

# Water and Development Congress & Exhibition 2023

10-14 December 2023 | Kigali, Rwanda



## UTILITY LEADERS FORUM

12 DECEMBER 2023

**inspiring change**



# Acceleration adoption and scaling of City Wise Inclusive Sanitation - What is working?

SESSION II

# Keynote Speech 1

## Urban Wastewater Treatment



**Florian Thevenon**  
Senior Expert, UN-Habitat



**Success and challenges of utility-based  
wastewater monitoring in the process of  
Global Wastewater Monitoring (SDG 6.3.1)**

**Florian THEVENON (UN-HABITAT & GRID-Arendal)**

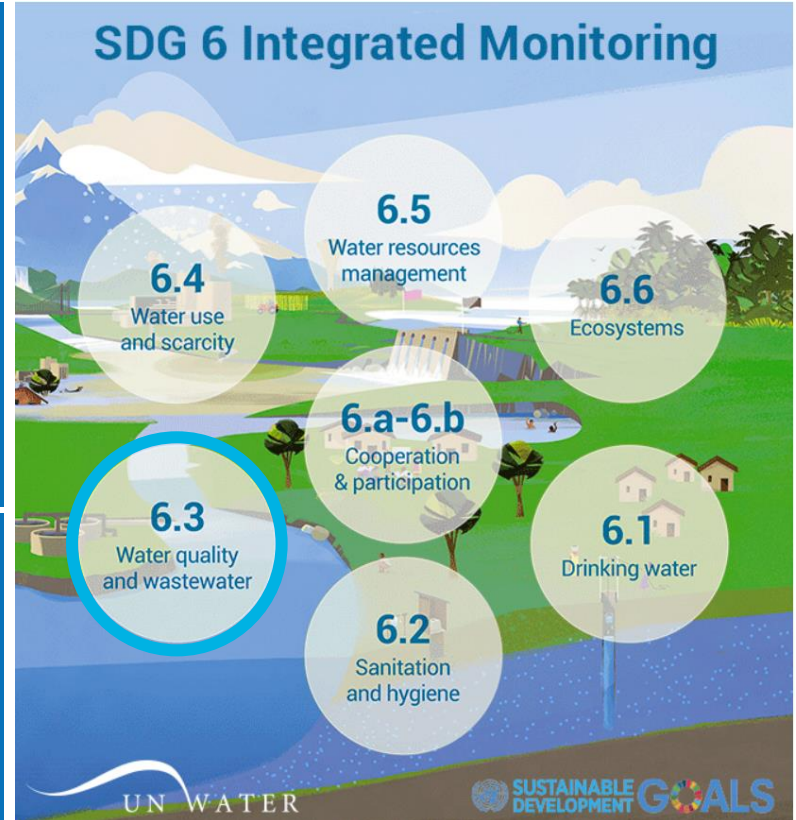
# AGENDA

- SDG indicator 6.3.1 on total & industrial wastewater flows and the importance of **utilities**
- The outcomes of five series of regional webinars involving more than 100 countries and 141 **utilities**
- Industrial/domestic wastewater flows & pollutant loads – Ghana
- Wastewater & SDGs interlinkages

# SDG TARGET 6.3 & INDICATORS 6.3.1 & 6.3.2

“By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing the release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally”.

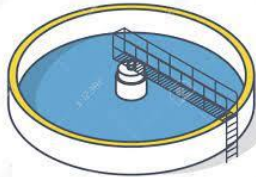
- Indicator 6.3.1 “Proportion of wastewater safely treated”
- Indicator 6.3.2 “Proportion of bodies of water with good ambient water quality”



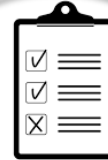
# 3 UN AGENCIES CUSTODIAN FOR SDG 6.3.1

TOTAL & INDUSTRIAL  
wastewater

**UN HABITAT**  
FOR A BETTER URBAN FUTURE



Industrial + Municipal + Septic tanks  
will include wastewater REUSE



United Nations  
Statistics Division

eurostat 



DOMESTIC  
wastewater



World Health  
Organization



including onsite  
sanitation  
(SDG 6.2.1)

2 global monitoring systems: The UNSD/UNEP Questionnaire on Environment Statistics,  
+ OECD/Eurostat Joint Questionnaire on Inland Waters → 3 databases




