



City level excreta flow analysis - the SFD Promotion Initiative

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Water and Sanitation Program (WSP) World Bank¹; the Global Sector Program on Sustainable Sanitation of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ GmbH) commissioned by the German Federal Ministry for Economic Development and Cooperation (BMZ)²; Sandec (the Department of Sanitation, Water and Solid Waste for Development) of Eawag (the Swiss Federal Institute of Aquatic Science and Technology)³; the water@leeds research group of the University of Leeds (UoL)⁴; Water, Engineering and Development Centre (WEDC), Loughborough University⁵; and the Centre for Science and Environment in Delhi (CSE)⁶

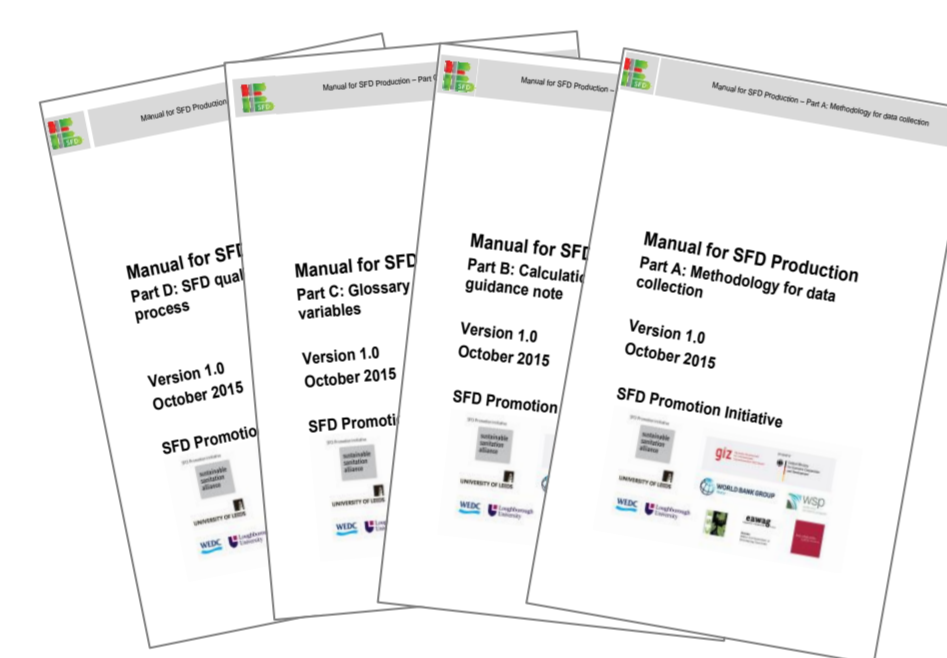
2015 Water and Health Conference: Where Science Meets Policy
October 2015

Background

- In 2012-2013 the Water and Sanitation Program of the World Bank carried out an analysis of excreta management in 12 cities and developed new tools for assessing the context and outcomes relating to the flow of excreta through the city (Peal et al., 2014).
- This study aimed to provide a more comprehensive understanding of excreta management across the sanitation service chain in urban areas.
- A group of institutions active in the field of excreta management convened in June 2014 to further develop excreta flow diagrams (also known as shit-flow diagrams or SFDs) and the service delivery assessment tool developed by WSP.
- The initiative is being managed by GIZ under the umbrella of the Sustainable Sanitation Alliance (SuSanA). Since November 2014, GIZ has been supported by the Bill & Melinda Gates Foundation.

The SFD Promotion Initiative – Phase 1

- The main objective of Phase 1 (November 2014 - January 2016) is to roll out the SFD approach.
- Through working with stakeholders and partners in cities and towns around the globe, the initiative is gaining experience in producing SFDs in order to generate an easily understandable manual, which will enable the independent production of SFDs.
- The SFD manual includes:
 - a methodology for data collection and stakeholder engagement
 - an SFD calculation tool
 - a glossary of terms and variables
 - an explanation of an SFD quality and credibility process
- The initiative is testing this approach in more than 40 cities in Africa, Asia and Latin America.
- The results are being disseminated widely via the SFD portal hosted by the SuSanA web-platform.



What is an SFD?

- An SFD presents a clear picture of the outcome arising from wastewater and faecal sludge management practices and services in a city or town. This is expressed in terms of the percentage of the population.
- It provides technical and non-technical stakeholders with an easy-understood advocacy tool that can be used to support decision-making in urban sanitation planning and programming.
- An SFD for any city or town contains three parts:
 - a diagram which shows the pathways taken by all excreta from defecation to final fate - either unsafely discharge to the environment, or safe end-use/disposal;
 - a concise narrative report describing the diagram and the service delivery context - including the enabling environment within which the services are being delivered; and
 - a complete record of all the data sources used in developing the diagram and report - the stakeholders consulted, documents reviewed and all validation and quality control exercises implemented.

