

# Sanitation Safety Planning

Step-by-step guide for safe use and disposal of wastewater

Work in progress



World Health  
Organization

# Overview

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1. **Brief global overview: Drivers for wastewater use at a glance**
2. **Brief summary health risks and benefits**
3. **WHO Guidelines for safe use of wastewater**
4. **Sanitation Safety Planning for wastewater use**



# Wastewater Use at a Glance



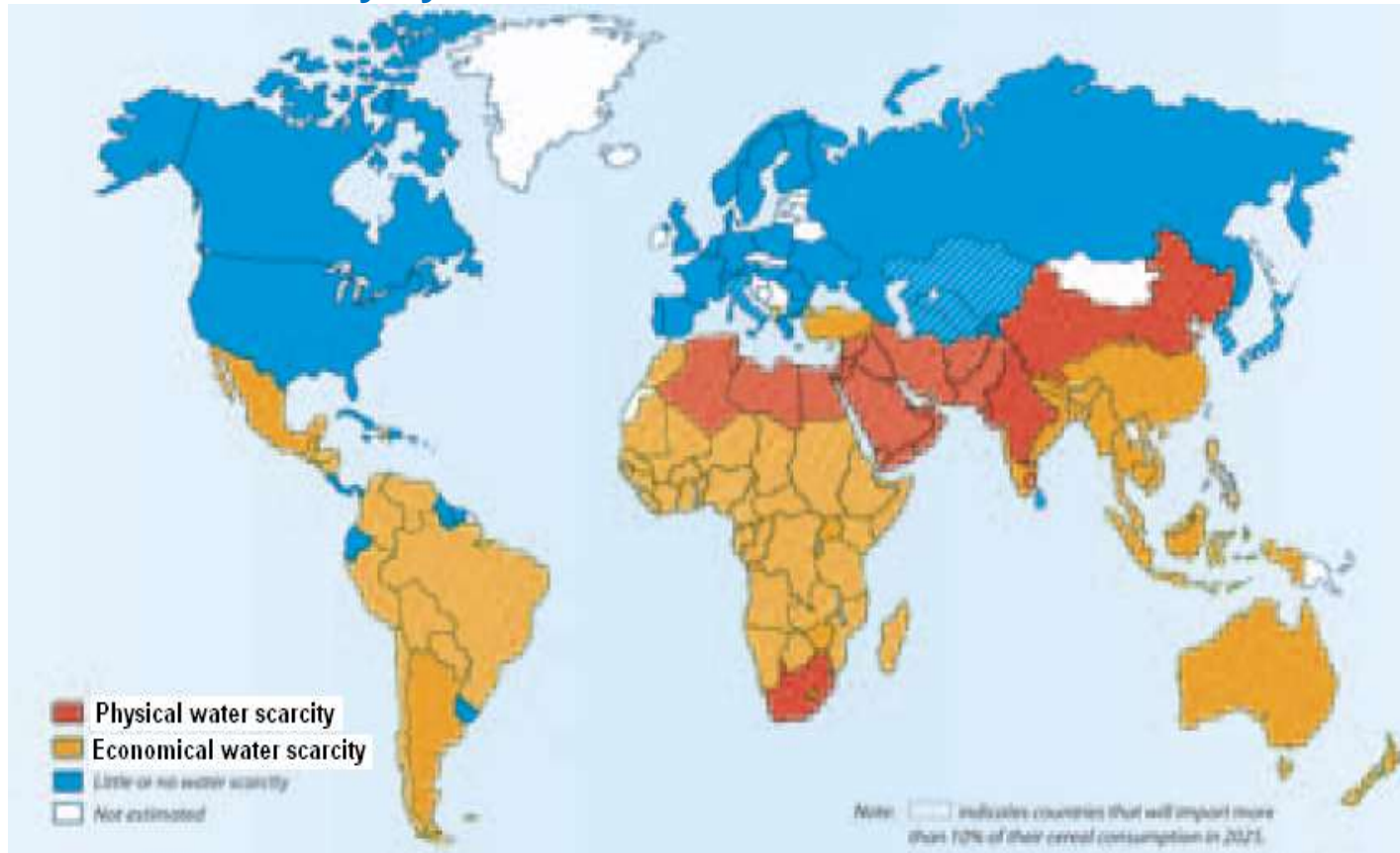
# Most wastewater is untreated

- Up to 90 % of all wastewater in developing countries is discharged untreated directly into rivers, lakes or the oceans
- Wastewater use is extensive worldwide and increasing
- An estimated 10% of the world's population is thought to consume wastewater irrigated foods and 20 million ha of land in 50 countries are irrigated with raw or partially treated wastewater.
- Actual extent is difficult to quantified due to the informal nature of the practice.



# Use of wastewater will grow

## Bluewater scarcity by 2025



### Drivers:

- Water scarcity
- Nutrient scarcity
- High levels of pollution causing unintentional reuse
- Population growth and urbanisation → Feeding hungry cities.