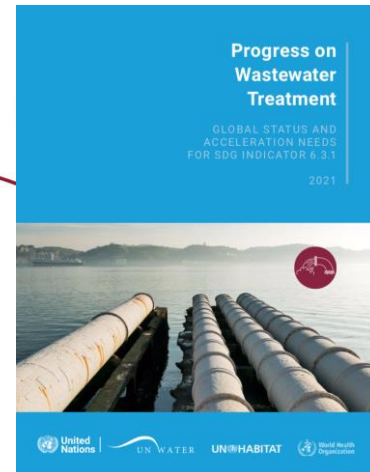
## SDG 6.3.1 WASTEWATER



Only  
**42**  
countries

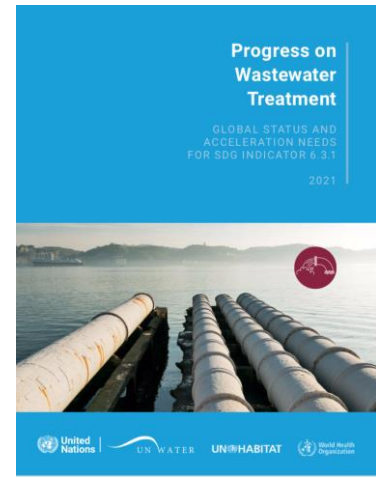
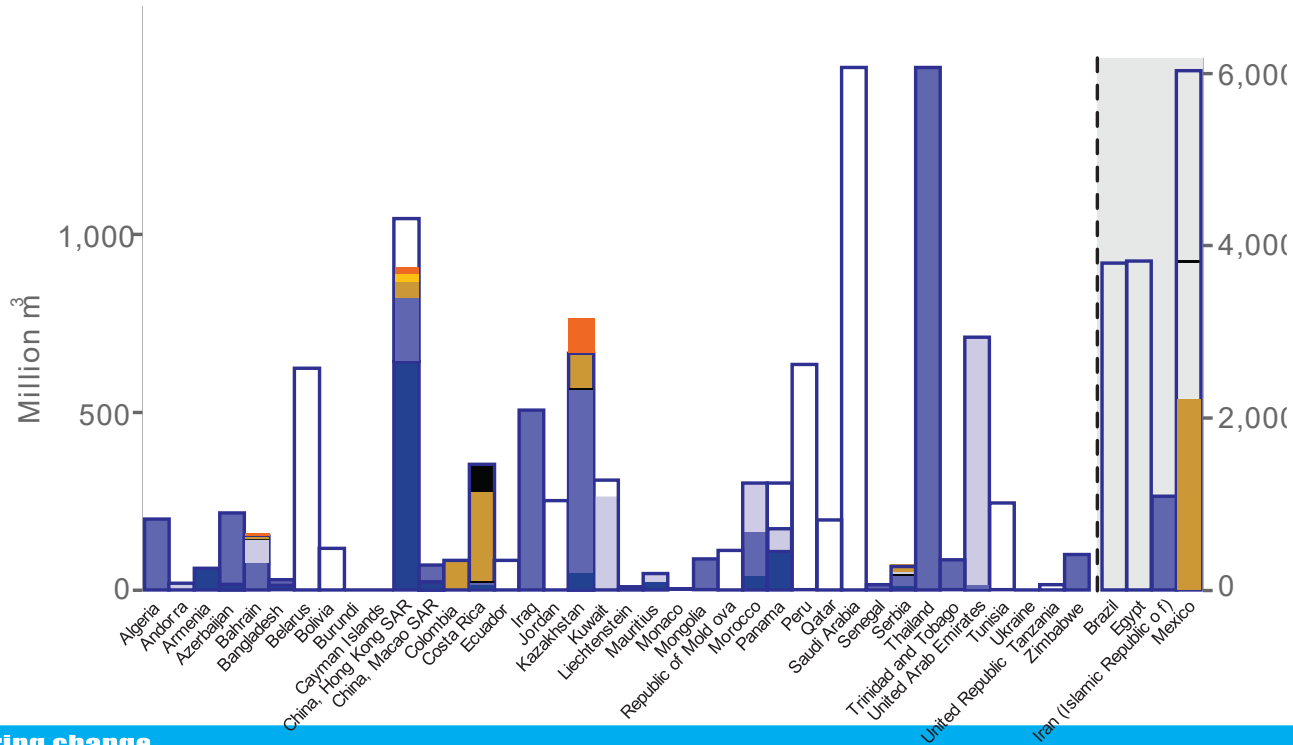
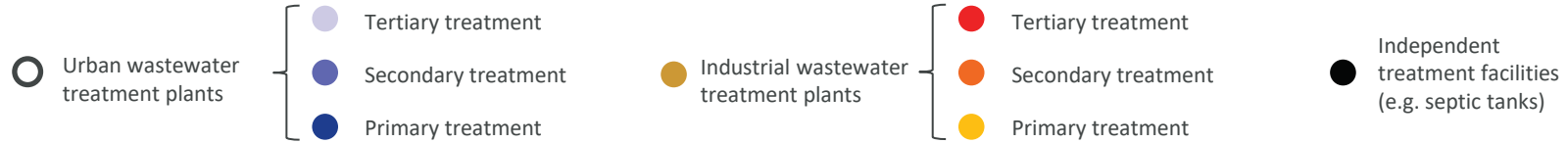
**reported statistics** on wastewater  
generation and treatment in **2015**

These **limited data** suggest that about a  $\frac{1}{3}$   of total or industrial wastewater **received treatment** before discharge





# TREATED WASTEWATER FLOWS FROM UTILITIES



# Wastewater 2030 Striving for a Circular Economy in a Climate-resilient World

EPA Ghana & UN-Habitat (Government)

#SDGAction51746



DESCRIPTION SDGS & TARGETS DELIVERABLES & TIMELINE RESOURCES MOBILIZED PROGRESS REPORTS FEEDBACK

## Description

Wastewater warrants much more attention for health, environment, or justice reasons. If we are consistent in adopting a much-needed global transformation for a circular and resilient economy, wastewater management must feature more strongly in development policy. The situation is critical in a range of member states and is further exacerbated by the climate crisis. Wastewater is wasted since it cannot be adequately treated for safe reuse. This commitment will take a fresh look at SDG6.3.1. promoting a new initiative to better integrate wastewater statistics and policies to support Agenda 2030. The initiative will review the following sub topics:

