Shit Flow Diagrams (SFD)

A South African Experience

Jay Bhagwan – Executive Manager: Water Use & Waste Management

SALGA Inspiring service delivery

Municipal Benchmarking Initiative water services

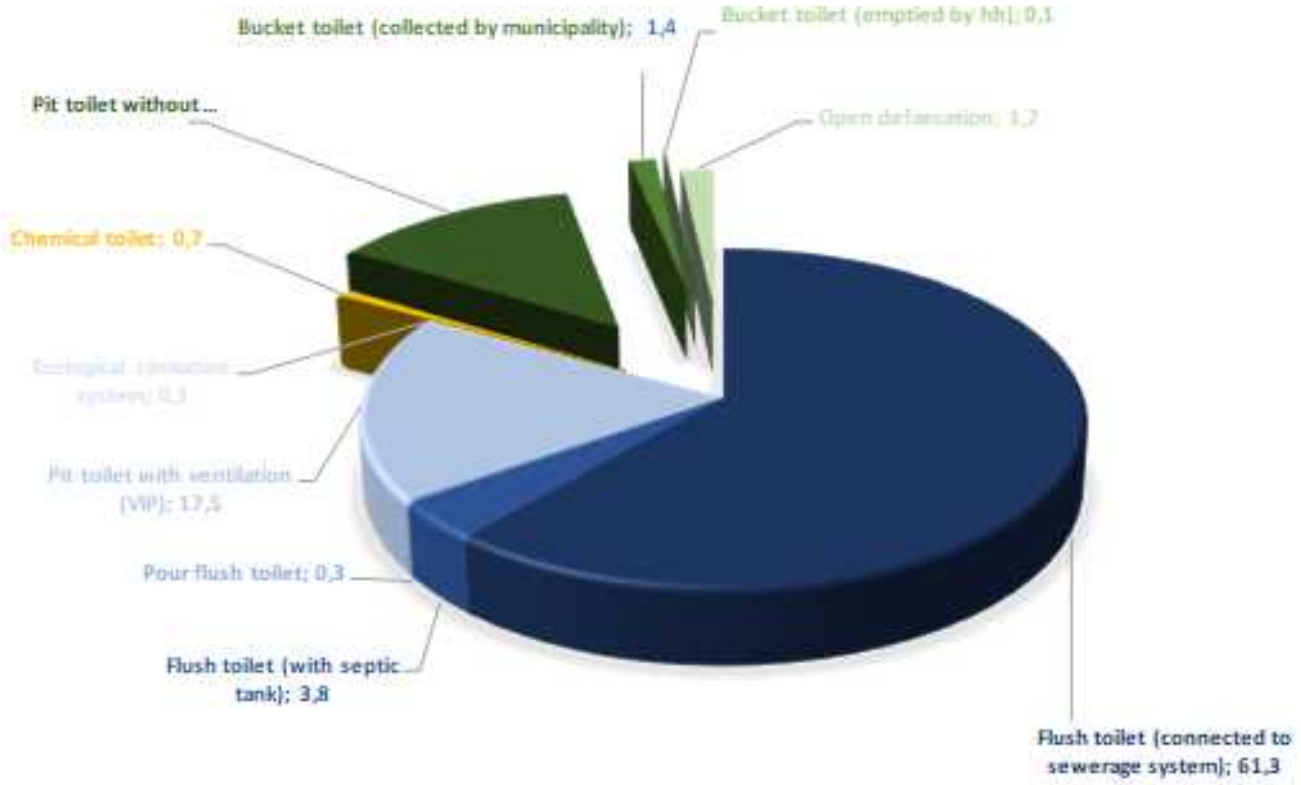
IMESA

EMANTI

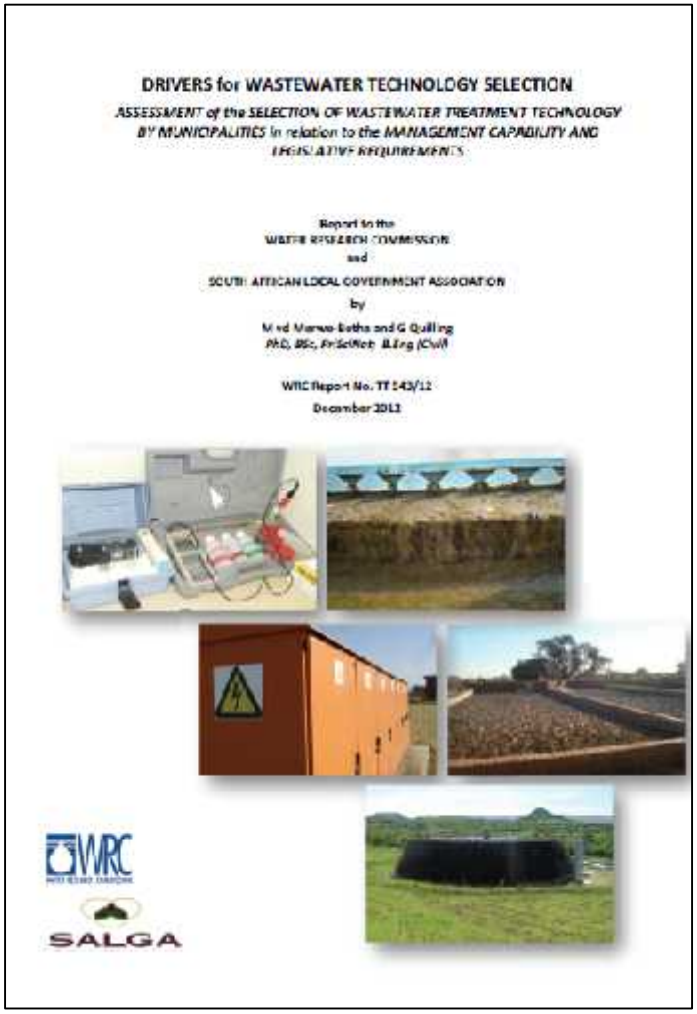
“People off the water sanitation grid become invisible”

Prof Kartik Chandran

South African Sanitation Technical Landscape



Challenges with Reticulated Wastewater Systems



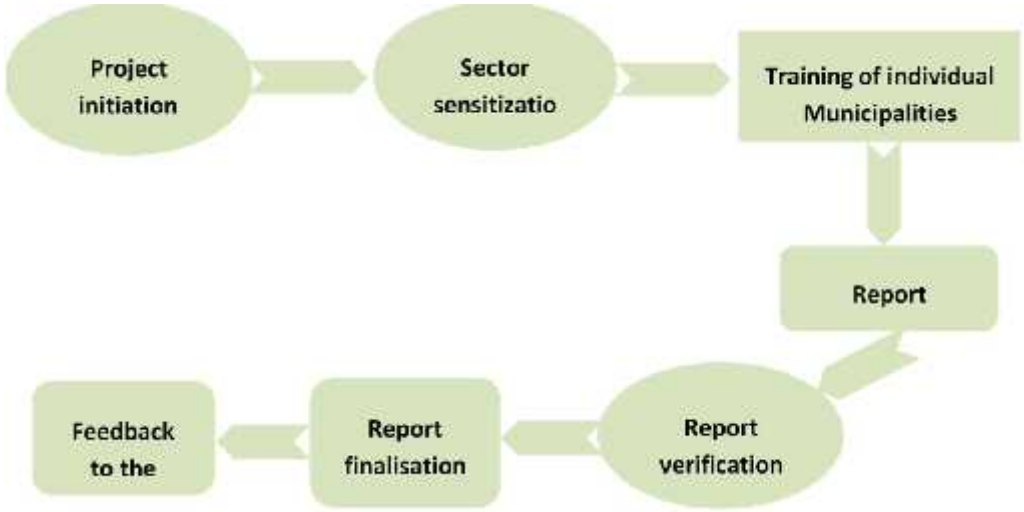
Metros	Self-identified knowledge gaps
City of Cape Town	• Sanitation for the informal sector • Sustainability models for water and sanitation tariff structures • Reuse of effluent and by-products • How to engage with communities • Knowledge gaps at the bottom: Learning the job takes 2 to 3 years, so introducing new people is a problem as the younger generation wants to escalate very quickly through the ranks
City of Tshwane	• Preventative maintenance and actions • Technical audit process: what to do if performance of a specific process is not up to the required or specified standard • Sludge handling remains a problem; they rely heavily on research done by the WRC
Ekurhuleni (ERWAT)	• Reclaiming valuable substances from wastewater • Sludge – we produce large volumes and we do not know what to do with it. It is expensive to get rid of (microbiology lab manager, ERWAT).
eThekwini	• As the metro has a large number of sanitation facilities, faecal sludge is a major challenge. • They need to be at the forefront of the latest technology; research and development (R&D) is critical.
City of Johannesburg (Johannesburg Water)	• Main risk of the municipality is non-compliance; plants cannot deliver wastewater to the standard that their licences require. • New ways in which to use biogas in WWTWs (wastewater treatment works) • The function of bioreactors to remove nitrates and phosphates
Nelson Mandela Bay	• Different kinds of pump stations, the maintenance that they need, capital outlay, comparison of performance • Storm water ingress: formal mechanisms to investigate; what has worked in other municipalities.

