development assistance will be managed using existing structures as far as possible, in order to reduce transactions costs and improve sustainability. Other partnership principles are joint planning and implementation of support programmes; information sharing on the nature, timing and financing of these programmes; and support to a harmonised approach to capacity building.

Among the essential components of a SWAp are[59]

- an agreed sector policy and strategic framework;
- a medium-term expenditure framework reflecting sector priorities and strategies;
- a sector coordination framework under the government's leadership
- a performance monitoring system
- a focus on institutional capacity development and good governance.

All these components are under development in Rwanda.

Partners agree on joint objectives, principles and operating procedures, including the Harmonised Procedures Manual for project and programme implementation.

Participation in the harmonised financing mechanism being developed – which will allow for both budget support and basket funding arrangements – is encouraged but partners are not limited to using theses modalities. "In the context of the Rwanda Aid Policy, resources are deemed to be on-budget where they are reflected in the GoR's budget. Resources are on-plan when clear alignment with a strategic plan is demonstrated." External support can thus be on plan (EDPRS) and on budget regardless of the financing modality used. However, partners "commit as far as possible to increasingly employing GoR disbursement and financial reporting systems."

Among the agreed tools of consultation and coordination are

- a SWAp secretariat, to be hosted by MININFRA / the Agency;
- regular meetings of the Sector Working Group, the highest advisory and coordination body within the sector;
- a Joint Sector Review, to take place once a year.

Development partners "will appoint a lead donor representative to coordinate donor views, act as co-chair in sector meetings and activities, and ensure harmonisation of dialogue." The government will, inter alia, submit the annual work plan, budget and MTEF for review at the Joint WATSAN Sector Review, and will invite partner representative to the planning process.

Re-defining and consolidating institutional roles and coordination mechanisms

The institutional framework of the water supply and sanitation sector is being restructured in all its aspects and functions: Creation of new autonomous institutions, decentralisation, PPP, regulation, financing, and coordination mechanisms, to name just the most important ones. Two challenges merit particular attention: Clear

[59] EU Water Initiative Africa Working Group: Making it Work - Sector wide approach. Briefing Note, 2nd Africa Water Week, November 2009

interfaces and delimitations of responsibilities for tasks such as implementation, technical support and regulation; and the setup of an institutional framework for sanitation.

The sector undertakes to develop with one year (i) a consistent concept for the future institutional framework, structured by sub-sector and task, and (ii) the necessary cooperation arrangements (MoUs, joint commissions etc.) with institutions outside of the sector.

Cooperation with districts shall be institutionalised on: (i) planning (preparation, approval and updating of masterplans); (ii) implementation (harmonised procedures, technical assistance, support in procurement matters); (iii) financing (modalities of harmonised financing mechanism); (iv) reporting and performance monitoring; (v) capacity assessment and development; and, (vi) local level coordination mechanisms (with non-government sector stakeholders, and regarding water resources management).

In **sanitation**, operational arrangements shall be developed to ensure joint action and smooth cooperation with the Ministries of Health and Education. Jointly the roles and responsibilities, coordination mechanisms and regulation requirements shall be defined for each of the following five sub-sectors: Individual (household) sanitation; institutional sanitation (schools and other public institutions); collective sanitation (including sludge management); storm water management; and solid waste management.

Effective **regulation** requires close cooperation between the sector institutions and RURA. RURA will have an independent position, as shown in the figure below, but will participate in sector consultations on technical standards, service levels, tariffs, benchmarking, standard contracts and terms of reference, etc.

