Regulation and monitoring of water supply services

Elisabeth Nahimana
ESAWAS Regulators Association

Content

Water supply service

- Understanding water supply service provision
- Characteristics of water supply systems
- Service delivery models

Regulation of water supply services

- Definition, objective and role of WS regulation
- Enabling environment for WS regulation
- Functions, powers and competences of WS regulators
- Models of WSS regulation in Africa

Compliance monitoring

- Understanding compliance monitoring
- Methods of compliance monitoring
- Inspections types
- Inspections process

Rural water supply

- Rural water supply systems
- Challenges of rural water supply
- Rural water supply service - Case of Rwanda
- Key considerations

ESAWAS Regulators Association

A network of Water Supply and Sanitation (WSS) Regulators, created in 2009 to enhance effective regulation of WSS. It is governed by a constitution and legally registered in Zambia

Capacity building and information sharing -

- To enhance the capacity of members in WSS regulation

Regional regulatory cooperation -

- Identification & adoption of good practices for effective WSS regulation

15 Members

Eleven autonomous regulators

AURA-IP, Mozambique; **WASREB**, Kenya; **EWURA**, Tanzania; **RURA**, Rwanda; **LEWA**, Lesotho; **NWASCO**, Zambia; **ZURA**, Zanzibar; **AREEN**, Burundi; **IRSEA**, Angola; **EKWASRA**, Ekiti State – Nigeria **EWRC**, Sierra Leone

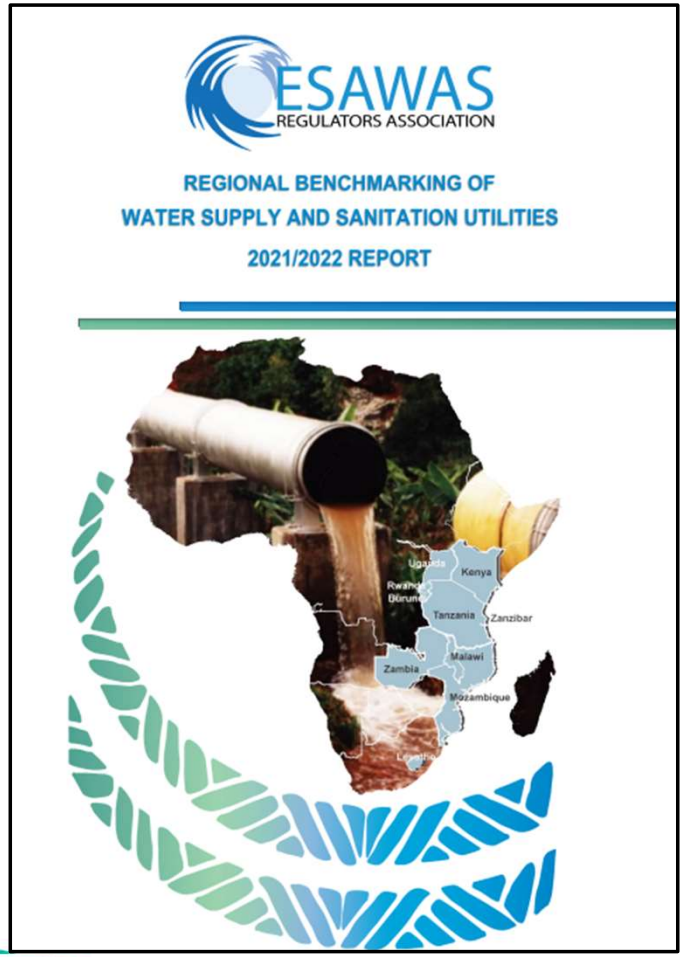
Three ministerial departments

WURD, Uganda; **DWS**, South Africa; **DWS**, Botswana

One association

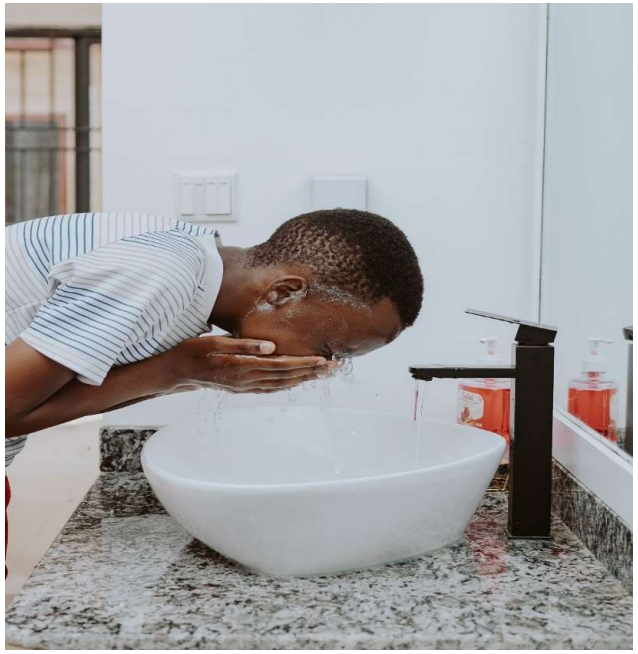
WASAMA, Malawi

Core activities



Regulatory Peer Reviews	Hands on interrogation of regulatory systems and practices to establish what works, what can be adopted or adapted
Regional benchmarking	Comparative analysis of utility performance across the region to incentivize improvements in service delivery
Regulatory frameworks, instruments and tools	Frameworks, guidelines and tools for adoption and adaptation by countries to improve regulation of WSS
Research & Development	Collation and dissemination of good regulatory practices towards effective regulation
Capacity Development	On demand and formal training programmes in WSS regulation for regulators, service providers, policy makers and other stakeholders
External Services Unit	Technical assistance to non-members to strengthen their regulatory institutions (weak/under establishment)
Annual General Conference	Platform for knowledge and experience sharing

