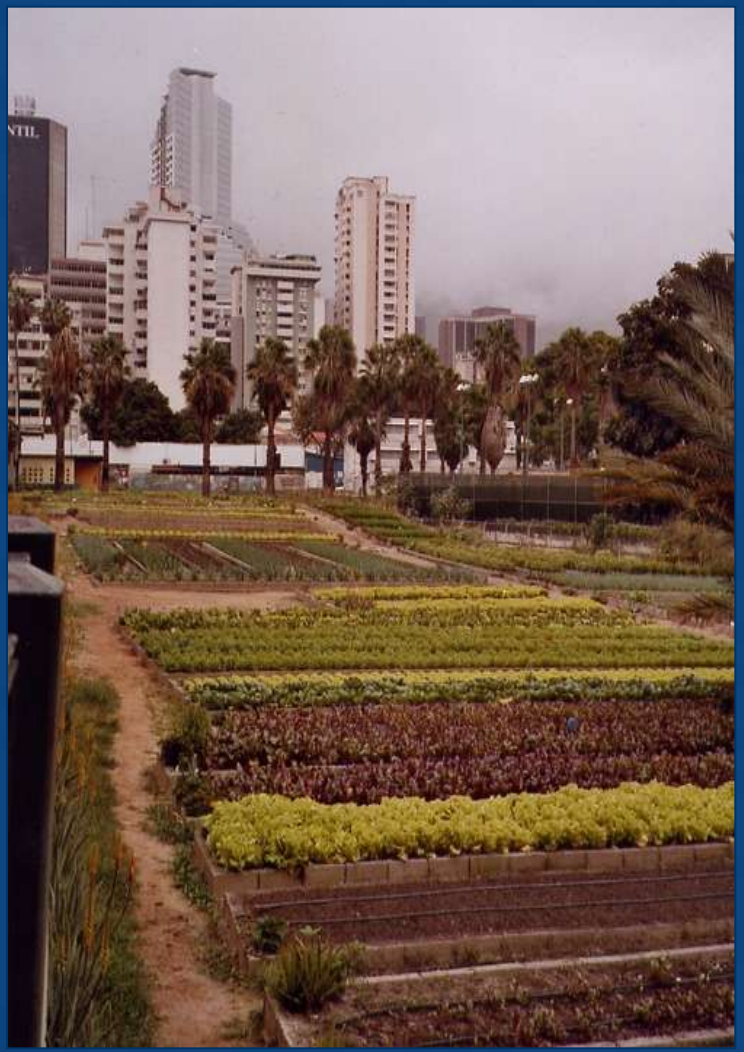
FAO WATER

FAO and the Use of Wastewater in Agriculture



Javier Mateo-Sagasta Dávila
FAO Land and Water Division

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- Global figures on wastewater use in agriculture
- Why wastewater is used?
- How to manage risks?
- FAO Program
- Capacity Development Project

