

# **Sanitation Safety Planning to ensure RRR business models protect health**

# But first....a reminder of public health risk associated with reuse

## Direct Health Effects

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

## Indirect Health Effects

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



*Fish concentrate microbes in their intestines*

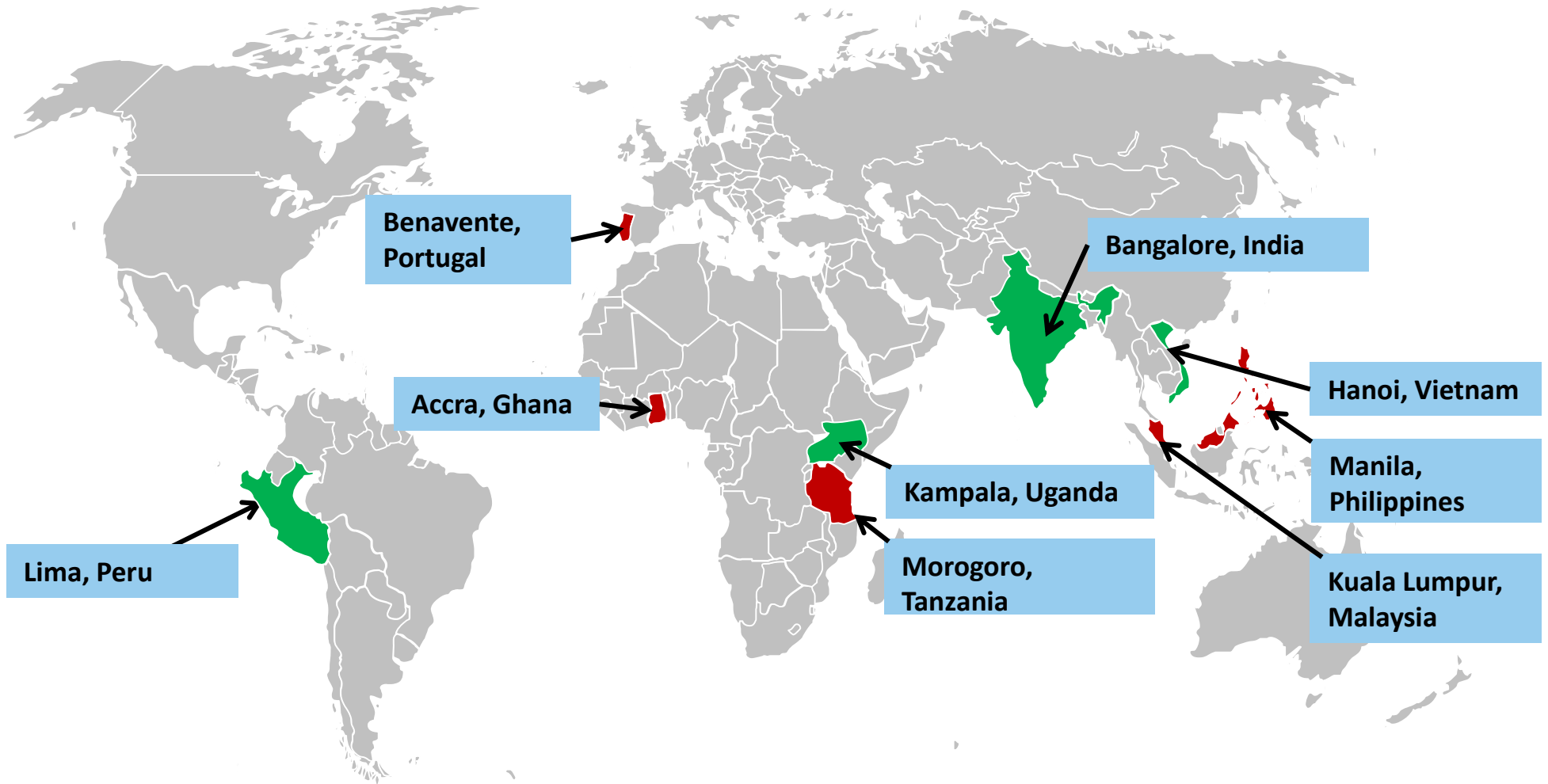


*Ascaris in untreated wastewater and fecal sludge*

# How can health protection be incorporated in RRR businesses?

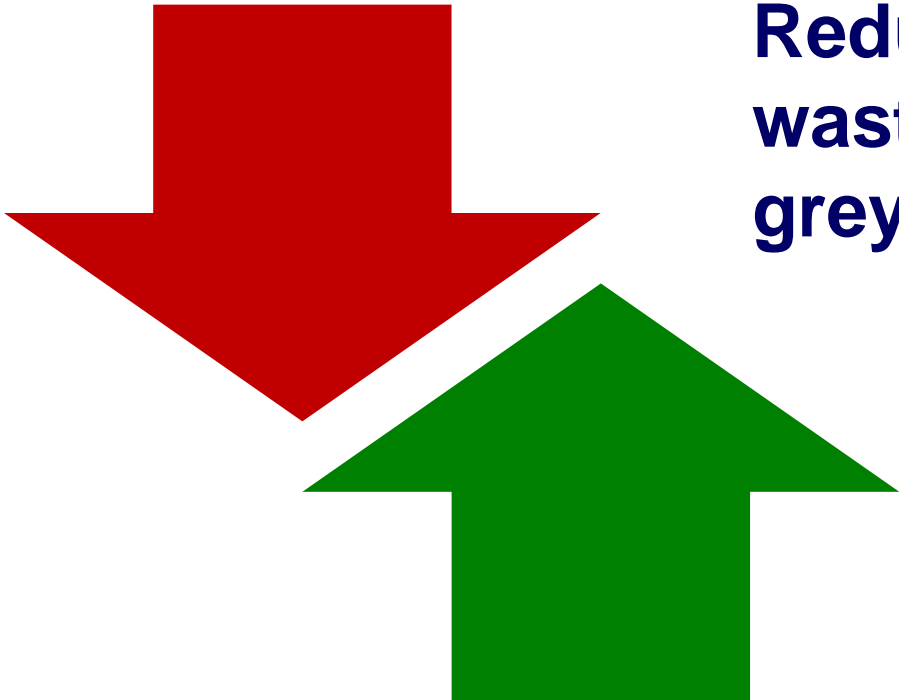


# SSP trial sites



# SSPs are a management tool to:

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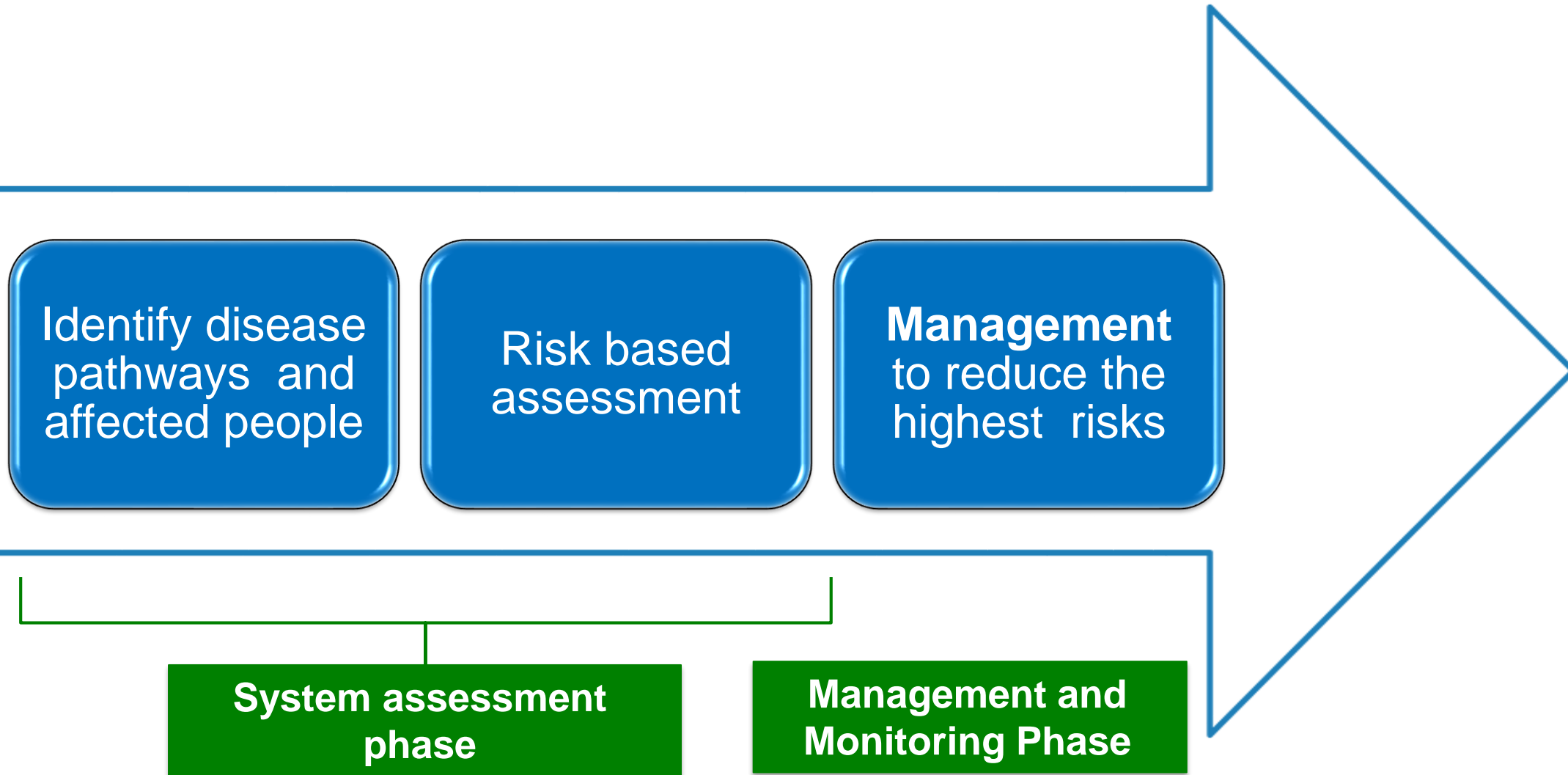


