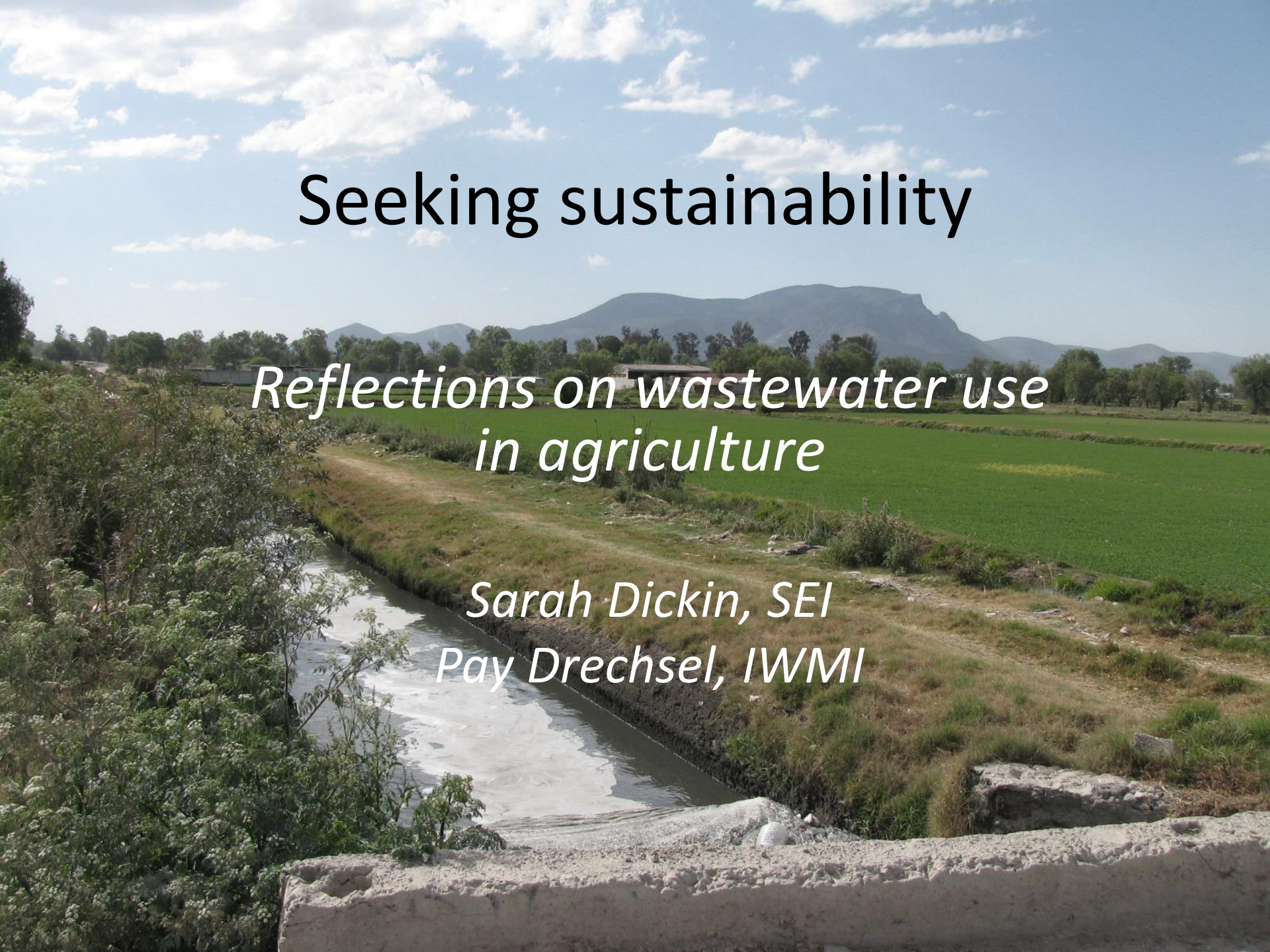


Seeking sustainability

Reflections on wastewater use in agriculture

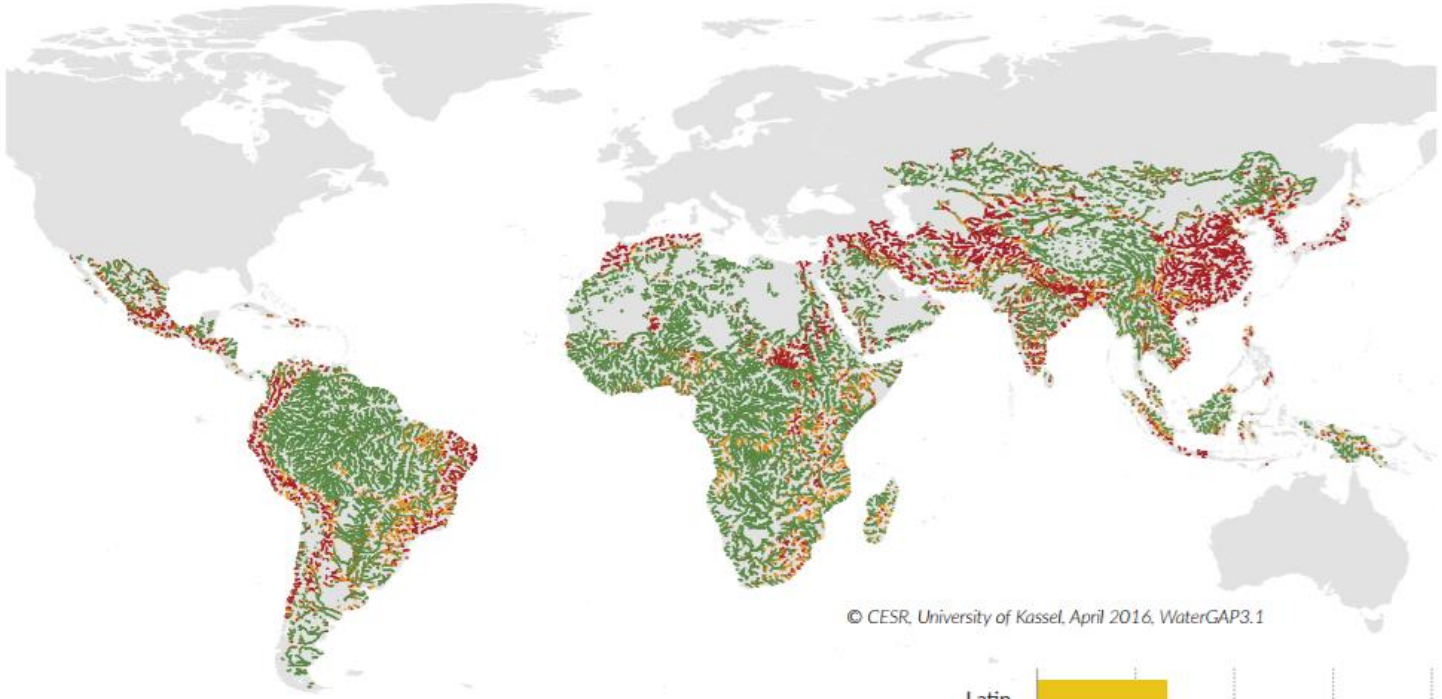
Sarah Dickin, SEI
Pay Drechsel, IWMI

Some trends

- Population growth has outpaced gains in sanitation and drinking water coverage, especially in urban areas
- Little wastewater is treated globally, and use of wastewater in irrigated agriculture widespread
