

SANITATION SAFETY PLANNING

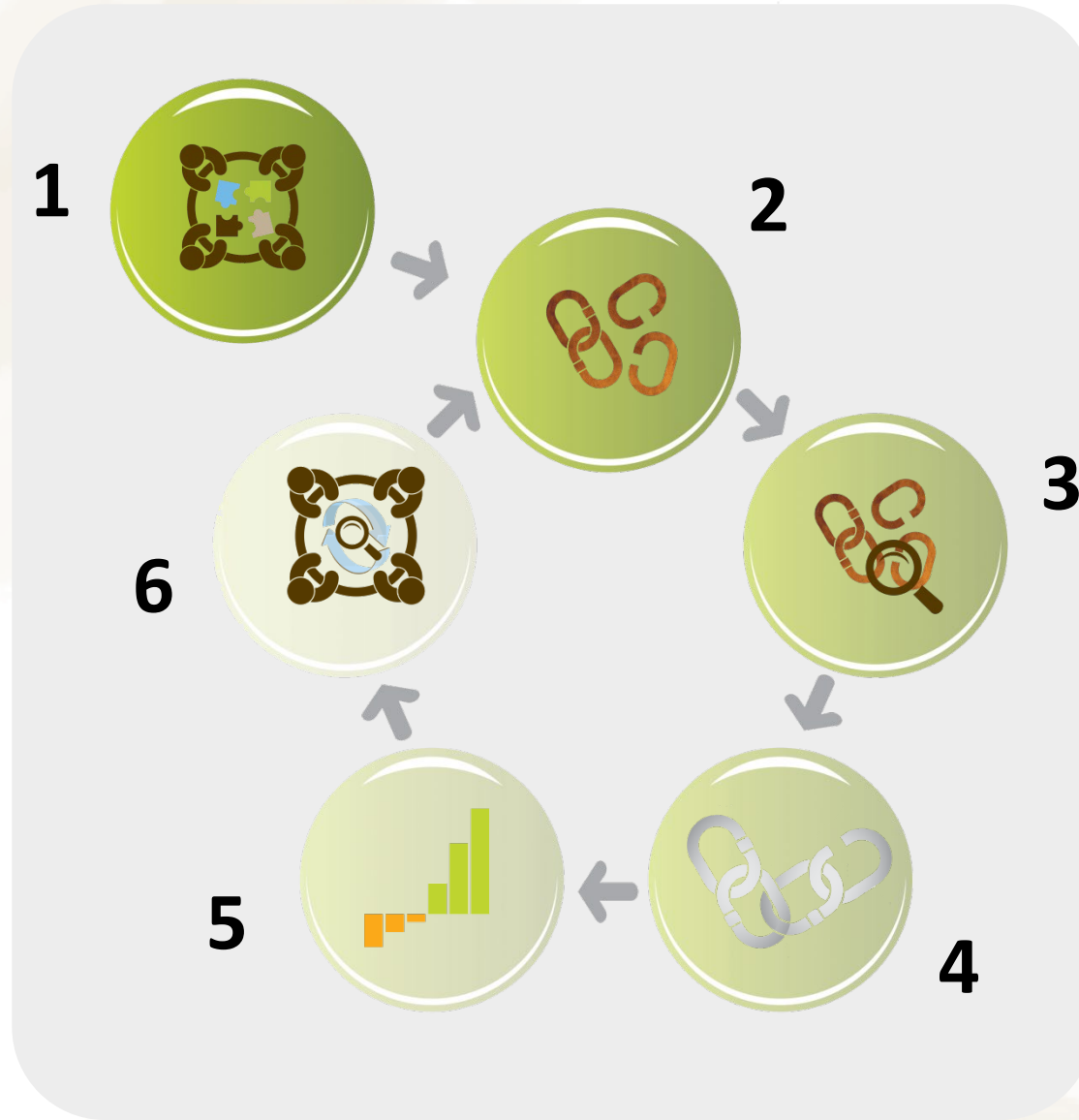
Step-by-step: Module 1 & 2



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SSP's 6 Modules

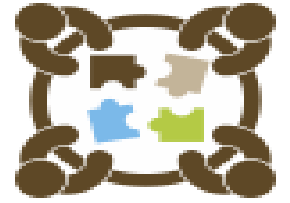




MODULE 1
PREPARE FOR
SANITATION
SAFETY PLANNING



SSP Manual pages 9 - 20



Module 1: Overview

Sub-Modules

- 1.1 Establish priority areas or activities
- 1.2 Set objectives
- 1.3 Define the system boundary and lead organization
- 1.4 Assemble the team

