

Introduction to Climate – Resilient Sanitation Safety Planning

Step-by-step risk management for safely managed
sanitation systems



SANITATION
SAFETY
PLANNING

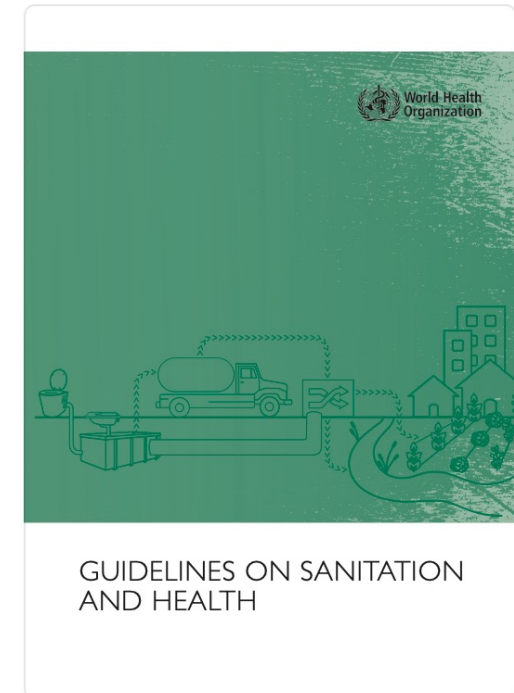
Why do we need Sanitation Safety Planning?

Sanitation

According to the WHO Guidelines on Sanitation and Health:

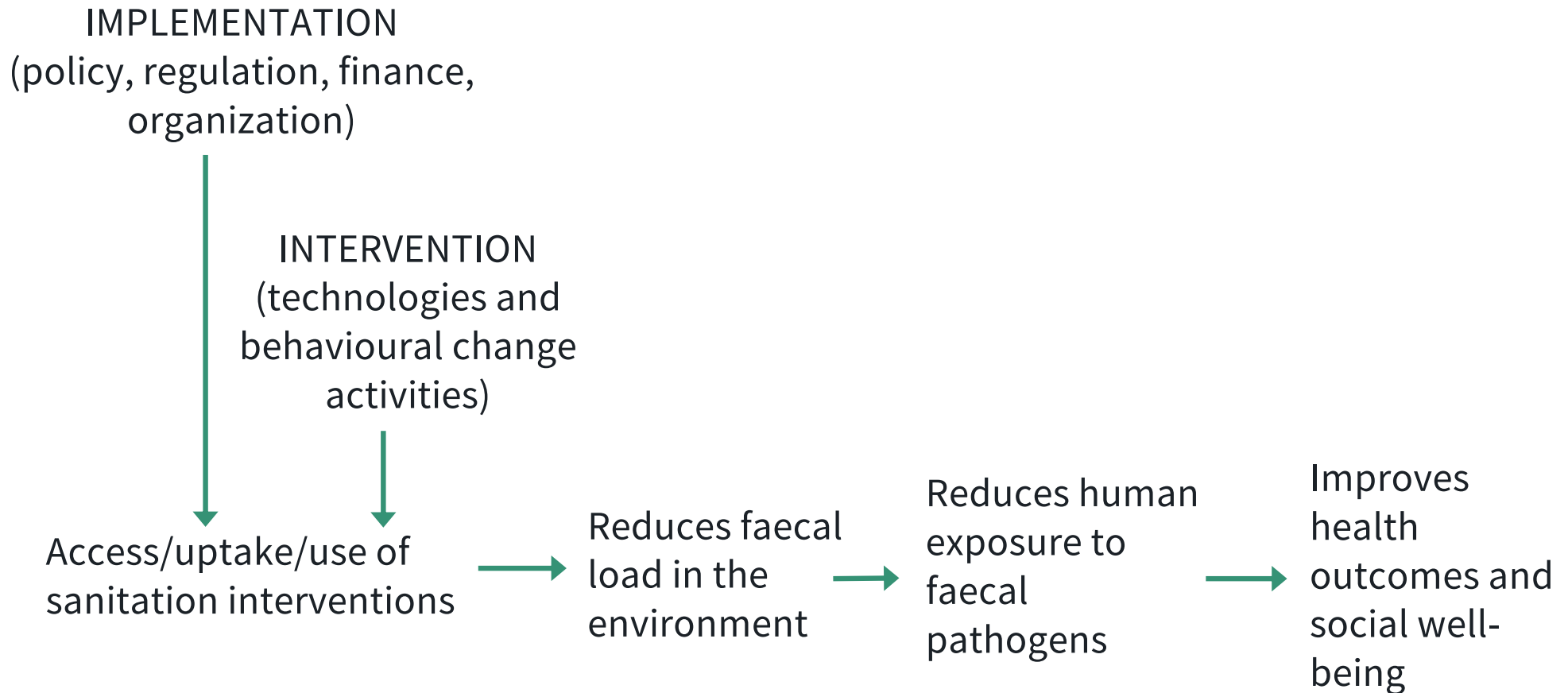
Sanitation is defined as **access to** and **use of** facilities and services for the **safe disposal** of human urine and faeces.