Future work – Phase 2

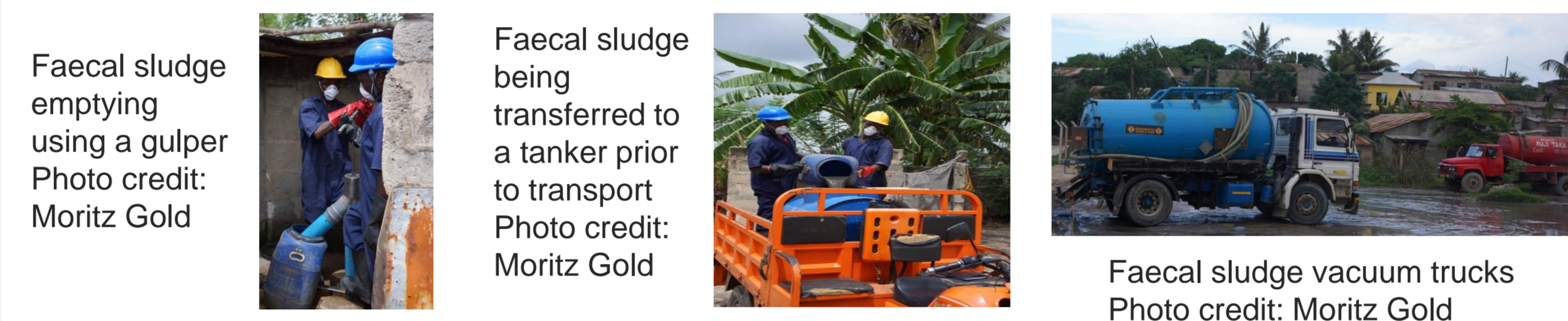
Phase 2 will run from February 2016 for three years and will comprise:

- Technical refinement:** Phase 1 SFDs reveal several areas where new research could improve SFD accuracy and credibility
- Tool refinement:** a review of usability of all SFD tools will enable their further refinement and improvement
- Direct support:** development of further SFDs in partnership with cities and towns
- Scaling up:** availability and promotion of the refined tools to encourage the use of the SFD approach for advocacy and decision making
- Quality control:** design and delivery of a support mechanism (web-based FAQs, tools and helpdesk) and the roll-out of a quality assurance process that will provide support for those preparing their own SFDs

