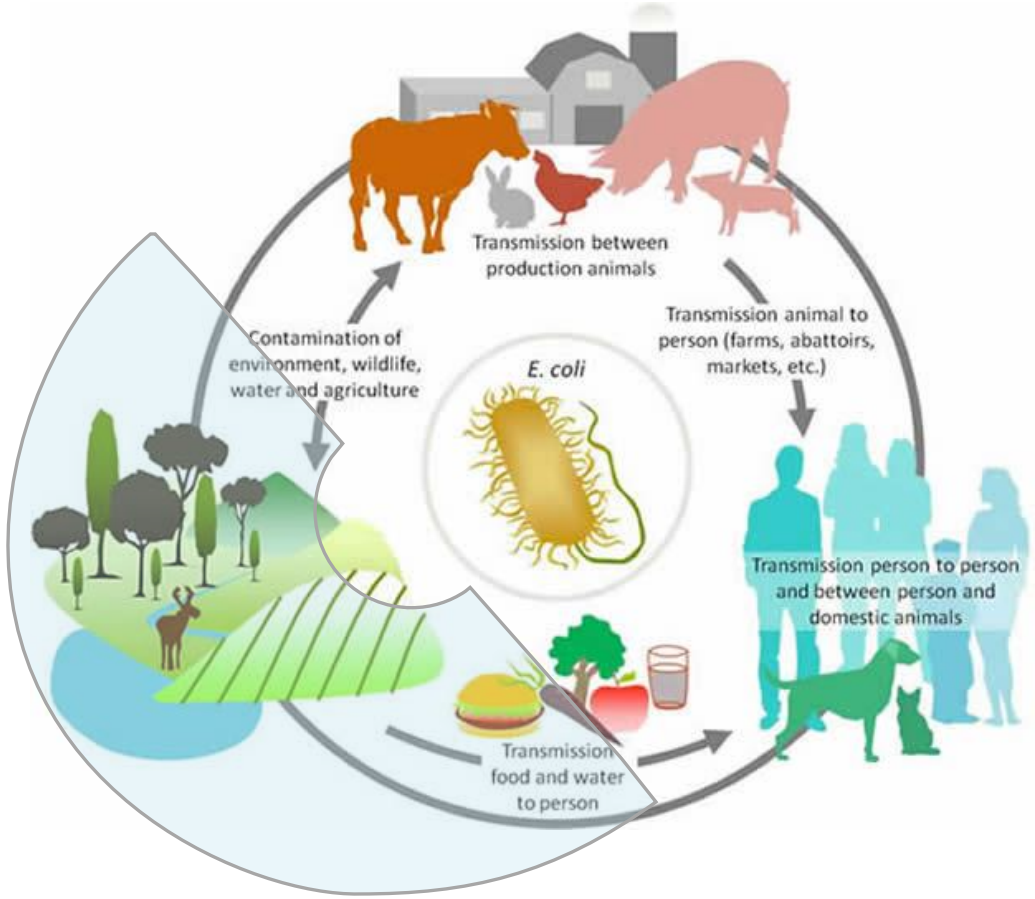
ONE WATER ONE HEALTH ONE PLANET

5 October 2023 Rome, ITALY



Dr. Sasha Koo-Oshima, Deputy Director (FAO)

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Food and Agriculture Organization of the United Nations

International Water Management Institute

ROME WATER DIALOGUE 2023

Publication launch

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http://www.fao.org/3/cc7340en/cc7340en.pdf

Food and Agriculture Organization of the United Nations

FAO ROME WATER DIALOGUE 2023

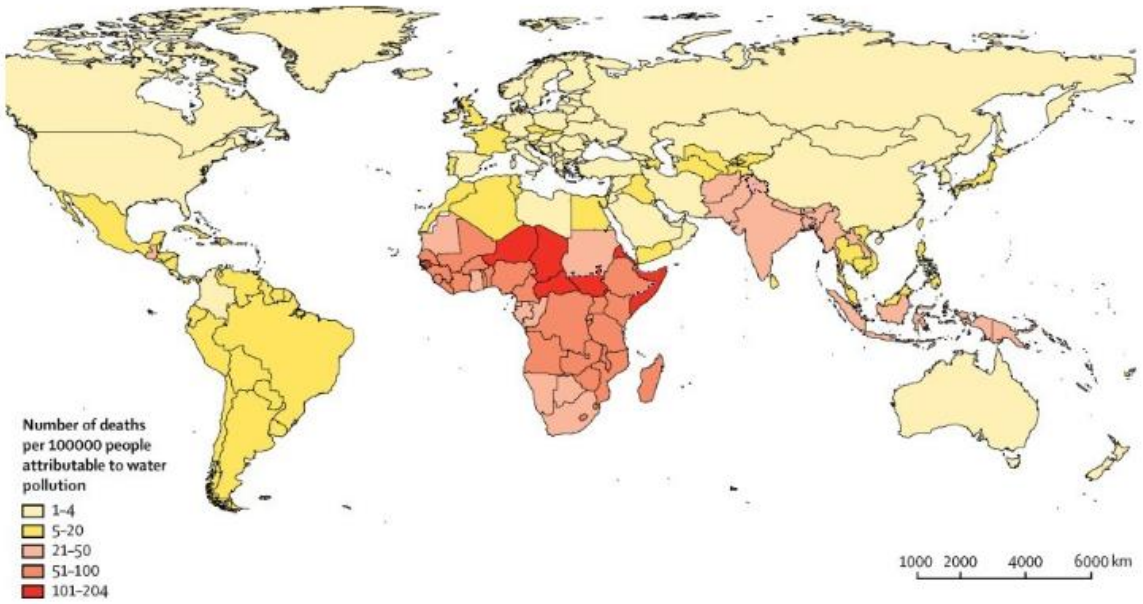
Part 1:

Dr. Sasha Koo-Oshima (FAO) on the water quality challenge, risks and the need for the publication

The water pollution challenge: risks

According to the most optimistic estimates, still half of all domestic is untreated, not counting a much larger volume of agricultural drainage water discharged untreated into the environment, causing especially in countries with poor medical services significant harm.