Water Supply Service



Understanding Water Supply Service Provision

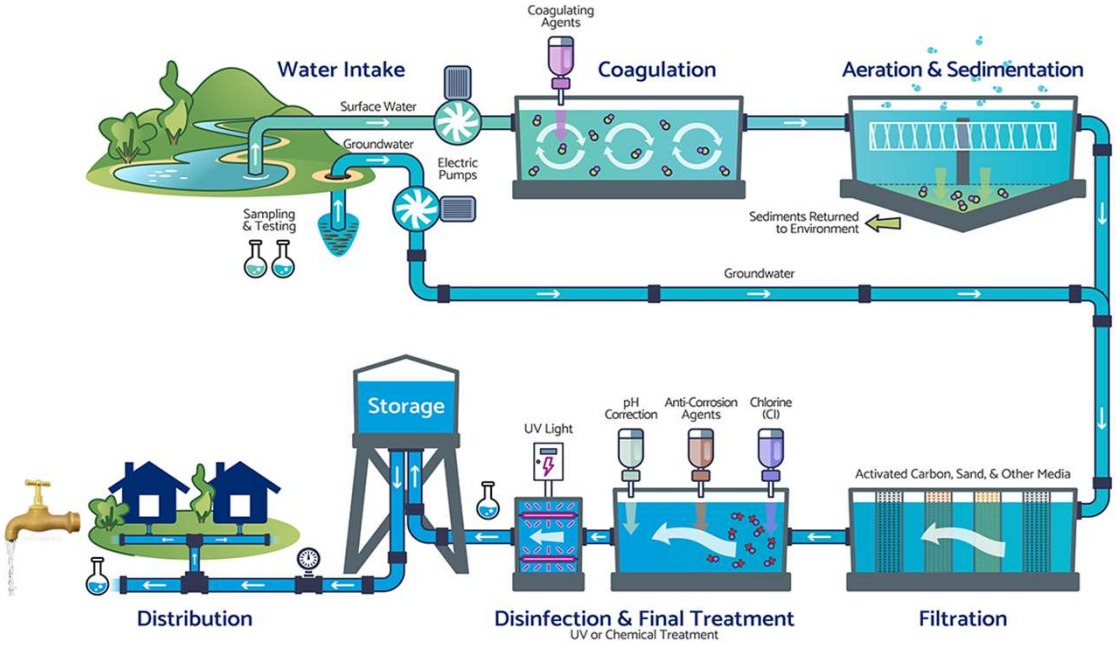
Water Supply

Provision of water to consumers via a system of facilities

Service Provision

Perform a service for a customer for compensation

Characteristics of water supply systems



Networked water supply
- Mostly for urban areas
- Service provision by public or parastatal companies
- Natural monopoly

Off-grid & rural water systems
- Mostly in peri-urban, informal & rural areas
- Various types
- Multiple service providers

Must fulfill both quality and quantity requirements

Service delivery models: Business and technical models

Municipality	• Publicly owned and managed *e.g. piped systems*
Commercial Utility	• Publicly owned-privately managed *e.g. piped water and sewerage systems*
Lease Operator	• Operator and asset holder separate *e.g. treatment plants, distribution*
Community-managed	• Professional manager under community formalized arrangements *e.g. public water supply systems, community borehole with handpump*
Private Operator	• Privately owned and managed *e.g. distribution, storage, construction of facilities*
Delegated Management	• Subcontracted out services *e.g. distribution, treatment*
Operation and Maintenance	• Repairs and maintenance *e.g. handpumps, distribution network*

ONEA

SEN'EAU
Eau du Sénégal

GHANA WATER LTD

WASAC
Water & Sanitation Corporation
'Dignifying Life'

WSS Regulation - overview

Definition of Regulation

OECD

Diverse set of Instruments used by government / non-governmental bodies to control some aspect of the behaviour of a private economic actor and supported by the explicit threat of punishment for non-compliance.

Oxford reference

Explicit rules to govern behaviour that are enforced by specified institutions or agencies. In case of breach, sanctions can be imposed.

Measures or interventions employed by the government or other competent authorities to govern/influence the behavior of a sector and the players in it.