Outputs

Agreed **priority areas, purpose, scope, boundaries and leadership** for SSP

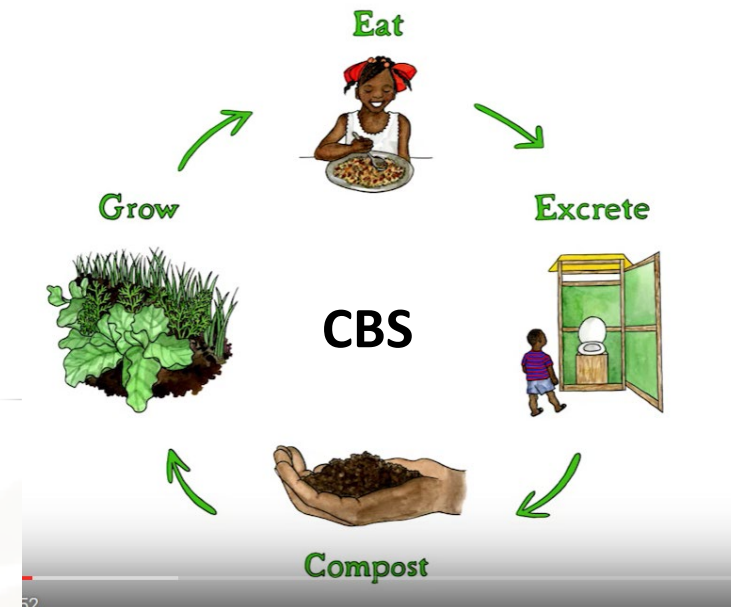
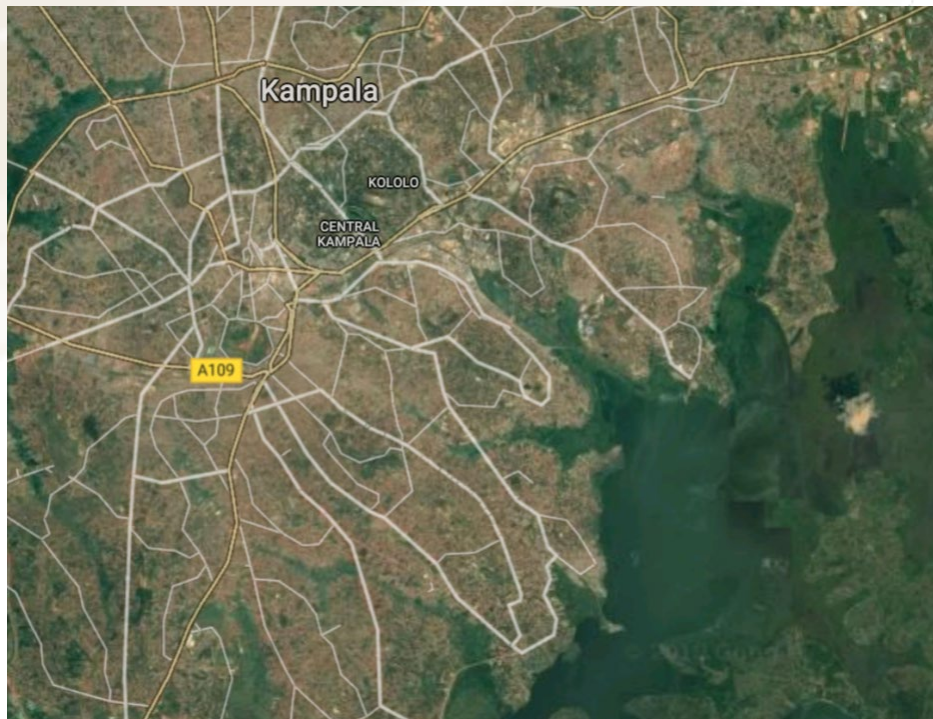
A **multidisciplinary team** representing the sanitation chain for development and implementation of SSP

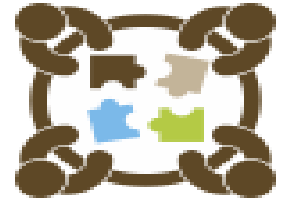
- **Modules 1.1, 1.2 and 1.3 are interrelated and iterative processes**



Module 1: Overview

The scope of Module 1 very much depends on the given scenario





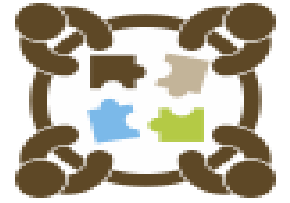
Module 1.1: Establish priority areas or activities

- Mod 1.1 Relevant for municipal authorities, wastewater utility companies, health authorities entities ✓
- Mod 1.1 Not relevant for entities with a single sanitation system or small manageable scale (e.g. faecal sludge collection, treatment and sale) ✗
- In both cases, include full sanitation chain from waste generation to reuse or disposal

- **Key considerations when selecting priority areas or activities**



SSP manual
page 9



Module 1.1: SSP steering committee

For entities with a **broad range of sanitation activities**, establish a steering committee





Module 1.2: Set specific SSP objectives



To ensure the SSP outputs respond to the agreed public health objectives for the system

- Objectives should relate to improved public health outcomes
- Other objectives may relate to wastewater management and its use, or have more broad regional or national significance