Sanitation a human right, a public good and is meant to deliver cost-effective **health benefits**.



Sanitation impact on health

Pathways through which sanitation shall provide health and economic benefits



But evidence shows lower health impact than expected



Photos: L. Barreto Dillon

Sanitation systems are not interrupting pathogen transmission

The reality of poor sanitation



**Faecal-oral infections: e.g.,
diarrhea (2016 killed 800 000
people)**

Helminth infections

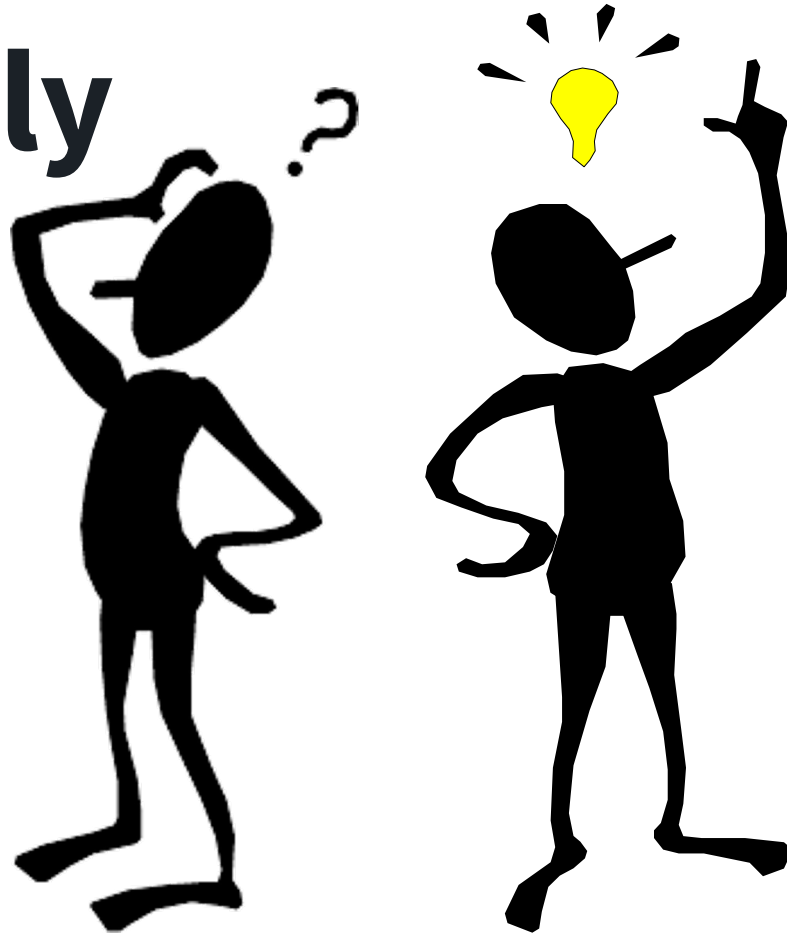
Vector-borne diseases

**Sequelae (conditions caused by
preceding infections): e.g.,
stunting.**

Broader well-being: e.g., anxiety

**Consequences of poor
sanitation in public health**

What should we do
differently
then?