Types of regulation

Economic regulation

Price, financing, accounting reports, management plans

Contractual regulation

Agreements between players (owner and provider, provider and consumer, between providers)

Technical regulation

Quality of service, water quality, performance, infrastructure, technologies

Social regulation

Pro-poor approaches, human rights

Environmental regulation

Environmental protection

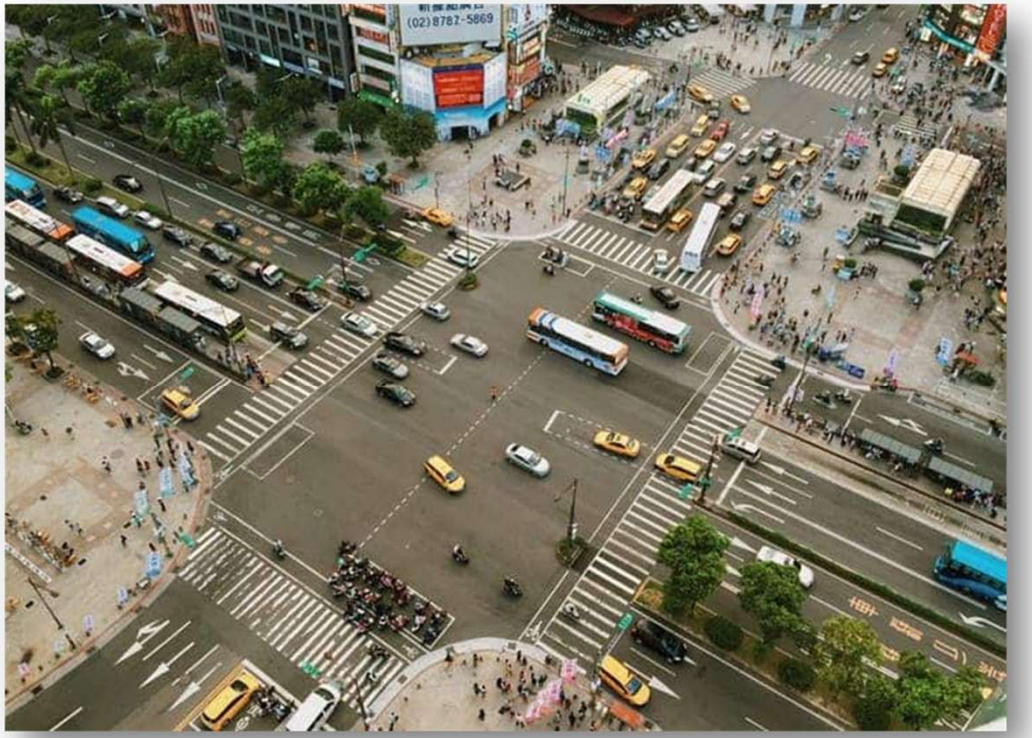
User interface regulation

Consumer protection, management of complaints, social engagement

Objective of regulation – the referee concept

Objective of WSS regulation – the transport concept

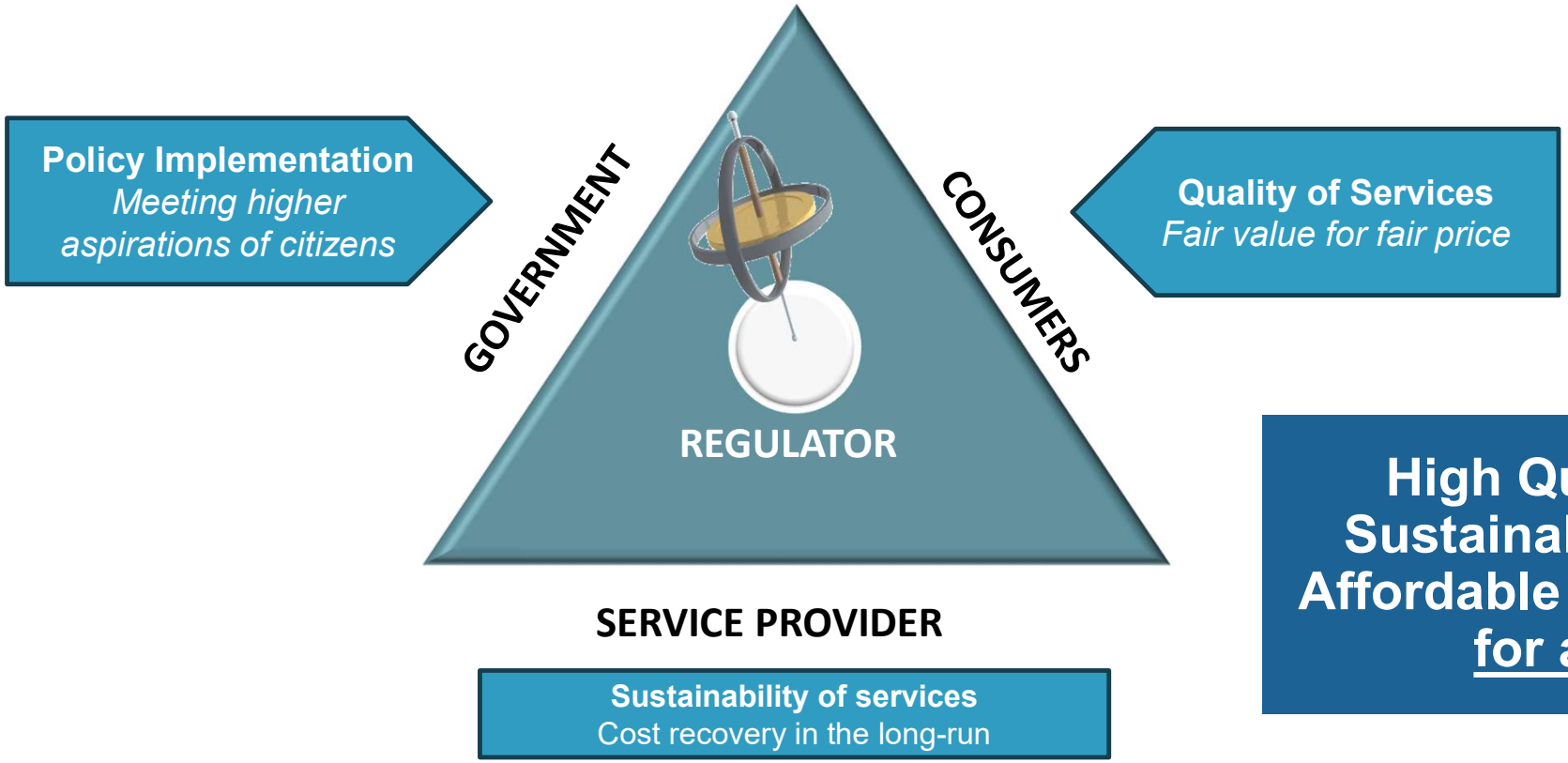
vs



Objective of regulation is to formalize the sector, provide clear guidance for those working within it and monitor the performance of the sector.

The role of WSS regulation

Balancing Interests



High Quality, Sustainable and Affordable Services for all

Enabling environment for WSS regulation

Policy framework

- Strategic guidance for WSS service provision
- Alignment with other agendas (public health, environmental protection, etc)
- Provision for sector regulation

Legal framework

- Legal basis for Water supply and sanitation services
- Service quality standards, responsible institutions
- Establishment of sector regulator

Institutional framework

- Clarity of roles and responsibilities
- Coordination and accountability mechanisms
- Highlight the regulatory oversight of WSS service provision

The policy, legal and institutional framework defines the legitimacy of WSS regulation

Functions, powers and competences of regulator

Functions

- Develop regulations, rules, guidelines
- Establish standards for service quality
- Determine/Approve tariffs
- Issue licenses
- Advise Government
- Report on the performance of the sector

Powers

- Monitor compliance with standards
- Maintain information of WSS services
- Carry out inspections
- Set fines and sanctions
- Request information or documents
- Make orders for compliance

Competences

- Tariff analysis and approval
- Performance reporting
- Utilities benchmarking
- Financial and statistical analysis
- Technical operations
- Dispute resolution

Models of WSS regulation in Africa

- Most countries have a **mixed regulatory arrangement** based on multiple regulatory models
- The **predominant regulatory model** refers to the regulatory model under which the primary service provider in each country is regulated.
- Predominant regulatory model:
  - 37% = **Regulation by Agency**
  - 28% = **Regulation by Contract**