SSP manual
Example 1.1 page 14



Module 1.3: Define the system boundary & lead organization

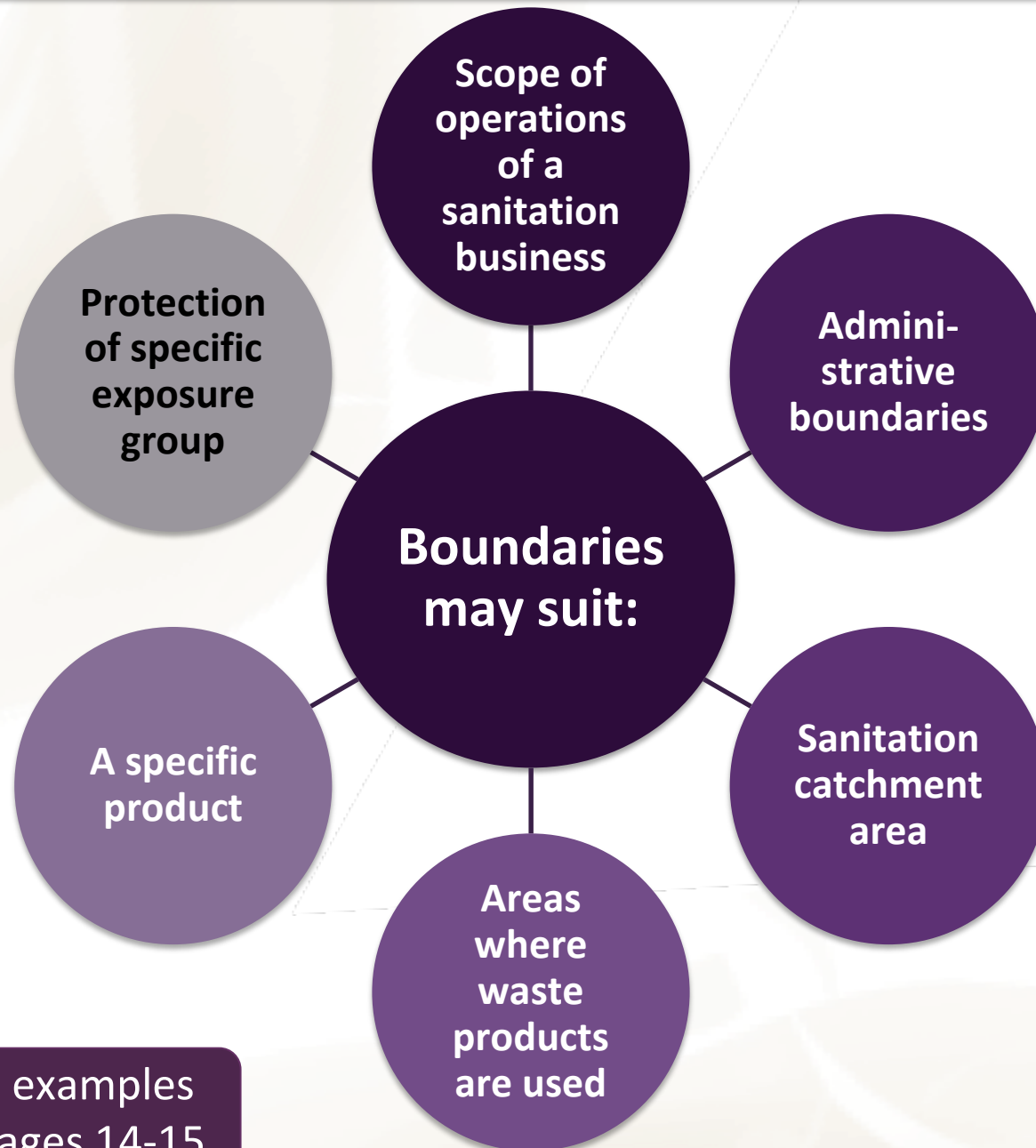
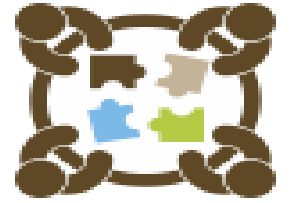


To ensure that the scope is understood by all stakeholders and is manageable

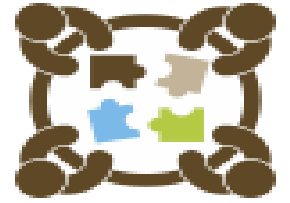
Boundary should reflect the specific SSP objectives defined in Module 1.2



SSP manual
Examples 1.1 and 1.2 page 14



SSP manual examples
1.2 to 1.3, pages 14-15



Module 1.4: Assemble the team



To ensure broad stakeholder commitment to design and implement the entire SSP process

Conduct a stakeholder analysis and select expertise for the team

Appoint a team leader

Define and record roles of the individuals on the team

Ensure management and financial considerations are planned



**SSP manual
Pages 10-11**



End of Module 1



MODULE 2
DESCRIBE THE
SANITATION
SYSTEM

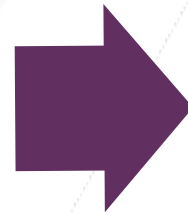


SSP Manual pages 21 - 38



What is the system; who's at risk?