We need to ensure

safety

along the entire
sanitation service
chain.

Safe sanitation systems

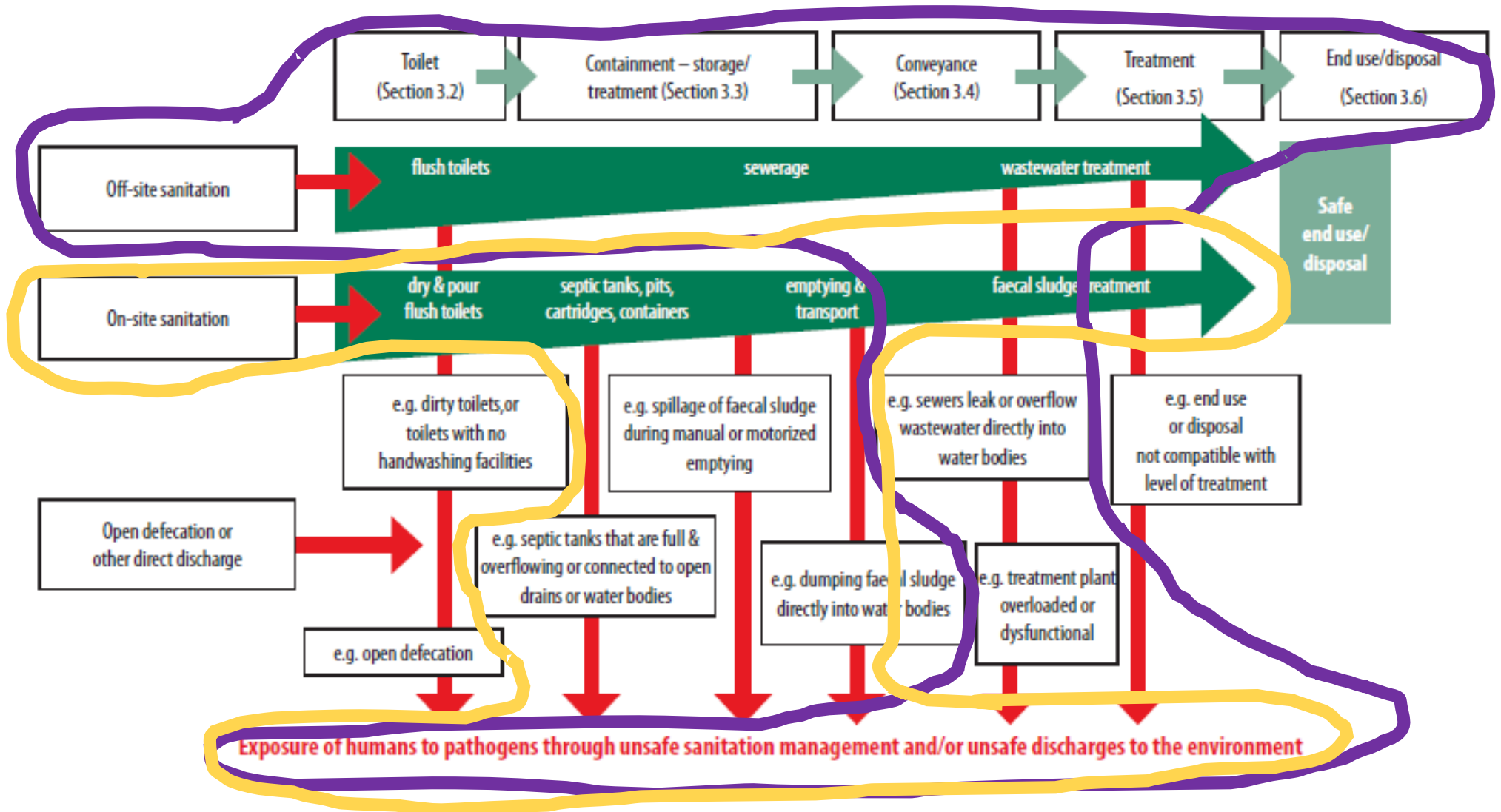


Arrangement of technologies and practices designed to separate human excreta from human contact at all steps of the **sanitation service chain**.