  - 33% = **Ministerial Regulation**
  - 2% = **Self-Regulation**

Models of WSS regulation in Africa

Regulation by agency

A regulatory body (semi-) autonomous from the government has discretionary powers to regulate WSS or aspects of WSS. This regulatory agency can be mandated to perform a specific set of functions (i.e., economic regulation) or hold a more comprehensive set of powers for regulating WSS service delivery

Predominant in 20 African countries
Eg: Burundi, Ghana, Liberia, Mozambique, etc

Regulation by contract

A public entity and a service provider agree on contractual clauses that determine how key aspects of WSS service provision are defined and controlled, such as tariffs and service standards.

Predominant in 15 African countries
Eg: Eswatini, Morocco, Senegal, Uganda, etc

Models of WSS regulation in Africa

Ministerial regulation

A ministry is tasked with performing some or all regulatory responsibilities for WSS.

Predominant in 18 countries
Eg: Botswana, Ethiopia, Malawi, South Africa, etc

Hybrid regulation

Regulation by contract is combined by supervision of an independent regulator. The regulator sets the tariff/ approves tariff agreed upon by contracting parties and may provide standardized terms and conditions of the contract

Eg: Mozambique

Self regulation

A service provider (typically a public utility or unit of local government) provides WSS services and is legally mandated to perform regulatory activities upon itself.

Eg: Djibouti

Compliance monitoring

Compliance monitoring, reporting & enforcement as a process

Compliance monitoring
Continuous assessment of service provider's adherence to existing regulatory requirements and standards

→ **Extent of meeting regulatory obligations**

↓

Compliance reporting
Compiling and communicating the findings and recommendations

→ **Compliance**

→ **Non compliance**

↓

Compliance enforcement
Application of mechanisms (sanctions/incentives) to redress the fault

The process helps the service provider to achieve regulatory compliance which ultimately leads to improved service provision

Compliance Monitoring

4 Main elements

Observe

- Check records, verify data and take some extracts
- Observe and talk to workers undertaking a particular activity
- Query and verify answers from records using checklist
- Take samples or readings from instruments

Conformity/ Compliance

- Compare results or reading against the standard. How significant is the variation either positive or adverse
- Check progression for particular performance parameters in meeting target dates.