Module 2



Sufficient information to support the risk assessments in **Module 3**



Module 2: Overview

- 2.1 Map the system
- 2.2 Characterize the waste fractions
- 2.3 Identify potential exposure groups
- 2.4 Gather compliance and contextual information
- 2.5 Validate the system description



See SSP manual
p 22

Modules

Outputs



Module 2.1: Map the system



To aid understanding of the source and path of waste(s) through the system - critical in the later assessment of exposure groups at risk

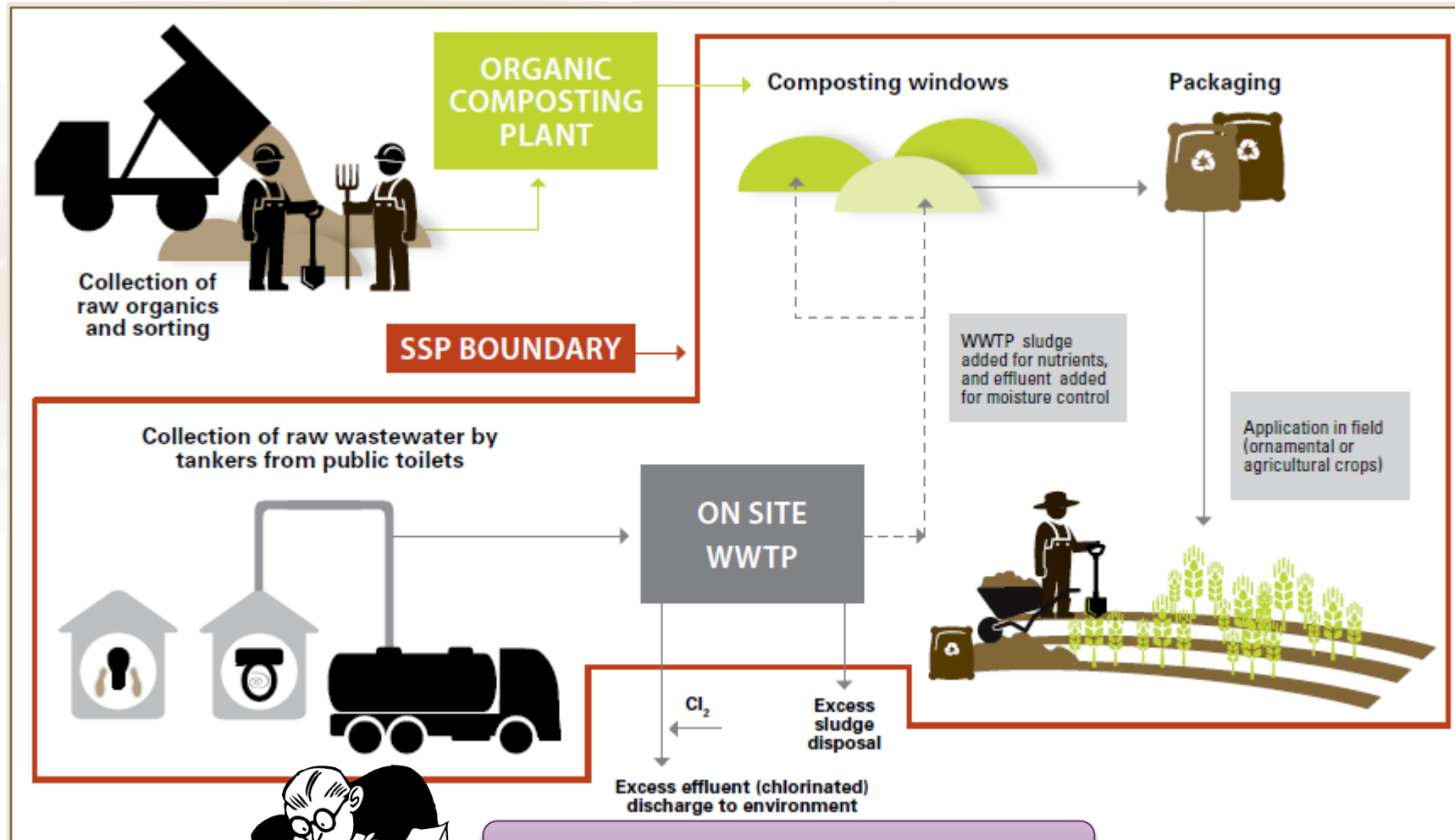
- Can use system flow diagrams or process flow diagrams (best to combine with narrative)
- Choose what works best for your SSP team



SSP manual
Guidance Note 2.1 (p.26) &
Examples 2.1 – 2.3 (p.34-37)



Simple flow diagram example



SSP manual Example 2.1, p 34

Module 2.1



Follow the path of *all* fractions of the waste (solid and liquid) along all sanitation steps

Typical sanitation steps we use:

Generation of wastes

Collection
Transportation
Conveyance

Treatment

Use or
disposal



Module 2.1



Checklist

- Guidance Note 2.1 - Page 26

Examples of maps

- Pages 34-37
- 2.1 Co-composting plant flow diagram
- 2.2 Multiple wastes – process flow diagram
- 2.3 Faecal sludge – process flow diagram

Newtown SSP Module 2

- Pages 91 – 117 Example SSP
- Modul 2.1, p. 95-100
- Waste fractions, p. 100



Module 2.2: Characterize the waste fractions and identify potential health hazards



To characterize the **microbiological, physical and chemical constituents** from all sources

This information is important for future modules!