Tackling wastewater pollution from all sources

Promoting Climate resilient wastewater infrastructure

Adopting a new inclusive policy for wastewater

Promoting good practices & stimulating investment

Towards a more-aligned international effort on wastewater

A consortium of partners will meet twice a year and develop a refined policy document through consultation and review. Funds will be raised to support capacity-development in the area of wastewater. The work of the consortium will share the results of their work at major international fora

## Action Network



## Share



<https://sdgs.un.org/partnerships/wastewater-2030-striving-circular-economy-climate-resilient-world>

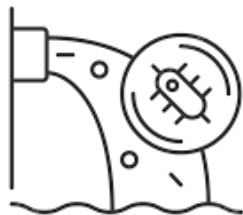
# FIVE SERIES OF REGIONAL WEBINARS

- Convened by UN-Habitat and regional co-organizers between 2020 and 2023 in Africa, the Arab States, Asia, the Caribbean and Latin America.
- Explored regional practices on wastewater monitoring and discussed how to strengthen policy development and decision-making around investments into wastewater management.
- Involved more than **100 countries and 141 utilities**, regional water associations, regulators, line ministries, development partners, academic, public and private sectors.
- Followed by regional data collection exercises to enhance water and wastewater monitoring by utilities, and to support national institutions in their efforts to report on SDG indicator 6.3.1.

# REGIONAL PARTNERS AND PARTICIPATING ORGANISATIONS



# POLICY (BRIEF) RECOMMENDATIONS



Protection of water  
resources & public health



Climate change  
adaptation & mitigation



Municipal services &  
urban water security



Stimulating investments  
& financing



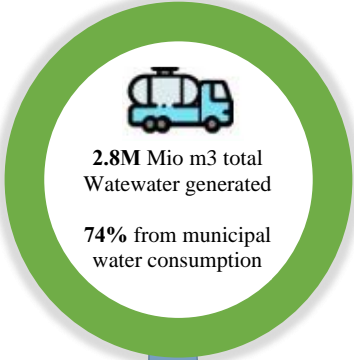
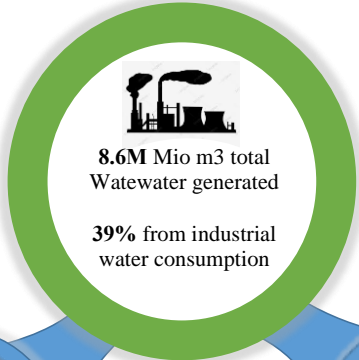
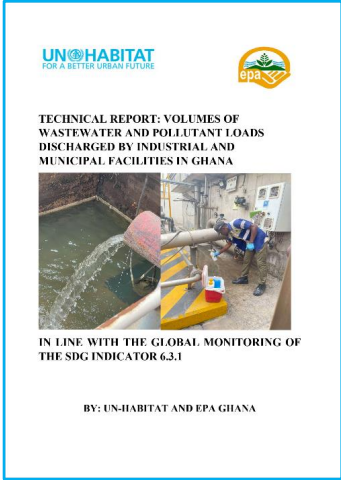
Integrated  
policy & governance



Common effort on  
wastewater monitoring



# EPA GHANA INDUSTRY/MUNICIPAL



All 7 municipal services treat wastewater

Each of the 7 municipal services site serves as a communal wastewater depot

Contributes 25% of total wastewater generated

Generates 2.8 M Mio m3 wastewater from the municipal sector (avg. 398,642 m3)

83 industries does not have WWTP

Contributes 12% of total wastewater generated

83 with no WWTP generate **16%** (1.4M Mio m3) of the total wastewater from the industrial sectors (avg. 16,925 m3)

60 industries have WWTP

Contributes 63% of total wastewater generated

60 with WWTP present generate **84%** (7 M Mio m3) of the total wastewater generated from the industrial sector (avg. 119,476 m3)

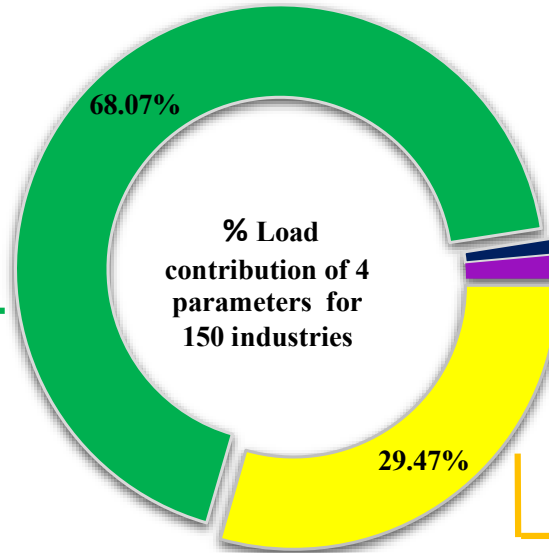
# EPA GHANA INDUSTRY/MUNICIPAL

## Load from wastewater generated

- BOD ( 3,049 t/y)
- COD ( 7041 t/y)
- Nitrate (106 t/y)
- Phosphorus (148 t/y)