Figure 2.1. Number of deaths per 100 000 people due to water pollution, 2015



Source: Reproduced with permission from Landrigan, P.J., Fuller, R., Acosta, N.J.R., *et al.*, 2017. The Lancet Commission on pollution and health. The Lancet, 391(10119): 462–512; modified to United Nations map geodata, version April 2023.

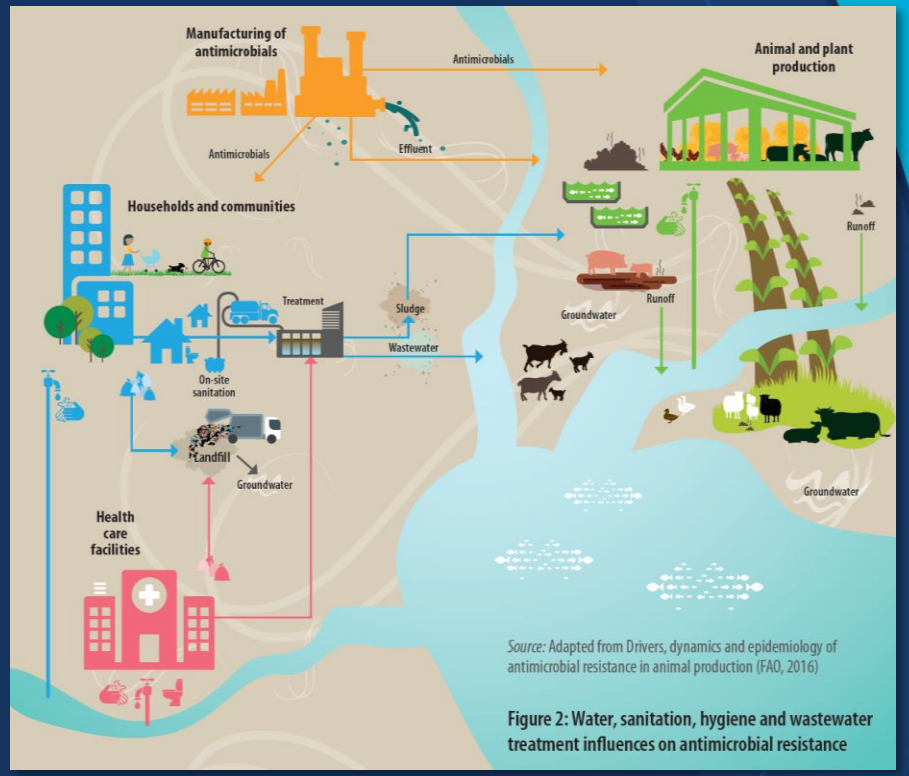
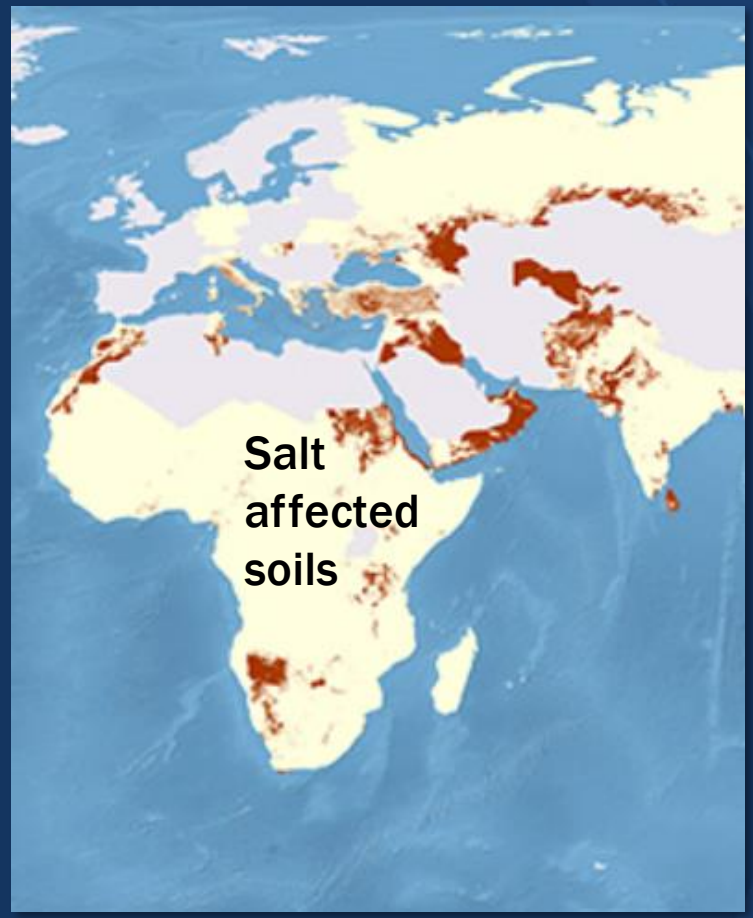


