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Institute for Integrated Management  
of Material Fluxes and of Resources

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# If not, what? The Costs of Neglecting the Nexus of Water, Food and Health

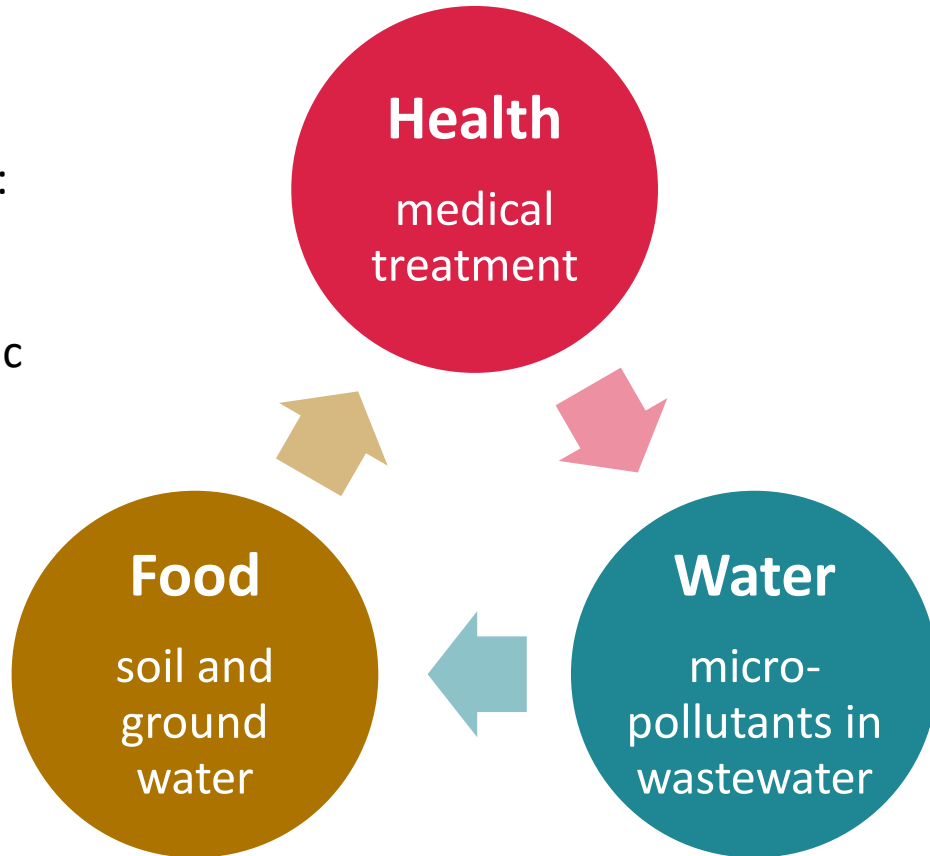
Edel Guenther

Advancing a Nexus Approach to the Sustainable  
Management of Environmental Resources