Issues: sludge management, technical capacity, maintenance issues, resource recovery requested

Non-Sewered Sanitation: Faecal Sludge Management

Planning, Operation & Maintenance
Achilles Heel (for All Systems)

Introducing SFDs to South Africa



Shit/Excreta Flow Diagram Action Plan

Name of System/ Municipality

Date:

1. Containment	Status	Comments and Current Interventions	Agreed Action	Responsible Person (Who)	Completion Date (When)	Proposed Budget
2. Emptying	Status	Comments and Current Interventions	Agreed Action	Responsible Person (Who)	Completion (When)	Proposed Budget
3. Transport	Status	Comments and Current Interventions	Agreed Action	Responsible Person (Who)	Completion (When)	Proposed Budget
4. Treatment	Status	Comments and Current Interventions	Agreed Action	Responsible Person (Who)	Completion (When)	Proposed Budget
5. Reuse	Status	Comments and Current Interventions	Agreed Action	Responsible Person (Who)	Completion (When)	Proposed Budget

ADAPTATION

Key Outputs

- Eight SFD reports developed
- No municipality is 100% sewered
- Interactions have confirmed that >50 % of pits and/or tanks are not emptied
- SFDs highlighted gaps and areas of concern related to the sanitation chain
- Innovation: Forecast modelling (see figure)
- Need for Remedial Action Plans – SFDs only point problem – need for solutions

Blue & Green Drop Certification

- An incentive-based regulation approach
- Innovative way to regulate with core objective of safeguarding tap water quality management and sustainably improve wastewater management
- Blue Drop: the regulation tool aimed at ensuring quality of tap water of a municipality
- Green Drop: awarded to wastewater systems that obtain scores of 90% against criteria set for wastewater management
- **Do We Need A "Brown Drop"?:** Non-sewered sanitation not on the radar (in terms of planning, O&M)
- Can SFDs form the basis of "Brown Drop" regulation?

Scaling up SFDs – *'Brown Drop'*

- Next phase – National Programme towards regulation, horizontal learning, building capacity at local government.
- Teaming with DWS, SALGA and EWSETA (accredited programme)
- Catalytic and cascading training model, with institutional streghtening of train the trainer.
- Have most Municipalities prepare an SFD by 2nd year.
- Introduce the SFD league and benchmarking
- Functional management tool for the future.