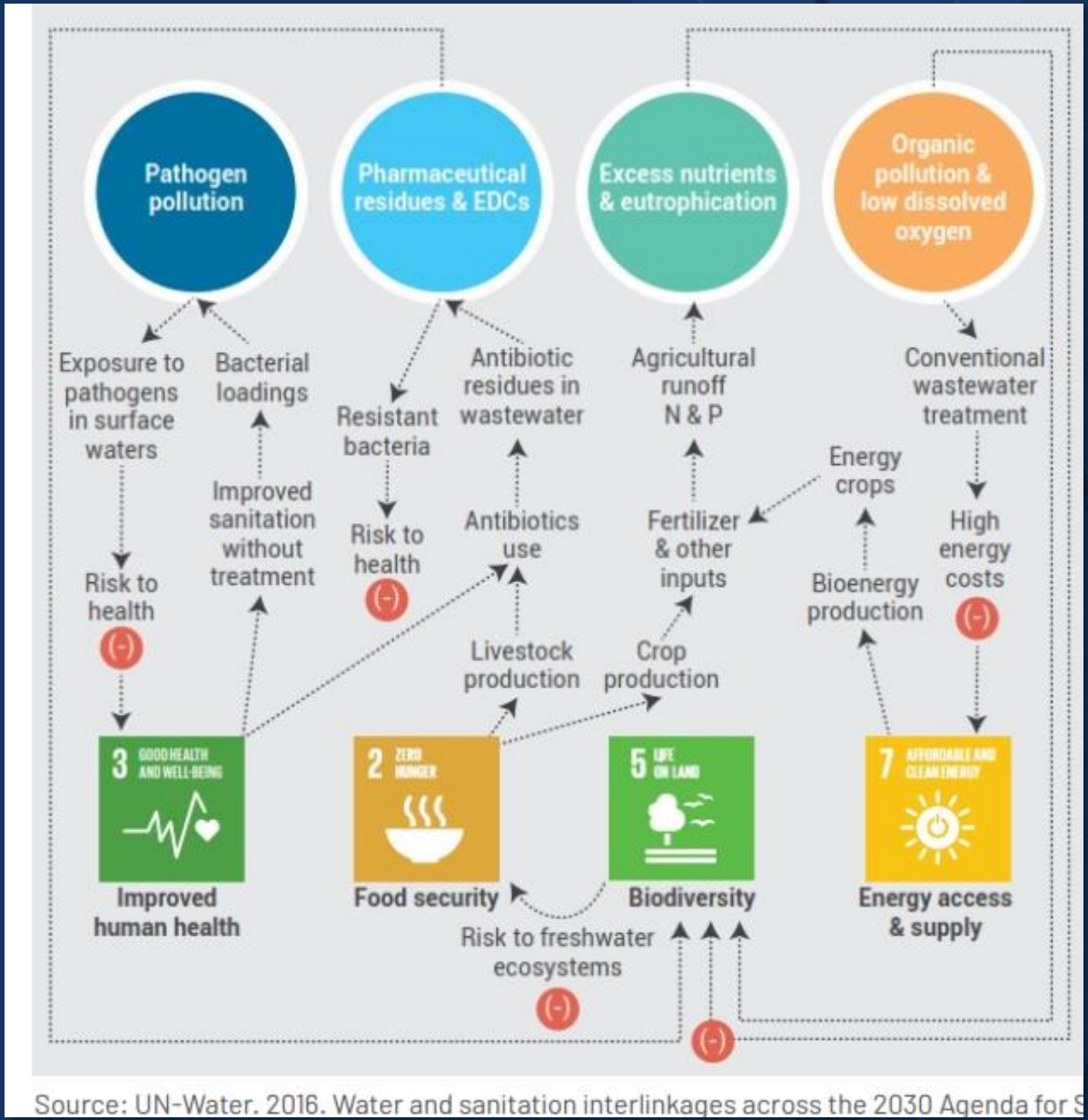
Figure 2: Water, sanitation, hygiene and wastewater treatment influences on antimicrobial resistance

Agriculture and Water Quality: The key challenges

- Globally, there are over 833 million hectares of **salt-affected** soils including an estimated 33% of irrigated land (ca. 100m ha).
- About 30 million hectares of farmland feeding 800 million urban residents, are irrigated with **highly contaminated water.**
- Only 11 per cent of the produced urban wastewater is currently being **safely** reused (max covering 1m ha; high data scarcity).



