

SFDs: Visualizing Excreta Flows in Cities



Habitat III

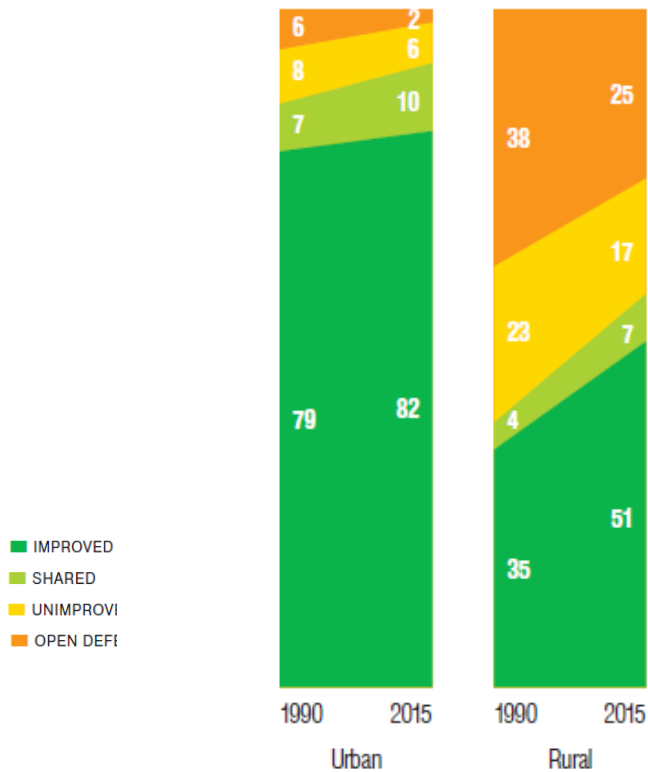
19 October 2016

Cecilia Rodrigues, GIZ

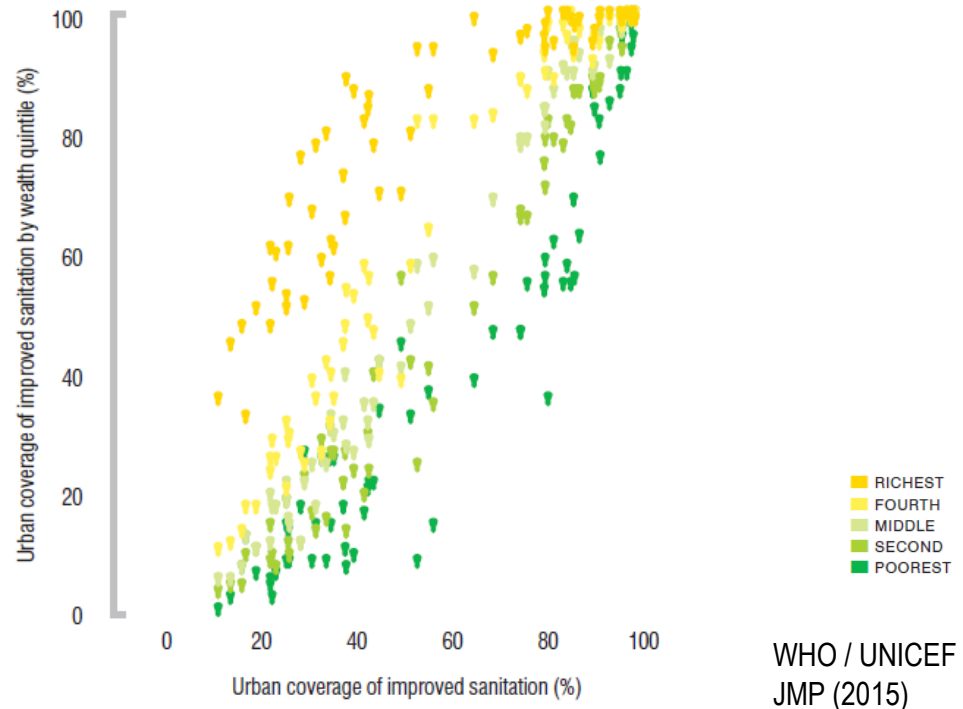
The status quo – MDGs in urban areas

Target 7.C: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

Urban and rural trends in sanitation coverage



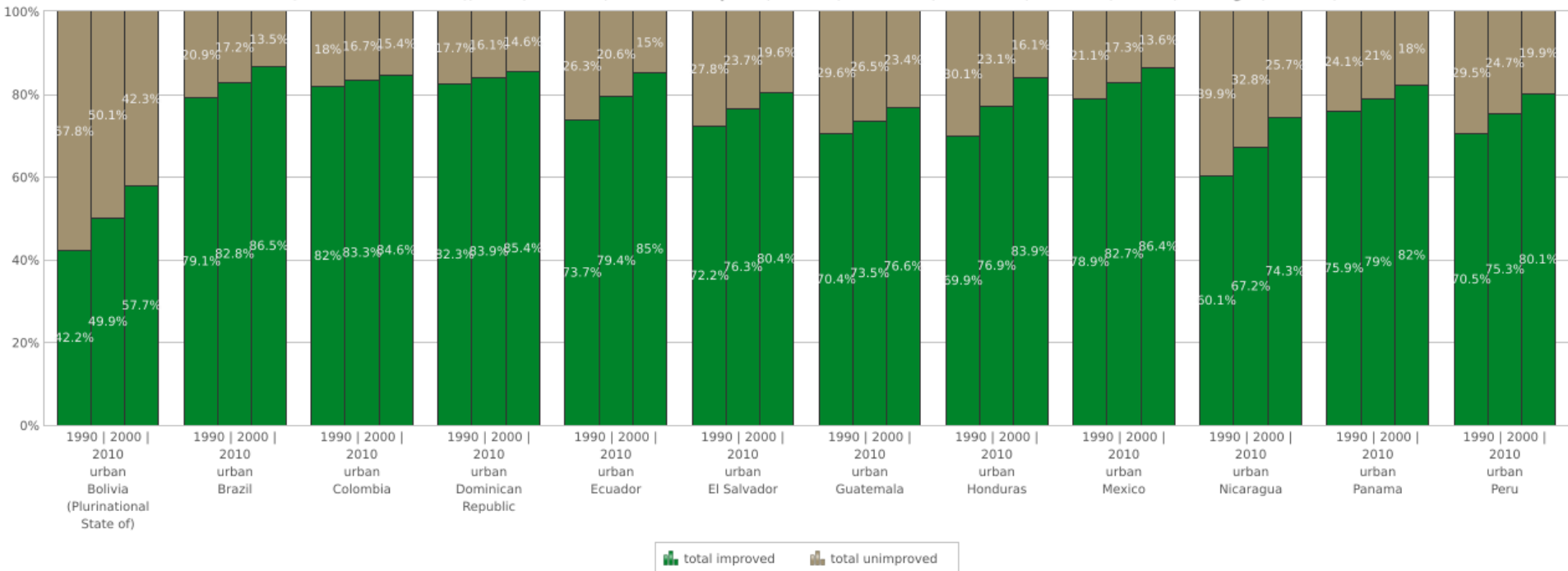
Use of improved drinking water and sanitation facilities by urban and rural wealth quintile in 2012



WHO / UNICEF
JMP (2015)

Urban sanitation in LA

Percentage of population with access to sanitation in 1990 - 2000 - 2010
Bolivia (Plurinational State of), Brazil, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru



Source: JMP 2015

SDG: A more comprehensive approach



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

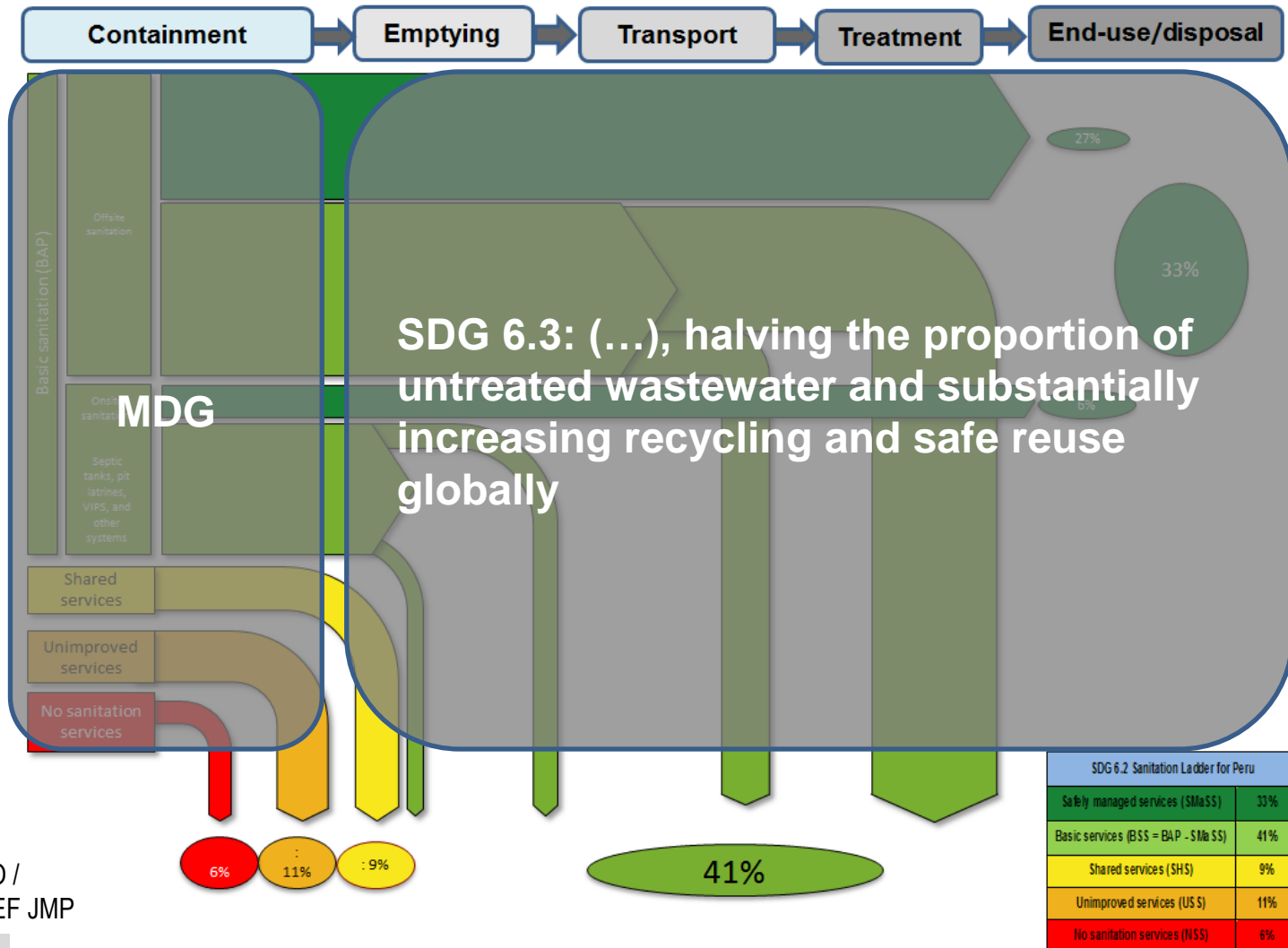
6.2 By 2030, achieve access to adequate and **equitable sanitation and hygiene for all and end open defecation**, paying special attention to the needs of women and girls and those in vulnerable situations

- 6.2.1 Proportion of population **using safely managed sanitation services, including a hand-washing facility with soap and water**

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

- 6.3.1 **Proportion of wastewater safely treated**
- 6.3.2 Proportion of bodies of water with good ambient water quality

The transition from MDG 7 to SDG 6



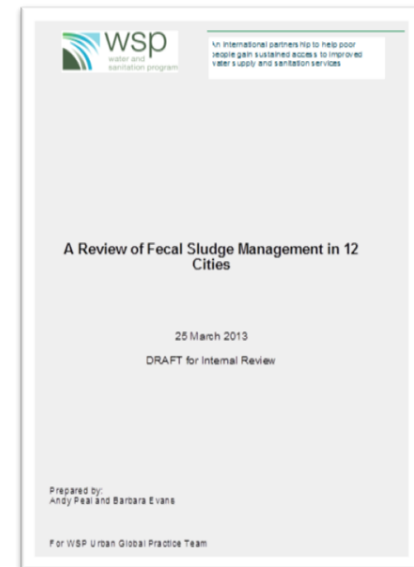
* WHO / UNICEF JMP

The status quo

- **Strong focus on sewerage** by IFIs and governments, but
- **Most urban dwellers with sanitation access use on-site systems: <10%** of urban Africa has sewer access
- **Virtually all poor people** use informally managed on-site sanitation systems
- **Failure to manage the whole sanitation service chain** results in gross fecal contamination of the environment

* A Review of Fecal Sludge Management in 12 Cities. Unpublished report, 2013 World Bank - WSP

** The Missing Link in Sanitation Service Delivery, 2014 World Bank - WSP C



The status quo – Results

- Data on sanitation not collected city-wide so problems not properly identified and prioritized
- Poor sanitation in informal areas not generally addressed, although often a major city-wide public health hazard
- On-site systems often seen as a temporary solution and therefore neglected by city authorities and poorly managed
- Policy and spending usually biased towards sewerage – subsidies for the rich
- As usual, the main victims are poor people, women and other vulnerable groups

The SFD Promotion Initiative

SFD Promotion Initiative

sustainable
sanitation
alliance

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

On behalf of



Federal Ministry
for Economic Cooperation
and Development

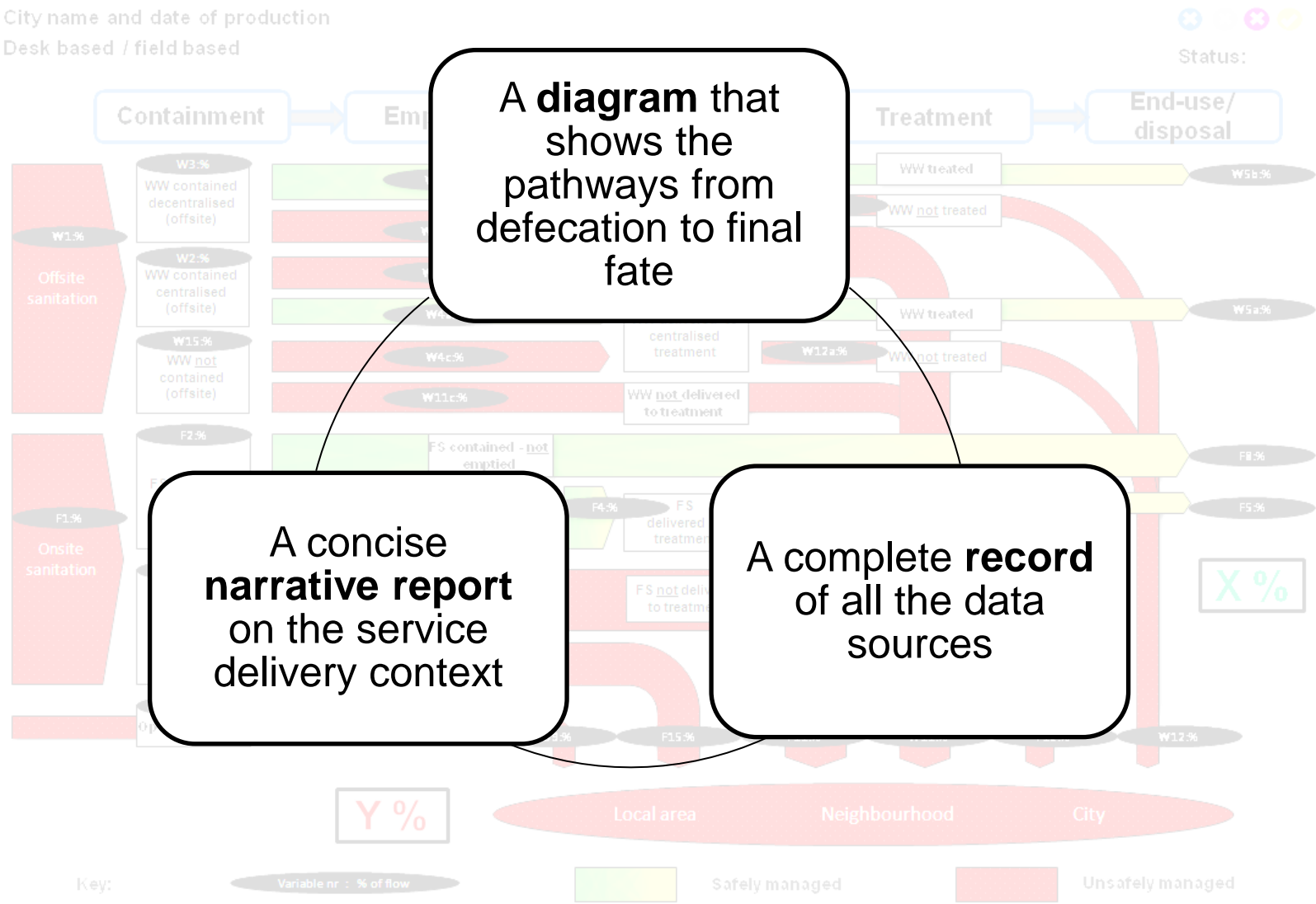


eawag
aquatic research

Sandec
Sanitation, Water and
Solid Waste for Development



What is an SFD?