# Health Risks and Benefits

# Health risk and benefits

## Direct Health Effects

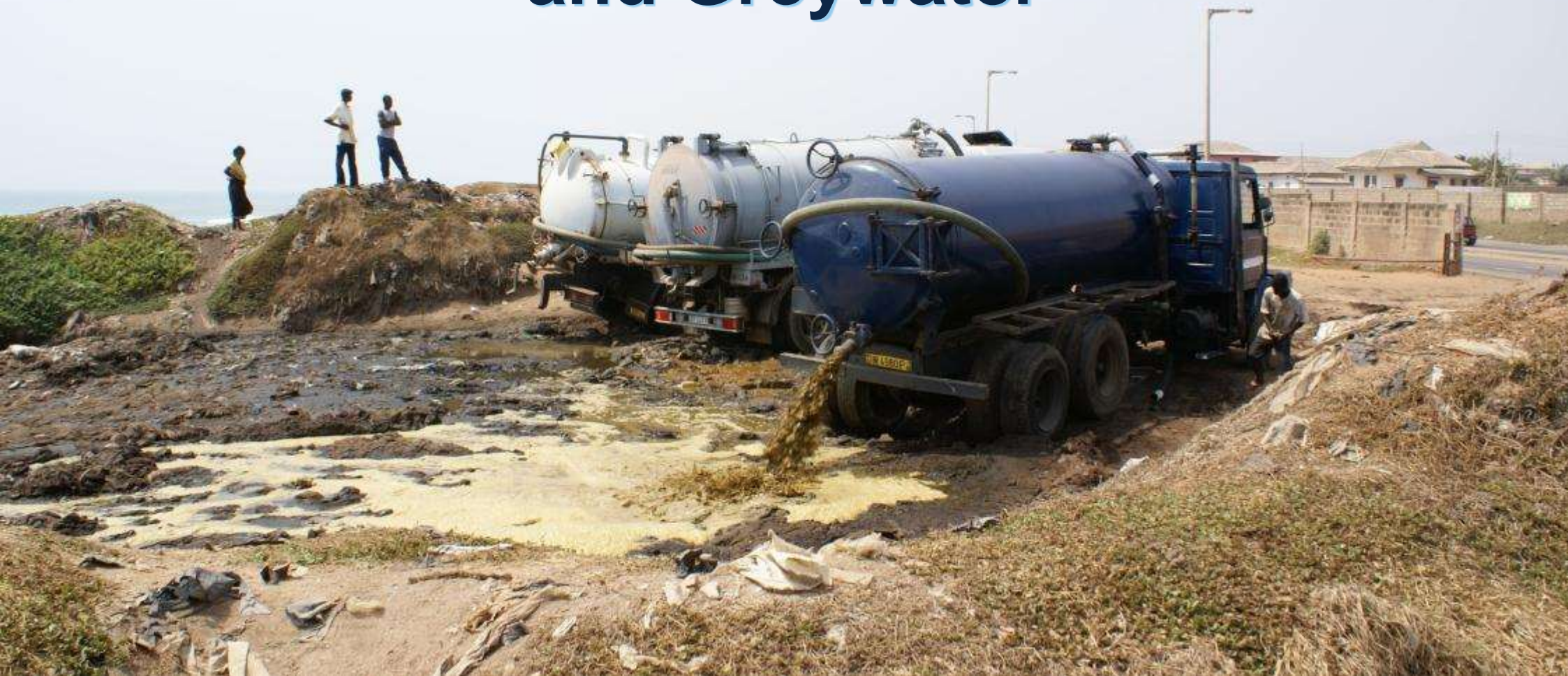
- **Disease outbreaks** (food, water and vector borne)
- **Persistent diseases** (e.g. intestinal helminth infections, diarrhoeal diseases)
- **Non-communicable diseases** (eg from industrial waste)

## Indirect Health Effects

- **Adverse impacts on the safety of drinking water, food and recreational water.**
- **Positive impacts on household food security and nutrition**



# 2006 WHO Guidelines For the Safe Use of Wastewater, Excreta and Greywater





# Starting point for SSPs



## 2006 WHO Guidelines for Safe Use of Wastewater, Excreta and Greywater in Agriculture and Aquaculture

Objective: To maximize the protection of human health and the beneficial use of human waste.

