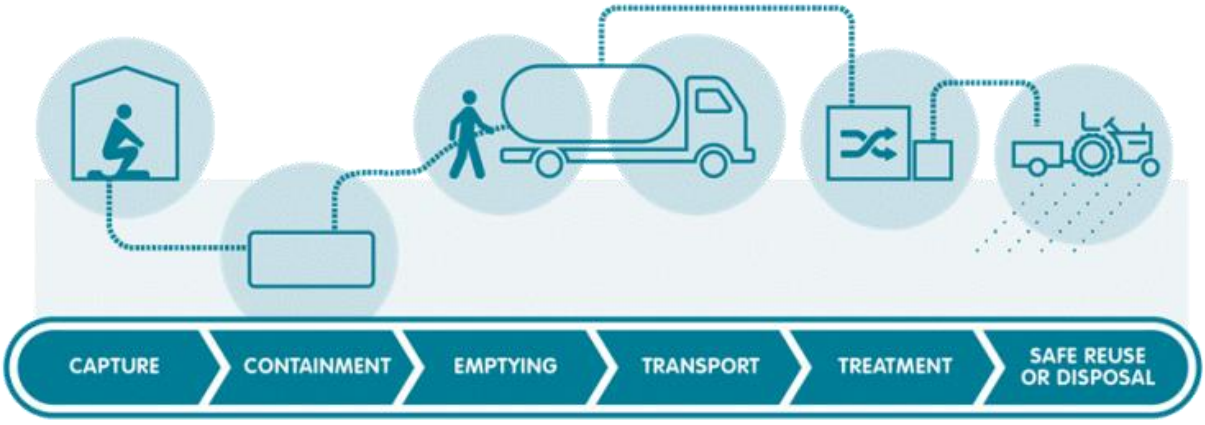
CITYWIDE INCLUSIVE SANITATION (CWIS) ASSESSMENT IN DUSHANBE TAJIKISTAN

CONTEXT:

Dushanbe Vodokanal (DVK) faces challenges in managing Dushanbe's urban sanitation due to rapid growth. Poor sanitation is linked to disease transmission, necessitating a comprehensive assessment to improve public health. The Citywide Inclusive Sanitation (CWIS) approach by the World Bank's Water Global Practice emphasizes service provision and enabling environments over mere infrastructure, promoting diverse, context-specific solutions for safe and sustainable waste management. The CWIS assessment in Dushanbe identified gaps and actions in seven areas: inclusive urban planning, engaging marginalized groups, protecting health and environment, prioritizing services for the poor, ensuring safety and sustainability, investing based on comprehensive analysis, and committing to transparency and accountability, across the whole sanitation chain. This assessment used tailored diagnostic tools, including faecal flow diagrams, City Service Delivery Assessment, Sanitation Service Chain Risk Assessments, business model canvases, and financial flow models, and gathered data through quantitative surveys of households, healthcare facilities, and schools, along with qualitative focus groups, interviews, and field visits, utilising the mWater platform for real-time data collection and reporting.