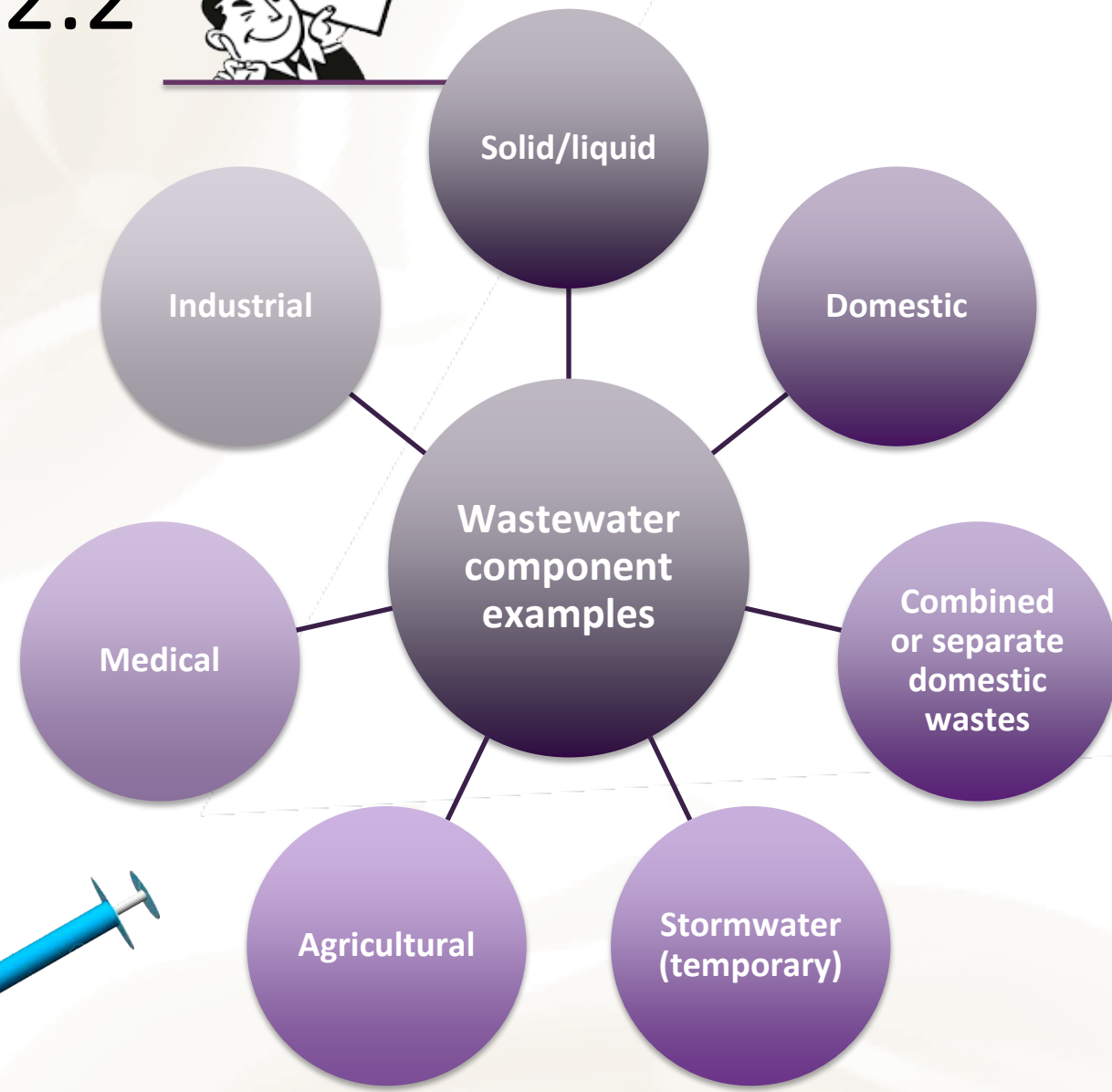
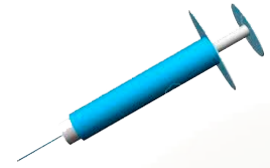