Failures at any step of the sanitation chain result in negative health outcomes

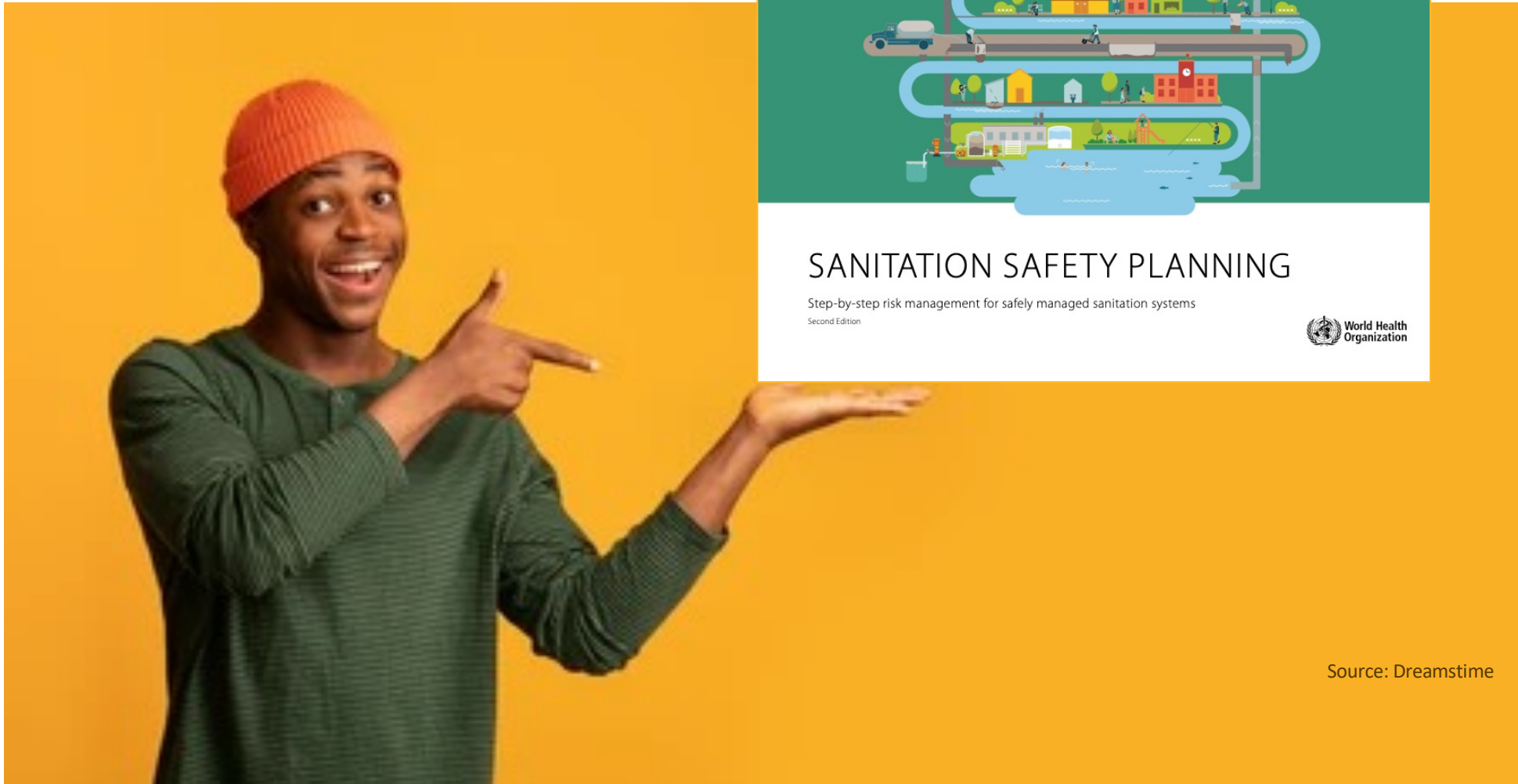
Typical failures





Risks should be managed along the entire sanitation service chain





Source: Dreamstime

Sanitation Safety Planning - SSP

WHO recommended step-by-step approach for local risk **assessment and management** for sanitation systems

- Step-by-step risk-based approach
- Assists in the implementation of local level risk assessment and management
- For the entire sanitation service chain - from toilet, containment/storage and treatment, conveyance, treatment and end use or disposal



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Step-by-step risk management for safely managed sanitation systems
Second Edition



SSP ensures that the system is managed to meet the health objectives

WHO 2006 Guidelines for the safe use of wastewater, excreta and greywater