4894 (70%) tons was eliminated from the effluent

2,147 (30%) tons was discharged into the environment



66 (62%) tons was eliminated from the wastewater

40 (38%) tons was discharged into the environment

115 (78%) tons was eliminated from the effluent

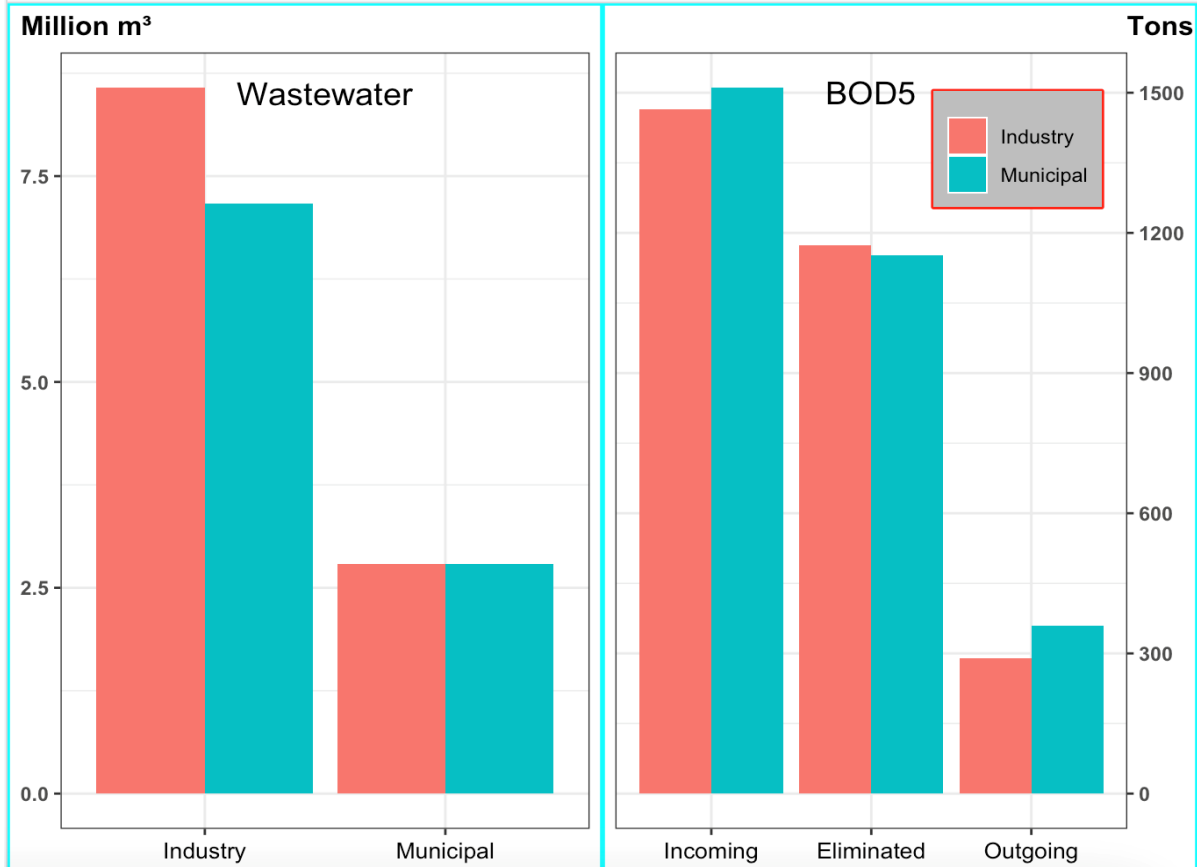
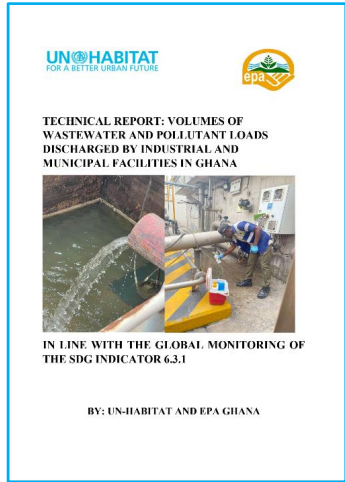
33 (22%) was tons discharged into the environment

2,379 (78%) tons was eliminated from the effluent

670 (22%) tons was discharged into the environment

t/y= tons/year

# EPA GHANA INDUSTRY/MUNICIPAL





# SDG INDICATOR 6.3.1 INTERLINKAGES

## 6.b Support local engagement in water and sanitation management

Fostering active participation of local communities in water and sanitation management and exchange of knowledge on sustainable practices can encourage responsible water use and wastewater disposal.

## 6.a Ensure availability and sustainable management of water and sanitation for all

Providing capacity-building and fostering international cooperation can enable developing countries to enhance their wastewater management and infrastructure.

## 6.6 Protect and restore water-related ecosystems

Water-related ecosystems are directly impacted by the quantity and quality of discharged wastewater effluents. Improving wastewater treatment can restore and protect water-related ecosystems.

## 6.1 Safe and affordable drinking water

Ensuring that wastewater is safely treated can improve the quality of drinking-water by reducing contamination, while increasing access to drinking-water must be matched by increased wastewater treatment.

## 6.2 End open defecation and provide access to sanitation and hygiene for all

Increased access to sanitation may yield additional wastewater volumes that must be collected and treated if good ambient water quality and healthy ecosystems are to be sustained.