Time period

- Note milestone dates and check if being complied with
- Note the time cycle for particular parameter monthly, quarterly or annually for valid comparison

Corrective action

- Compliment or incentive given for good work
- Directive to take specified action within particular time period
- Penalties , prosecutions

Areas of Compliance

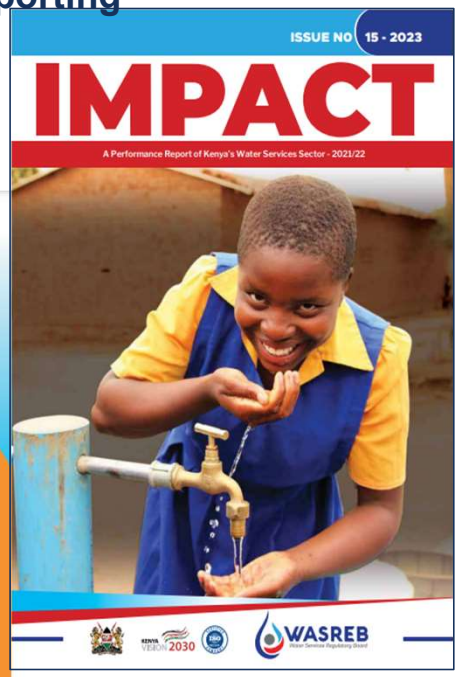
Legal statutes	• Primary law and statutory instruments
License	• License conditions
Rules Regulations Guidelines	• General requirements regarding operations (e.g. tariff) and behavior (e.g. reporting)
Standards	• Industry practice e.g. water quality
Service Level Guarantees	• Quality of service targets • Minimum acceptable service levels

How is monitoring carried out?

Periodic reporting – monthly, quarterly, annually

Scheduled/Unscheduled surveillance

Annual sector performance reporting



Inspections

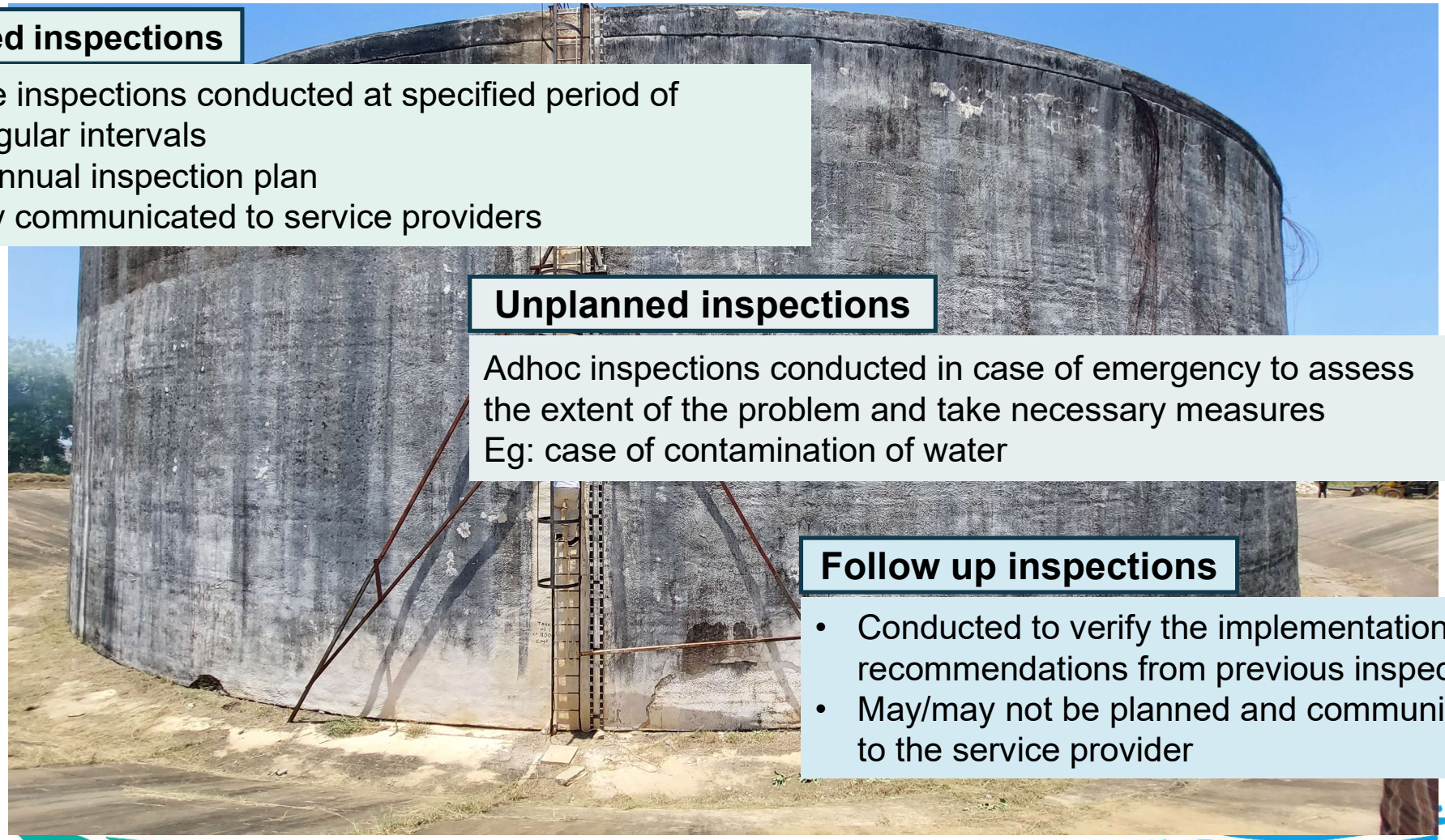
Definition

Visit conducted by **authorized regulatory staff** to licensed service provider's sites or premises to **check and examine** their operations or documents related to the regulated services being provided and **assess their compliance** with regulations and license conditions