# 1989 WHO Guidelines

Irrigation  
water quality  
thresholds



Wastewater  
generation

Farmers

Traders

Kitchens

Consumers

Wastewater  
treatment

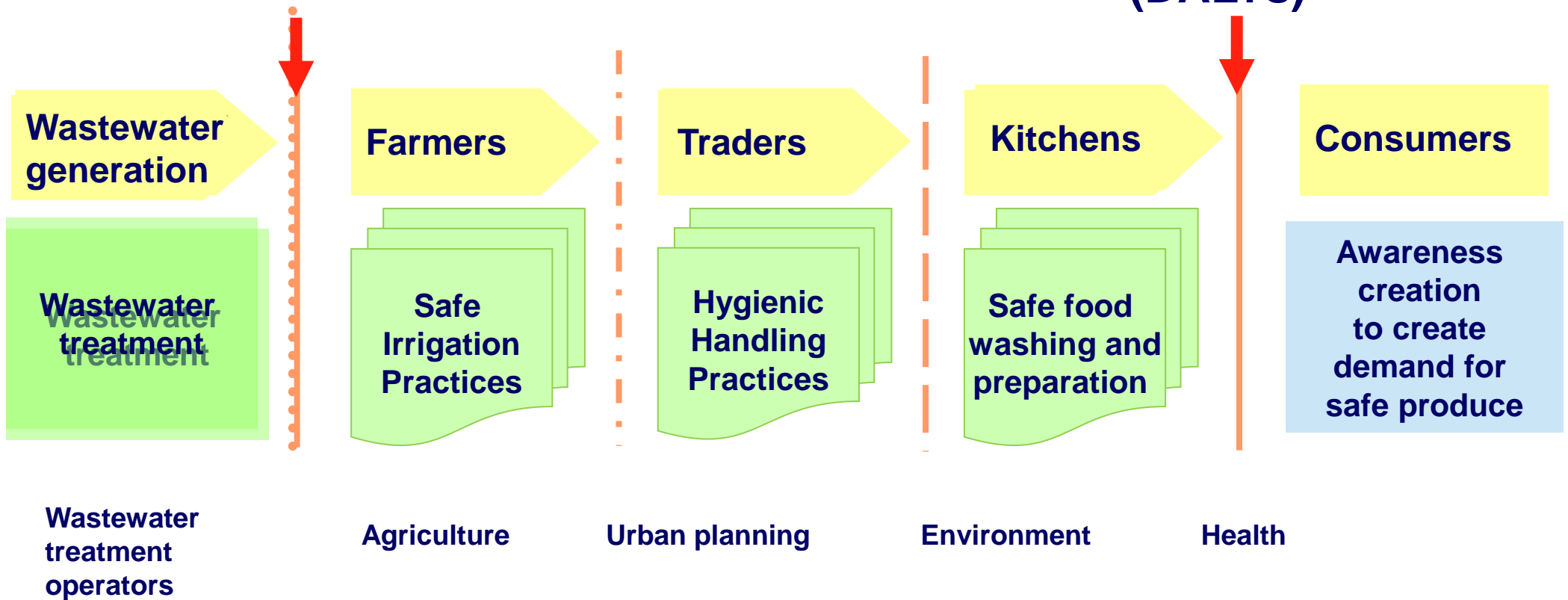
Wastewater  
treatment  
operators



# 2006 WHO Guidelines

Irrigation  
water quality  
thresholds

Health-based  
targets  
(DALYs)