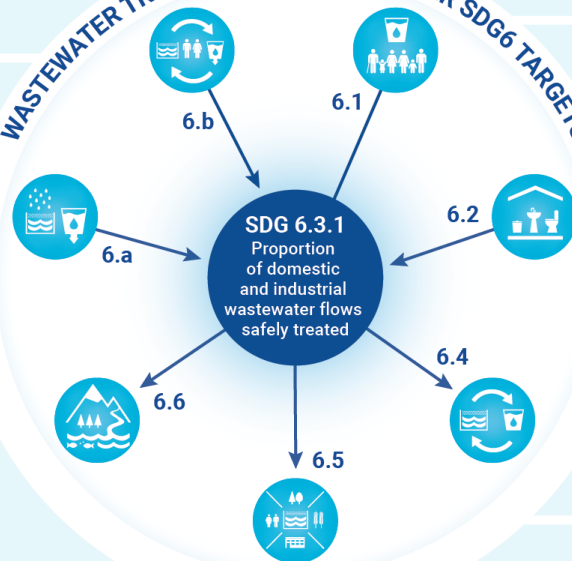
## 6.4 Increase water-use efficiency and ensure sustainable freshwater supplies

Wastewater treatment and reuse can increase the sustainability of freshwater supplies and improve water-use efficiency.

## 6.5 Implement integrated water resources management

Characterization and quantification of wastewater flows at basin level is key in the implementation of Integrated Water Resources Management (IWRM).

### WASTEWATER TREATMENT AND THE OTHER SDG6 TARGETS



- ←● SDG6.3.1 influence other SDG6 targets
- Other SDG6 targets influence SDG 6.3.1
- SDG6.3 and other SDG6 targets influence each other

GRID-Arendal  
(2023)



# TARGET 6.3 INTERLINKAGES

## 1 No poverty

Improving wastewater management and safe reuse can build resilience for poor and marginalized groups by reducing exposure to polluted waters.

## 2 Zero hunger

Improving wastewater management and safe reuse can support food security and crop yields in water scarce regions.

## 3 Good health and well-being

Wastewater collection and treatment can reduce the release of hazardous waste and chemicals and associated illnesses and deaths.

## 4 Quality education

Reducing exposure to polluted water can increase educational attendance while acquired knowledge on the benefits of wastewater management can promote sustainable development.

## 5 Gender equality

Improving wastewater treatment and reuse can create employment opportunities and foster equal participation and leadership roles for women in the wastewater sector.

## 7 Affordable and clean energy

Wastewater and sludge can be a source of renewable energy.

## 8 Decent work and economic growth

Wastewater treatment and reuse can enhance resource efficiency and promote technological innovation, thus help decouple economic growth from environmental degradation.

## 9 Industry, innovation and infrastructure

Building resilient infrastructures that enable wastewater treatment and reuse and technological upgrade and innovation can promote sustainable industrialisation.

## 10 Reduced inequalities

Support and promotion of financial flows to developing countries can provide necessary funding for initiatives related to wastewater management and reuse initiatives.

## 11 Sustainable cities and communities

Wastewater treatment and reuse can ensure access to adequate basic services, upgrade slums and reduce the environmental impact of cities, while enhanced capacity for urban planning can improve wastewater management.

## 12 Responsible consumption and production

Enhancing wastewater collection, treatment and reuse can improve the sustainable management and efficient use of water resources.

## 13 Climate action

Energy efficient wastewater treatment and wastewater reuse can reduce greenhouse gas emissions and provide adaptation and mitigation actions against climate change.

## 14 Life below water

Improved wastewater treatment that mitigate the release of land-based nutrients can reduce eutrophication and strengthen the resilience of coastal and marine ecosystems.

## 15 Life on land

Wastewater management and reuse can protect natural habitats and halt the loss of biodiversity. Conversely, preservation of freshwater ecosystems can improve water quality and the sustainability of water resources.

## 16 Peace, justice and strong institutions

Enhancing wastewater management can foster transparent governance and inclusive decision-making that promotes sustainable resource management. Meanwhile, strengthening institutions at all levels can enable improved management of wastewater.

## 17 Partnerships for the goals

Wastewater management and reuse can contribute to domestic resource mobilization and facilitate transfers of environmentally sound technologies. Promotion of investments in least developed countries can provide funding for wastewater collection and treatment.



GRID-Arendal (2023)

adapted from: ESCAP, UN (2016). *Analytical Framework for Integration of Water and Sanitation SDGs and Targets Using Systems Thinking Approach*. Working paper.



# KEY TAKEAWAYS

- UN 2023 WATER CONFERENCE → Follow-up on the commitment for the Water Action Agenda.
- 2023 Data Drive → SDG 6.3.1 Indicator update (Global SDG Indicators Database & UN Water Data Portal for SDG 6) & 2024 Indicator report.
- POLICY BRIEF: Setting the agenda for safe and sustainable wastewater management and monitoring in the context of the SDGs.