Objective

To assist the service providers take appropriate measures to comply to regulatory requirements, prevent infringement and improve their operations

Types of inspections in WSS



Scheduled inspections

- Routine inspections conducted at specified period of time/regular intervals
- From annual inspection plan
- Already communicated to service providers

Unplanned inspections

Adhoc inspections conducted in case of emergency to assess the extent of the problem and take necessary measures
Eg: case of contamination of water

Follow up inspections

- Conducted to verify the implementation of the recommendations from previous inspections
- May/may not be planned and communicated to the service provider

Types of inspections in WSS

Technical inspections

Infrastructure for services

- Infrastructure conditions
- Quality of service standards
- Technical efficiency (processes, NRW,etc)
- Metering
- Asset management including maintenance

Commercial inspections

Customer-related operations

- Customer base
- Tariff structure
- Billing
- Collection
- Complaints management

Financial and HR inspections

Financial sustainability and staff capacity

- Expenditure (costs) Management
- Revenue Management
- Business plan, strategic plan
- Accounting Procedures
- Procurement procedures
- Human resource management

Inspection process

Inspection planning

- Elaboration of an annual inspection plan
- Organization of preliminary information
- Definition of inspected components
- Communication to providers and other main stakeholders
- Action plan for on-site visit
- Instructions for carrying out inspection

Execution of inspection

- Opening meeting at the service provider
- Inspection of technical, commercial, financial and HR aspects
- Field inspection
- Evidence: photographic records, reports and other documents
- Identification and registration of non-compliance
- Closing meeting at the service provider