Global figures

Use of untreated or partially treated WW

50 Countries

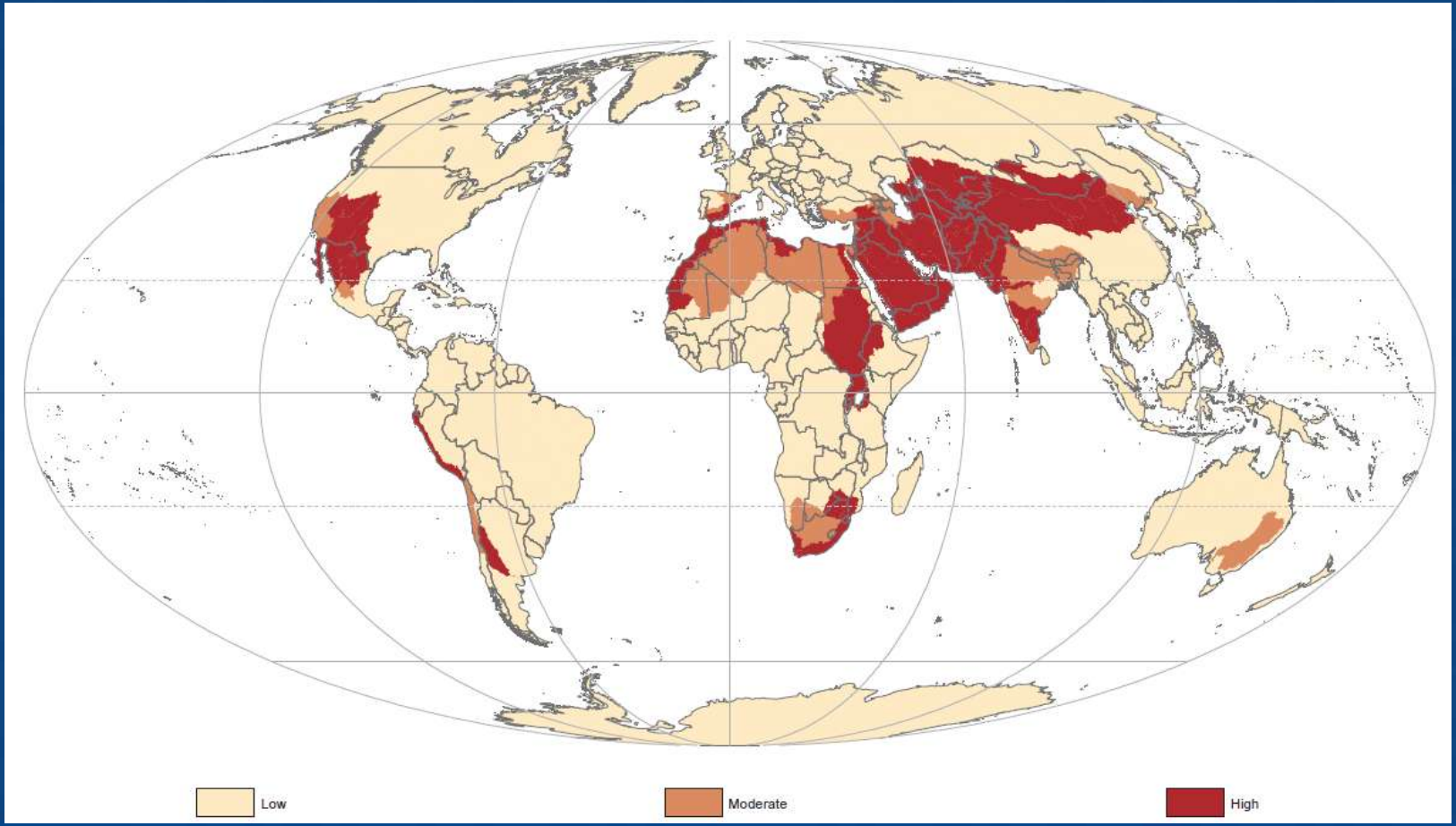
5-20 million hectares

Difficult to monitor by public authorities.

May be underreported!

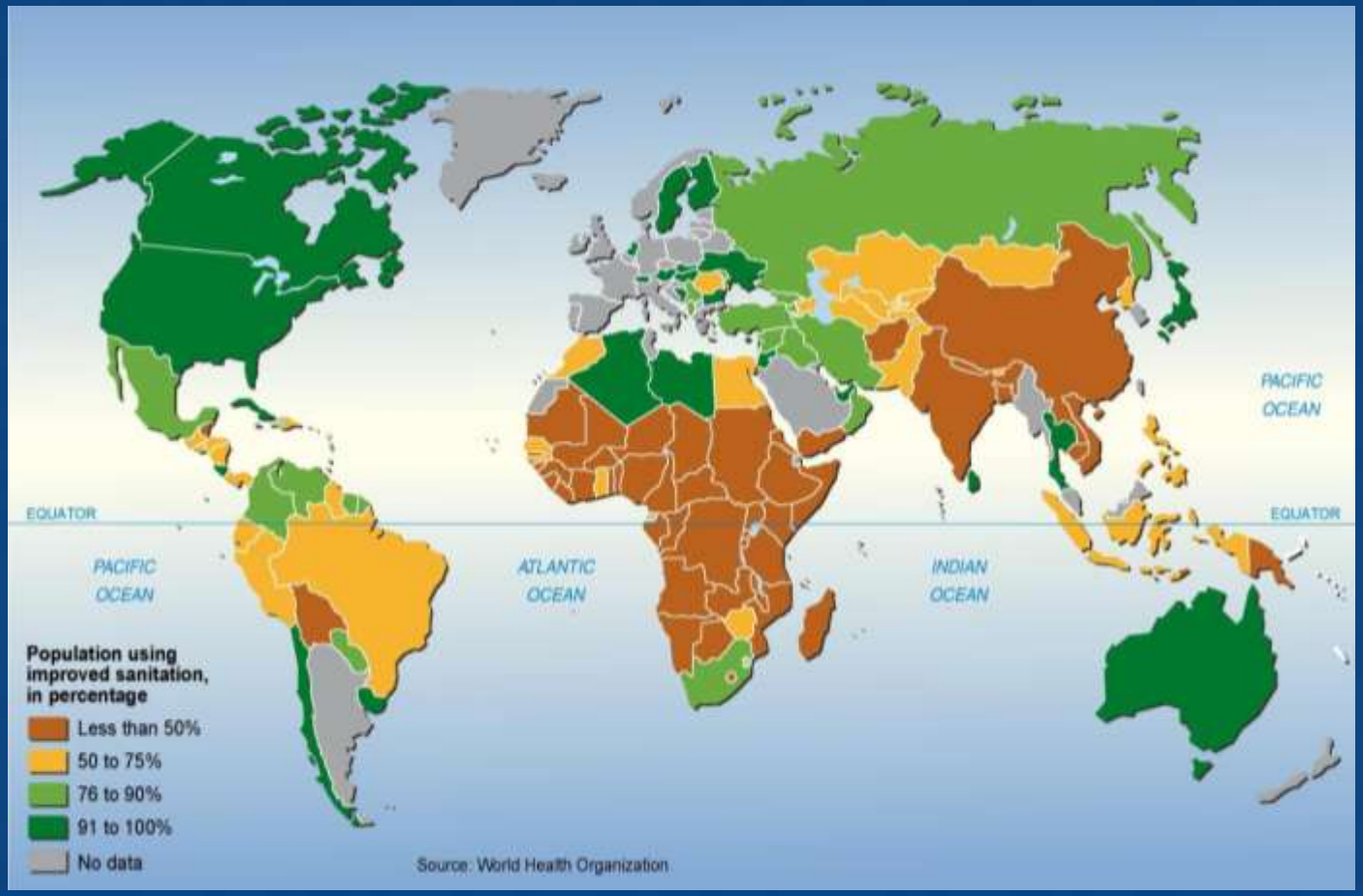
Why wastewater is used

Water Scarcity



Why wastewater is used

Water Pollution



Why wastewater is used

These two drivers are specially important in **urban and periurban** areas.