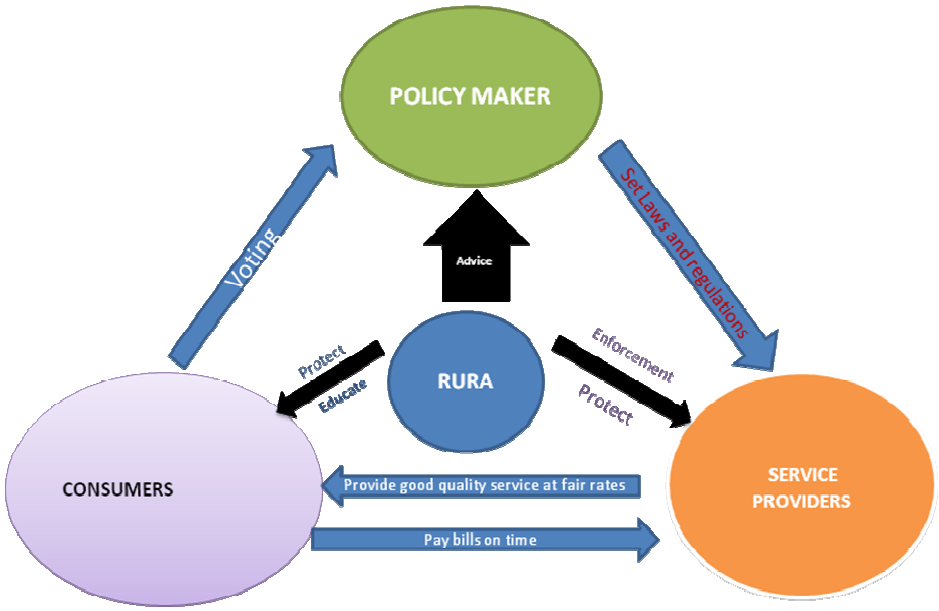


Figure provided by RURA

Water resources management needs particular attention to ensure resource protection, sustainable use and coordination with other water users. The water supply and sanitation sector is committed to the concept of Integrated Water Resources Management. It will closely cooperate with the Ministry in charge of water resources management and REMA to develop, implement and enforce appropriate standards regarding water abstractions, water quality, waste water discharge and environmental impact assessments.

Finally, close cooperation with **urbanisation, housing and land use planning** is required both in urban and rural areas. Appropriate coordination and joint planning mechanisms will be developed with the Districts, the City of Kigali, the line Ministries concerned and the Ministry of Local Government.

Establishing a dedicated WSS Authority with substantial operational autonomy

The Authority will be the core player of the sector, liaising with other national and decentralised institutions. Key responsibilities, which include in particular the operation of the harmonised financing mechanism and implementation support to the districts, have been outlined in the respective Policy section, 4.9.3. The Authority will operate decentralised support units as described in section 7.1.

To cope with the tasks outlined in this strategy it will have to become fully operational within a very short time after its formal creation. Even assuming that full staffing with qualified professionals will be available right from the beginning this is a major challenge as institutional building – setting up and consolidating all the necessary processes – requires a minimum amount of time. In addition, this strategy includes a number of new concepts and systems to be developed, most of which to become operational within the first one or two years (see section 8.1.1).

It is therefore strongly recommend to provide for external technical assistance during the start-up period of the Agency. This would consist of 2 (in the first year 3) technical assistants, including an institutional development expert, a sanitation expert, and a financial management adviser.

Communication, consultation and coordination

Sector development and a successful SWAp depend on good communication and complementary cooperation of the different sector stakeholders – government and non-government institutions, develop partners and users.

A sector communication strategy to be prepared in 2010/11 will specify the necessary tools, approaches and responsibilities by subject, target group and level.

One of the tools for communication and information exchange will be a water and sanitation sector homepage. It will provide a platform for stakeholder communication, for disseminating resources and tools, for publishing selected MIS data and maps on key indicators, and for informing the general public.

Monitoring & evaluation and performance measurement framework

The M&E and performance measurement framework, to be approved by Government institutions and Development Partners, will consist of an agreed set of performance indicators and targets, and a system for the collection, analysis and dissemination of information on progress against these indicators. These components shall be the basis for the annual joint sector reviews and sector performance reports. They will be supplemented by independent M&E missions to be jointly conducted by teams comprising GoR officials, stakeholders and externally contracted experts.

See also section 8.4 for an outline of the overall sector strategy on M&E and performance measurement.

The first steps to implement the strategy are to make the sector MIS fully operational; provide training to all system users, operators and data providers; and establish reliable reporting and validation procedures to ensure that the MIS information is reliable and regularly updated. The existing inventory will be refined, validated and completed, in particular by adding data on sanitation coverage.

The MIS will hold baseline and survey data, statistical data to evaluate sector performance indicators, as well as detailed implementation and operational data for project management / monitoring purposes. It will feed into national, cross-sectoral databases and reporting systems (EDPRS / CPAF, DevInfo, etc) and will be linked to the District's reporting and information systems. Key information should be available online to foster transparency.

Infrequent national statistical surveys, such as Demographic & Health Surveys, cannot replace sector-specific data collection through administrative channels. With the progress of decentralised planning, implementation and financial management it has become inevitable to link with the District's data collection, reporting and information management systems. Reporting and monitoring mechanisms have to satisfy the sector requirements without overstraining district resources.

The Authority will engage in close cooperation with the Districts, the National Institute of Statistics and the Ministry of Health in order to agree on definitions, data collection and calculation methods, with particular attention for sanitation.

Professional training and education

The WSS sector will, on the one hand, identify and specify its overall requirements in terms of professional training and education. Needs will be specified by type, level, target group and duration, and will include indicative numbers of persons to be trained. The Authority will be in charge of communicating, discussing and agreeing this concept with the education sector institutions.

On the other hand, sector specific short term training courses will be promoted and organized by the Agency, in cooperation with the Districts, the Ministry of Health and others as applicable.

Research and knowledge management

The strategy to promote innovation and build a knowledge base relies on two main components: (1) cooperation with research organisations and (2) improved knowledge management, aiming to make experience readily available to all sector stakeholders.