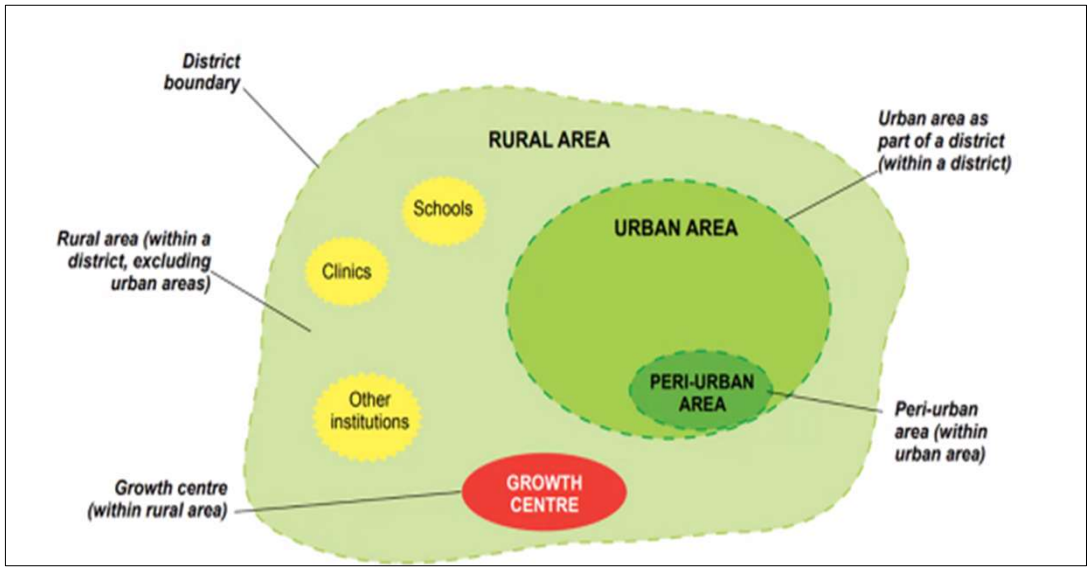
Inspection report

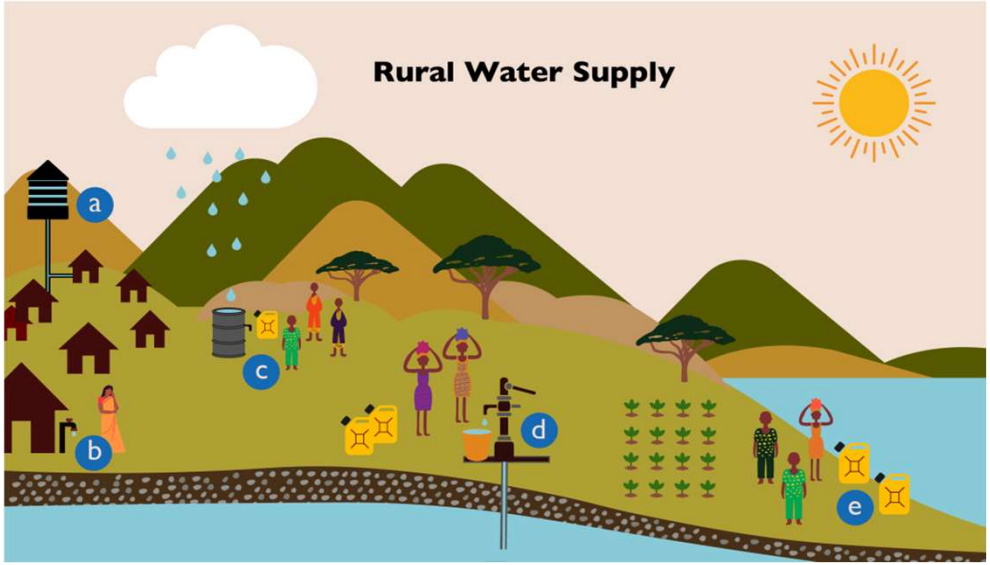
- Inspected service provider
- Inspected components
- Findings with evidence
- Recommendations

Directives and orders

Actions to be taken by the service provider to address identified non-compliances

Rural water supply services





Rural water supply systems

- Piped water sources
  - Standpipes – public, private
  - Water kiosks
- Protected dug wells
- Borehole / Pumped wells
- Springs
- Rainwater harvesting systems

Key challenges of rural water supply

- **Fragmentation**
  - Different types/systems/models
  - Many actors – investment, asset ownership, management
- **Lack of appropriate regulatory framework**
  - Rural water supply can't be regulated the same way as urban water supply
- **Limited technical, human & financial resources**
  - Infrastructure – supply, quality control
  - Professional service provision
  - Rural water supply depends largely on external investments for infrastructure
  - Sustainability of service – low revenues from tariff/charges
- **Lack of data for decision making**
  - Data collection tools & management systems
  - Coverage per system
  - Functionality of system

Rural water supply service Rwanda – key milestones

1964

Delegation to **Association Internationale pour le Developpement Rural** (AIDR) to construct, operate and manage all rural water infrastructure. Service provision was free

1984

Transfer of rural water infrastructure to communes (districts) due to increase in infrastructure and to incorporate beneficiaries' participation

1987

Presidential law no 291/11 of 15th May 1987 transferring the ownership of water supply infrastructure management to Districts

1994

Creation of 3 management models:
Regie Associative (CBM)
Regie administrative (management by districts
Regie professionnelle (management by private operators)

2004

New water policy reinforces PPP following the assessment indicating that schemes managed by private operators functioned well and CBM failed

2009

Sector Wide Approach (SWAp) – partnership between government and development partners to strengthen inter/intra sectoral coordination and rationalization of DPs initiatives.

2010

WSS policy stipulated **Districts as owners of WSS infrastructures**, reinforced the **PPP as the standard way** to operate piped WS schemes in rural areas and revenue collection based on metered/ quantified consumption

2014

Water supply and Sanitation Corporation (WASAC) was created with a specific directorate (RWSS) to empower Districts and to ensure the sustainability of water and sanitation infrastructure and services

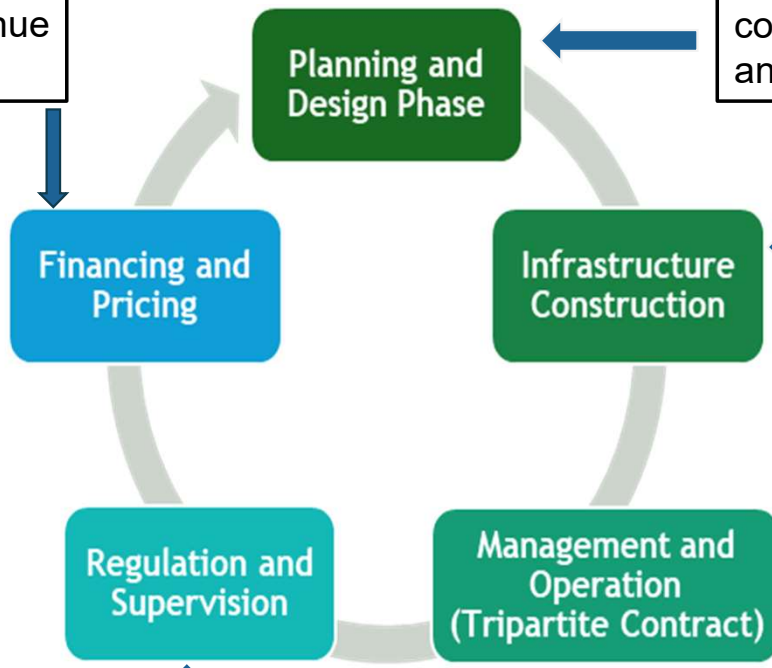
2023

The national policy for water and sanitation gave **full responsibilities of WSS to WASAC across the entire country** with possibility of delegating rural water supply services to private operators (youth companies)

Rural water supply service Rwanda – key institutions and roles

Multiple sources : government budgets, contributions from development partners (AfDB, WB, etc.) , NGOs and Revenue from water bills.