**INSTITUTIONS INVOLVED IN ENSURING SAFETY**

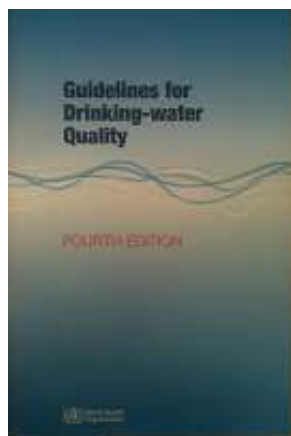




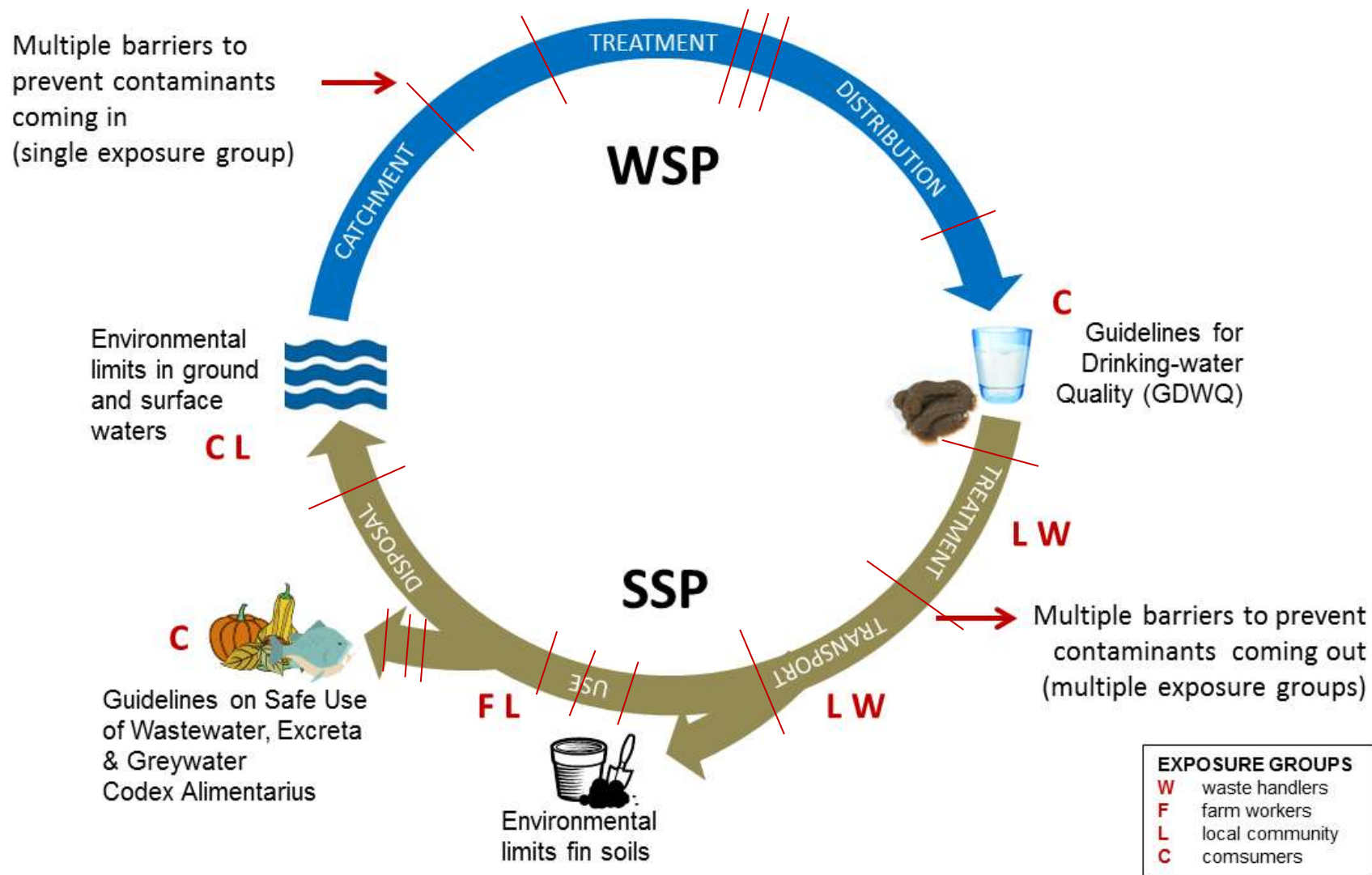
# Sanitation Safety Planning



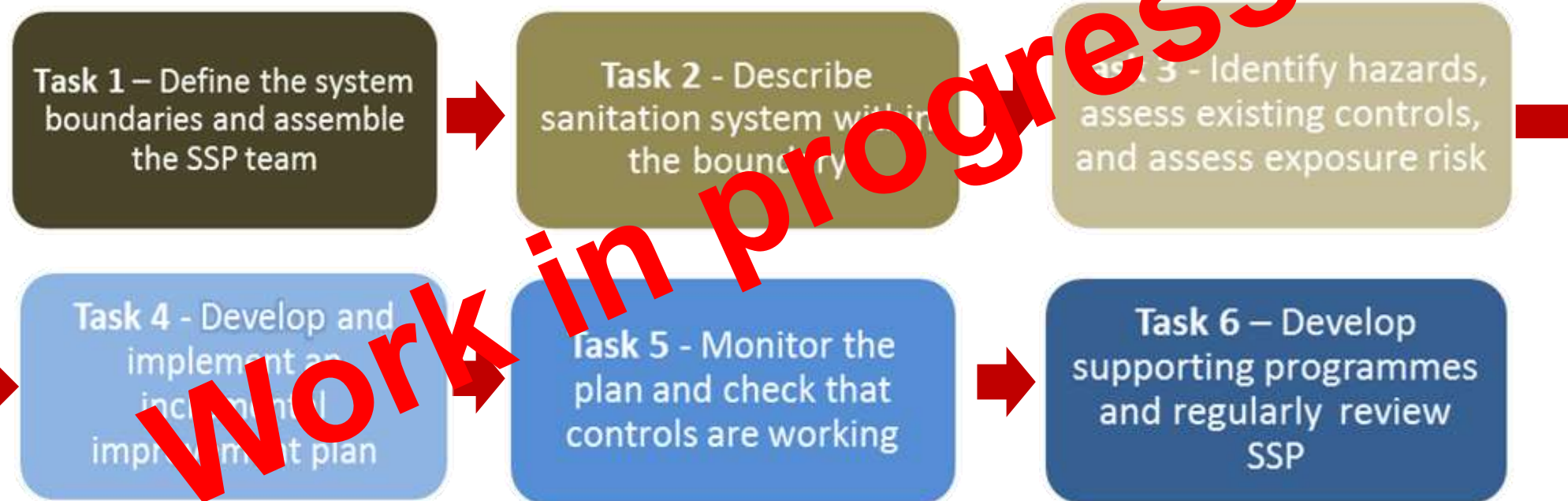