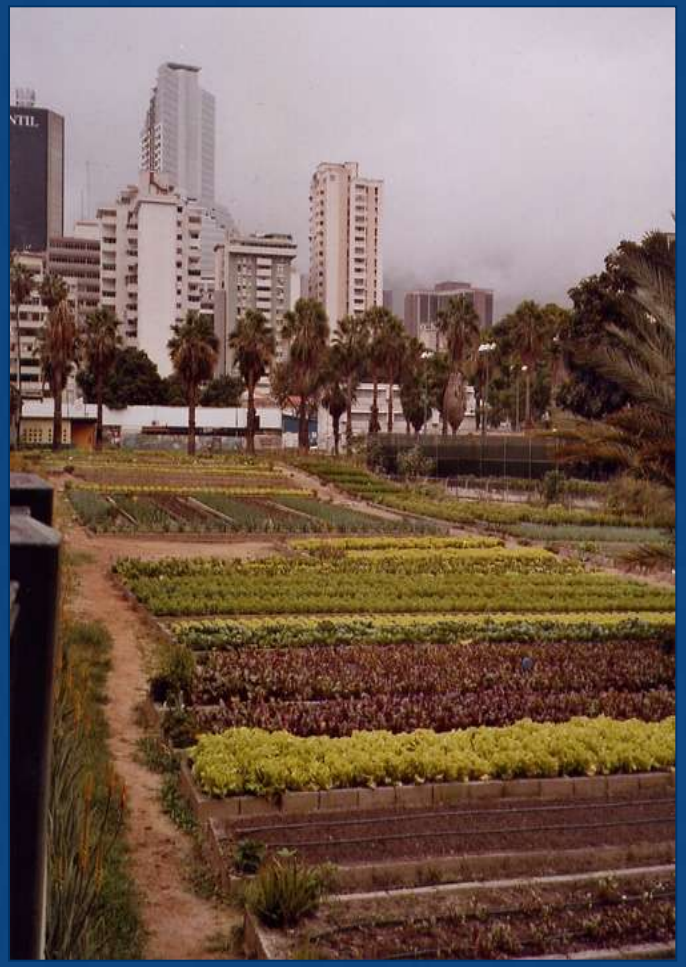
- Water Scarcity
- Water Pollution

→ Fierce **competition** for clean water

Why wastewater is used

Consequence:

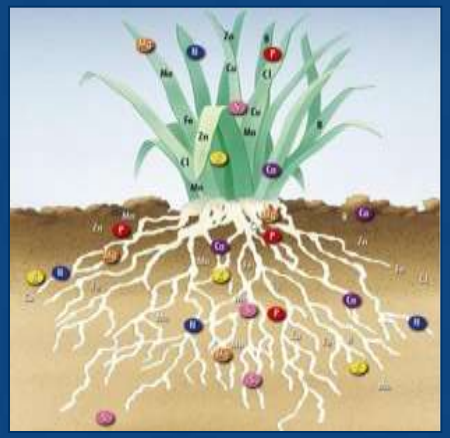
Millions of farmers, specially in peri-urban areas, have no option but to use marginal quality water to irrigate their crops.



Why wastewater is used

Nutrients

Macro nutrients (N and P),
Micro nutrients (K, Ca, Mg…)
Organic matter



– Demand of chemical fertilizers is reduced

– it may be the only source of fertilizers for poor farmers

Why wastewater is used

Available all year round

Unlike rain water or natural water courses.

It Allows:

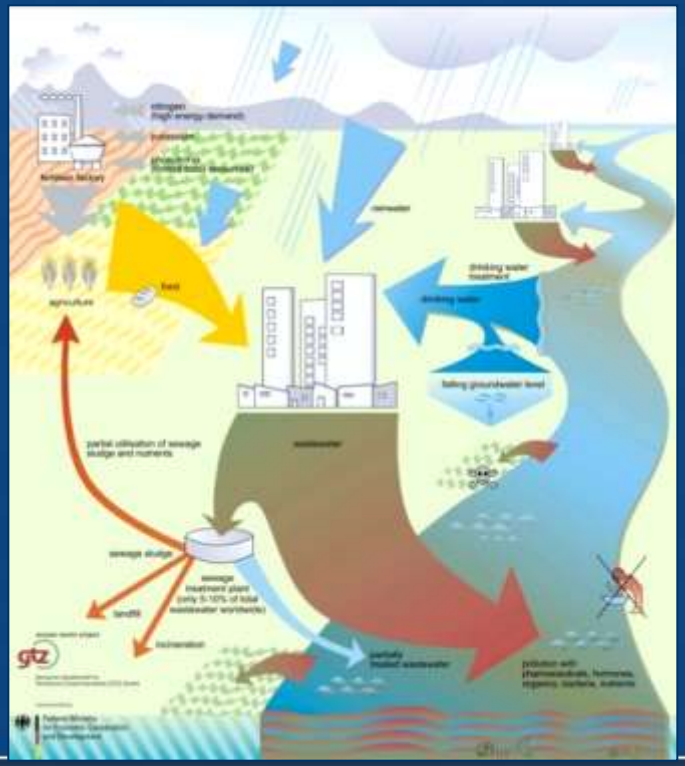
- More types cof crops
- More corps per year
- Higher incomes