SSP manual
Guidance page 24

Module 2.2



SSP manual, Guidance
Note 2.2 and Example 2.4





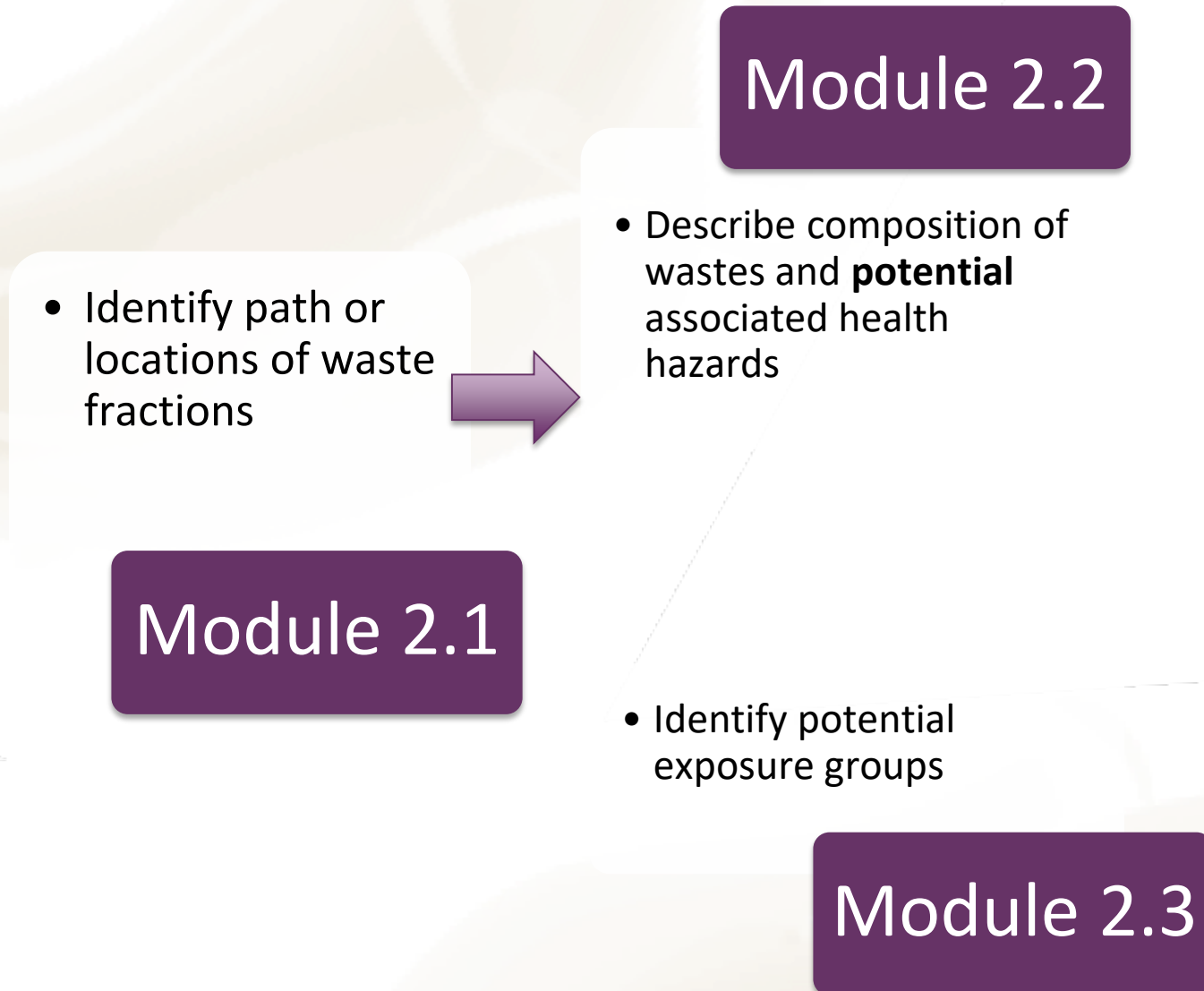
	POTENTIAL BIOLOGICAL HAZARDS					POTENTIAL CHEMICAL HAZARDS		POTENTIAL PHYSICAL HAZARDS		
	Viruses	Bacteria	Protozoa	Helminths	Vector-related diseases	Toxic chemicals	Heavy metals	Sharp objects	Inorganic material	Malodours
Liquid waste fractions										
Diluted excreta (human or animal)	X	X	X	X						X
Urine (human or animal)	X	X	X	X						X
Domestic waste water	X	X	X	X	X			X	X	X
Stormwater	X	X	X	X	X	X	X	X		
River water	X	X	X	X	X	X	X			
Industrial wastewater (Note 1)						X	X			
Solid waste fractions										
Faecal sludge	X	X	X	X	X			X	X	X
WWTP sludge	X	X	X	X	X	X	X	X	X	X
Organic domestic waste	X	X			X					
Inorganic domestic waste						X	X	X	X	
Agricultural waste (crop residuals)	X	X	X	X	X			X	X	
Gardening waste					X				X	
Animal manure/slurry	X	X	X	X	X				X	X
Medical waste	X	X	X	X		X	X	X	X	X
Industrial waste						X	X	X	X	X
Slaughter house waste	X	X	X	X	X		X			X
Construction and demolition waste								X	X	

SSP manual, Guidance Note 2.4, p 29 compiles many of these points





Module 2, sub-modules





Module 2.3: Identify potential exposure groups



To ensure that an initial classification of exposed groups is identified and related to where and how, within the system, exposure occurs.

- This is recorded in relation to the mapping in Module 2.1.