Cooperation with research organisations – such as the National University of Rwanda (NUR), Kigali Institute of Science and Technology (KIST), and Kigali Health Institute (KHI) – will involve the promotion and support of applied research and thesis in relevant fields. Support can include the provision of data, sensitisation of stakeholders, guidance, as well as financial support for expenditures such as data collection, travel and subsistence.

Applied research will focus on innovative technologies and approaches, which are not necessarily new but not yet standard in Rwanda, and hence to be tested and adapted for Rwandan conditions. Examples are: Rainwater harvesting as the main source of drinking water supply for areas that cannot be supplied by gravity; solar pumping as an alternative to diesel pumping for areas not connected to the grid; simplified collective sanitation systems; affordable solutions for; or integrated sanitation solutions for health institutions.

Other research will aim to measure the impact of water and sanitation inventories at the beneficiary level, including unintended impacts, longer-term impacts and impacts on cross-cutting issues: impacts on the role and living conditions of women, vulnerable people, on water resources, etc. These scientific impact evaluations are not to be confused with standard evaluations which are part of the project cycle. Data will be disaggregated in order to capture effects on women, children and on the poor.

Finally, the implications of climate change are another expected focus of research.

Knowledge management will initially focus on making the existing experience available. One of the first steps will be to create, based on the existing inventory, a national database of water supply and sanitation facilities containing key data on technologies, operational status, and benchmarking data, including reference to related studies and evaluation reports.

The overall responsibility to initiate and coordinate the above activities will be with the Agency.

International exchange and cooperation

Participation in international workshops and conferences will be active, but selective, in order to avoid excessive absence of key sector staff. Study tours and exchange visits will focus on (a) the East Africa Region and (b) on countries with emerging economies[60] where appropriate, cost-effective approaches can be studied.

[60] Such as: South Africa, Brazil, or India

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
9.1 Promote sector harmonisation and aid effectiveness by developing a SWAp							
SWAp secretariat in place	X					250 (sector coordination, total)	MININFRA
Regular Sector Working Group meetings and annual Joint Sector Review held	X	X	X	X	X		MININFRA / Agency
Financing concept and commitments for sector activities obtained	X						MININFRA MINECOFIM MINISANTE
9.2 Re-define and consolidate institutional roles and coordination mechanisms							
WSS policy and strategy documents disseminated to districts	X					100 (sector restructuring, total)	MININFRA
Institutional concept outlining roles and responsibilities developed	X						MININFRA (lead)
Cooperation framework in place - with districts - on sanitation - on regulation - on water resources abstraction/protection - on settlement planning	X						MININFRA MINISANTE MINIRENA MINEDUC MINICOM MINALOC RURA, REMA Districts. KCC
9.3 Establish a dedicated WSS Authority with substantial operational autonomy							
WSS Authority established	X					50 (start-up; Authority staffing and operation not included)	MININFRA Cabinet
WSS Authority staffed and operational	X						MININFRA MINFOTRA
No. of Technical Assistants available	3	2	2			580 (Technical Assistance)	MININFRA
Harmonised procedures updated, adopted and validated by stakeholders	X						

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
9.4 Improve communication, consultation and coordination in a multi-stakeholder environment							
Sector communication strategy/plan formulated		X				20	Agency MINISANTE
Sector web-based platform online	X					10	Agency *(other stake-holders are users)*
9.5 Develop a reliable and robust M&E and performance measurement framework							
MIS system and associated reporting procedures operational	X						MININFRA / Agency Districts
Methods to assess and survey WSS coverage revised and coordinated	X					20	Agency NIS
Number of districts where MIS / M&E training has been held	30	30	30			90	Agency Districts
9.6 Develop professional training and education in WSS relevant fields							
Sector educational needs at all levels assessed and updated	X		X		X	2,000 (global estimate for capacity building programme)	MININFRA / Authority MIFOTRA MINEDUC MINISANTE
No. of WSS sector specific training courses promoted and organized (short term)	X[61]	X	X	X	X		Authority/MINEDUC MINISANTE
9.7 Promote innovative technologies / approaches and develop knowledge management							
No. of Rwandan researchers and students involved in applied WSS research						25 (financial support to researchers/ students)	Agency MINEDUC NUR KIST KHI
Sector knowledge management system in place and used		X	X	X	X		Agency
9.8 Seek exchange of lessons learned and good practices through regional and international cooperation							
Number of exchange visits / study tours / active	10	12	16	16	16	110	MININFRA / Agency

[61] Target numbers of courses to be held every year will be defined based on the sector needs are assessment.