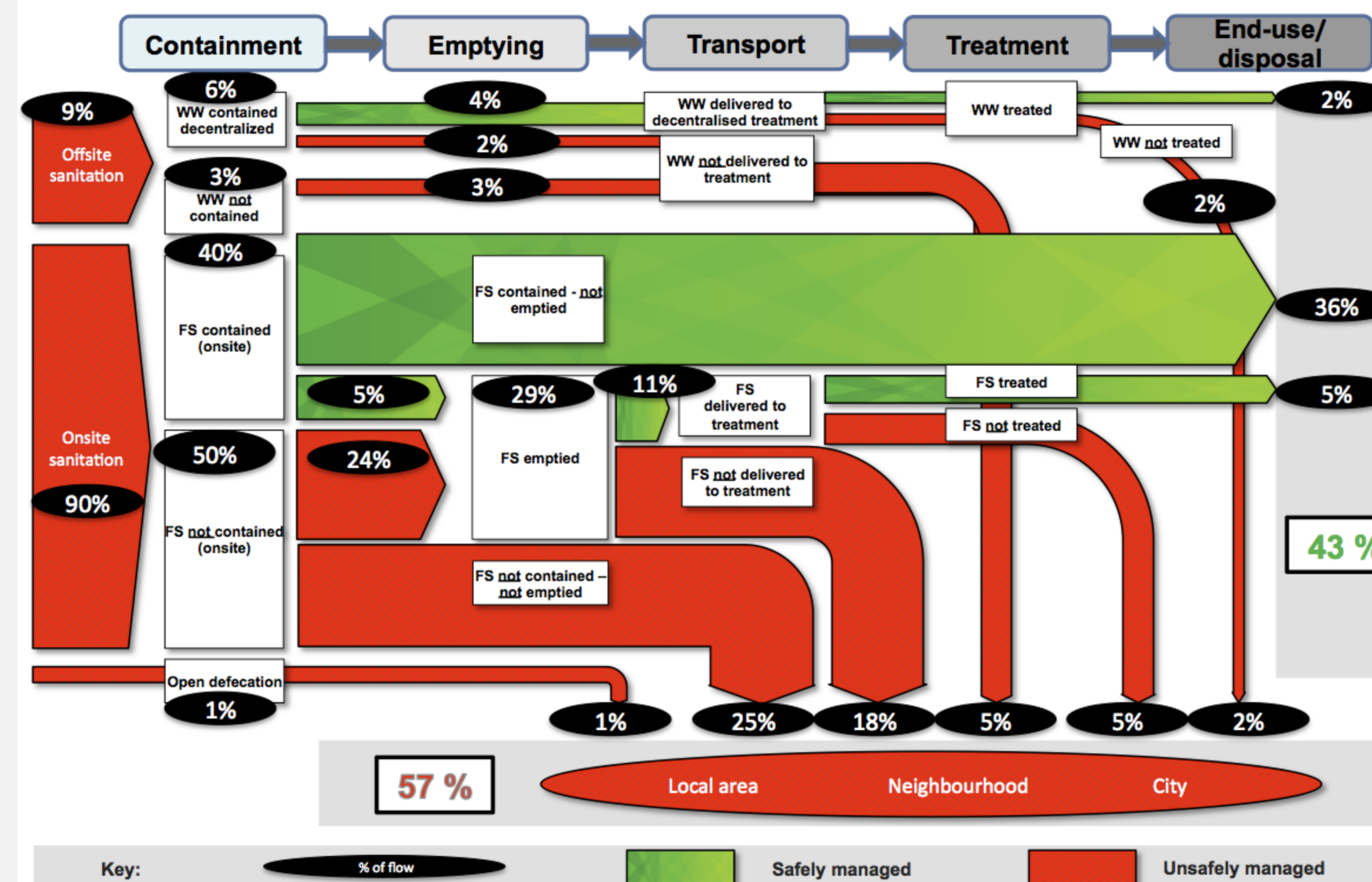
A case study: Dar es Salaam, Tanzania

- The SFD was produced through field-based research by Sandec (the Department of Sanitation, Water and Solid Waste for Development) of Eawag (the Swiss Federal Institute of Aquatic Science and Technology).
- Collaborating partners included :
 - University of Dar es Salaam (UDSM)
 - Bremen Overseas Research and Development Organization (BORDA) Southern Africa / SADC
 - Ifakara Health Institute (IHI)

Examples of sanitation services in Dar es Salaam



Dar es Salaam, Tanzania, 03.09.2015
Field based assessment



Examples of sanitation services in Dar es Salaam



References

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Key service outcomes in Dar es Salaam

- 43% of the excreta is safely managed, of which 36% result from faecal sludge being contained and not emptied in areas with a low risk of groundwater pollution.
- 57% of the excreta ends up directly in the environment without adequate treatment.
- 90% of the population rely on onsite sanitation technologies for containment of excreta (75% pit latrines, 15% septic tanks) (NBS, 2015).
- 50% of the excreta from onsite sanitation technologies is not contained; for example, pit latrines with outlets that directly discharge into open drains or water bodies, and partially lined pits and septic tank soakpits in areas with high groundwater (Jenkins et al., 2014, EHOs FGD, 2015).
- 50% of the excreta is in onsite systems which are in areas with high groundwater, where groundwater is the source of drinking water.
- The balance comprises: 1% open defecation, 3% pour flush toilets going directly to open drains or water bodies (NBS, 2015, EHOs FGD, 2015), and 6% containment by sewers (DAWASCO, 2015, NBS, 2015).

How was the Dar es Salaam SFD produced?

How credible is the SFD?

- Estimations were based on a literature review of journal articles, research reports and national policy documents.
- Where adequate information was not available, unpublished reports and presentations were used.
- To verify the validity of data, 14 key informant interviews and two focus group discussions were conducted as well as observations of households, emptying service providers and treatment facilities.
- Where assumptions were made, they were backed up by interview statements or results from focus group discussions. The following assumptions were made:
 - 50% of residents reside in areas with high groundwater pollution risk;
 - 10 people per sewer connection (DAWASCO, 2015);
 - emptying service providers using vacuum trucks or the gulper technology deliver faecal sludge to treatment sites.
 - Percentages do not add up to 100% due to rounding.

Who was Involved?

- Local Government Authorities and municipal councils were actively engaged in the data collection process.
- Focus group discussions were conducted with Environmental Health Officers from wards of each of the three municipal councils, with emptying and transport service providers, and with local NGO's.
- Interviews were conducted with the Ministry of Health and Social Welfare and with the National Environmental Council.
- The Water & Sewerage Authority and Water & Sewerage Corporation (DAWASA/DAWASCO) provided information for the SFD, and were supportive of the assessment.
- The final SFD was presented to collaborating partners, and shared electronically with stakeholders that were actively involved in gathering information.

You can find the full report on the Dar es Salaam SFD, the SFD manual and the status of SFDs in other cities and towns at: www.sfd.susanna.org
Contact information: sfd@susanna.org