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## Progress on Wastewater Treatment

GLOBAL STATUS AND ACCELERATION NEEDS FOR SDG INDICATOR 6.3.1

2021



## Setting the agenda for safe and sustainable wastewater management and monitoring in the context of the SDGs

POLICY BRIEF



UN HABITAT  
FOR A BETTER URBAN FUTURE

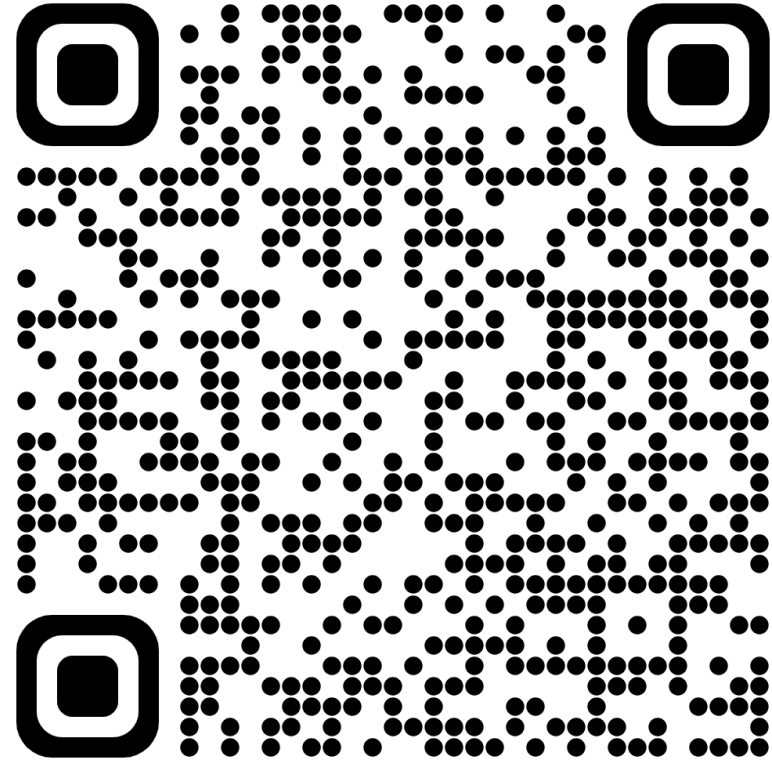


TECHNICAL REPORT: VOLUMES OF WASTEWATER AND POLLUTANT LOADS DISCHARGED BY INDUSTRIAL AND MUNICIPAL FACILITIES IN GHANA



IN LINE WITH THE GLOBAL MONITORING OF THE SDG INDICATOR 6.3.1

BY: UN-HABITAT AND EPA GHANA



# Keynote Speech 2

## Integrating Urban Sanitation Services: A Case of Lusaka Water Supply and Sanitation Company



**Jilly Chiyombwe**  
MD, Lusaka water supply and  
Sanitation



## Integrating Urban Sanitation Services: A Case of Lusaka Water Supply and Sanitation Company

Eng. Jilly CHIYOMBWE

10-14 December 2023 | Kigali, Rwanda

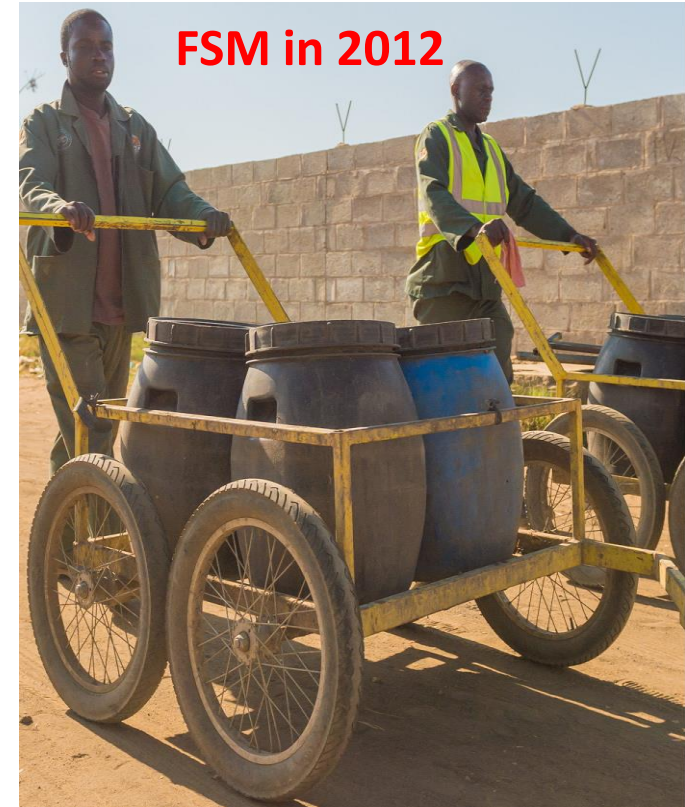
# 1. THE URBAN SANITATION CHALLENGE

- Rapid urbanization/population growth, rural urban migration = **A challenge to sanitation provision**
- Old and aging sewer infrastructure (Lusaka coverage 14%) – Majority depend on OSS
- Inadequate infrastructure + climate change impacts = Public health & Env. Hazard (**5,900 cases/ 114 deaths** recorded in Lusaka during the 2017/18 cholera outbreak)



## 2.URBAN SANITATION INTEGRATION – THE GENESIS

- **CWIS:** a new approach & rethinking of urban sanitation
- LWSC's CWIS journey started in 2012 and is far from over (2 Pilot Projects)