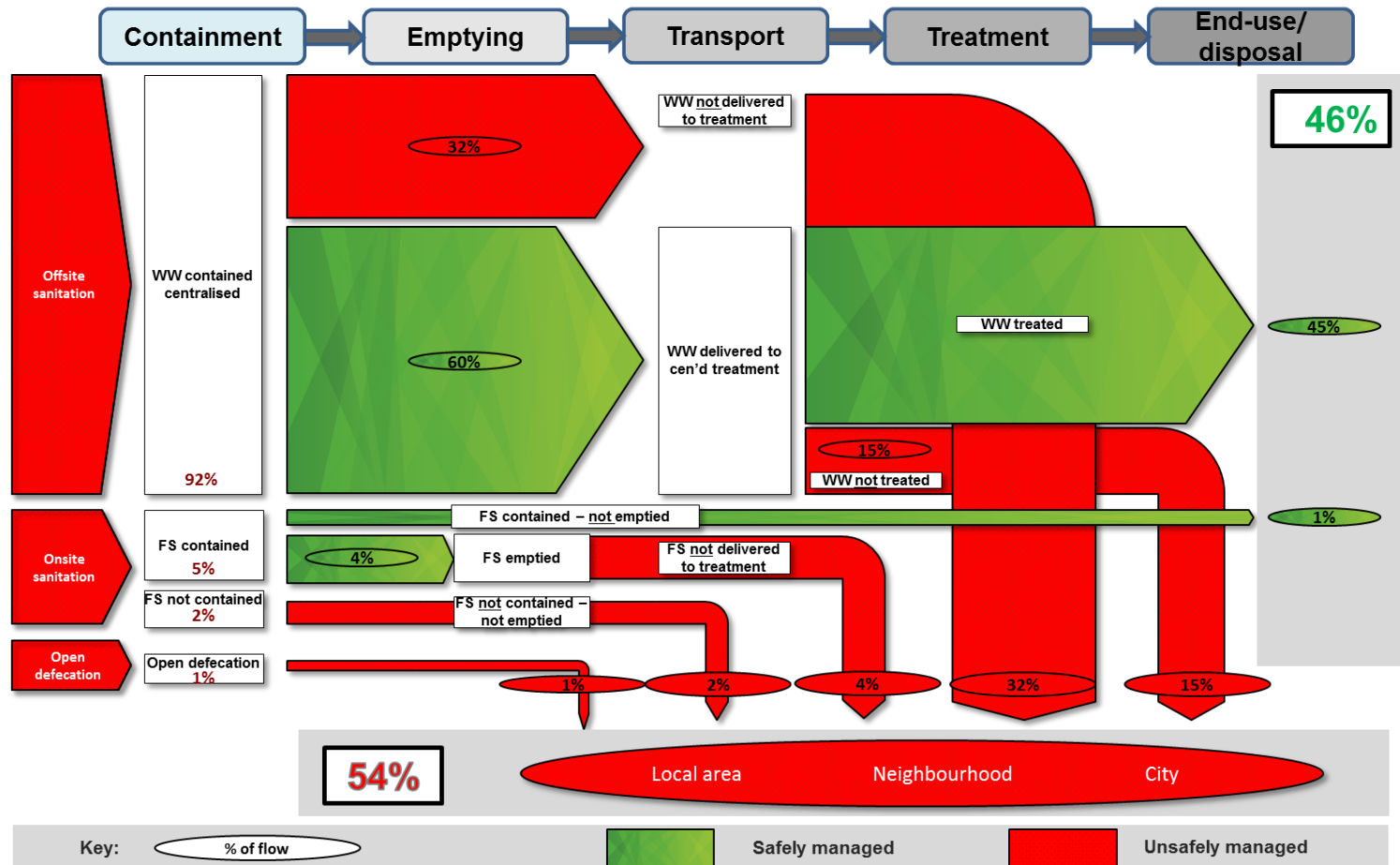
A **diagram** that shows the pathways from defecation to final fate

A concise **narrative report** on the service delivery context

A complete **record** of all the data sources

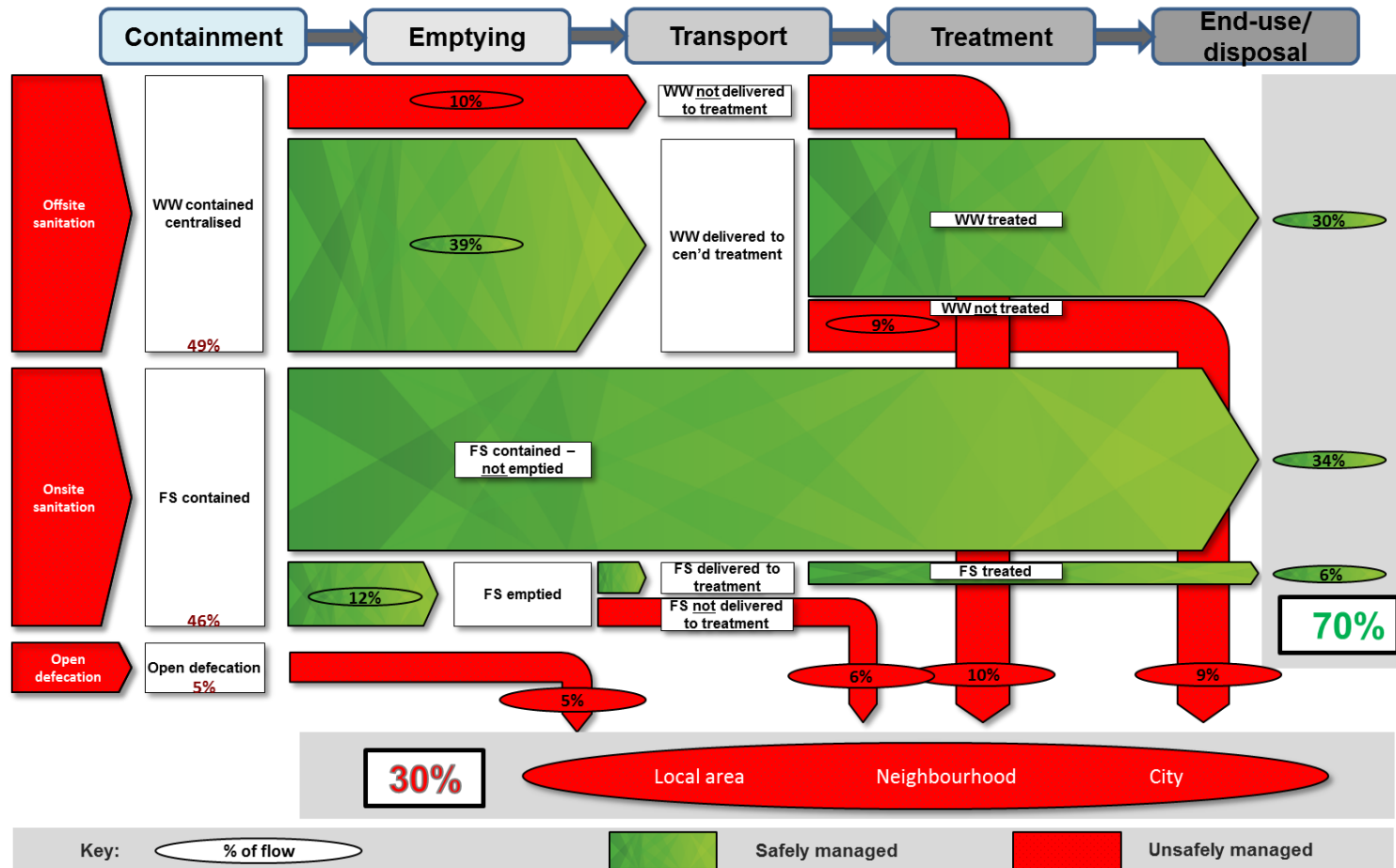
SFD for Lima, Peru

Lima, Peru, 28 April 2016
Desk based assessment



SFD for Santa Cruz, Bolivia (Draft)