- By 2030, global demand for energy and water is expected to grow by 40% and 50%, respectively (UN Habitat)

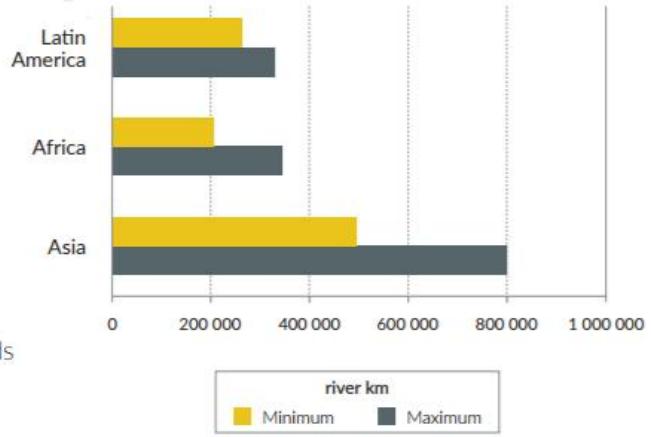
WWAP, 2017

Estimated in-stream concentrations of faecal coliform bacteria (FC)



February 2008–2010
FC [cfu/100ml]

- Not computed
- Low pollution (=200)
- Moderate pollution (200<x=1000)
- Severe pollution (>1000)



Notes: *Low*: Suitable for primary contact; *Moderate*: Suitable for irrigation; *Severe*: Exceeds thresholds