SUMMARY OF FINDINGS: SANITATION SERVICE CHAIN

Figure: Sanitation Service Chain



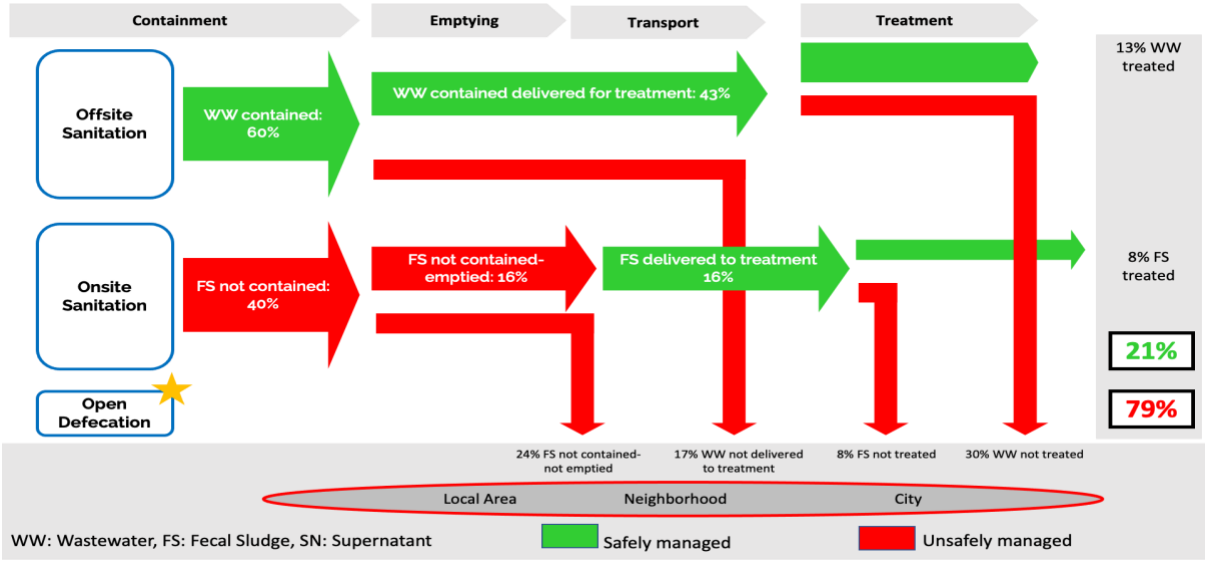
Sewered	**60%** households	**72%** of wastewater reaches wastewater treatment plant	**30%** wastewater treated safely	Some wastewaters may be used for irrigation
Non-sewered	**40%** households using lined tanks with open bottoms and pit latrines	**40%** of toilets are emptied by private trucks. 60% not emptied.	**50%** faecal sludge treated safely	Some faecal sludge reused in agriculture

Faecal Flow Diagram (FFD):

The FFD of Dushanbe highlights critical issues and risks: i) Faecal sludge not safely contained in unlined tanks potentially ii) Faecal sludge unsafely emptied; iii) Wastewater unsafely treated prior to disposal) Sludge from wastewater and septage unsafely treated prior to reuse. Sewered sanitation faces inefficiencies with significant bypassing of treatment, a deteriorated treatment plant, and limited sludge management. Non-sewered sanitation, utilized by one-third of the population, suffers from varied emptying frequencies and inadequate treatment, posing health and environmental risks. Incomplete treatment processes and lack of standard procedures further compound these challenges, amplifying public health hazards.

This assessment found that nearly 21 percent population of Dushanbe has access to safely managed sanitation services, 78 percent have basic sanitation and less than one percent unimproved sanitation as per SDG ladder of global Joint Monitoring Programme of WHO & UNICEF.

Figure: Faecal-Flow Diagram of Dushanbe



Findings from the Household Survey:

Sanitation Facility Types: Varied; 20.4% piped sewer, 12.6% septic tank, 67% lined pit latrine.

Reasons for Non-Connection: Distance (33.2%), fees (3.4%), lack of service (61.6%).

Inclusive Facilities: Limited; 1.7% support for disabilities.

Toilet Cleaning Frequency: Monthly (60.4%), weekly (30.6%).

Emptying Frequency: Varied; 38.2% never, 21.6% 10 years ago.

Sludge Disposal: No dedicated FSTP exists, and co-treatment of sewer

Findings from Schools Survey:

School Facilities: Majority pit latrines (53%), followed by flush toilets (47%), with most pit latrines not emptied when full (53%).

Toilet Accessibility: Limited for smaller children (53%), none for people with disabilities.

Water Supply: All schools have piped water; mostly in the compound (53%).

Handwashing Facilities: Present in all schools, but soap availability varies (60% with both, 40% water only).

Findings from Healthcare Facilities Survey:

Toilet Infrastructure: All healthcare facilities have toilets connected to piped sewer systems.

Outpatient Access: Toilets are available for outpatients in all surveyed healthcare facilities.

Staff Toilet Sharing: Only 50% of facilities have staff sharing toilets with outpatients, raising hygiene concerns.

Menstrual Hygiene Facilities: None of the facilities have toilets equipped with menstrual hygiene

sludge is done with the sludge collected from pits.

Maintenance Costs: Varied; <10 TJS (24.2%), 10-13 TJS (54.5%).

Emptying Cost: Varied; <150 TJS (9.5%), >450 TJS (13.7%).

Water Bills: Mostly received (76.2%).