Santa Cruz, Bolivia, 21 September 2016
Desk based assessment



Service Delivery Context Assessment



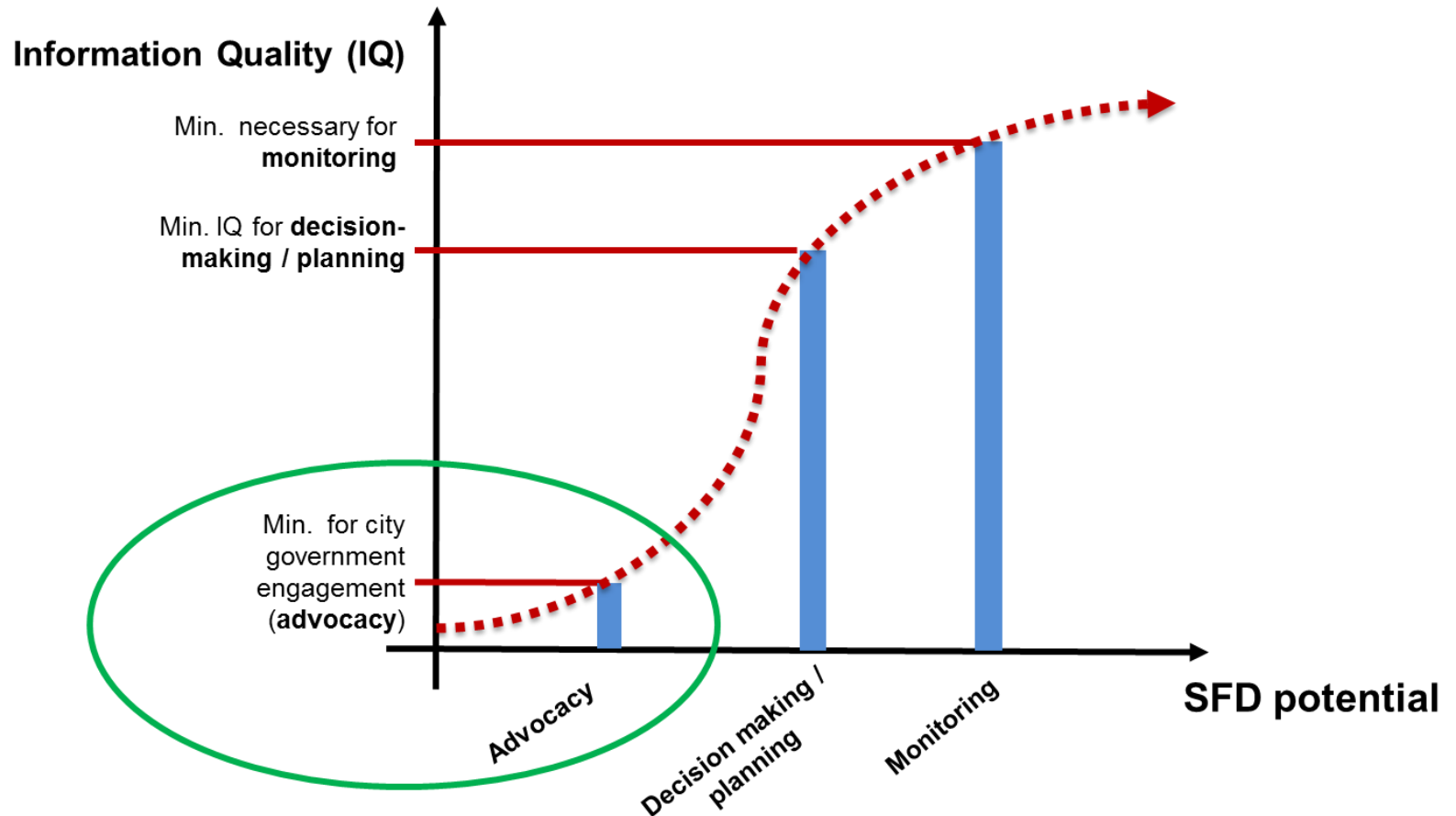
○ It IS

- An effective **communications** and **advocacy** tool
- A tool for engineers, planners and decision-makers
- Based on contributing populations and an indication of where their excreta goes
- A representation of public health ***hazard***
- An overview from which to develop sanitation priorities

○ It is NOT

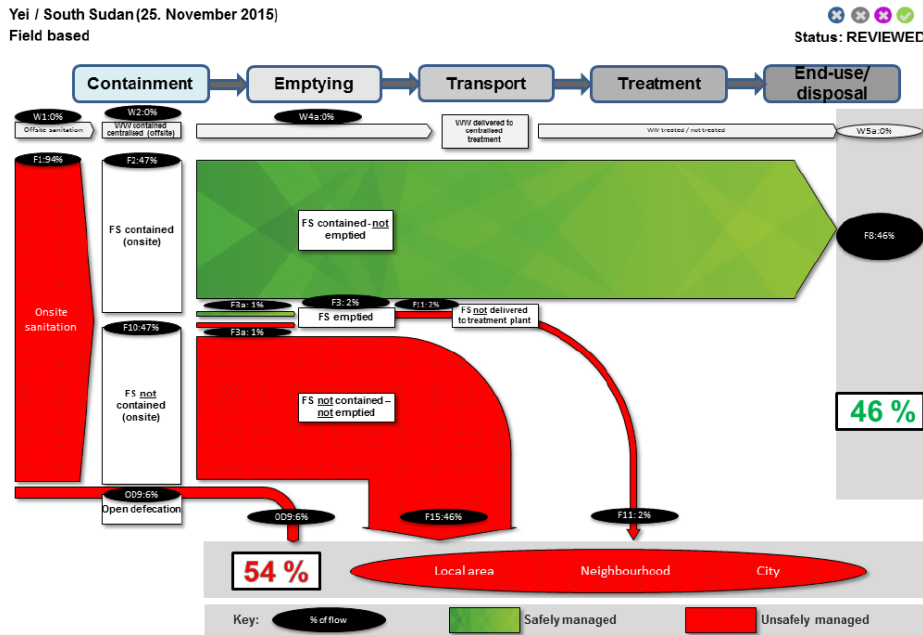
- Based on volumes/mass – these are determined by other related factors
- A representation of public health ***risk***
(*risk = hazard x behavior/vulnerability*)
- A precise scientific analytical tool

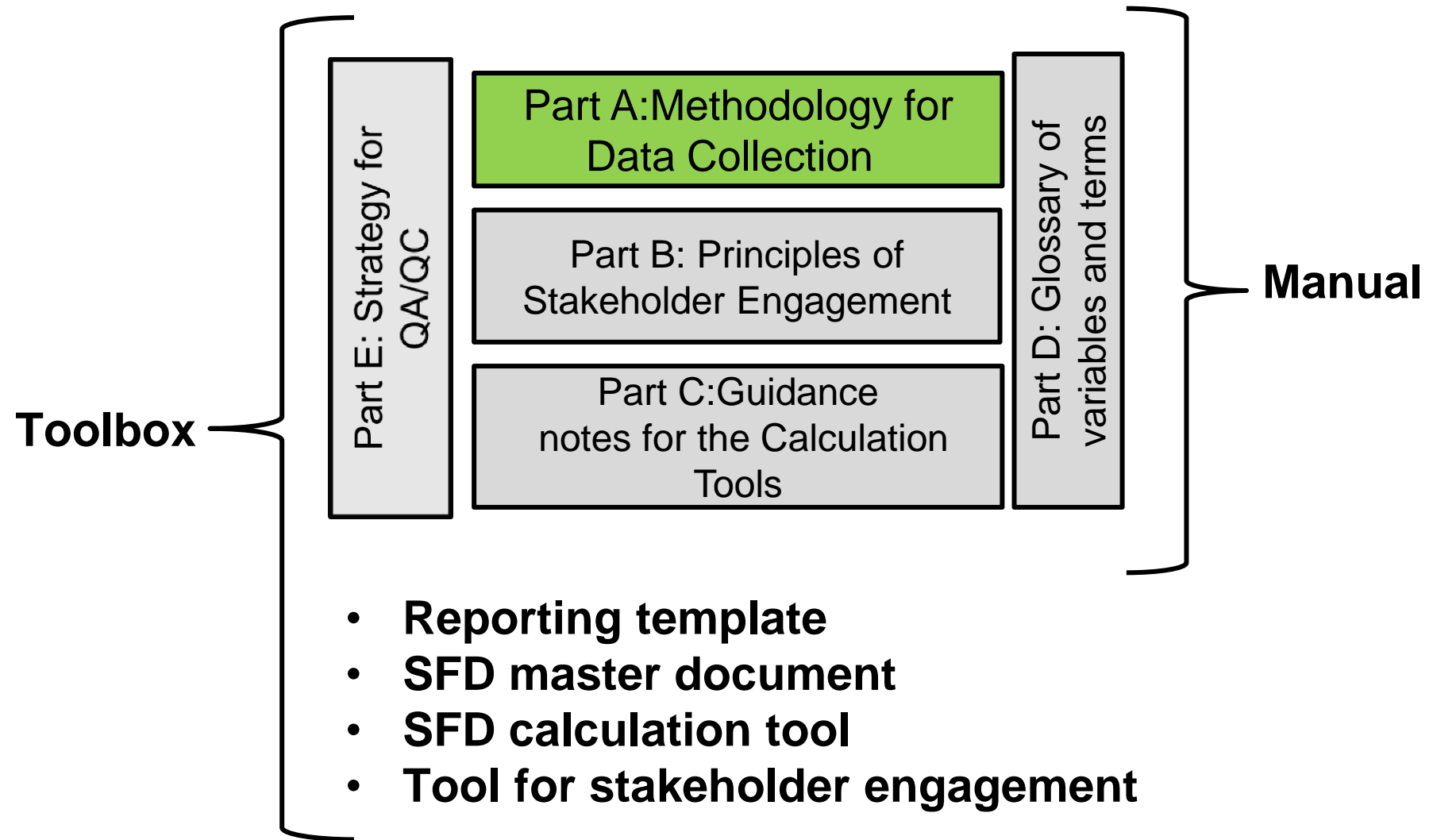
SFD potential in relation to information quality