Performance Indicator	Target					Cost estimate (million RWF)	Implementation responsibility
	10/11	11/12	12/13	13/14	14/15		
participation in international conferences							Districts

8 Implementation

8.1 Critical Issues and Challenges

The purpose of this section is to highlight critical aspects of implementation in a concise manner, without repeating the details provided in other sections.

8.1.1 Year 2010

The magnitude of the planned interventions combined with the need to revise and develop the institutional framework makes it obvious that the year 2010 is decisive for laying the ground for successful sector development. This involves creating new institutions, financing and coordination mechanisms; capacity building at all levels; sector harmonisation; and the formulation and funding of the key projects to be carried out in the subsequent years.

This will require considerable efforts, clear priorities and adequate planning and management capacities. It is strongly recommended to strengthen the sector management capacities by involving **technical assistants** during at least three years.

8.1.2 Water supply

The critical challenges are to:

- Create a consistent, effective **decentralised implementation framework** including the development of district capacities; support services by the Agency; as well as harmonised financing, implementation and monitoring mechanisms. This should build on the existing national implementation unit, good practices and harmonised procedures.
- Bring delegated management (PPP) to scale while **substantially improving regulation** and developing tariffs that reconcile financial viability and affordability.
- Achieve **financial viability of urban water supply services** (RWASCO) and create a **joint planning framework** between RWASCO and the municipal / district authorities.

8.1.3 Sanitation

At the overall level, there are 3 major challenges for the implementation of the sanitation sub-sector strategy.

Start-up phase: The relative inexperience in providing and promoting national sanitation services will require considerable initial efforts. Sufficient planning capacity and funding must be made available for the 2010/11 start-up phase. 2011/12 and 2012/13 may focus on pilot projects under this strategy, in particular with regard to infrastructure, before rolling out and scaling up interventions starting in 2013.

Sector coordination: Successful sanitation programs need not only infrastructure works but also the provision of

services and behaviour change oriented concepts and activities. The appropriate balance to manage State interventions will require a multi-sectoral approach involving various Line Ministries, regulation bodies and administrative levels down to districts, sectors and imidugudus as well as the mobilization of the private sector, community-based associations and households.

Efficiency of public financing: The financing of the planned increase of sanitation coverage needs to tap into all available sources and the optimization of public investments. Since access to the domestic financial market is hardly available for operators yet, State investments and expenditures must mobilize financial contributions from public or private investor-operators such as RWASCO and others under the PPP scheme as well as, to an even larger extent, from private households. The latter will be required to provide to the bulk of the funds for the construction or improvements of most domestic sanitary facilities.

Specific strategic conceptual and implementation challenges concern the following domains:

Individual sanitation: The key role will belong to the households and the challenge is to develop a performing institutional setup at district level that will be able to conceive and implement an effective combination of awareness campaigns, technology promotion and incentives schemes.

Collective sanitation: The challenge is to plan and implement low cost sewerage systems combining a balanced social and technical approach, to achieve cost recuperation (sustainability) and eventually to tap into domestic financial market for the financing of sewerage extensions.

Storm water management: The main challenge is to implement intelligent urban planning measures in order to limit expensive construction works.

Solid Waste management: The challenge is to establish a cost effective and sustainable solid waste management approach by identifying the key drivers for most cost effective waste minimization and profitable recycling and for the mobilization of all stakeholders.