# SSPs follow the model of WSP



# Aiming to close the loop with Water and Sanitation Safety Plans



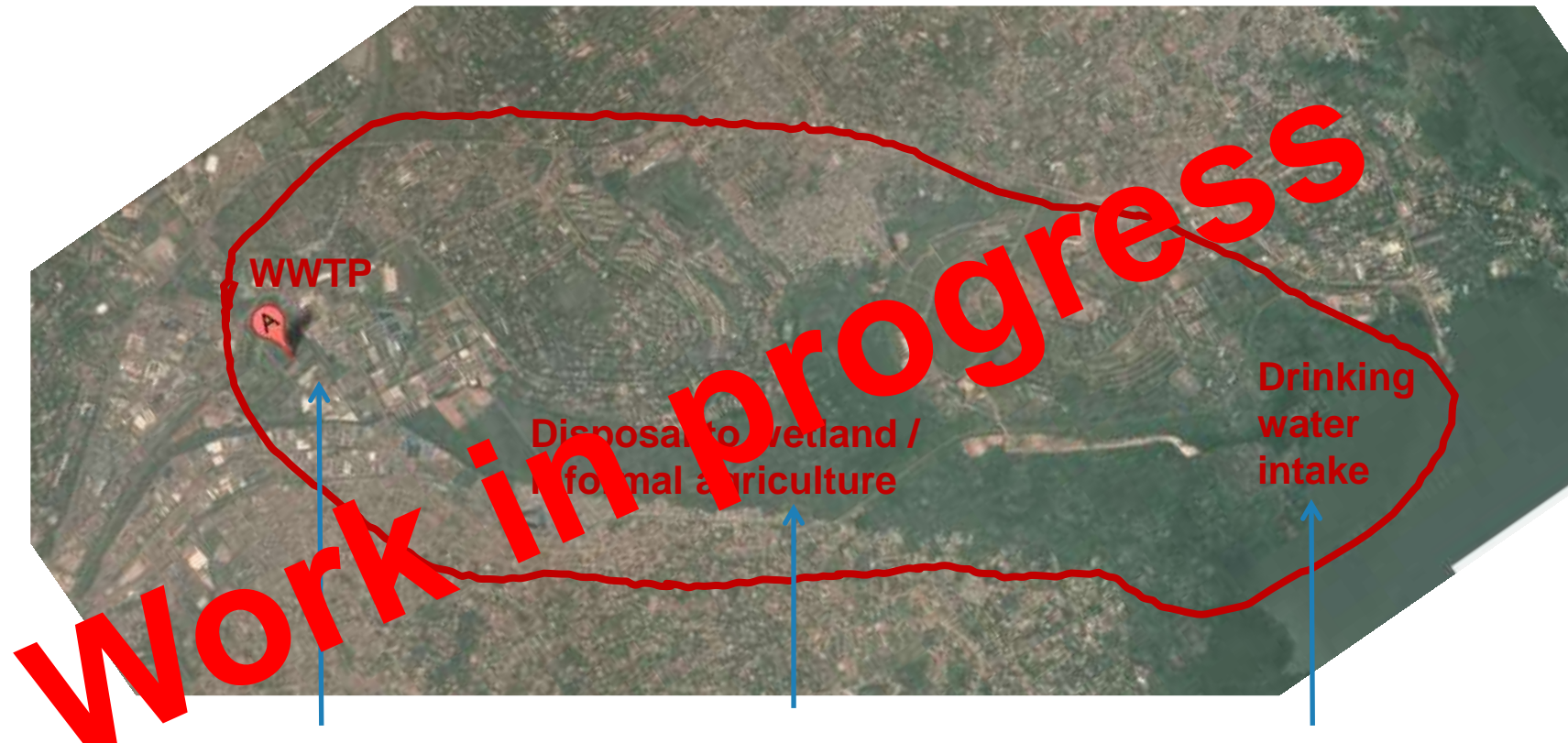
# Risk Management (SSP) Tasks



Continuous improvement