The tools and methods

Yei / South Sudan (25. November 2015)
Field based





SFD Data to Graphic Converter Tool



Data input

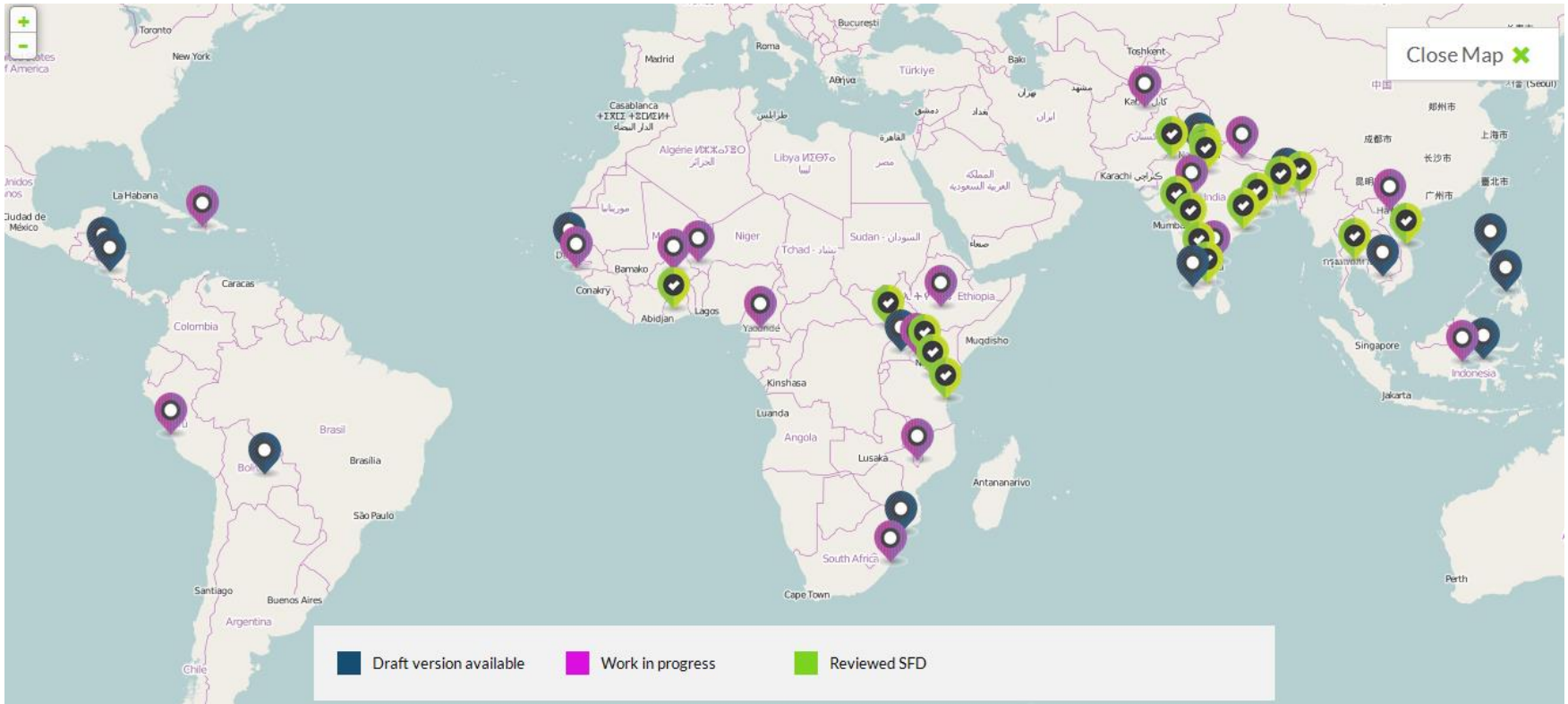
SFD VARIABLES				NOTES ON SOURCES, STUDY AREA AND/OR POPULATION BOUNDARIES	IMPORTANT NOTES:		KEY TO SHADING																				
CITY:	Proportion of each septic tank which is 19 (or not efficient, superefficient or inflexible) (default is 50%)	SDN					WHITE AND PATTERNED CELLS ARE UNPROTECTED AND CAN BE FORGIVEN																				
COUNTRY:	Proportion of each fully lined tank (sealed) which is 19 (not efficient, superefficient or inflexible) (default is 50%)	SDN			IF IT IS NECESSARY TO ASSIGN OR ESTIMATE PERCENTAGES FROM EXPERT OPINION IT IS RECOMMENDED THAT THE APPROACH USED IS ONE THAT WILL MINIMIZE THE MAXIMUM ERROR FOR INSTANCE, WHEN IT IS KNOWN THAT THE FISCAL WATER FLOW IS ALONG TWO DIFFERENT PATHWAYS, BUT THE PERCENTAGE SPLIT IS NOT KNOWN, ASSUMING THAT THE FLOW IS SPLIT 50:50 WILL MINIMIZE THE MAXIMUM ERROR		GREY SHADING INDICATES THAT THE VARIABLE IS NOT KNOWN																				
POPULATION (N):	Proportion of all each lined tank with impermeable walls and open bottom and all each pit (all types) which is 19 (not efficient, superefficient or inflexible) (default is 50%)	SDN					WHITE AND PATTERNED CELLS ARE UNPROTECTED AND CAN BE FORGIVEN																				
DATE PREPARED:																											
PREPARED BY:																											
				FACIAL ROOMS				WASTEWATER CONTAINED CENTRALISED				WASTEWATER CONTAINED DECENTRALISED				WASTEWATER NOT CONTAINED		OD									
Description of sanitation containment system (see PPT document)	Sanitation schematic reference (see PPT document)	Population using this type of system? (N) (m)	Proportion of population using this system (N)	Proportion of population using this system with emptying? (7) (m)	Preparation of population using this system with emptying? (N)	Variable F1	Variable F2	Variable F3	Variable F4	Variable F5	Variable F6	Variable F7	Variable F8	Variable F9	Variable F10	Variable F11	Variable F12	Variable F13	Variable F14	Variable F15	Variable F16	Variable F17	Variable F18	Variable F19	Variable F20	Variable F21	Variable F22
						(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)	(Range of %)
Tab 1 ref																											
TAB32	Reference L1	0%	0%																								
TAB32	Reference L1	0%	0%																								
TAB32	Reference L2	0%	0%																								
TAB32	Reference L2	0%	0%																								
TAB32	Reference L3	0%	0%																								
TAB32	Reference K1	0%	0%																								
TAB32	Reference L4	0%	0%																								
TAB32	Reference L3	0%	0%																								
TAB32	Reference L3	0%	0%																								