8.2 Institutional Responsibilities and Cooperation Requirements

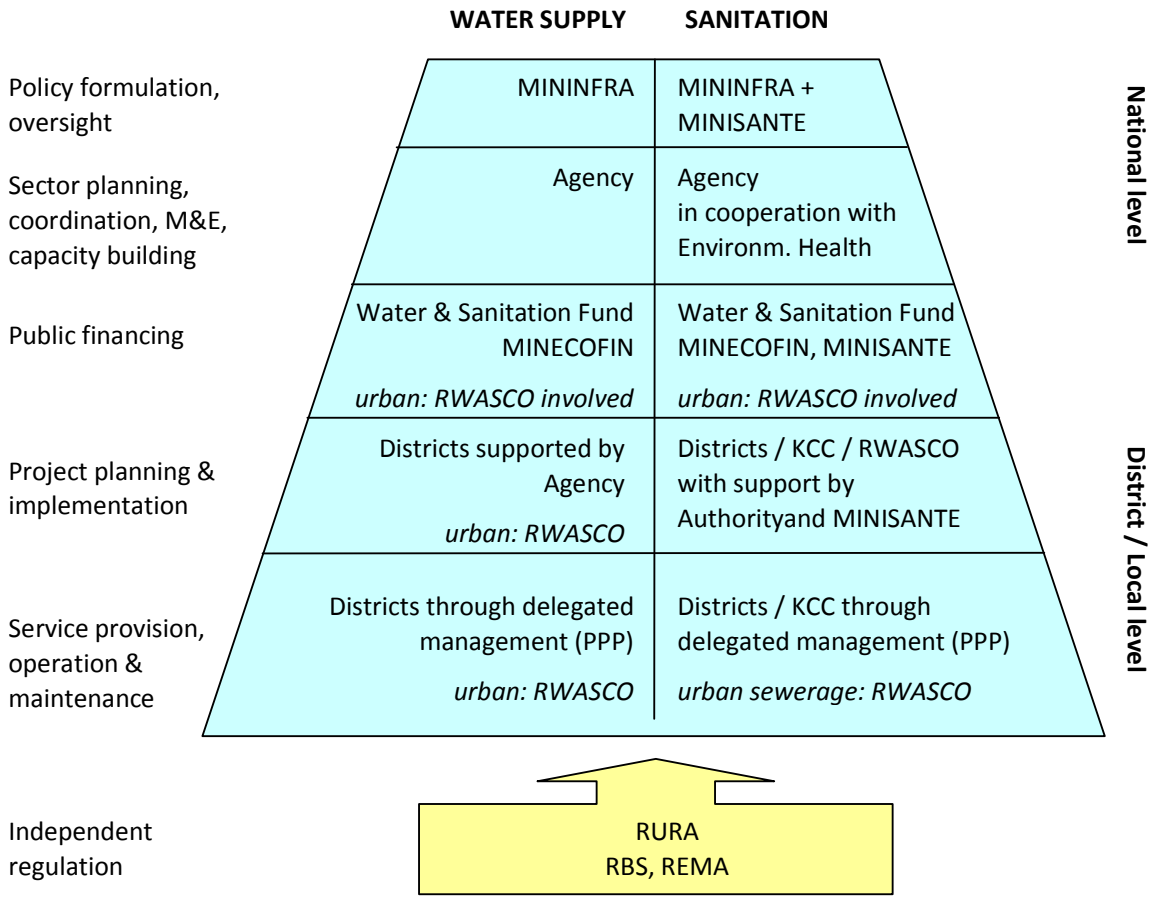
8.2.1 Overview

Implementation of the Policy and the Strategic Action Plan will be a joint responsibility of various government institutions - several Ministries and national autonomous entities as well as local governments – under the overall oversight of MININFRA and the Agency, its implementation arm. Government bodies, development partners and non-government stakeholders will cooperate in a SWAp framework, agreed in 2009 but to be operationalised in 2010.

Development and strengthening of the institutional framework is itself one of the major undertakings of the Policy and Strategy; see in particular statement 9.2 regarding the overall framework, but also 9.3 (establishment of the Agency), 3.1 (consolidation of the Utility in charge of urban water supply and sewerage), 4.1 (individual sanitation), 6.1 (collective sanitation), 7.1 (storm water) and 8.1 (solid waste).

MININFRA will lead the institutional reform process and will host a permanent Sector Working Group that ensures coordination and monitoring of the sector programme, including dialogue and communication with other sector stakeholders (in particular local governments, other sector institutions, cross-sectoral planning and regulatory bodies, NGOs and the private sector). Specific Task Forces will be setup for launching the institutional and regulatory development of the solid waste and storm water management sub-sectors.

The schematic below provides an overview of the key roles and responsibilities of the public institutions involved in the WSS sector.



Water Supply and Sanitation Sector: Roles and Responsibilities of Public Institutions

The schematic is intentionally simplified and shows public entities only. More details on the individual sub-sector are provided below while a tabular overview of the roles and responsibilities of the various sector stakeholders is compiled in annex 1.

8.2.2 Water supply

The five key steps towards creating an effective institutional framework are

- Establishment of the Water Supply and Sanitation Agency, a public institution with substantial autonomy, as the planning, implementing and monitoring arm of MININFRA (policy objective 9, 3rd statement)
- Establishment of the Water and Sanitation Fund as harmonised financing mechanism (objective 1, 2nd statement)
- Developing the implementation capacities of the district governments, including the establishment of decentralized support units by the Authority(objective 1, 4th statement)
- Consolidating the public Utility in charge of urban water supply and sewerage (objective 3, 1st statement)
- Strengthening the regulatory framework and the role of RURA (objective 2, 2nd statement).

Districts will have the main responsibility (project ownership) for the **implementation of rural water supply projects**. However, the Authority will provide technical support and guidance as well as targeted funding and will ensure sector specific monitoring and quality assurance. To this end it will establish (i) a dedicated financing facility, the Water and Sanitation Fund, and (ii) regional support units for field support and liaison. These support units will replace the existing project implementation units and arrangements. Additional support may be provided by the urban Utility on request.

The responsibility for continuous service provision, i.e. for **infrastructure operation and maintenance**, will again be with the Districts. Piped water supply schemes will be managed through PPP arrangements (delegated management) based on service contracts. In this context the Authority will provide guidance (e.g. on tariffs and contracts) while RURA will ensure independent regulation.