### 3.URBAN SANITATION INTEGRATION – THE GENESIS

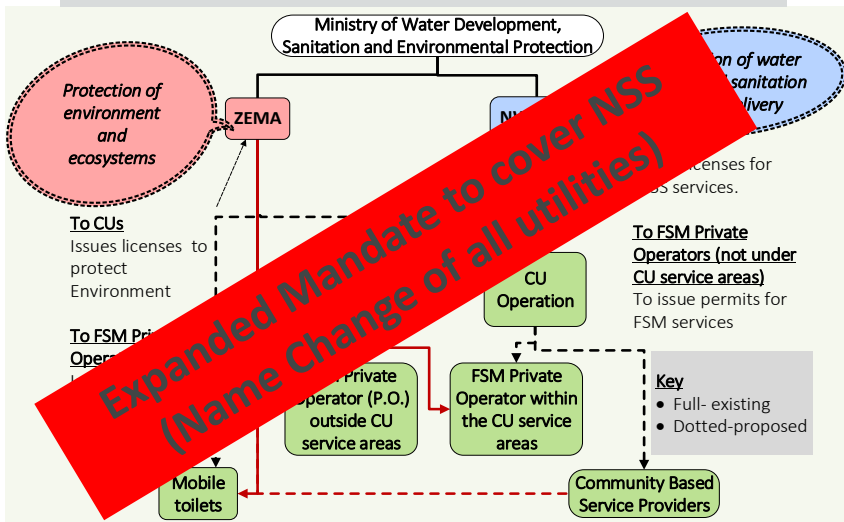


- Experiences, challenges & breakthroughs shaped reforms (national & institutional level) to sustainably upscale the services.
- Key Lessons:
  1. Address market failures & barriers
  2. Catalyze the market through incentives (stimulate demand & supply)
  3. Ground the services within a well-functioning institutional and regulatory framework
  4. Leverage partnerships with private sector/ community part.

# 3.URBAN SANITATION INTEGRATION – ADOPTION

- The Birth of the LSP in 2015 was a game changer to the urban sanitation sector
- LWSC led Discussions with various stakeholders/ funders of LSP to prioritize investments in NSS.

## 1. NWASCO Regulatory Reforms



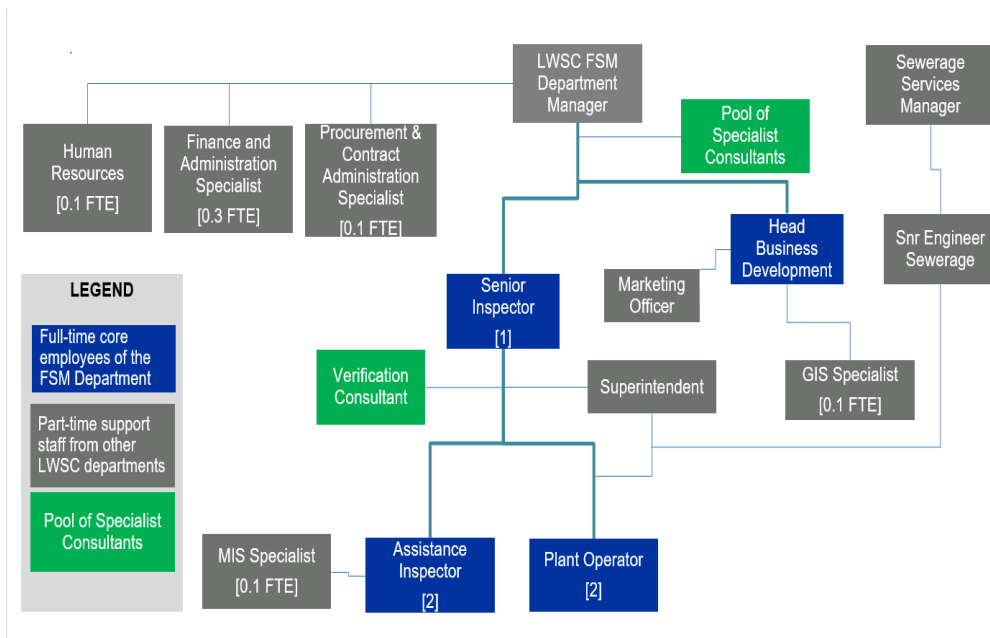
## 2. Interventions Across the Chain



## 3.URBAN SANITATION INTEGRATION – ADOPTION

To accommodate the expanded mandate,

- LWSC had to go through institutional restructuring





## 3.URBAN SANITATION INTEGRATION – ADOPTION



To accommodate the expanded mandate

- LWSC adopted the CWIS Approach

### FOCUS OF CWIS APPROACH

- Address the whole sanitation service chain.
- Adopt a mix of technologies and service delivery models
- Enhance access to safe and affordable sanitation services for LICs.
- Incentivize & trigger demand and market development for emptying services.
- Improve sanitation data management & reporting systems
- Strategic Sanitation Planning

# 3.URBAN SANITATION INTEGRATION – UPSCALING & ACCELERATION

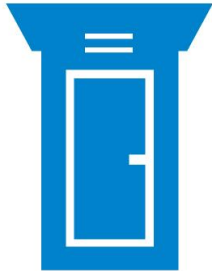
Since 2020 LWSC has implemented various interventions to upscale urban sanitation:

## 1. Sewer improvement



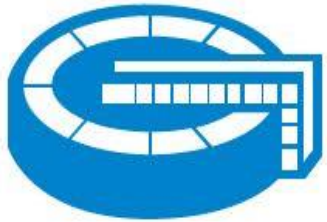
- 250km network
- 5,500 connections
- 1 LIC included
- 44,000 benef.