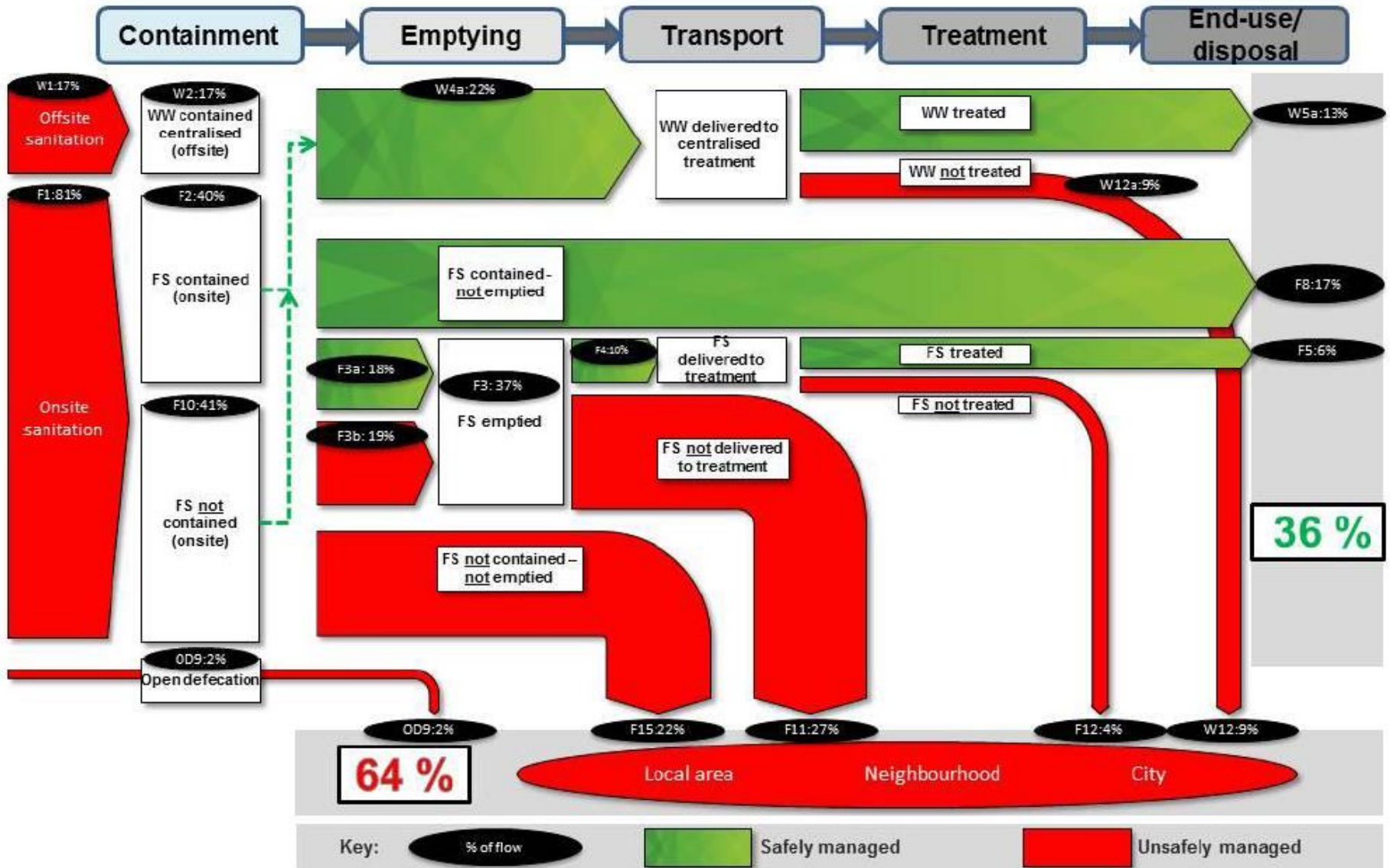
Description of terms and variables provided in the accompanying glossary

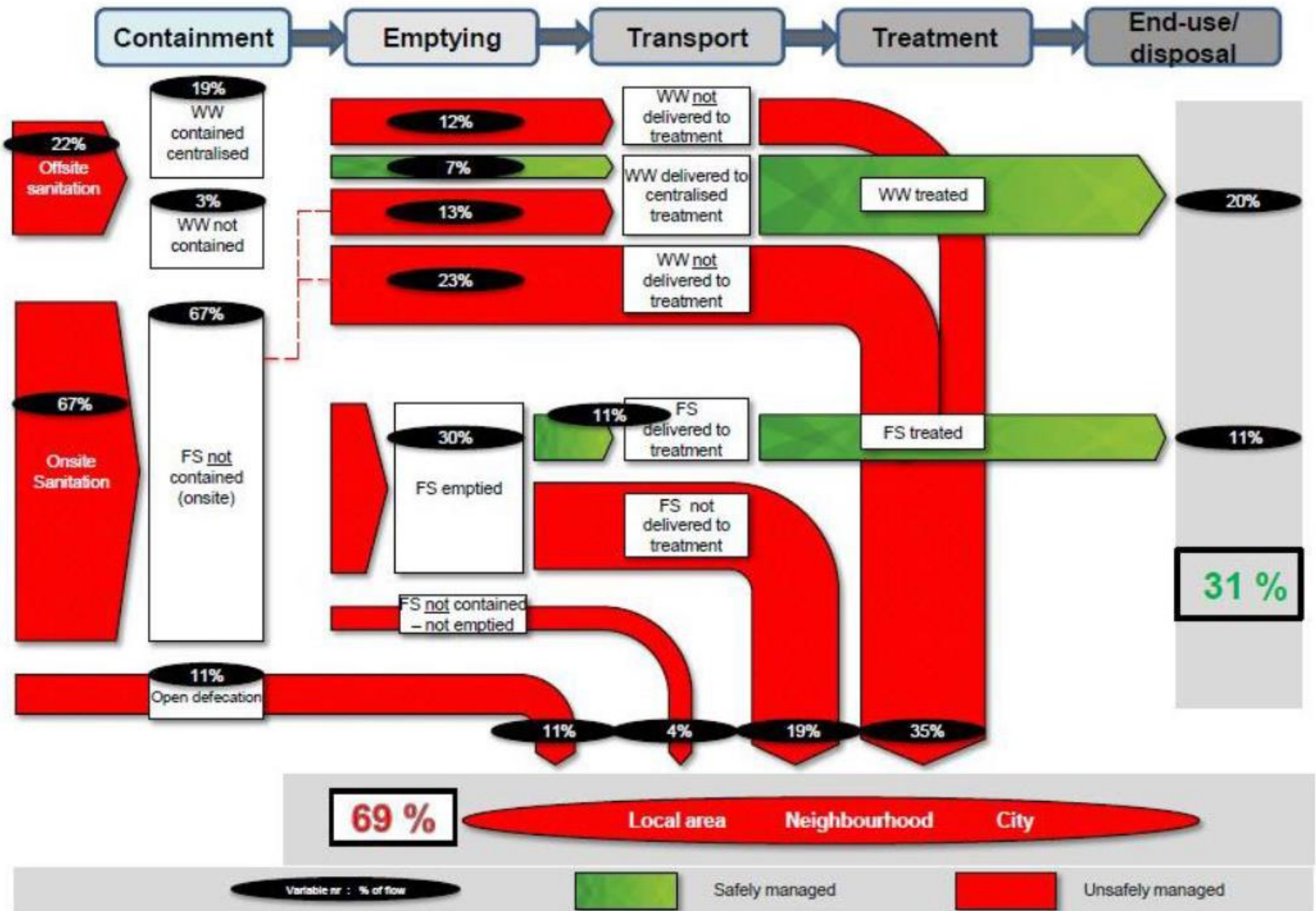
Quality control and quality assurance

Summarize data by the reference numbers assigned to them in the reporting template						
CONTAINMENT:						
EMPTYING:						
TRANSPORT:						
TREATMENT:						
ENDUSE/DISPOSAL:						
	CONTAINMENT	EMPTYING	TRANSPORT	TREATMENT	ENDUSE/DISPOSAL	
Types of data sources used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Municipal, utility or private local service provider records
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Interviews with city authorities and local government departments
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Documented studies
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Community representatives (interviews desk- and field-based, FGDs only field-based)
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Service providers (interviews desk- and field-based, FGDs only field-based)
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Observation (only field-based)
Further availability of data sources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	This is a one-off exercise no further data expected
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Limited amount of new data expected, SFD to be revised
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Substantial amount of new data expected, SFD to be revised
If updated SFD expected, enter date:						
How has current SFD been used (entire service chain)	<input type="radio"/>					SFD has <u>not</u> been shared with local stakeholders
	<input type="radio"/>					SFD has been shared with local stakeholders but no follow up action agreed
	<input type="radio"/>					SFD has been shared and follow up actions have been agreed
	<input type="radio"/>					SFD has been shared and follow up actions have been agreed and initiated