https://www.fao.org/documents/card/en/c/cb7247en



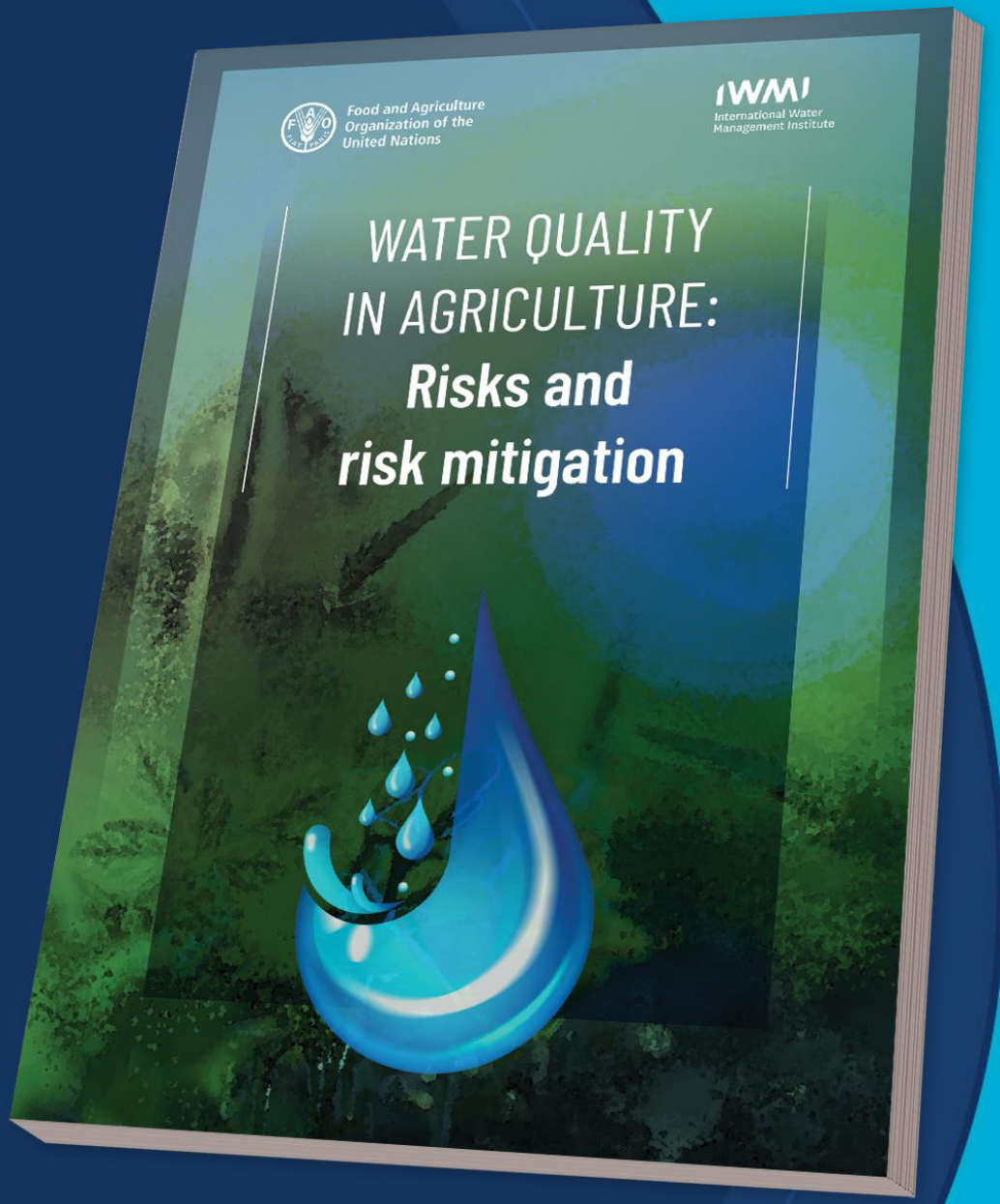
Source: UN-Water. 2016. Water and sanitation interlinkages across the 2030 Agenda for S

Poor water quality is undermining several SDGs aside SDG 6, with direct consequences for FAO Strategic principles of ***better production***, ***better nutrition***, a ***better environment***, and a ***better life***.

Need for a new publication

- FAO at the forefront of providing information on assessing water quality risks and risk mitigation options.
- Benchmark publications: **Water Quality for Agriculture** (Ayers & Westcot 1976, 1985) and **Wastewater Treatment and Use in Agriculture** (Pescod 1992). **FAO-WHO Guidelines for Safe Wastewater Reuse.**
- FAO Land and Water Discussion Paper 5 on **Water Desalination for Agricultural Applications.**
- However, over the last 30 years, water quality challenges and risks have significantly grown, resulting in many new data requirements and guidelines.

- **Timely publication for FAO to summarize the current state of the art in a new publication.**
- Partnering with IWMI to co-publish the joint report.
- Contribution from international team of experts from Israel, Spain, USA, Tunisia, Ghana, Australia, The Netherlands, Kenya, France, Canada, etc.
- Covering the **crop**, **livestock**, and **aqua-culture** sectors but also **environmental** needs.



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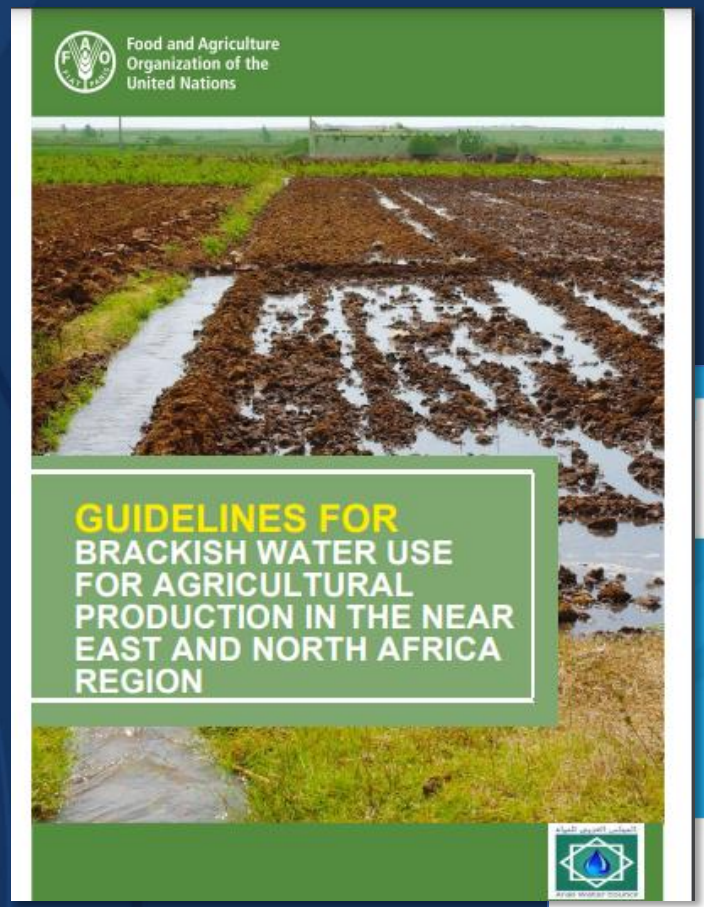
The new book is complemented by two other recent FAO guidelines for Brackish Water Use and Wastewater Management to Prevent Spread of Antimicrobial Resistance (AMR)