Why wastewater is used

Opportunities of water reuse

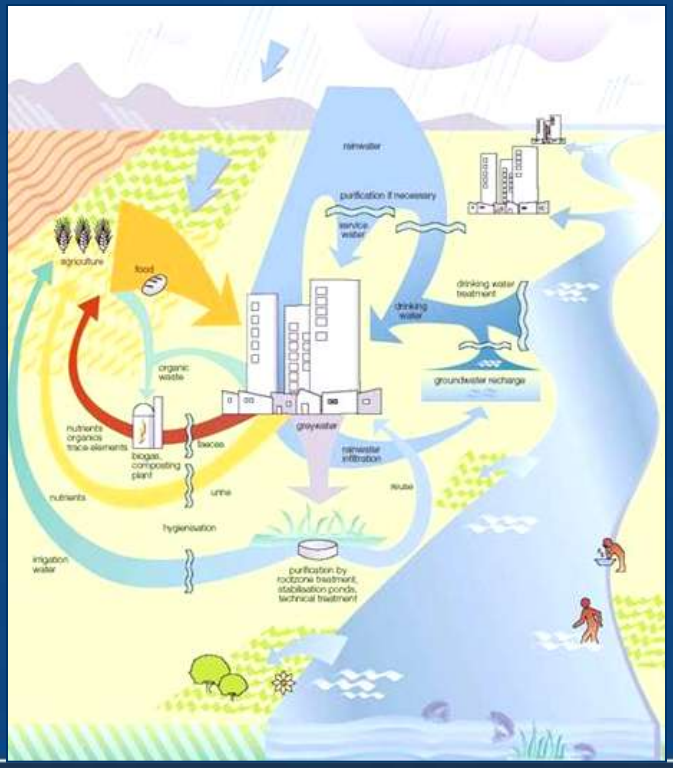
Linear society:

Pollution and lost resources



Recycling society:

Improved food security



Risks

Hazards

Helmints

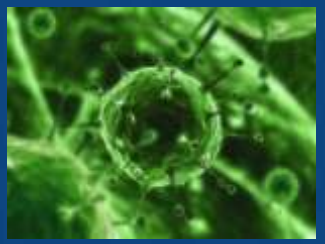
Ascaris

Parasitic Protozoa

Ameba intestinalis

Giardia Intestinalis

Virus



Enteric Virus

Bacteria

Cholera, typhus, salmonella

Heavey Metals

Others

Risks

Hazards of wastewater use

- pathogens,
- Heavy metals,
- Toxic organic compounds
- Salts

Can Harm:

- Human health
- Environment
- Crop productivity

Risks

Groups at risk

- Consumers
- Farmers and their families
- Close communities

Risk management

OPTION 1: Eliminate hazards:
Safe Water

Water Reclamation

OPTION 2: Risk management:
Multiple barriers

Lower the hazard and reduce the exposure

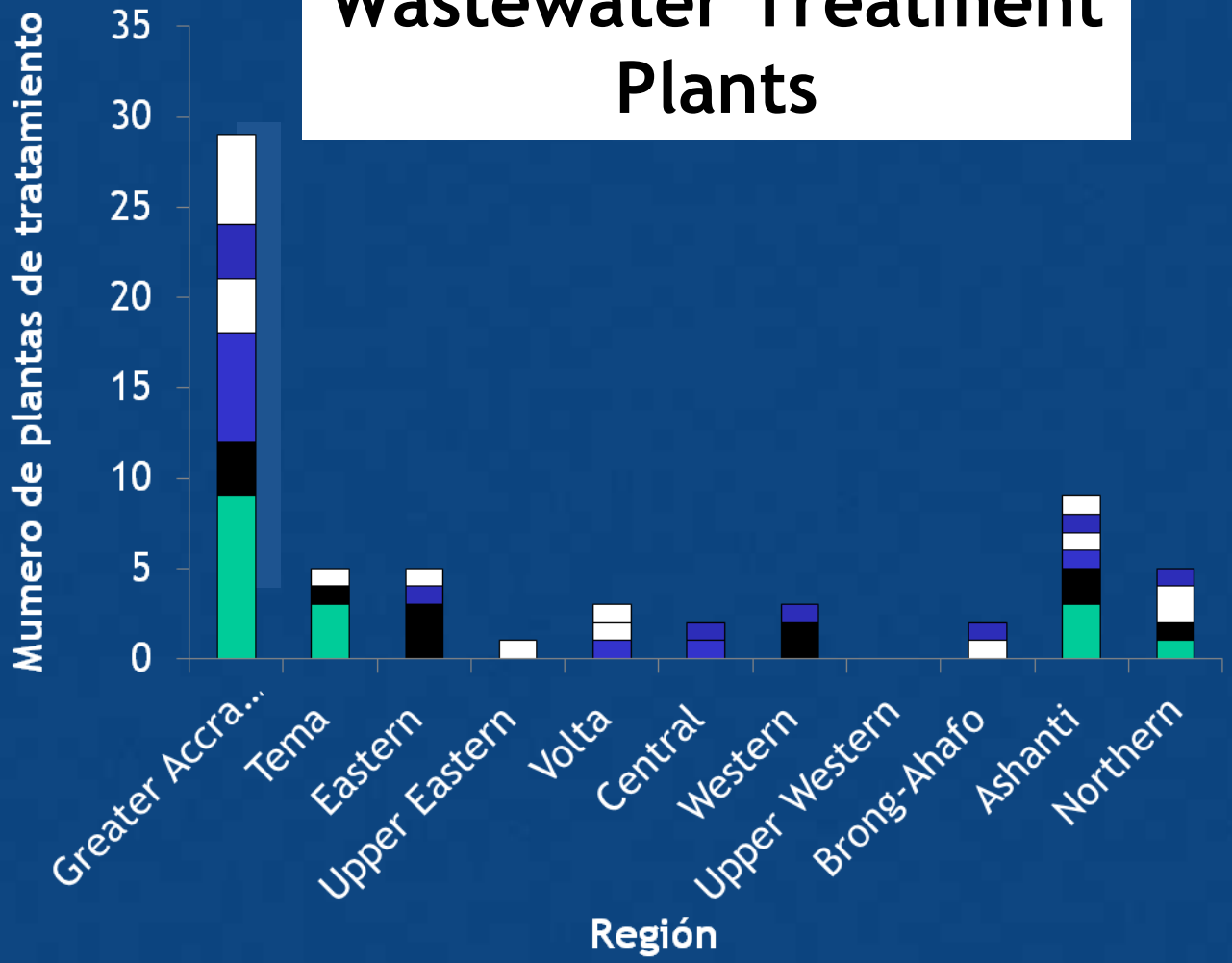
Risk management

OPTION 1: Eliminate hazards: Safe Water

- Common in high income countries
- Strict water quality standards for reuse
- Advanced Wastewater Treatment = water reclamation