The public Utility, RWASCO, will remain the main service provide of **urban water supply** services (initially the 14 towns served by the former ELECTROGAZ) and will in addition take responsibility for urban collective sanitation. It operates on a commercial basis and charges for its services. Oversight of urban water services is to be carried out by MININFRA with technical support by the Agency, regulatory control by RURA. The Utility does not hold a monopoly, hence private companies can also provide urban water supply services.

RURA, the Rwanda Utilities Regulatory Agency, will ensure **regulation** in two respects: vis-à-vis the public, by ensuring adequate and affordable services and protecting the interest of the consumers; and vis-à-vis the service providers, by monitoring contract management, financial viability and accountability and ensuring effective competition. RURA thus covers four complementary aspects of regulation: (i) technical; (ii) economic; (iii) legal; and (iv) consumer relations.

The operational responsibilities for drinking water quality surveillance are yet to be defined.

8.2.3 Sanitation

Albeit sanitation has been realized mostly through individual projects, Rwanda has undertaken to set up the institutional preconditions to implement its national strategy. The present strategy emphasizes the need to define the institutional framework in accordance with the specific complexity of individual and collective sanitation, involving Ministries, regulating and enforcing entities, credit and financing agencies, local administration, NGO, operators, private sector and households.

The main responsibilities of the State for **individual sanitation** will be with MININFRA (through the Agency) and MINISANTE, sharing the responsibility with the Districts to promote environmental health awareness and to

provide and support technical and financial solutions for upgrading or replacing half of the countries household latrines. However, individual households as well as the industry will continue to be fully responsible for financing, building and operating their individual sanitation facilities.

The technical and financial responsibilities for **institutional sanitation** improvements in schools, health facilities and public places will be shared among MINEDUC, MINISANTE and Districts who will count on the technical support from the Agency.

MININFRA will hold the main responsibility for promoting **collective sanitation** services, storm water and solid waste infrastructure and management. MININFRA and the Authority will count on the support from MINISANTE (environmental health) and will cooperate with RWASCO (for urban sewerage), the Districts and the private sector for planning, implementation and operation and maintenance. The private sector is encouraged to contribute technically and financially as service provider, constructor, operator or real estate developer. Households and communities (e.g. imidugudu) will participate in a variety of ways for sanitation, storm water prevention and solid waste management.

In all areas, the district administrations and Kigali City Council shall assume, as mentioned above, a leading role in the execution and supervision of activities within their territory and must develop the appropriate management capacities.

RURA, REMA and RBS are the main independent national regulating bodies while the subsequent enforcing functions and responsibilities have to be defined carefully by the Taskforces of each area.

8.3 Implementation Costs and Financing

8.3.1 Total funding requirements

As summarised in the table below, the total public funding requirements for the Water Supply and Sanitation Strategic Action Plan are about RFW 250 billion (US$ 450 million) for the five-year period 2010/11 to 2014/15 (5 years); see table below for a breakdown. All cost estimates are indicative, pending more detailed cost evaluations through a Sector Investment Plan / financial model.

The costs below refer to public funding requirements only, to be provided through the government budget and/or through channels of development cooperation. Private investments (by households or companies) and costs covered by fees (such as O&M costs) are not shown. However, these types of financing will be described in the following section on financing arrangements.

Programme	Public funding requirements (both Capex and Opex)		
	Total costs over 5 years		Proportion
	RWF billion	US$ million[62]	
Rural water supply – increasing coverage	137.1	249.3	54.6%
Rural water supply – ensuring functionality	3.4	6.1	1.3%
Urban water supply	42.4	77.1	16.9%

[62] Exchange rate used: 1 US$ = 550 RWF

Individual sanitation	33.8	61.5	13.5%
Institutional sanitation	2.5	4.5	1.0%
Collective sanitation	14.4	26.3	5.8%
Storm water management	1.6	2.8	0.6%
Solid waste management	12.5	22.6	5.0%
Institutional sector framework	3.3	5.9	1.3%
Total	**250.9**	**456.1**	100.0%

8.3.2 Sector financing arrangements, by sub-sector

Rural water supply – new infrastructure: The bulk of new infrastructure and major rehabilitation works will continue to be funded by government and its development partners. Community contributions are important to foster commitment and ownership but will not exceed a few percent of the total upfront investment. Project funding will gradually be replaced by funding through the Water and Sanitation Fund (WSF), to be established as a joint financing mechanism that handles both government and donor funds and supports district-led implementation. NGOs will continue to contribute to infrastructure development. The potential for private investment in new rural water supply schemes is limited: it requires high upfront investments while the revenue base is small. However, the private sector will be involved through PPP arrangements and is expected to invest in extensions or rehabilitations of existing schemes and service level upgrades. The type and duration of delegated management contracts shall be reviewed to mobilise this type of investments by private scheme operators, and the WSF will consider funding modalities to leverage private investment (e.g. low-interest loans, co-financing, Output-Based Aid / OBA).