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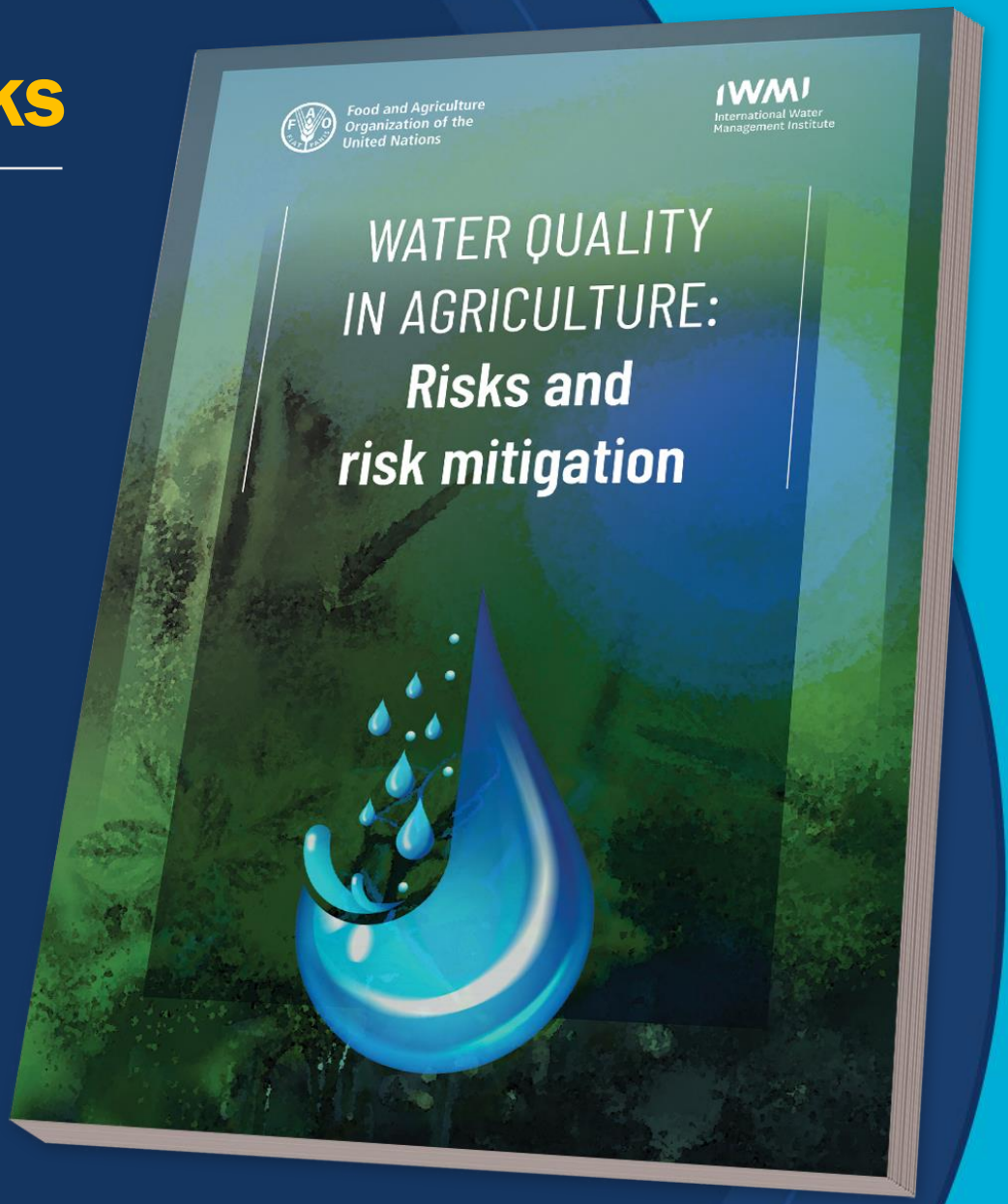
Part 2:
Dr Rachael McDonnell (IWMI) on **risk assessment and mitigation**