**Reduce health impact from  
wastewater, excreta and  
greywater, while...**

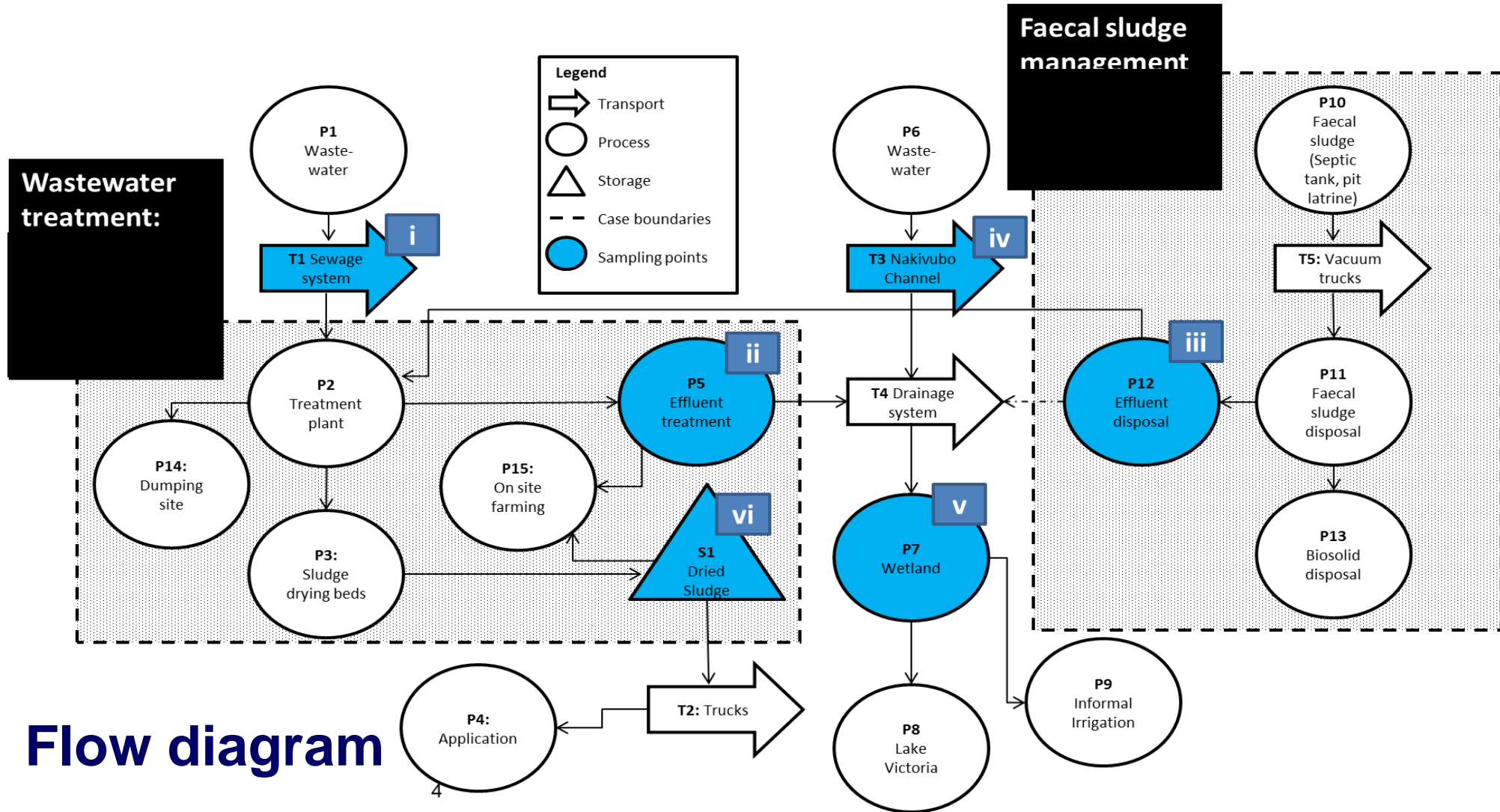
**maximizing the benefits  
of their use**