Menstrual Waste Management: Lack of proper mechanisms or bins in all schools; most lack covered bins in girls' toilets (60%).

Menstrual Hygiene in Girls' Toilets: Often lacking soap (47%), with some having no water at all (13%).

facilities, posing challenges for female staff and patients.

Accessibility: No facilities have toilets designed for people with disabilities or limited mobility, highlighting a critical gap in accessibility and dignity.

Assessment of Service Delivery in Dushanbe

City Service Delivery Assessment tool has been used to assess the enabling environment across the sanitation service chain in Dushanbe. The tool calculates a mean value for each step of the service chain in each building block and presents it in traffic light form – **green for satisfactory, yellow for improving**, and **red for poor**.

Figure: CSDA Full Assessment

Sewered sanitation				Non-sewered sanitation		
WC, house connection	Sewerage	Sewage treatment & reuse		WC, house connection	Sewerage	Sewage treatment & reuse
Enabling				**Enabling**		
0.7	0.7	0.7	Policy, legislation	0.3	0.2	0.2
0.5	0. 5	0.8	Planning, budgeting	0.0	0.0	0.0
0.5	0.5		Inclusion	0.0	0.0	
Delivering				**Delivering**		
0.7	0.5	0.3	Funding	0.0	0.0	0.0
0.7	0.5	0.5	Capacity, outreach	0.2	0.0	0.0
0.5	0.5		Inclusion	0.5	0.0	
Sustaining				**Sustaining**		
0.5	0.5	0.3	Policy, legislation	0.3	0.0	0.0
0.5	0.5	0.4	Planning, budgeting	0.0	0.0	0.0
0.2	0.0		Inclusion	0.2	0.0	

The CSDA of **sewerage sanitation** highlights several issues: incomplete frameworks and regulations, unclear targets, and inadequate budgets. Investment plans cover only 50% of needs and face coordination challenges. The responsible entity is understaffed, with limited outreach programmes and sporadic capacity-building efforts. Operational costs are partially covered by revenue, with weak enforcement of standards. Sanitation services lag behind population growth, especially for marginalized groups, with inadequate data collection and limited access to safe sanitation. The CSDA of **non-sewered sanitation** reveals significant issues: a lack of comprehensive policies and legislation, plans without specific targets or budget allocations, inadequate funding, and poor investment coordination. Insufficient staffing and outreach hinder service delivery and community engagement. Marginalized groups' needs are unmet, regulatory oversight and cost recovery are weak, and services fail to keep pace with population growth, leaving many without safe sanitation access.

Investment Need for CWIS Dushanbe and Business Models.

Dushanbe needs minimum **20 million USD per annum for rehabilitating existing infrastructure or 67 million USD per annum for constructing all new infrastructure for 15 years' (2025-2040)** to achieve CWIS/ safely managed sanitation services. This underpins necessary institutional reforms to improve operational efficiency, enhanced bill collection, rationalised tariff structure, resource mobilisation from development partners and private sector including public private partnerships.

In the context of Dushanbe, possible business models include Composting and Black Soldier Fly Larva for organic fertilisers and manuring for farmers, and Biosolids as fuel for local industries. Further studies are needed to assess the market demand for reusable products followed by stakeholder's dialogue to finalise the business model for the city. An integration with solid waste will make the cases more viable and feasible.

Overall Key Actions

1. A survey to validate population connected to sewer networks for accuracy of existing infrastructure data.
2. Develop an integrated database to streamline customer information and improve service delivery.
3. Detailed sanitation regulations of sewered /non-sewered systems, standards containment design, desludging & treatment requirements.
4. Establish enforcement mechanisms and penalties for non-compliance to ensure adherence to regulatory standards.
5. Invest in training programmes for all sanitation stakeholders, to enhance technical expertise in sanitation management.
6. Collaborate with academic institutions and international partners to develop tailored training curricula and knowledge exchange initiatives. Launch a public awareness campaign and utilise multimedia
7. Mainstream inclusive sanitation considerations into broader urban development policies, strategies and initiatives.
8. Develop innovative financing for sanitation infrastructure investments, including public-private partnerships, performance-based contracts, revolving funds, Climate Financing and TAs
9. Establish multi-sectoral coordination to facilitate collaboration across government agencies and sectors.

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