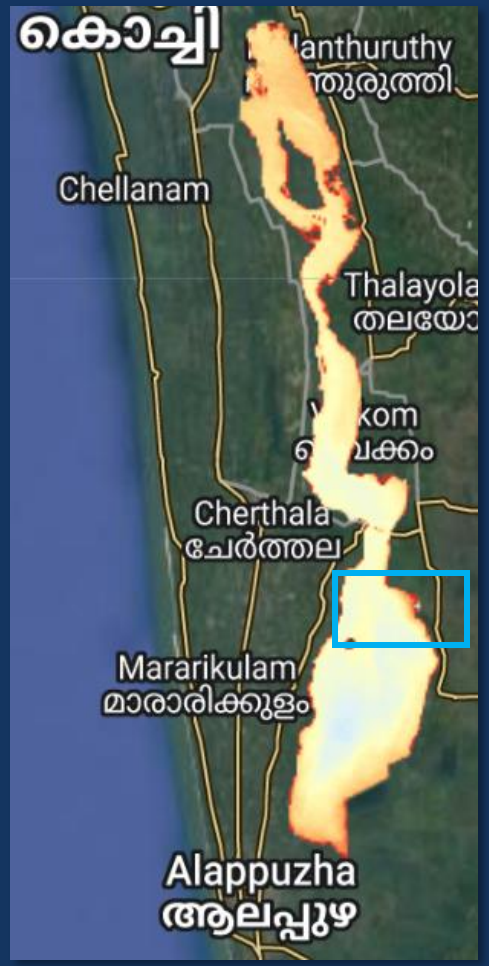
Assessing salinity and pollution risks

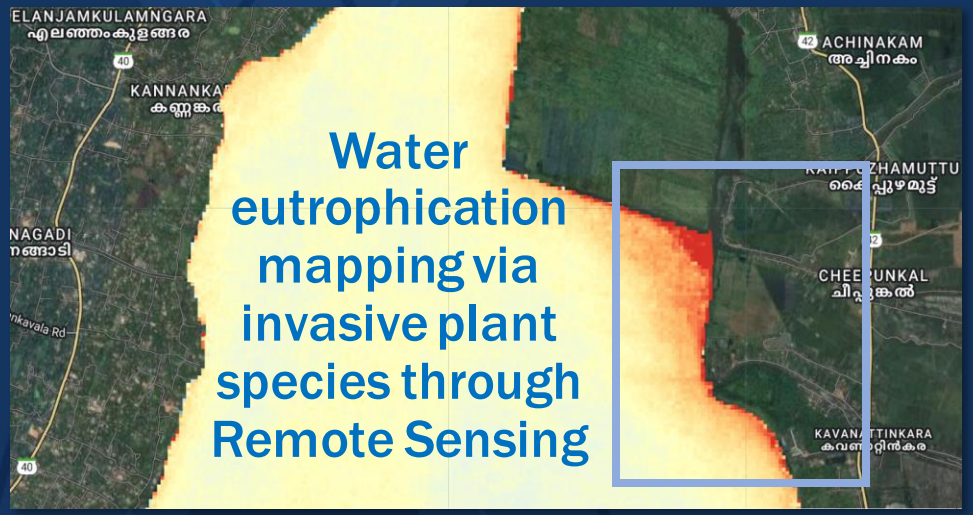
- Relevant international threshold values for risk assessments (via water, soils, crop testing)
  - Salinity, chloride, boron
  - Pathogens
  - Heavy metals
  - Emerging contaminants
- Citizen science approaches
- Remote Sensing
- Special attention to the Global South



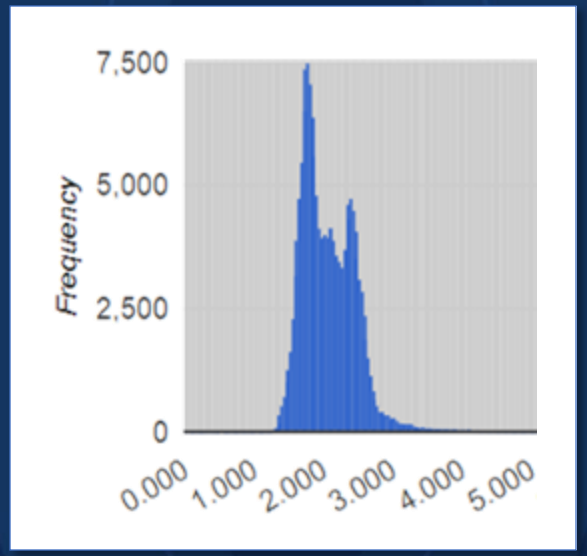
An example from IWMI work: Vembanad Lake, Kerala, India