# Task 1: SSP System and team

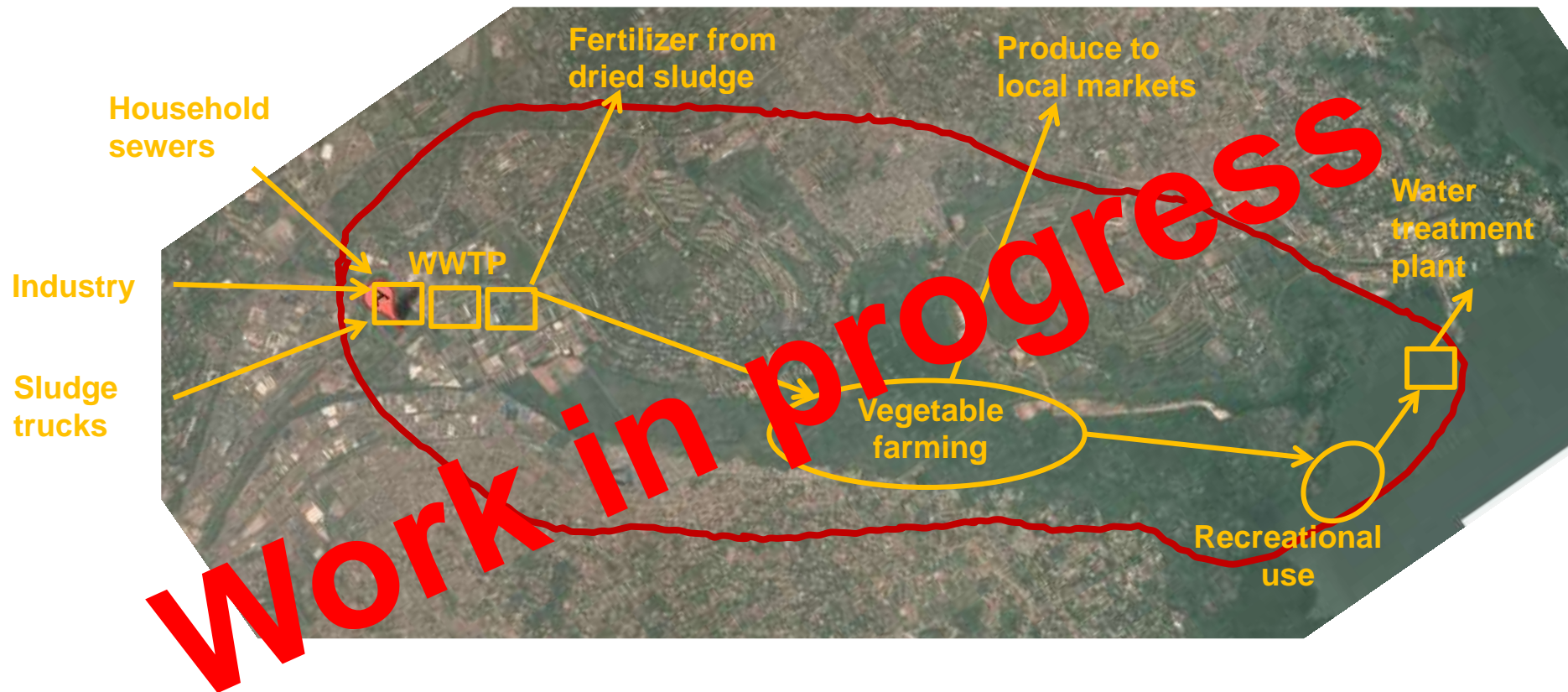


Team:	WWTP operators	City Council health dept	Water utility	
Stakeholders:	Feecal sludge truck operators	Urban farmers	Communities	Local markets