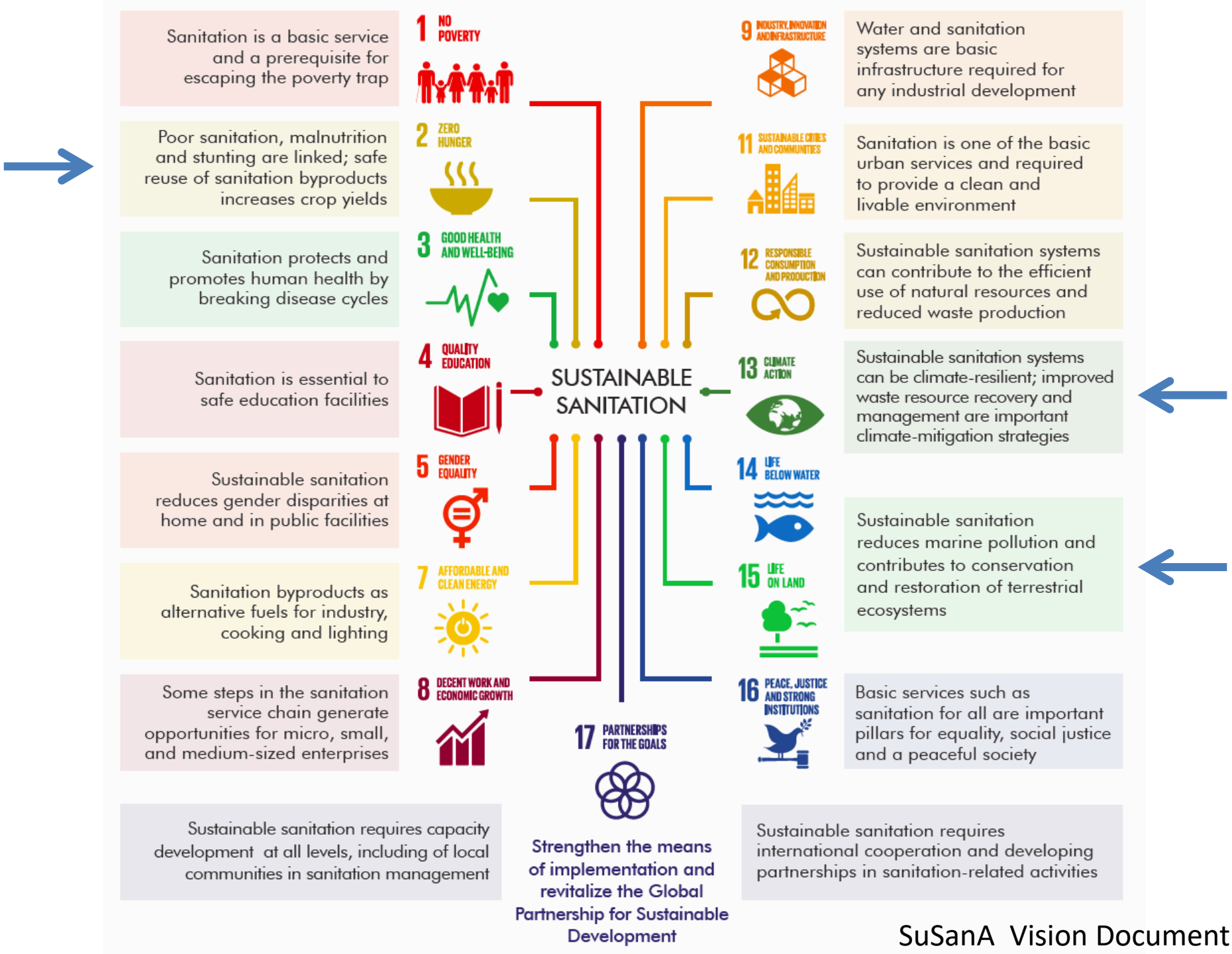
Wastewater, agriculture and the sustainable development agenda

SDG Target 6.3 Halving the proportion of untreated wastewater and substantially increasing recycling, and safe reuse globally

Opportunities for synergies with other Goals

- Potential to leverage investments and political will, but what are strongest interactions?
- What potential trade-offs exist?