Heatmap of Chlorophyll-a calculated from Empirical formula



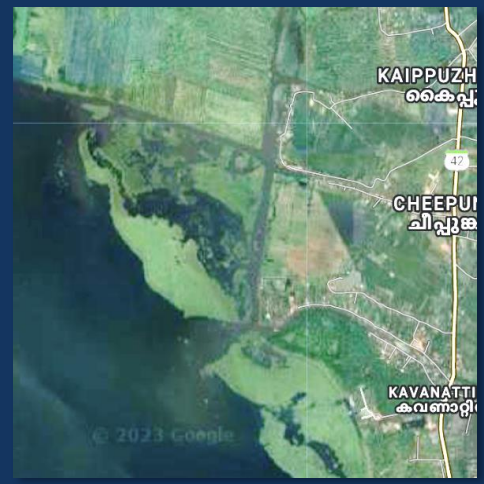


Water eutrophication mapping via invasive plant species through Remote Sensing

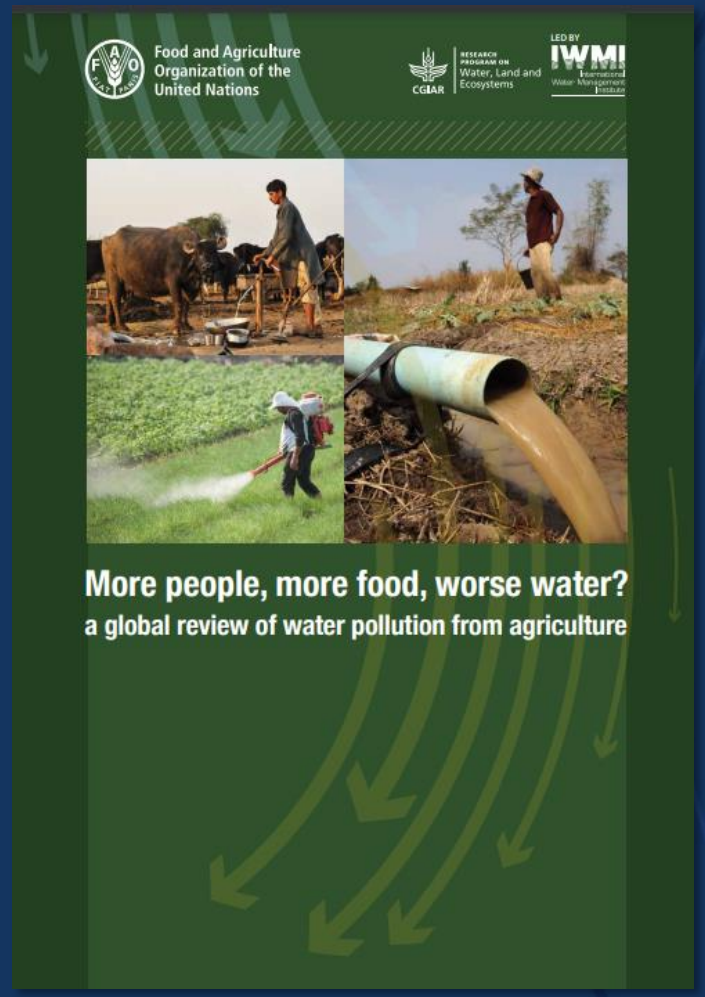


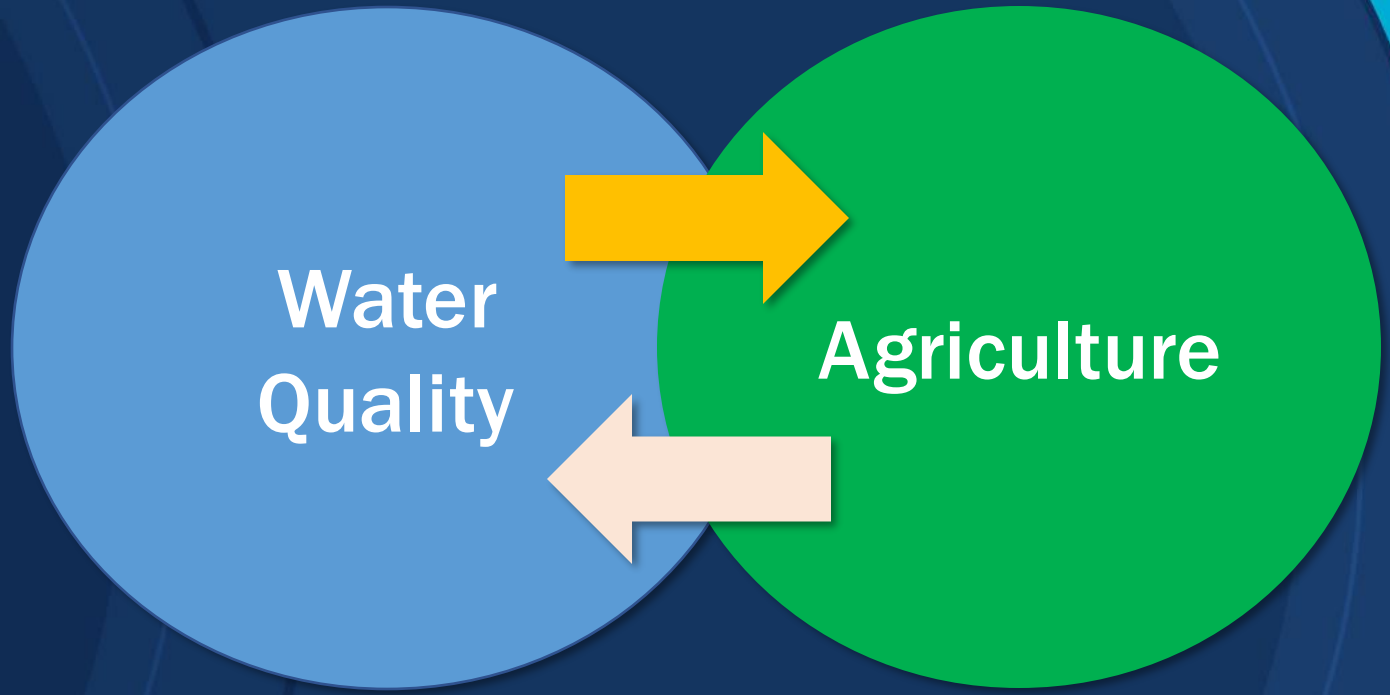
Histogram of Chlorophyll-a (mg/L)