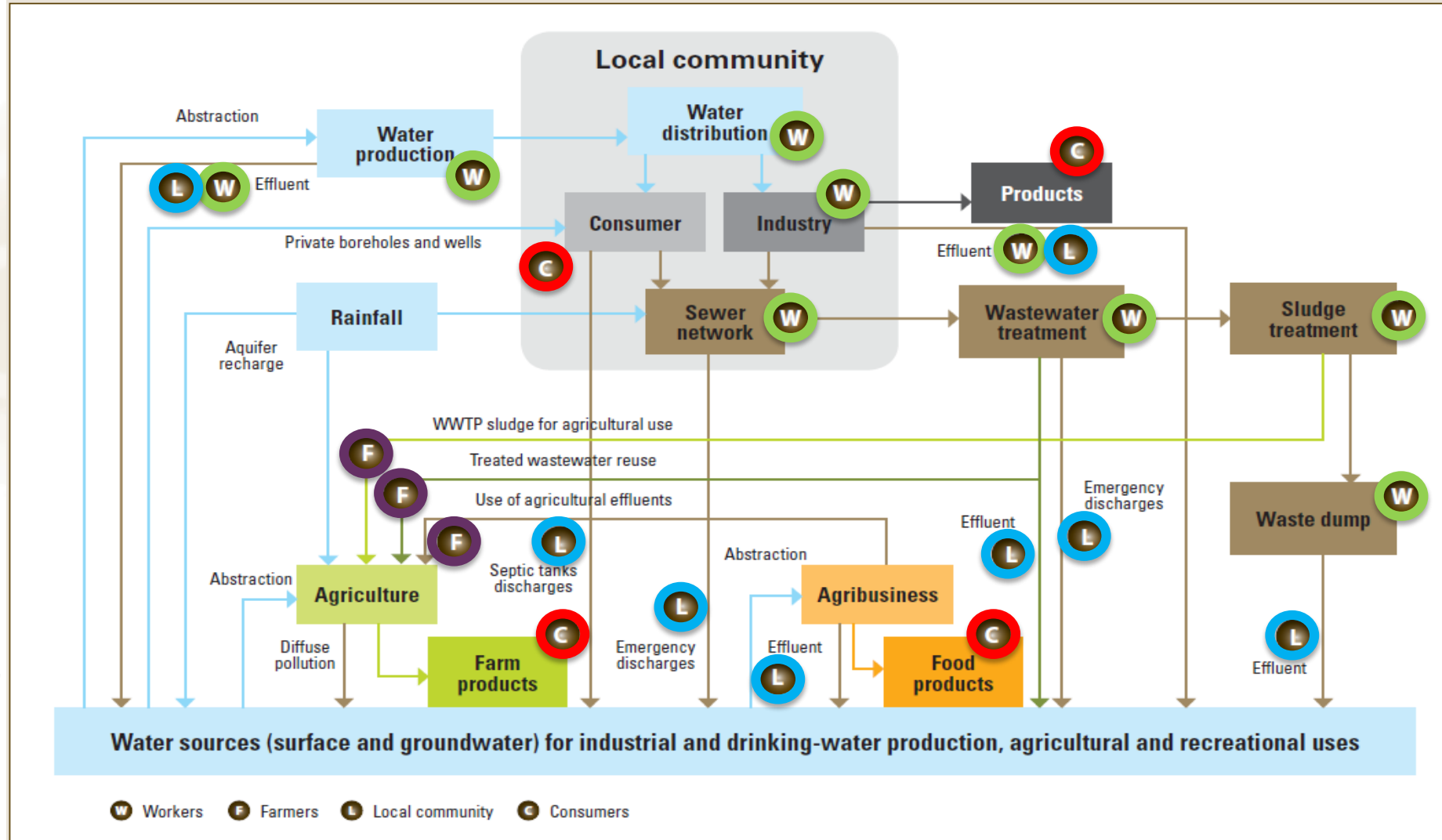


SSP manual
Guidance Note 2.1 p 26 &
Examples 2.1 – 2.3 pp 34-37



EXAMPLE 2.2

Multiple waste sources mapping, Portugal



Based on SSP experiences in Portugal.



Exposure groups

Exposure groups

- Categorize people exposed to hazards
 - Consider, for example, occupation, location, gender, age, socio-economic status, etc.

Why is this important?

- Enables a further prioritization for control strategies and exposure groups risk assessment in Module 3.



Systematically identify all groups of people that may be exposed to a hazard. Typically:

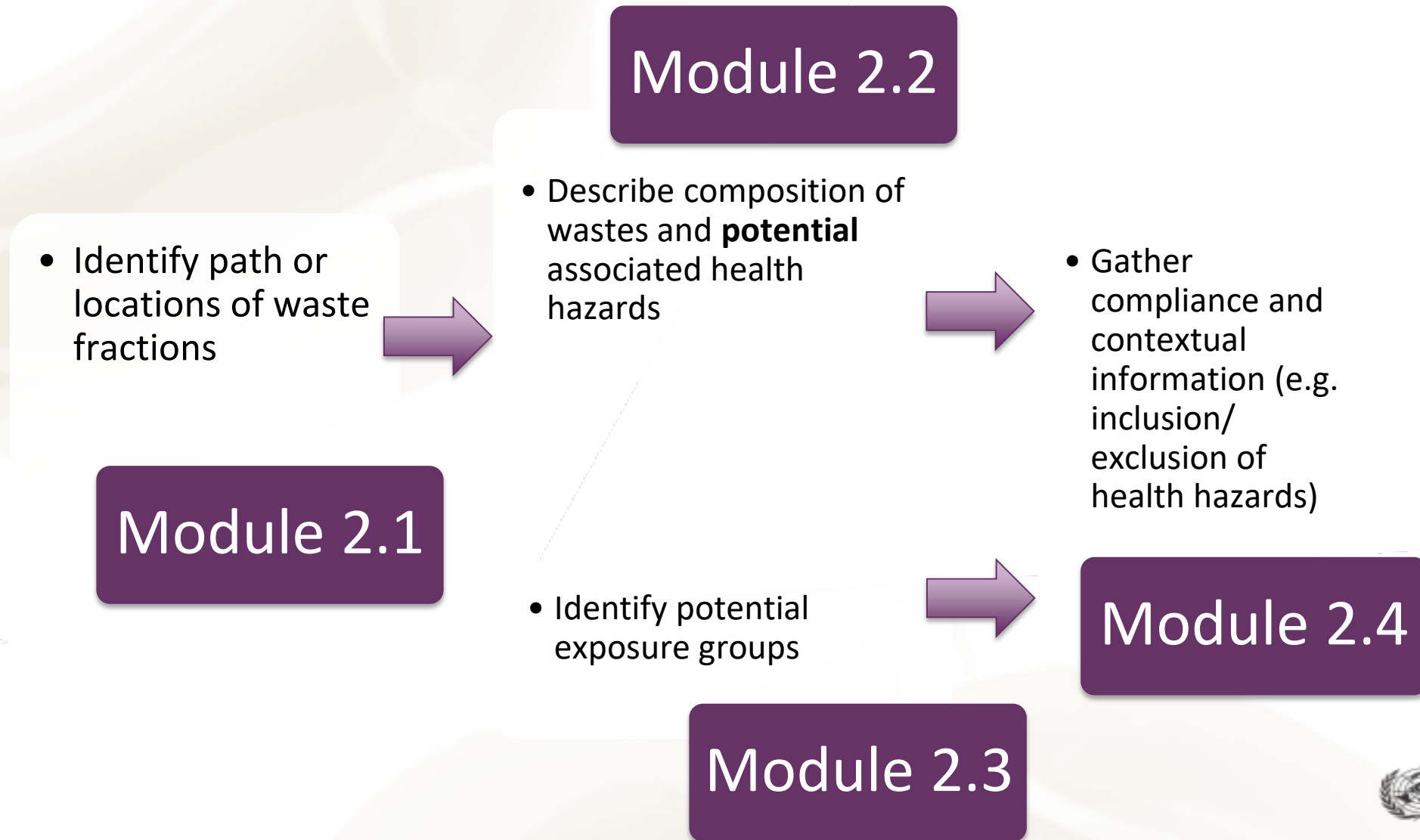
Typical Exposure group and symbol	Description
Workers (W)	Person who maintains, cleans, operates or empties the sanitation technology.
Farmers (F)	Person who uses the products (e.g. untreated, partially or fully treated wastewater, biosolids, faecal sludge, fuel bricks, compost,) usually on a farm or in a factory
Local community (L)	Anyone living near to, or downstream from the sanitation technology, or farm on which the material is used and who may be passively affected.
Consumer (C)	Anyone who consumes or uses products (e.g. Crops, fish, compost), fuel bricks) that are produced using sanitation products



SSP manual
Tool 2.1, p 33



Module 2, sub-modules





Module 2.4: Gather compliance and contextual information



To collect and document system compliance and contexts and identify health hazards



SSP manual
Guidance Note 2.3, 2.5 to 2.7
p 27, 30-32





Examples of data to be collated

Regulations Standards

- Effluent quality standards
- Certification and auditing
- Agricultural product certification

System performance

- Monitoring and surveillance records
- Epidemiological data
- Types and amount of products produced

Demographics

- Demographics, land use
- Formal and informal
- Equity and vulnerability considerations



SSP manual
Guidance Note
2.3, p 27

Climate

- Seasonal changes & impacts on loadings
- Seasonal crop and harvest data
- Climate changes

Module 2.4



Compiling information on biological, chemical and physical hazards

Biological hazards

- See Guidance Note 2.5 p 30

Chemical hazards

- See Guidance Notes 2.6 and 5.5 and Annex 3 pp 31, 77, 136



Physical hazards

- See Guidance Notes 2.6 & 2.7 pp 31, 32



Module 2.4



Range and quality of data

Depends on:

- Range of relevant information needed
- Data availability (e.g. secondary data) and quality
- Resource considerations (financial, human capacity, time)

Example: Nakivubo wetland, Kampala

https://www.youtube.com/watch?v=CQEC3d4iE_A&spfreload=10

<http://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0004469> Fuhrimann et al. 2016, PLoS NTD)

<http://www.sciencedirect.com/science/article/pii/S235235221630010X> (Fuhrimann et al. 2016, Microbial Risk Analysis)





Module 2.5: Validate the system description



To ensure that the system description is complete and accurate

To identify data requirements and potential institutional gaps (e.g. policy gaps)

Update system map and waste characterisation on completion.



SSP manual, Guidance p. 25
and Example 2.5 p 38



End of Module 2