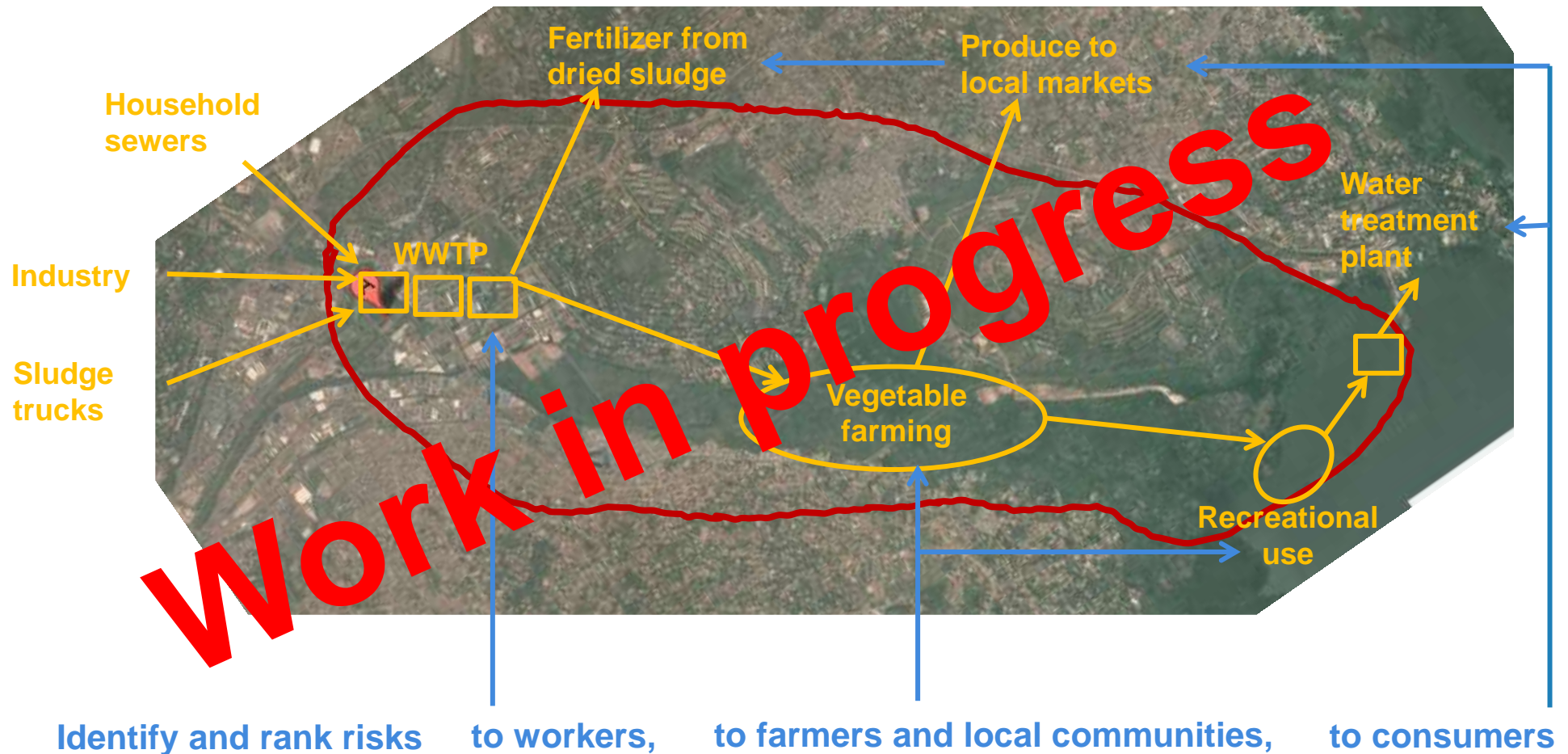
# Task 2: System Description



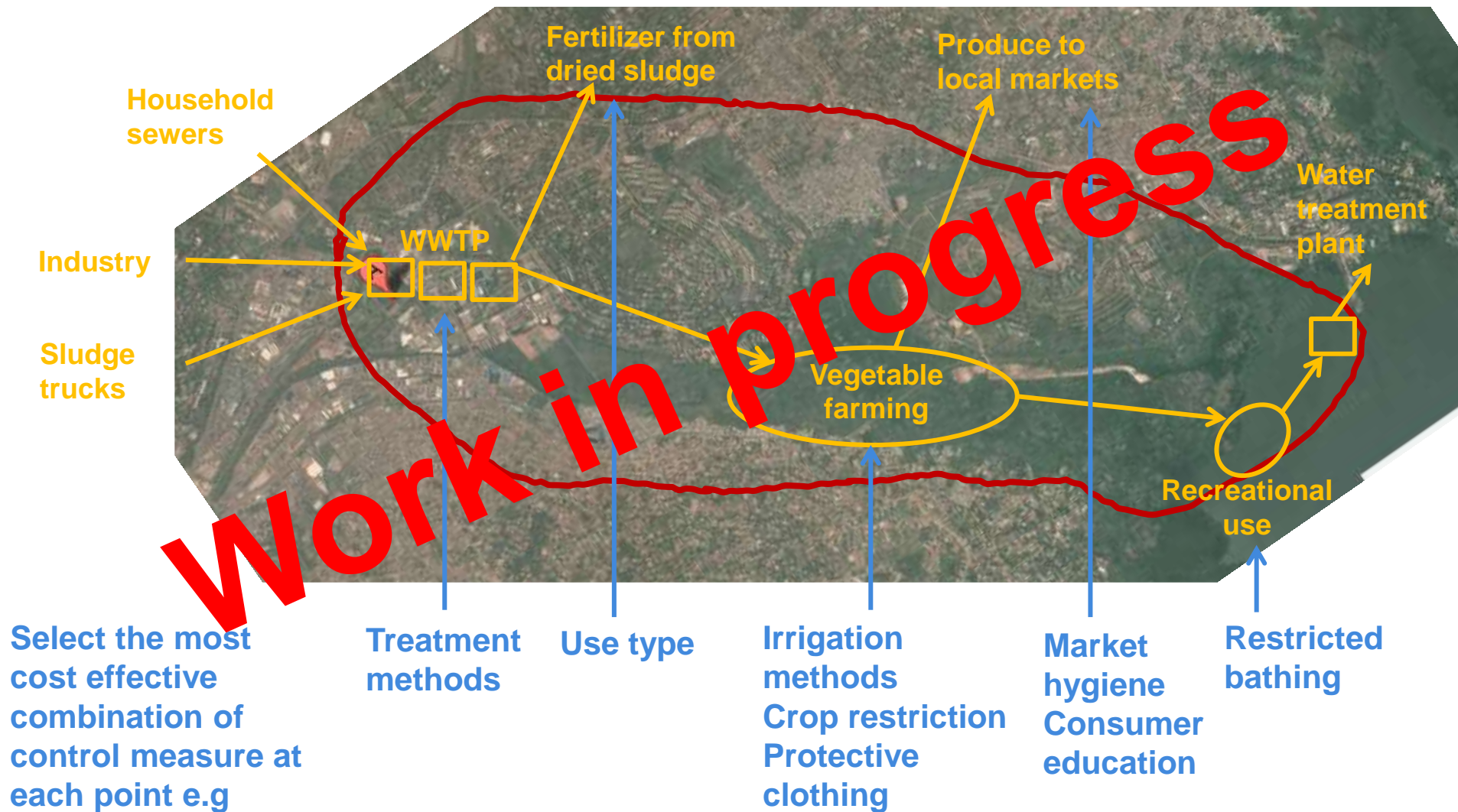
Describe the path of waste, its quality and quantity along the way and the various laws or standards that need to be met and each point