High resolution image from Google Earth



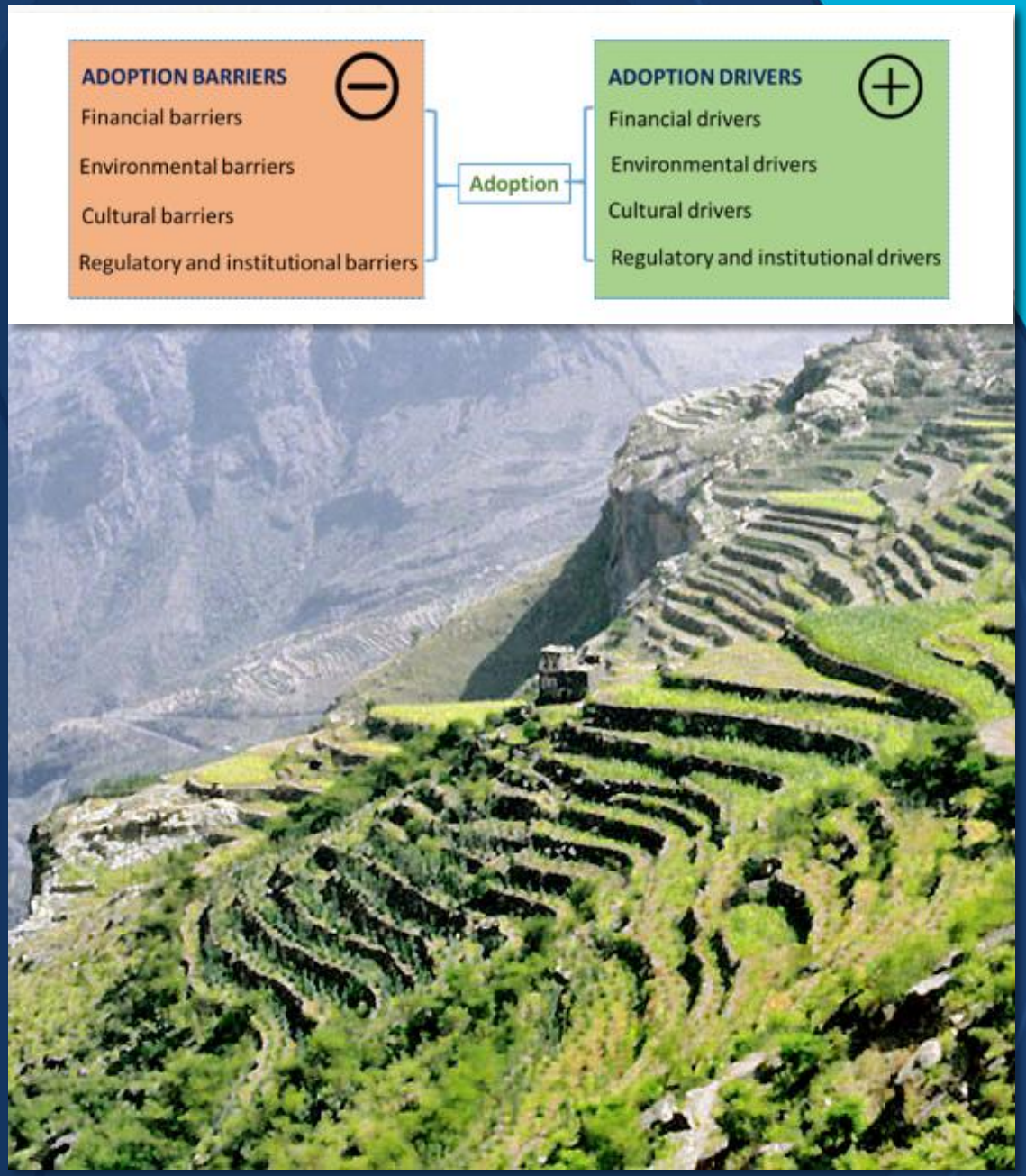
Crucial: Addressing possible agricultural downstream trade offs as highlighted in a previous FAO-IWMI publication

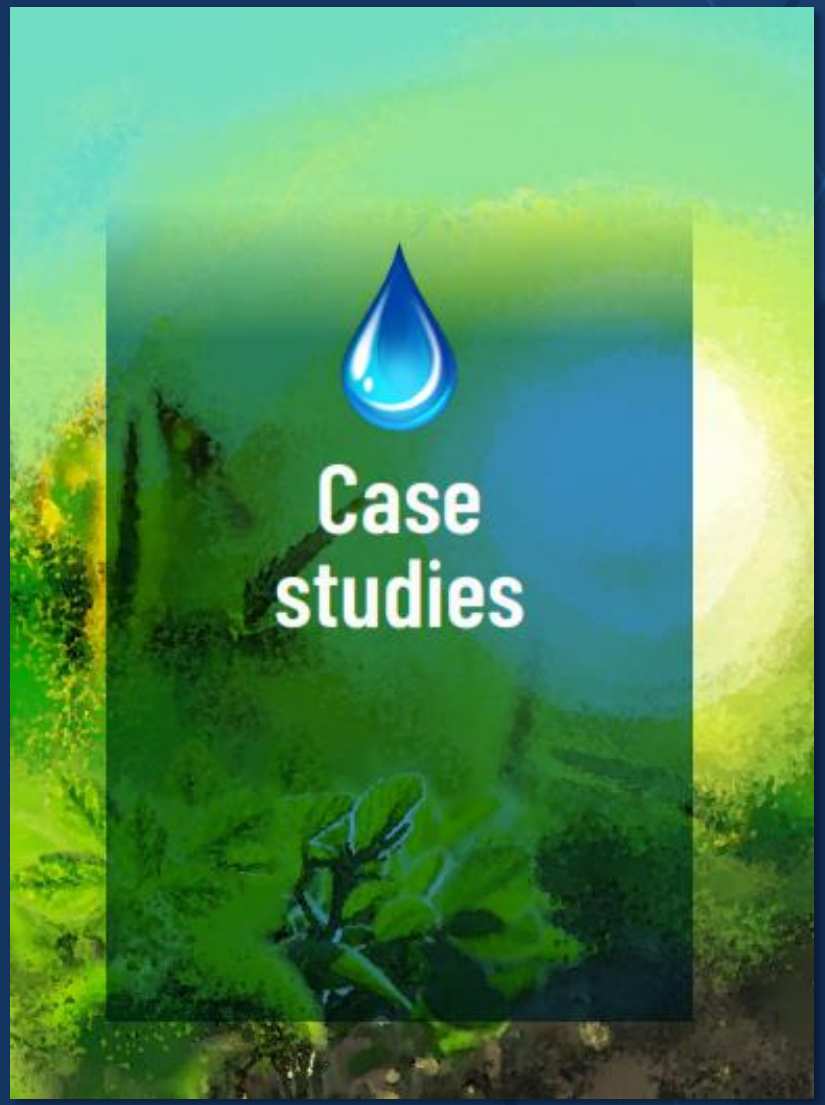




Risk mitigation focus from farm to basin

- Good Agricultural Practices (crops, livestock, aquaculture)
- Basin management plans (→ downstream impacts)
- Decision support systems
- Guidance on factors affecting the adoption of best practices





Approaches, results and lessons learnt are illustrating the recommendation through **case studies** from Ghana, Bangladesh, Australia, Spain, Tunisia, and USA, some based on IWMI work

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