Risk management

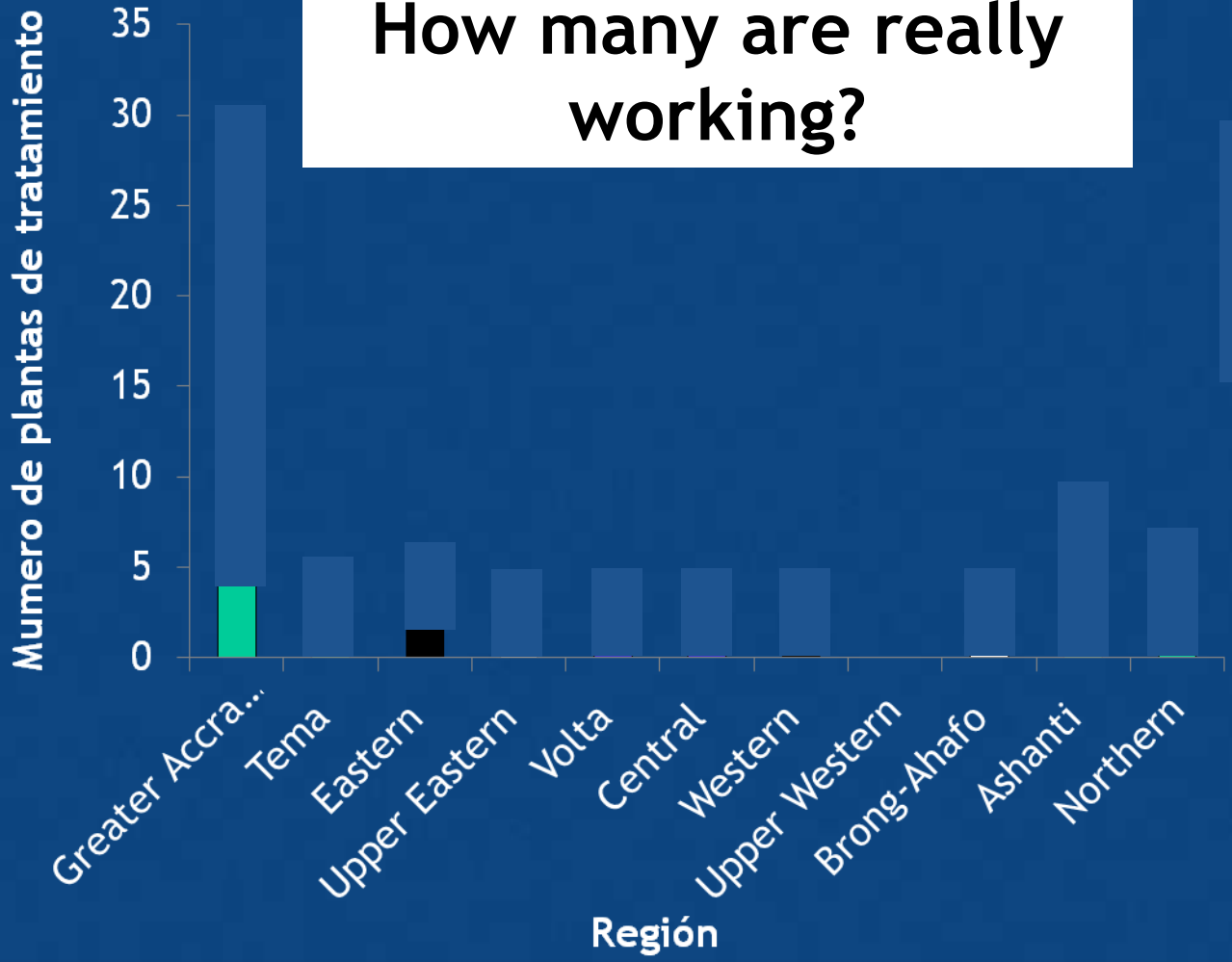
Wastewater Treatment Plants



Source: Murray & Drechsel, 2011

Risk management

How many are really working?



Source: Murray & Drechsel, 2011

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Risk management

Risk management

Why they don't work?

Not operated and poorly maintained

- Frequent power cuts
- Lack of technical capacities
- No capacity to pay

Risk management

OPTION 2: Risk management: Multiple barriers

Lower the hazard and reduce the exposure

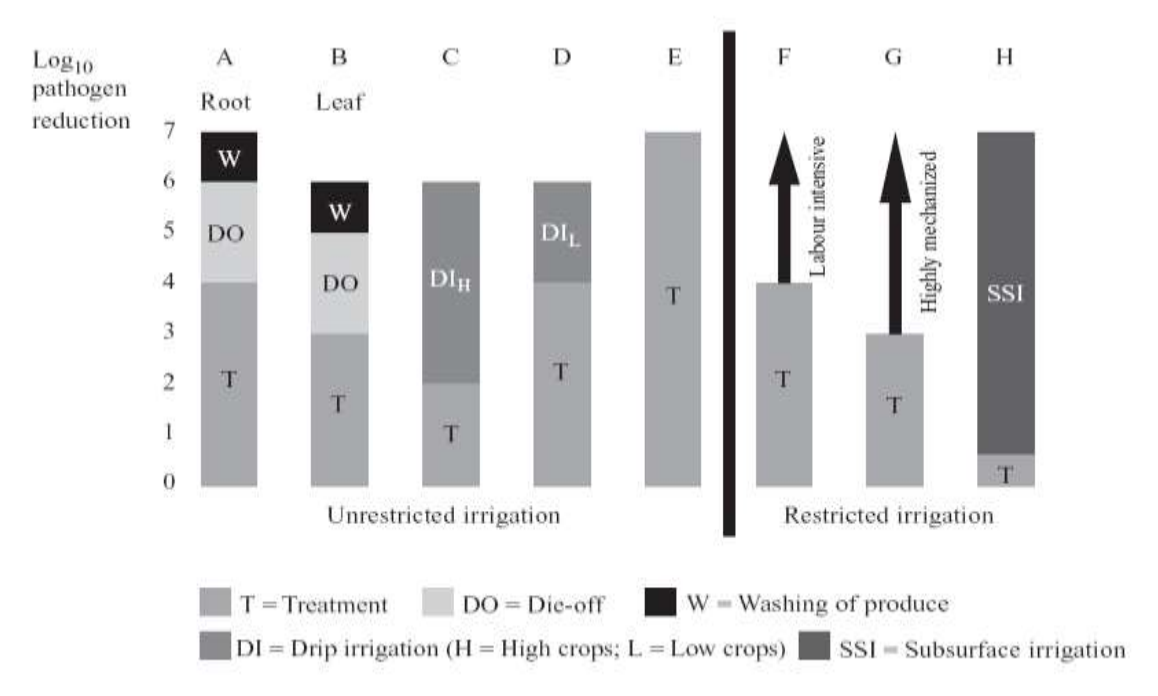
Types of barriers:

- Treatment (low cost)
- Crop restriction
- Irrigation techniques
- Produce washing or cooking

Risk management

OPTION 2: Risk management: Multiple barriers

Most cost-effective combination of barriers



FAO actions

Objetives

Promote the **planned and safe** use of wastewater in agriculture in order to:

- **Maximize opportunities** for agriculture, cities and environment.
- **Minimize risks** for consumers, farmers, closer communities.