# Case study 1: Health – Water – Food

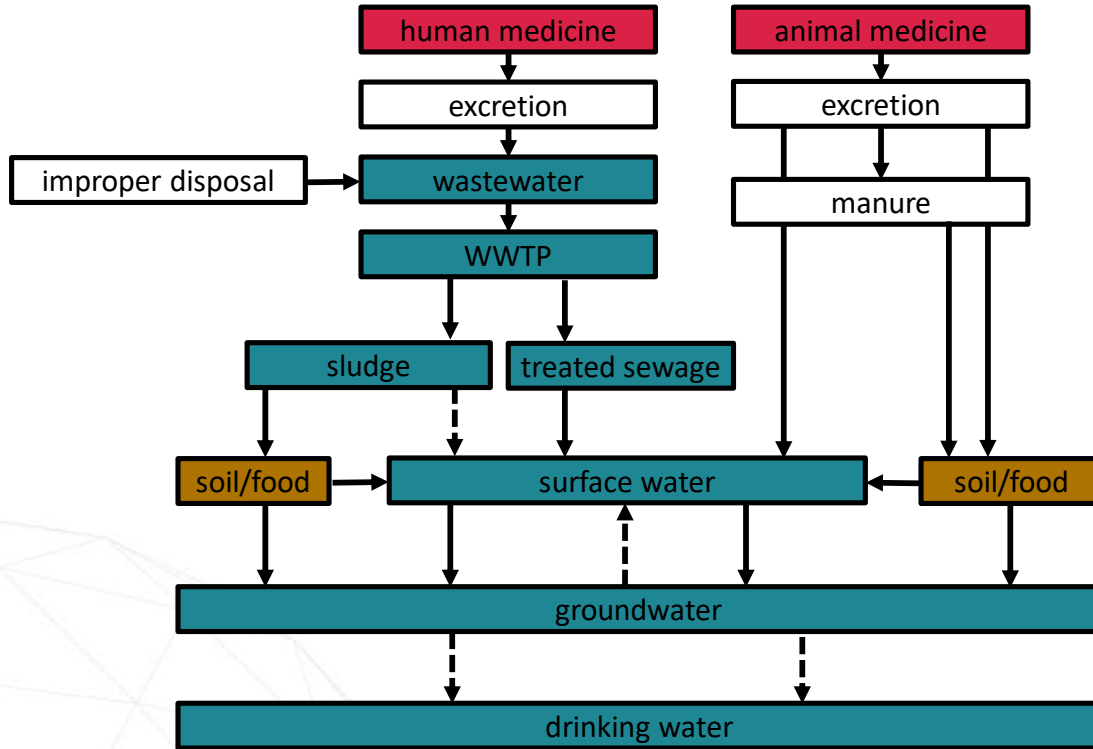
micropollutants via pharmaceuticals:

- Iodised X-ray contrast media
- Antiepileptic carbamazepine
- Analgesic/antiphlogistic diclofenac
- Antibiotic sulfamethoxazole
- Lipid reducers
- Beta-Blockers
- Synthetic hormones





# Micropollutants via pharmaceuticals





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# Whose costs?