Rural water supply – operation & maintenance: As a matter of policy, operation and maintenance costs of rural water supply infrastructure will be covered by user fees. Tariffs will be set to ensure the financial viability and sustainability of scheme operations, at a level of cost recovery that includes major repairs and replacement of electro-mechanical equipment but not asset depreciation. Targeted subsidy schemes or cross-subsidy arrangements (by grouping schemes) will be considered for exceptional cases where the local conditions do not allow for cost recovery with affordable tariffs. The Authority will develop guidelines for tariffs and for the use of fees set aside by the districts, while RURA will be in charge of regulation. Government will support the transformation of existing schemes for delegated management by providing subsidised water meters.

Urban water supply: The operational costs of urban water supply shall be entirely covered by user fees, with the long-term objective to achieve full cost recovery. In the short and medium term extensions of the production and distribution capacities will be funded by Government, but the Utility will be encouraged and supported to identify other sources of funding, such as loans. The opportunities to mobilise private investment (e.g. in bulk water supply) will be explored.

Individual sanitation: Private households, institutions and industry will finance their individual sanitation solutions as in the past. Holding the overall promoting responsibility, the State shall optimize fund allocation and direct its financial means to leverage private investments through adequate sanitation marketing, regulation and standards, technical assistance and training for small enterprises and the informal construction sector. In addition to that, the State shall promote access to sanitation credit facilities and, under certain circumstances, provide incentives to boost sanitation coverage.

Institutional sanitation: Building and maintenance of these sanitary facilities fall under the responsibilities of the respective institutions that shall provide the necessary financing for improvements, hygiene promotion and for proper maintenance. However, its proposed to make these investments eligible for funding through the

sector's harmonised financing mechanism. Construction and O&M of certain public toilets, e.g. in stadiums, markets, bus stations, can be outsourced to the private sector that can provide partial or full financing and operate the facility.

Collective sanitation: Public infrastructures such as sewerage systems and sludge disposals require substantial upfront investments as well as operating funds that can be recovered in the best case only slowly over extended periods of time. The State has to provide financing and channel it through RWASCO, the state-owned corporation in charge of urban collective sanitation. Alternatively, the State can establish attractive conditions for a PPP scheme in order to tap into the financial market and attract private investors/operators. Part of collective sanitation works and services will be financed, built and operated by households and industries themselves, e.g. private connections inside the premises to the public sewer, new upper/middle class condominiums or industrial pre-treatment plants. Sludge emptying services can be carried out by the private sector as well, provided that preset financial conditions allow for it (tariffs).

Storm water: If the focus is put on prevention, households, business and institutions will finance and build a major portion of local infrastructure by integrating adequate design and planning standards into their own construction projects. The State again shall optimize allocation of funding and emphasize on the financing of education, regulation, technical assistance, enforcement and the construction of the complementary public drainage systems only.

Solid waste management: This area encompasses both public infrastructure and services. The State may be requested to finance expensive upfront investments for landfills and regulate tariffs for cost recovery. Waste collection and recycling activities can also be provided by the private sector and community associations. Additionally, PPP arrangements for landfills can alleviate public financing needs and ensure cost recovery. Under such a participative scenario, the State should focus on financing awareness campaigns, education and training, simplified business credit schemes, regulation and enforcement and technical assistance, e.g. for heavy polluters such as slaughterhouses, hospitals and industries that may be required to finance their own waste (pre-)treatment.

Institutional sector framework: The ambitious sector objectives can only be achieved if the institutional framework is developed to an adequate level of capacities and operational funding. In the past many activities – senior sector staff, costs of workshops and studies, development of the MIS, etc. – have been covered by individual projects or development partners on a case-by-case basis. In the context of the SWAP joint financing channels will be established to finance sector development activities such as:

- Programme management, including SWAP secretariat costs
- Workshops, joint performance reviews etc.
- ICT costs (MIS, website, external communication)
- Capacity building and training courses organised by the sector
- Consultancies, studies and technical assistance
- Research grants for applied research in the WSS services sector
- Exchange visits, study tours and participation in international conferences

A key challenge is to ensure regular and sufficient funding for the human resources and operations of the new Agency. The Authority will also have decentralised offices (see section *.*). By replacing the existing project implementation units these offices will not increase the total transaction costs of the sector, but they will be financed through harmonised sector channels rather than project budgets as in the past.

8.4 Monitoring & Evaluation and Results-Based Management

The sector made considerable efforts to develop its M&E system, which is as a core part of the sector framework

and SWAP. Its further optimisation is one of the tasks tackled by this Strategic Action Plan (see section 7.9). The ultimate objective is full implementation of results based management at the sector level.