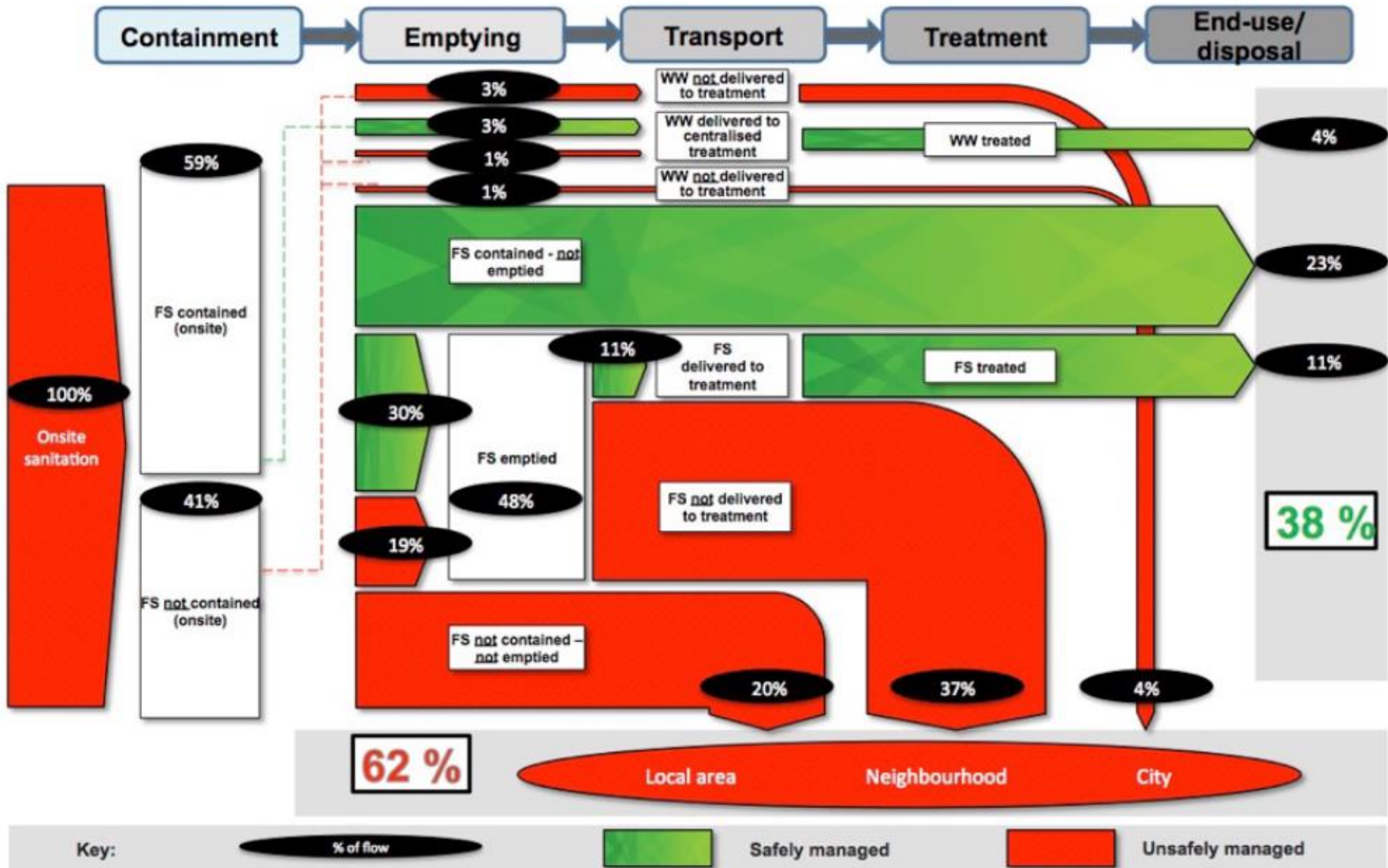
SFDs Worldwide







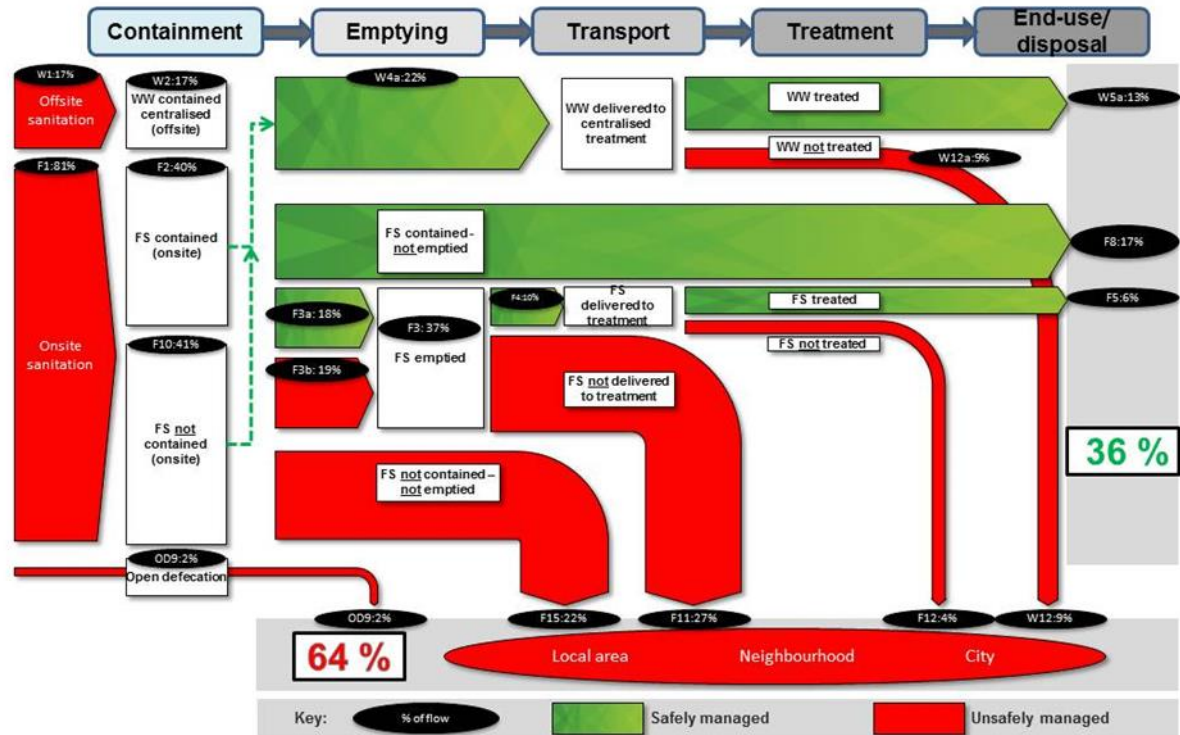
Danang, Vietnam, 13.11.2015
 Desk based assessment



Moshi, Tanzania

Moshi / Tanzania (23. November 2015)
Desk based

Status: DRAFT



Town planning, GIZ Uganda

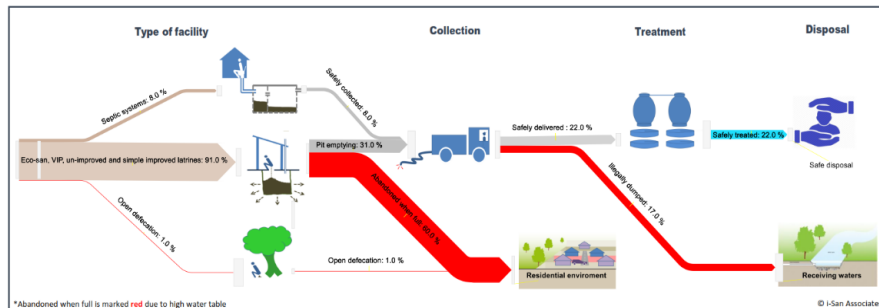
Reform of the Urban Water and Sanitation Sector (RUWASS)

- Used in 4 towns as a platform for involvement of a wider group of stakeholders (technical and non-technical)

Exercise – Go with the flow, understand the system

Objective is to understand the sanitation system in a town

- **Step 1:** Go with the flow, how is the shit collected, check %, where does the shit go next? What finally happens to the shit?
- **Step 2:** What are the problem(s) portrayed in the diagram? Why are the problems there? (Please write the problems on the flip chart)
- **Step 3:** For every problem, can you identify a solution? Think beyond the box!
- **Step 4:** Please compile all the solutions (on the flip chart)



Shit flow diagram for town 'X'





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Improving understanding of urban sanitation

SFDs are a new way of visualising excreta management in cities and towns

Background

The fate of excreta produced by urban populations across the globe is often poorly understood. Particularly in low- and middle-income with rapidly expanding cities, excreta management represents a growing challenge, generating significant negative public health and environmental risks.