Pharmaceutical  
companies



Pharmacies



Hospitals



Medical  
doctors



Health  
insurances



Households



Waste water  
treatment



Drinking water  
treatment



Farms



Agri-food  
companies



Authorities



Politics



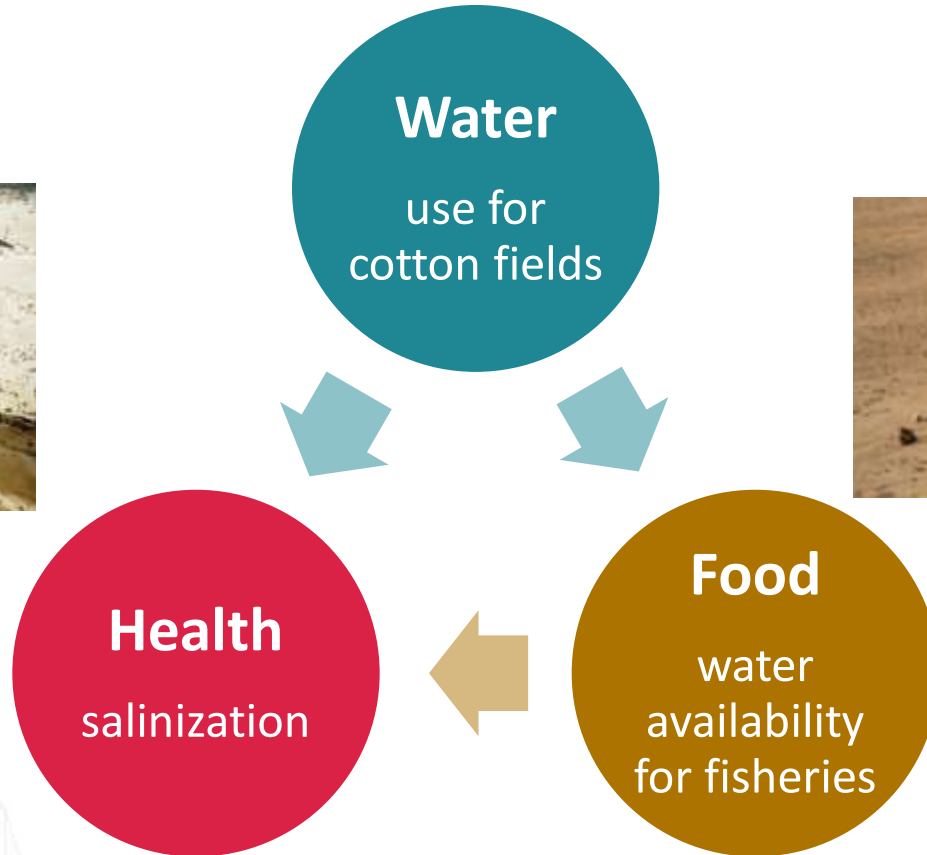
Banks



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## Case study 2: Water– Food – Health





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# Whose costs?



Fishermen



Cotton pickers



Developers



Environmentalist



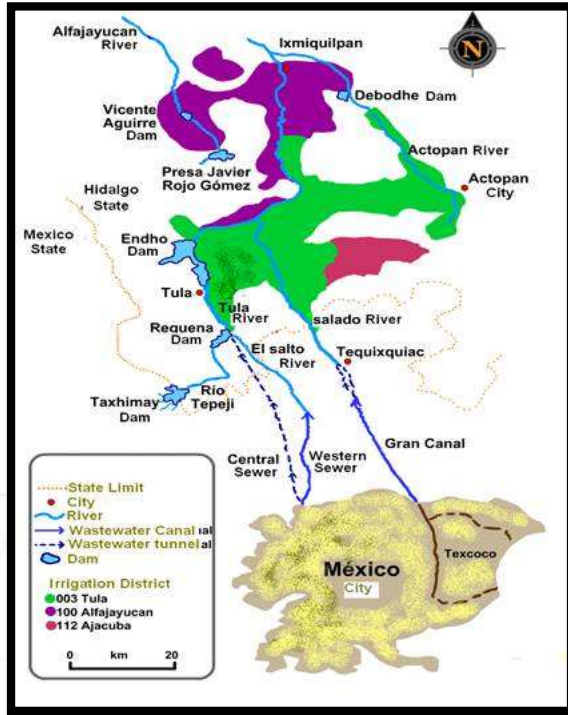
Waterworks



Regulators



# Case study 3: Food – Water – Health



**Food**  
irrigation with  
untreated  
wastewater

**Health**  
pollution

**Water**  
ground-  
water  
contami-  
nation





# Whose costs?

## Intended Activity: Water

- 50m<sup>3</sup>/s untreated wastewater from Mexico City via channel/tunnel

## Intended Activity: Food

- 90,000 ha irrigated with untreated wastewater for the past 100 years

## Unintended Results: Water

- Aquifer recharge as an indirect result
- Infiltration through channels and irrigation returns
- Groundwater pollution

## Unintended Results: Health

- Public health/environmental issues

## Unintended Results: Food

- Soil contamination
- Crop pollution





# Calculating the Net Effect – ISO 14007

## Costs of action for

avoiding

reducing

substituting

recycling

disposing

## Costs shifted to or shared with

customers

suppliers

government

insurances

## Costs of inaction

damage costs

legal sanctions,  
e.g. fees

licences

insurance costs

opportunity  
costs

ICS 13.13.020 > 13.020 > 13.020.20  
**ISO 14007:2019**  
Environmental management – Guidelines for  
determining environmental costs and benefits



# Barrier analysis