SSP was first published to make the 2006 WHO Guidelines on reuse more widely adopted.

Today, SSP is used for the entire sanitation system.



SSP manual – Second Edition, 2022

Key updates in this second edition of Sanitation safety planning include:

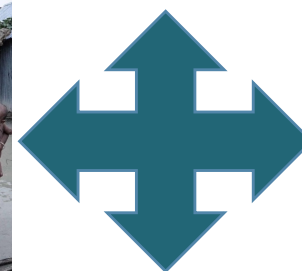
- **simplification** of the SSP process
- reorientation to support recommendations on local-level risk assessment and management in the WHO Guidelines on sanitation and health, **covering all steps of the sanitation chain**, with or without safe end use
- **inclusion of climate risks**



Discussion paper: **Climate, Sanitation and Health**



Draft | July 2019



World Health Organization
GUIDELINES ON SANITATION AND HEALTH



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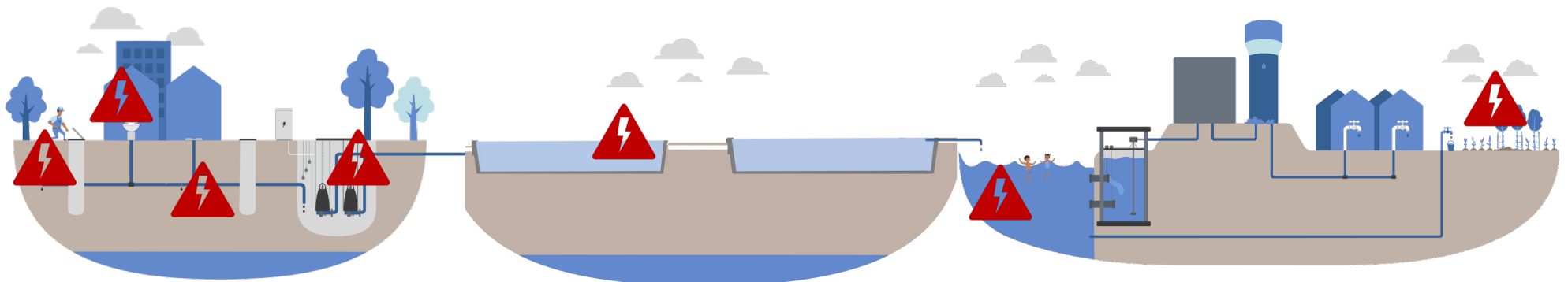
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How does SSP work?