**Relevant for Business Models but also Public Health Programmes**

# How do SSPs work?



# SSP outputs: What is the system?



# SSP outputs: Who's is at risk?

**Table 1 – Exposure groups of the WWTP**

<b>Exposure group: WORKERS (W)</b>		<b>number of individuals</b>
<b>No.</b>	<b>Exposure sub-group</b>	
W1	Worker who operate the plant	25
W2	Worker who are located in the office or labs	25
W3	Worker who clean the sewage system	30
W4	Worker who collect and transport the faecal sludge	100-200
W5	Worker who buy and transport the dried sludge	100-200
<b>Exposure group: Farmers (F)</b>		<b>number of individuals</b>
<b>No.</b>	<b>Exposure sub-group</b>	
F1	Farmers who work on site of the plant	40
F2	Farmer who work downstream of the plant and occupy the wetland	Up to 1000
F3	Farmers who use the dried sludge	500
<b>Exposure group: Local Community (C)</b>		<b>number of individuals</b>
<b>No.</b>	<b>Exposure sub-group</b>	
C1	Community in close proximity to the plant	1000
C2	Community exposed to effluent of the plant	5000
C3	Community scavenging on solid wastes	50-100
C4	Community along sewage transport routes	Above 5000

## Exposure groups





# Key Output: What can be done about it?

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## Improvement Plans

**What to do to improve the system, and when to do it – selected according to risk level**

# Key Output: How do we know is working?

## A Monitoring Plan

- What to regularly monitor
- Who monitors it
- Where it is monitored
- When it is monitored
- How it is monitored

- What to do if monitoring shows a possible problem



Operational monitoring for WSP including Maturation Pond

Operational Limits	Operational Monitoring of the Control Measure: Control Measure: Treatment Plant (WSP) including maturation pond		Corrective action when the operational limit is exceeded	
Flow: < design flow m3/day (to be determined) BOD: less than design limit (to be determined based on pond design and detention times)	What is monitored	Flow rate and BOD	What action is to be taken	Do additional verification monitoring to check on key performance indicators. If verification parameters are exceeded, do additional test and to determine reason for poor performance and take corrective action. Depending on levels observed, advise farmers to take additional personal protection measures and for additional washing of produce in clean water before leaving farm gate until the issues is resolved
	How it is monitored	Flow: Parshall flume BOD: sample		
	Where it is monitored	Flow: Inlet BOD, Inlet and Outlet	Who takes the action	Utility's Re-use Manager



# Emerging benefits of SSPs

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- **Understanding risk leads to greater uptake of health protection.**
- **Targets resources at the highest risk areas – incremental improvement.**
- **SSP implementation breaks down silos, stimulates national dialogue, and can lead to changes in policy and regulation.**