Led by **MININFRA** in collaboration with WASAC and Districts



Led by **WASAC** in collaboration with public sector, NGOs, and the private sector.

Regulation is done by RURA

- issues operating licenses to WASAC & private operators,
- Approves rural water tariff
- Sets service quality standards
- Monitors compliance with regulation and quality standards

Full responsibility by WASAC

- Delegation contract signed between WASAC, Districts and private operators (including Youth Companies) for O&M

Privately owned small rural water systems

Rural water supply in Rwanda – Monitoring framework

- **Water quality monitoring**
- **Water Safety Plan**
- **Monitoring indicators**
  - Performance indicators
  - Benchmark system
- **Sector Performance Report**
- **Management Information System (MIS)**

Parameter	Criterion measure	Method of test	Frequency (times / year)
Physicochemical			
Turbidity (NTU max)	≦5NTU	ISO 7027	2
pH value	6.5 – 8.5	ISO 10523	2
Microbiological			
Total coli-forms	Absent	ISO 9308-1	2
E. coli	Absent	ISO 9308-1	2
Chemical			
Nitrate as NO_3^-	≦45 mg/L	ISO 7890	2
Ammonia (NH_3)	≦0.5mg/L	ISO 11732	2
Iron (total) Fe	≦0.3mg/L	ISO 6332	2
Aluminium, Al^{3+}	≦0.2mg/L	ISO 12020	2
Manganese (Mn^{2+})	≦0.1mg/L	ISO 6333	2
Copper (Cu^{2+})	≦1.000mg/L	ISO 8288	2
Phosphates (PO_4^{3-})	≦2.2mg/L	ISO 15681	2
Fluoride (F^-)	≦1.5mg/L	ISO 10359	2
Arsenic (As^{2+})	≦0.01mg/L	ISO 11969	2
Residual free chlorine	≦0.2 -0.5	ISO 7393	2

Source: Rwanda standard (RS EAS 12:2-14). Potable water- Specification

Rural water supply in Rwanda – Monitoring framework

Performance Indicators at national level

Category	Performance indicator
Rural water supply - coverage	
1. Raise rural water supply coverage to 100% by fast-tracking implementation of a strategic investment programme	**I-1:** % of rural households within 500 m of an improved water source
Rural water supply - functionality	
2. Ensure sustainable functionality of rural water supply infrastructure by strengthening O&M management arrangements	**I-2:** % of rural improved water sources functional at the time of spot check
	I-3: % of public rural water supply systems managed by a contracted private operator
	I-4: % cost recovery (revenue / O&M costs) for rural piped water schemes

Rural water supply in Rwanda – Monitoring framework

National Benchmark System

Category	Proposed benchmark
1. Accessibility	a. The water point should not be more than 500 meters from the household b. The time required to reach the water point, queue, collect water and return to the household should not be more than 30 minutes
2. Reliability /downtime	a. The period for which a water point is not functional should not exceed 30 days per year b. 90% of the water points should be functional at the time of spotcheck
3. Crowding	The number of people served by a water point should not be more than 300 per bore-hole or standpipe, or 150 per hand-dug well
4. Quantity	The quantity of drinking water used per person should not be less than 20 liters per day
5. Coverage	100% of the population in the catchment area of the water point should have access to water
6. Quality	At least 90% of the samples should meet the national water quality standards
7. Equity	All vulnerable households in the catchment area of the water point should get adequate quantity of water daily free of cost

Key considerations

- **Adaptive Regulatory Frameworks** designed to respond to specific conditions of rural areas: light regulation, differentiated pricing and service delivery models and governance systems that encourage community participation.
- **Clarity of roles and coordination:** clear roles of different involved stakeholders and intervention coordination mechanisms
- **Strengthening local capacities**: capacity-building for local authorities and service providers in financial & technical management of rural water supply systems
- **Promote simple and resilient technologies**: adoption of technologies suited to rural areas, considering local realities. Eg. solar-powered pumps.
- **Inclusive tariffs:** differentiated pricing systems based on the payment capacity of rural populations, while ensuring sustainability of service provision
- **Sustainable financing mechanisms:** encourage innovative financing approaches for operation and maintenance while the government secure funds for infrastructure. Eg. Urban – rural water cross subsidisation

Effective sector regulation plays a leading role

ESAWAS intervention - regulatory framework

Development of regulatory framework and strategy for Rural WSS and small water supplies to provide guidance for countries across Africa to professionalise the operations and management of rural WSS and small water supplies under formalised governance and regulatory arrangements

1. Situation analysis of regulation of rural WSS and small water supplies

2. Gap Analysis in selected countries in Uganda, Ghana, Ethiopia, Zambia, Mozambique, Kenya, Rwanda, Tanzania

- Policy and legal framework
- Institutional framework
- Regulatory framework
- Service delivery models
- Financing models
- Technology aspects
- Data and information management
- Document findings on good practices, gaps, overlaps and challenges

3. Develop a framework and strategy for regulation of rural WSS and small water supplies

- Comprehensive framework that addresses the identified challenges
- Implementation strategy – roadmap and step-wise approach to institute regulation of rural WSS and small water supplies

Thank you