Risk assessment and management tool:

- analyse the **sanitation system**
- Identify the affected people or **exposure groups** (users, workers, communities, farmers, consumers)
- understand **transmission pathways** of excreta-related infections
- identify what could go wrong (**hazardous events**), evaluate the risk
- prioritize **highest health risk**
- Implement and monitor **control measures** to avoid exposure



SSP Modules



Role play

Let's work in groups of 3 persons

You are part of the Management Board of the Water and Sanitation Utility of Coppentown, Sanitola



Welcome to Coppentown, Sanitola

Municipality of 100,000 pp in the outskirts of a metropolitan city



Photo: L. Barreto Dillon

Coppentown case study

Evidences

40% of Newtown's inhabitants are affected by gastro-intestinal disorders.

Young children report skin diseases.

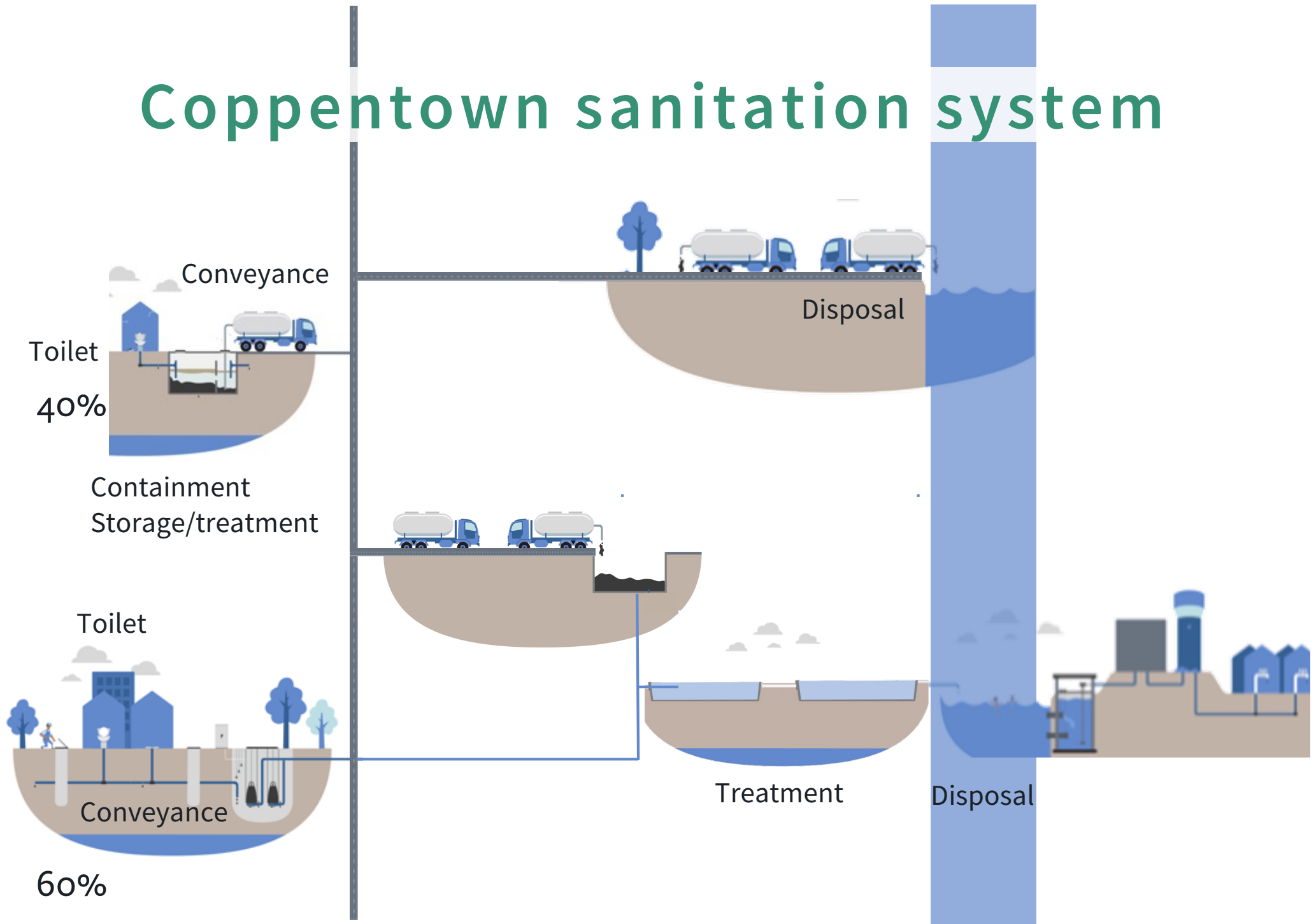
According to climate change projections, the area will have more heavy rainfalls and floods.