FAO actions

3 levels of intervention

Knowledge and information

Policy advice

Technical assistance

Global

National

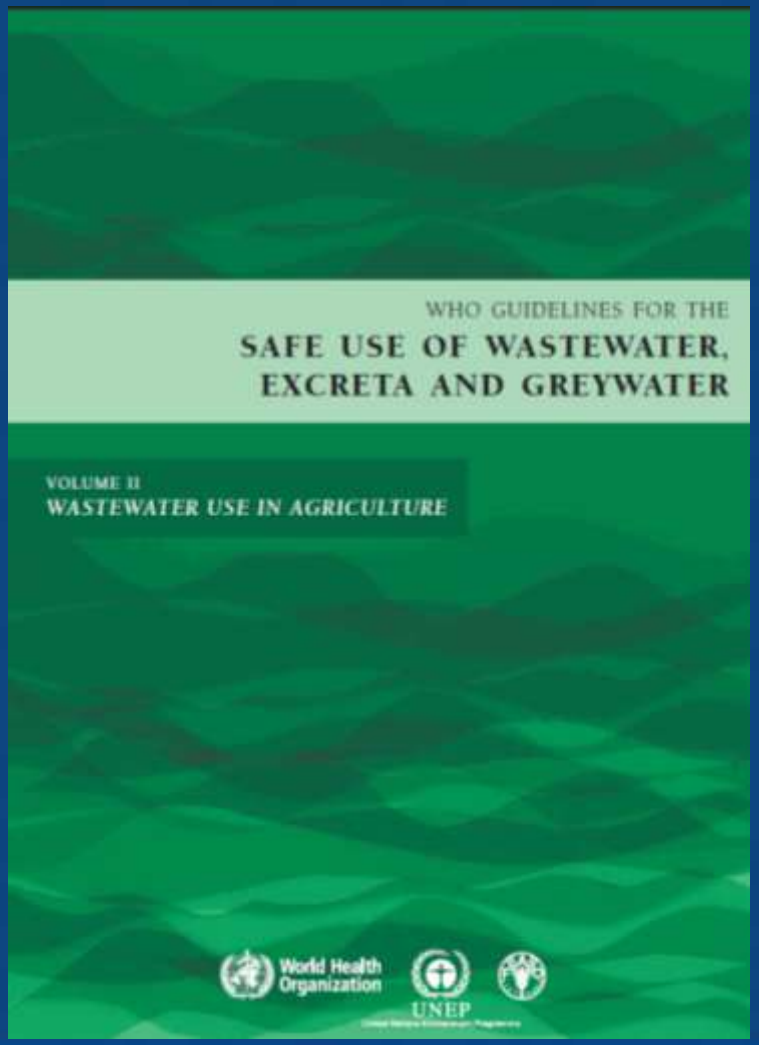
Local

FAO actions

International Guidelines

PROCEDURE
Multiple barriers

- WHO
- FAO
- UNEP



FAO actions

Information products

- FAO WR 35: The wealth of waste. The economics of wastewater use in agriculture

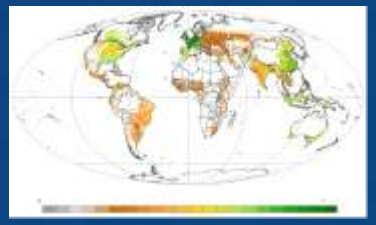
- Report: Heavy metal and wastewater interactions

FAO actions

Global overviews

- Wastewater data in AQUASTAT

- State of Land and Water (SOLAW)

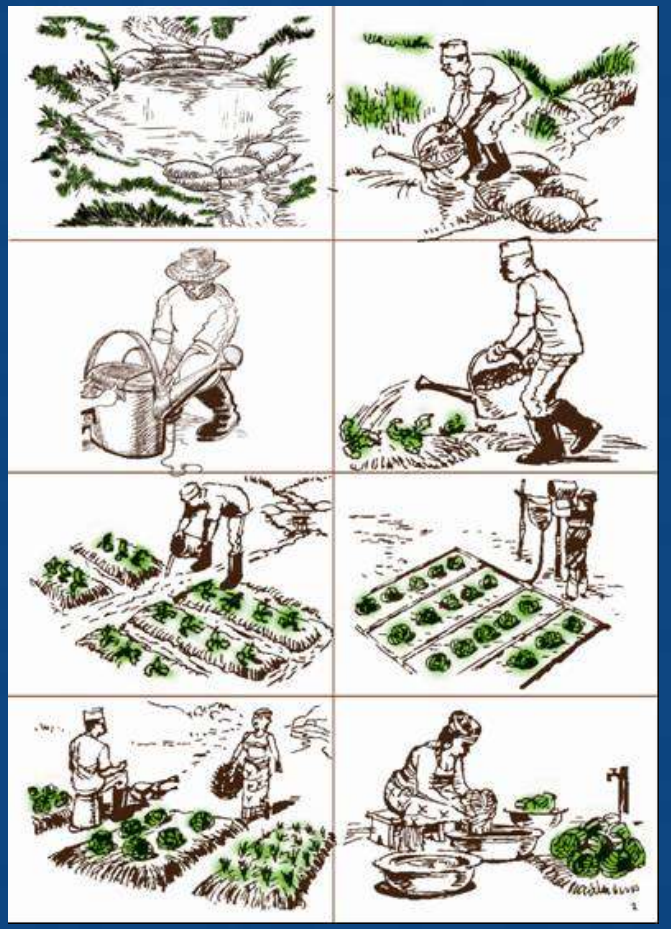


FAO actions

Training products

Farm Field School

manual on the safe wastewater use in agriculture



FAO actions

Field projects

- Senegal
- Angola
- Egypt
- Nicaragua
- Guatemala
- …

Capacity development

To promote the **planned** and **safe** use of wastewater in agriculture…

Countries need to **develop** their **capacities**.