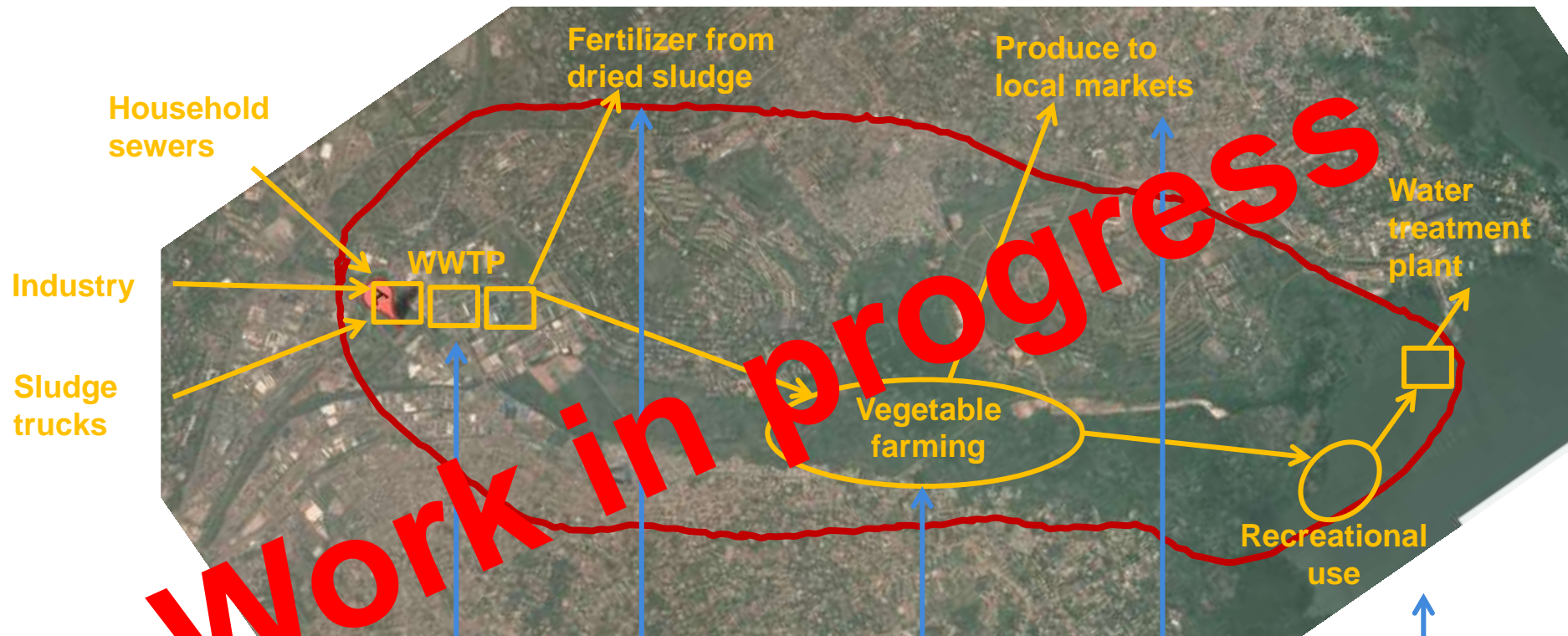
# Task 3: Risk Assessment



# Task 4: Improvement planning



# Task 5: Monitoring



**Work in progress**

Decide on operational and verification monitoring parameters: What, where, how often, by who, what to do when limit is exceeded

BoD  
Flow rates  
e.Coli  
Helminths  
Relevant chemicals

Drying time  
Micro. testing

Crop types  
Inspection of PPE use  
Farmers trained  
PH surveillance

Freq. of campaigns  
Microbial testing of food  
Immunization rates  
PH surveillance

Compliance with restrictions



# Key Concepts

- System assessment along the sanitation chain
- Hazard identification
- Risk assessment
- Multiple barriers
- Monitoring (operational and verification)
- Incremental improvement





**Thank you**

**All document available at  
[www.who.int](http://www.who.int)**