Considerable progress has been made in 2009 by establishing a comprehensive, web-based Management Information System (MIS) and conducting a baseline assessment. The challenge is to make it fully operational, develop sustainable data collection, reporting and quality assurance mechanisms and formats, and provide training to all the stakeholders involved in system operation, including in particular the decentralised level (data providers).

To implement this sector officer will be appointed for planning, M&E and data and information management, in addition to the technical staff needed for MIS operation. A focal point in charge of data collection and progress monitoring will be nominated in each district. Efforts will be made to involve other stakeholders, in particular the Utility and the NGOs active in the water sector, in the monitoring and reporting system.

Joint multi-stakeholder sector reviews will be held on a regular basis, at least annually. Key information on sector performance and EDPRS related indicators will be made available online.

One of the key challenges is to combine administrative, programme-related reporting with national household surveys. The WSS sector, coordinated by the Agency, will collaborate with the National Institute of Statistics to ensure compatibility and synergies between both types of information collection.

The sector MIS will be linked to Rwanda's cross-sectoral planning and reporting systems (EDPRS and CPAF M&E frameworks, DevInfo system). It will also inform coordination fora such as the Sector Implementation Group (SIG), forum of the Secretary Generals, Development Partners Coordination Group (DPCG) and Cabinet.

Annex 1: Institutions involved in water supply and sanitation services

Institution	Roles and responsibilities re WSS services
Ministry of Infrastructure (MININFRA)	Formulation of national policies and strategies; sector oversight, budgeting and resource mobilisation; overall sector performance monitoring.
Water and Sanitation Authority (to be created)	Implementation of WSS policies and strategies (both urban and rural); operational sector planning, monitoring & evaluation; coordination of sector stakeholders; support to districts (including rural infrastructure development and PPP arrangements); management of the harmonised financing mechanism (see below); preparation of guidelines and standards; capacity building; applied research and knowledge management.
Water and Sanitation Fund (WSF)	Currently a pilot project, intended to become a national harmonised financing mechanism linked to the Water and Sanitation Agency
Rwanda Utilities Regulatory Agency (RURA)	Independent regulation of the WSS sector, in particular delegated management (PPP) arrangements including tariffs; covers the following aspects of regulation: technical, economic, legal, and consumer protection.
Public Water and Sewerage Utility (RWASCO)	Autonomous state-owned corporation operating on a commercial basis, currently in charge of water production and distribution in 14 towns including Kigali; will also be in charge of urban sewerage systems and sludge emptying services in the future; provides technical assistance to rural service providers.
Ministry of Finance and Economic Planning (MINECOFIN)	Coordinates the national budgeting, planning and financing framework, with a strong role in related aspects of the WSS services sector.
Ministry in charge of Environment, Rwanda Environment Management Agency (REMA)	In charge of water resources management (allocation, protection and use) including discharge regulations and environmental impact assessment of WSS Projects; leading role in enforcement of environmental regulations and awareness promotion campaigns about domestic and industrial solid waste management.
Ministry of Health (Environmental Health)	Has the lead in household sanitation and hygiene promotion, while MININFRA focuses on infrastructure related aspects of sanitation; prepares and monitors water quality and hygiene standards
Ministry of Education	Partner for educational programmes (development of relevant curricula in coordination with MININFRA) and school sanitation programmes.
Ministry of Local Government (MINALOC)	Responsible for decentralisation and matters related to local government finance and administration.
District Local Governments, City of Kigali (KCC)	Responsible for the provision of access to basic services, including water, sanitation and solid waste management. Local governments have financial autonomy (fiscal decentralisation); own the water infrastructure; are in charge of implementing WSS projects; are encouraged to contract private operators for infrastructure O&M; prepare and implement consolidated district development plans .
Communities	To be involved in project identification, planning and commissioning, as a matter of policy; form user committees to represent consumer interests; are in charge of the operation and maintenance of certain water infrastructures (community management). Collective sewerage projects (condominial type) will actively involve communities in planning, O&M and possibly construction. Imidugudu may assume a major role for the provision of sanitary facilities and local solid waste management.

Private sector	Participates in the execution of projects (consulting firms, contractors) as well as in infrastructure operation and maintenance (private operators, through delegated management, contracted by the districts). The informal sector and SME provide sanitation services (sludge emptying), carry out most of the individual sanitary improvements throughout the country and are active in solid waste management (collection, recycling). Rwanda Private Sector Federation (PSF) has an important role in technical and vocational training and business development support.
Development partners	Support sector development in accordance with the principles agreed for the SWAP; contribute to financing sector projects through a variety of aid modalities.
Civil society / NGOs	Contribute to the implementation of WSS projects; participate in the SWAP and in coordination mechanisms at the district and national level; play a major role in solid waste management.