Kick-off of SSP

SSP team, lead by Coppentown Water and Sanitation Utility, has been working on it for the past months.

SSP aims to ensure that the entire sanitation service chain is safely managed, diminishing the incidence and impact of sanitation-related diseases of Coppentown dwellers.

Coppentown sanitation system



Coppentown case study

Sanitation step	Hazardous event	Exposure groups	Existing control measures	Under current climate scenario		Under the most probable climate scenario: <u>floods</u> + = increased risk - = decreased risk = = same risk	Improvement options	Resources required. [In Money Units]	Indicate with an "x" if it is selected
				Risk assessment ¹ (L x S = R)	Risk				
Collection/ Storage/ Treatment	Exposure to wastewater from overflowing cesspools or septic tank. This intensifies due to damaged or blockage following heavy rainfall.	30,000 individuals using on-site systems	None	L=3 Possible S=4 Moderate 3x4= 12	Medium Risk	+	Issuing a municipal decree/by-law to oblige the connection to the sewer system	1	
							Community education program encouraging the population to connect to the sewer system	2	
							Expand the sewer network to unserved areas	10	
							Installation of sealed covers for septic tanks and non-return valves on pipes to prevent back flows.	5	
Disposal	Exposure to pathogens caused by illegal dumping of fecal sludge in open land, open drains and river adjacent to residential areas.	100,000 individuals living in Newtown	None	L= 5 Almost certain S= 4 Moderate 5x4= 20	Very high	+	Issuing a municipal decree/by-law for fecal sludge mgmt.	1	
							Designation of an off-site dumping area for fecal sludge	1	
							Monitoring and controlling sludge private operators (for instance, through GPS systems).	3	
							Strengthening surveillance and enforcement authorities	3	
							Implement sludge transfer stations for private operators, with intermediate transport to the WWTP to be co-treated with wastewater.	5	
Treatment (Wastewater treatment plant)	Ingestion of pathogens while using river water contaminated with discharged untreated wastewater. This intensifies during extreme rainfall events causing discharge of excess, untreated wastewater into environment.	500 individuals living adjacent to treatment plant. 10,000 individuals living in village downstream	Wastewater treatment plant working ok with minor incidents	L= 4 Likely S=4 Moderate 4x4= 16	Medium Risk	+	Develop an SOP for the correct O&M, train and supervise workers	2	
							Implement an immediate maintenance program to remove the accumulated sludge	1	
							Construct a fecal sludge pre-treatment unit (settling tank and drying beds) to avoid malfunctioning of the WWTP	4	
							Install flood, inundation, and run-off defenses (e.g., dikes) and undertake sound catchment management	8	
							Invest in early warning systems and emergency response equipment (e.g., mobile pumps stored off-site, non-electricity-based treatment systems)	5	
							Additional holding pond to buffer high flows and reduce overflow or bypass to river	6	