## 2. HH OSS Facilities



- 5,578 facilities
- 100,500 benef.

## 3. Treatment facilities



- 2 FSTPs (200m<sup>3</sup>/day cap.)
- 2 STPs

## 4. Emptying Services



- All LICs in Lusaka
- 16,157 PL emptied
- 61,374m<sup>3</sup> FS
- 207,157 benef.



**Institutional strengthening & capacity building within LWSC**



## 3.URBAN SANITATION INTEGRATION – UPSCALING & ACCELERATION

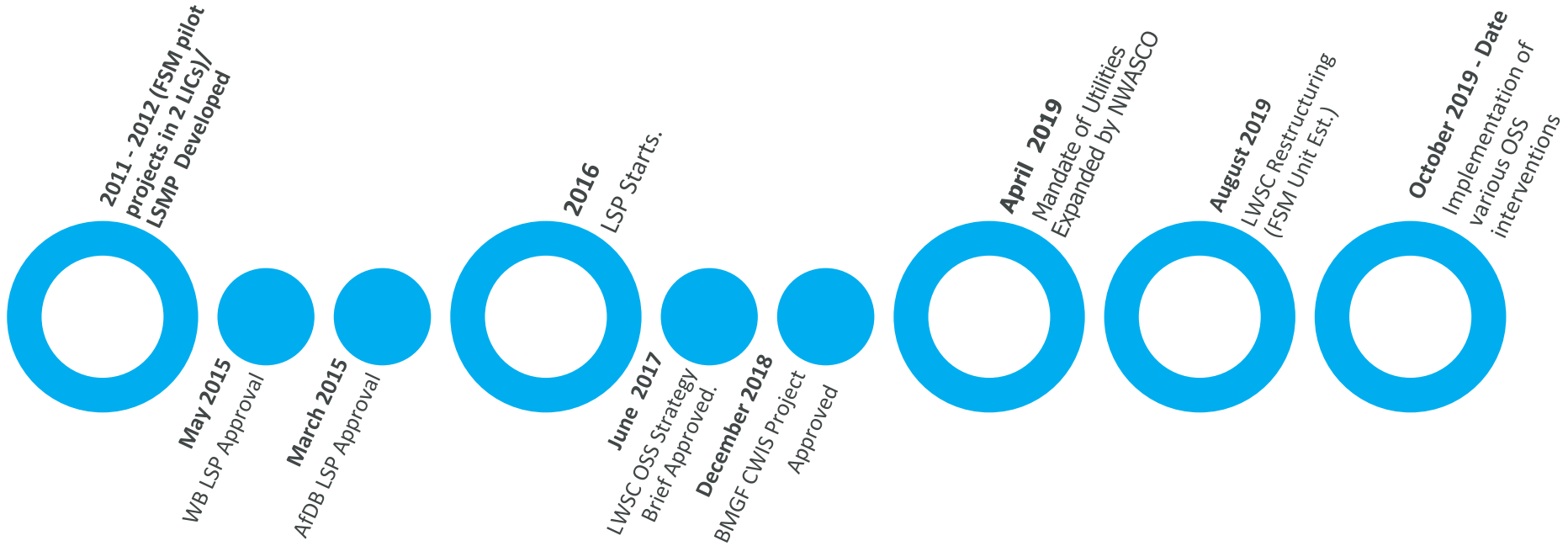


How did we achieve the results? (*Strategies and Approaches*):

1. **Private Sector Participation** (10 PSPs under permitting scheme)
2. **Community Engagement & Empowerment** (major factor in the success of sewer connections and HH OSS facilities programs)
3. **Digital Transformation & Data** (sanitation mapping, LSS, digital payment systems)
4. **Financial & Support Mechanisms** (subsidies, equipment financing for SPs)
5. **Climate Resilience** (flood resistance OSS facilities & sewer network)
6. **Strategic Sanitation Master Planning** (a SSMP that is in line with the expanded mandate)
7. **Learning** (share experiences and lessons with others)



# 3.URBAN SANITATION INTEGRATION – SUMMARY





## 3.URBAN SANITATION INTEGRATION – LESSONS & CHALLENGES



### KEY LESSONS:

1. **Adopt an incremental approach** (Avoid aiming for picture perfect scenario)
2. **CWIS Requires Flexibility and Agility** (Investment programming, planning & implementation)
3. **Understanding what works takes time** (learn, innovate and adapt)
4. **Private sector partnerships & participation is key** (subsidies, equipment financing for SPs)

### CHALLENGES:

1. **New line of business for LWSC**
2. **New line of regulation for NWASCO**
3. **Unknown revenue potential for the LWSC**





## 3.URBAN SANITATION INTEGRATION – WAY FORWARD



1. **Develop a New Master Plan** (from LSMP to Strategic sanitation master plan)
  - i. **Move to scheduled desludging model in the medium term.**
  - ii. **Sustain HH toilets construction program in LICs** (56,000 facilities overall target)
  - iii. **Expand Service coverage to other smaller districts**
  - iv. **Increase treatment capacity in the short to medium term** (construct additional FSTPs/ transfer stations)



# THANK YOU



# MODERATOR AND PANELISTS



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Principal Secretary, Dept of Housing &  
Urban Development



**Daniel Ayen Okello**  
Director of Public Health, Kampala  
Capital City Authority



**Yoko Hattori**  
Director of Water Resources, JICA





**Thank you**