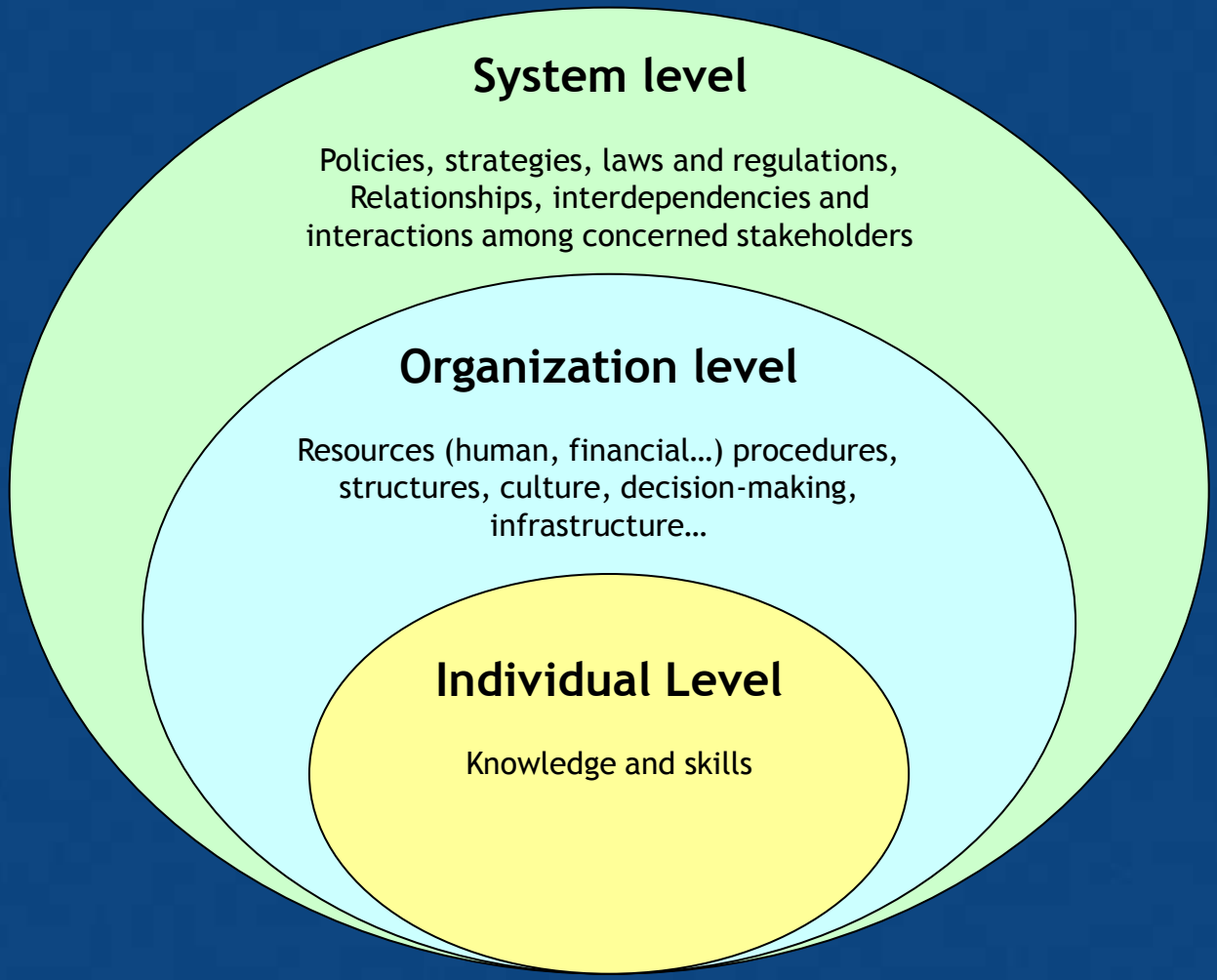
Capacity development

Capacity development

… but specifically

- **What** capacities?
- **Whose** capacities?

Capacity development



Capacity development

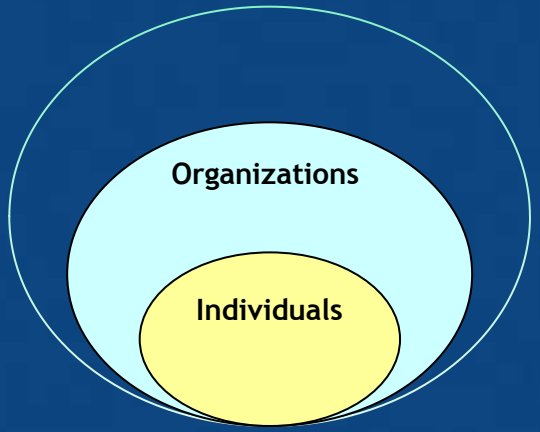
STAGE I

STAGE I - FINAL OUCOME

Qualified people in key organizations

to formulate the right policies and put into practice the safe use of wastewater in agriculture.

- Materials and methods
- Identified experts
- Dissemination strategy
- Capacity building action plan




THANK YOU!