[read more](#)

What is an SFD?

An excreta flow diagram (also often described as shit flow diagram, SFD) is a tool to readily understand and communicate visualizing how excreta physically flows through a city or town. It shows how excreta is or is not contained as it moves from defecation to disposal or end-use, and the fate of all excreta generated. An accompanying report describes the service delivery context of the city or town.

[discover](#)

Purpose of an SFD

SFDs are a useful tool to inform urban sanitation programming. They offer an innovative way to engage city stakeholders like political leaders, sanitation experts and civil society organizations in a coordinated dialogue about excreta management. They can also be used for advocacy.

[read more](#)

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SFD toolbox

It is the fact that urban excreta management will be the most significant public health and environmental challenge of the 21st century that makes SFDs a critical tool for data collection and analysis. These are all relatively underdeveloped areas.

Methodology

The SFD Promotion Initiative is developing a standardized approach with two different levels of data collection to produce city-wide SFDs: desk-based and field-based data collection.

[get in contact](#)

How to make an SFD

Through working with stakeholders and partners in 30 cities and towns around the globe, we are gaining experience in producing SFDs. With this expertise we are generating new to understand and produce documents, which will then enable you to produce an SFD for your location too. We will upload all the documents needed to make an SFD and its accompanying report in some place here.

Credibility process

The SFD Promotion Initiative is currently developing an accreditation mechanism for SFDs to promote standardization across cities.

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Balikpapan
Indonesia

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Dakar

Serial - Draft version available

Sewerage coverage in Dakar (2.7 million people) is high by comparison with most African cities, with an extensive sewerage system that covers significant areas of the city, although with currently limited coverage of lower-income districts; however, the majority of households use on-site sanitation, notably pour-flush latrines discharging to septic tanks or pits.

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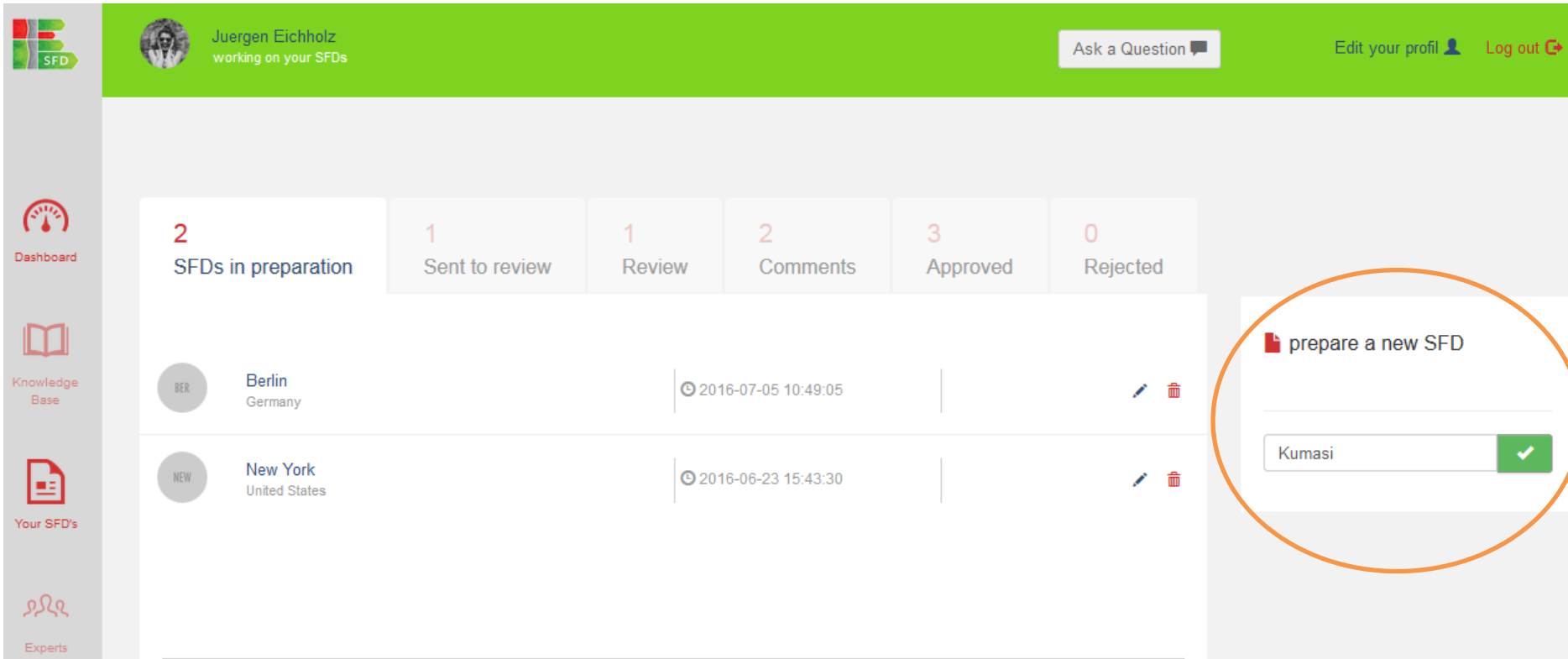
Downloads & Links

[SFD for Dakar](#)

Prepared by

WSP

The SFD helpdesk



The screenshot shows the SFD helpdesk interface. At the top, a green header bar contains the user's profile: Juergen Eichholz, working on your SFDs. To the right of the header are buttons for "Ask a Question", "Edit your profil", and "Log out".

On the left side, there is a vertical navigation menu with icons and labels: "Dashboard", "Knowledge Base", "Your SFD's", and "Experts".

The main content area features a dashboard with six status categories:

- 2 SFDs in preparation
- 1 Sent to review
- 1 Review
- 2 Comments
- 3 Approved
- 0 Rejected

Below the dashboard is a table of SFDs:

ID	Location	Created	Actions
BER	Berlin Germany	2016-07-05 10:49:05	[Edit] [Delete]
NEW	New York United States	2016-06-23 15:43:30	[Edit] [Delete]

On the right side, a modal window titled "prepare a new SFD" is open. It contains a search input field with the text "Kumasi" and a green checkmark button.

Support also available via email: sfd-helpdesk@susana.org

The SFD helpdesk



Juergen Eichholz
working on your SFDs

**Any questions?
Ask for support**

Ask a Question

Edit your profile Log out

City Name Kumasi	Country Ghana	Year of Data 2016
---------------------	------------------	----------------------

Your organisation's name
Your Organisation's Name

Has there been a previous SFD for this city?

Yes
 No

Was there an earlier SFD done for this city by you or by another author/organisation?

Size of Population

< 100.000
 100.000 - 500.0000
 500.000 - 1.000.0000
 > 1.000.000

What is the citie's population size?

City context

Enter information in prepared boxes

This section should be a maximum of one page. Insert basic information (summary) about the city context here: Country/City /Region, Population, Population growth rate, Significant variations in population (e.g. diurnal, seasonal), Topography, Climate, Key physical and geographic

status of SFD
SFD under preparation

**Report is finished?
Send to Review**

save your SFD submit for Review

Files & Media

your calculation basis (Excel)
no file uploaded yet

your SFD diagram (Powerpoint / Excel / PDF)
no file uploaded yet

your SFD report (WORD - optional to webform)
no file uploaded yet

Upload your documents

SFD potential in the SDG context

- Creates a common language that facilitates multi-sectoral dialogues and non-expert participation
- Initiates discussions on the local level about priorities and alternatives
- Builds capacity and promotes a better understanding of excreta management and sanitation systems
- Allows for additional uses, i.e. to map business opportunities, reuse potential, CO₂ emissions

Way forward

- Refine methodology, tools and templates
- Develop guidance documents and interactive training package
- Provide support to the independent production of SFDs
- Receive and quality control SFDs for posting on website
- Analyzing the results of the SFDs produced in Phase 1

Obrigada!

Cecilia.Rodrigues@giz.de

SFD Promotion Initiative

sustainable
sanitation
alliance

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

On behalf of



Federal Ministry
for Economic Cooperation
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