Coppentown case study

Semi-quantitative Risk Assessment Method

TOOL 3.5. Suggested risk definitions for semi-quantitative risk assessment

	DESCRIPTOR	DESCRIPTION
Likelihood (L)		
1	Very unlikely	Has not happened in the past and it is highly improbable it will happen in the next 12 months (or another reasonable period).
2	Unlikely	Has not happened in the past but may occur in exceptional circumstances in the next 12 months (or another reasonable period).
3	Possible	May have happened in the past and/or may occur under regular circumstances in the next 12 months (or another reasonable period).
4	Likely	Has been observed in the past and/or is likely to occur in the next 12 months (or another reasonable period).
5	Almost certain	Has often been observed in the past and/or will almost certainly occur in most circumstances in the next 12 months (or another reasonable period).
Severity (S)		
1	Insignificant	Hazard or hazardous event resulting in no or negligible health effects compared with background levels.
2	Minor	Hazard or hazardous event potentially resulting in minor health effects (e.g. temporary symptoms of irritation, nausea, headache).
4	Moderate	Hazard or hazardous event potentially resulting in self-limiting health effects or minor illness (e.g. acute diarrhoea, vomiting, upper respiratory tract infection, minor trauma).
8	Major	Hazard or hazardous event potentially resulting in illness or injury (e.g. malaria, schistosomiasis, food-borne trematodiasis, chronic diarrhoea, chronic respiratory problems, neurological disorders, bone fracture), and/or may lead to legal complaints and concern, and/or major regulatory noncompliance .
16	Catastrophic	Hazard or hazardous event potentially resulting in serious illness or injury, or even loss of life (e.g. severe poisoning, loss of extremities, severe burns, drowning), and/or will lead to major investigation by regulator , with prosecution likely.

TOOL 3.6. Semi-quantitative risk assessment matrix

			SEVERITY (S)				
			Insignificant	Minor	Moderate	Major	Catastrophic
			1	2	4	8	16
LIKELIHOOD (L)	Very unlikely	1	1	2	4	8	16
	Unlikely	2	2	4	8	16	32
	Possible	3	3	6	12	24	48
	Likely	4	4	8	16	32	64
	Almost certain	5	5	10	20	40	80
Risk score R = L × S			<6	6–12	13–32	>32	
Risk level			Low risk	Medium risk	High risk	Very high risk	

Group Work

You have received the risk assessment table prepared by the SSP local team

Climate Resilient Sanitation Safety Planning, Training of Trainers (TOT)
Nimri (Alwar), Rajasthan, India. February 6-9, 2024



Group Exercise: Understanding the value of Sanitation Safety Planning

You and your group are members of the Management Board of the Newtown W&S Utility. The SSP team, led by the Operations Manager, conducted a health risk assessment of the sanitation system. The following table shows the highest risk and the proposed measures. Based on the risk assessment and knowing that there is a **budget of 10 Money Units** for the next year, suggest which improvements should be prioritized.

Knowing that the Steering Committee only has 10 Money Units, which improvement options should be prioritized?

Why?

Sanitation step	Hazardous event	Exposure groups	Existing control measures	Under current climate scenario		Under the most probable climate scenario: floods + = increased risk - = decreased risk = = same risk	Improvement options	Resources required (in Money Units)	Indicate with an 'x' if it is selected
				Risk assessment ¹ (L x S = R)	Risk				
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	Additional holding pond to buffer high flows and reduce overflow or bypass to river	6							

In your SSP online platform, you will find this exercise as:

D1.4 Handout, exercise “Understand the value of SSP” (WORD DOCUMENT)

Back to plenary

Let's us discuss



- How can the local risk assessment help to prioritize sanitation interventions?
- How would you describe the value of Sanitation Safety Planning?

Value of Sanitation Safety Planning

- Maximizes health benefits of sanitation interventions
- Prioritizes efforts
- Sets a plan for incremental improvements
- Targets investments to the highest health risks
- Coordinates efforts



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SSP in a nutshell



- is the WHO recommended approach for local risk assessment and management for sanitation systems
- helps to maximize health benefits and minimize health risks
- guides efforts to where it will have the most impact
- helps to coordinate efforts of the many stakeholders along the sanitation chain, and stimulates policy dialogue

THANK YOU



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