ICSU, 2017



SuSanA Vision Document

Examples of interactions

- Reduction of GHG emissions and climate action
- Preventing release of organic matter and nutrients reduces degradation of aquatic ecosystems
- Contributions to food security, particularly in urban areas

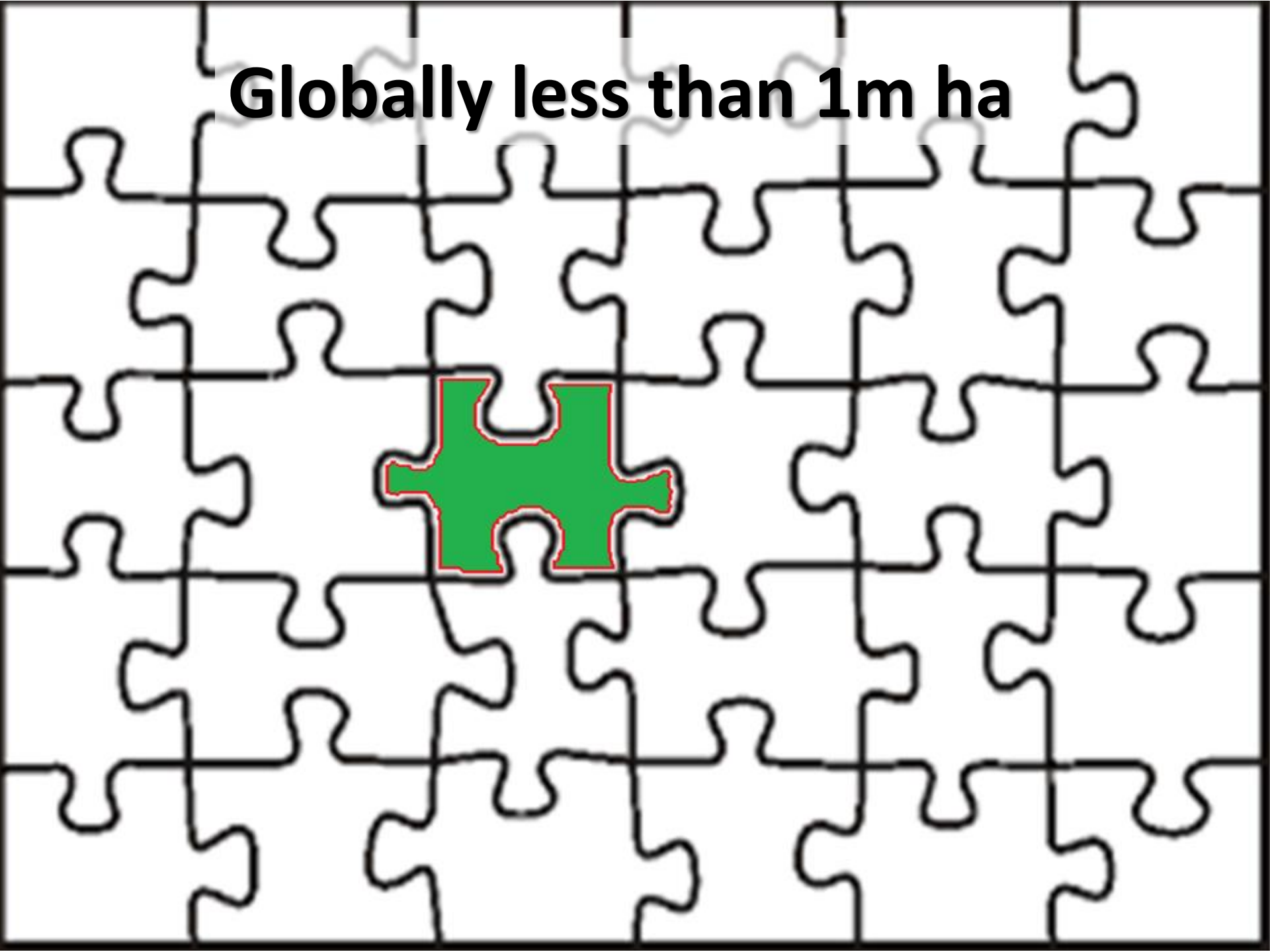
Table 6 | **Examples of Climate Actions that Align with SDG 6**

6 CLEAN WATER AND SANITATION — SDG 6: Ensure availability and sustainable management of water and sanitation for all	
SELECTED TARGETS	**SELECTED EXAMPLES FROM INDCS**
Target 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	**Improve water quality** "Morocco's vision for adaptation involves several quantified sectorial goals for 2020 and 2030. […] Improved performances of drinking and industrial water systems; connection to the sewerage system and wastewater treatment to reach 100% of urban areas; wastewater treatment to reach 100%." (Morocco, Goals to build resilience - Goals for 2030)[81]

Northrop et al. 2016

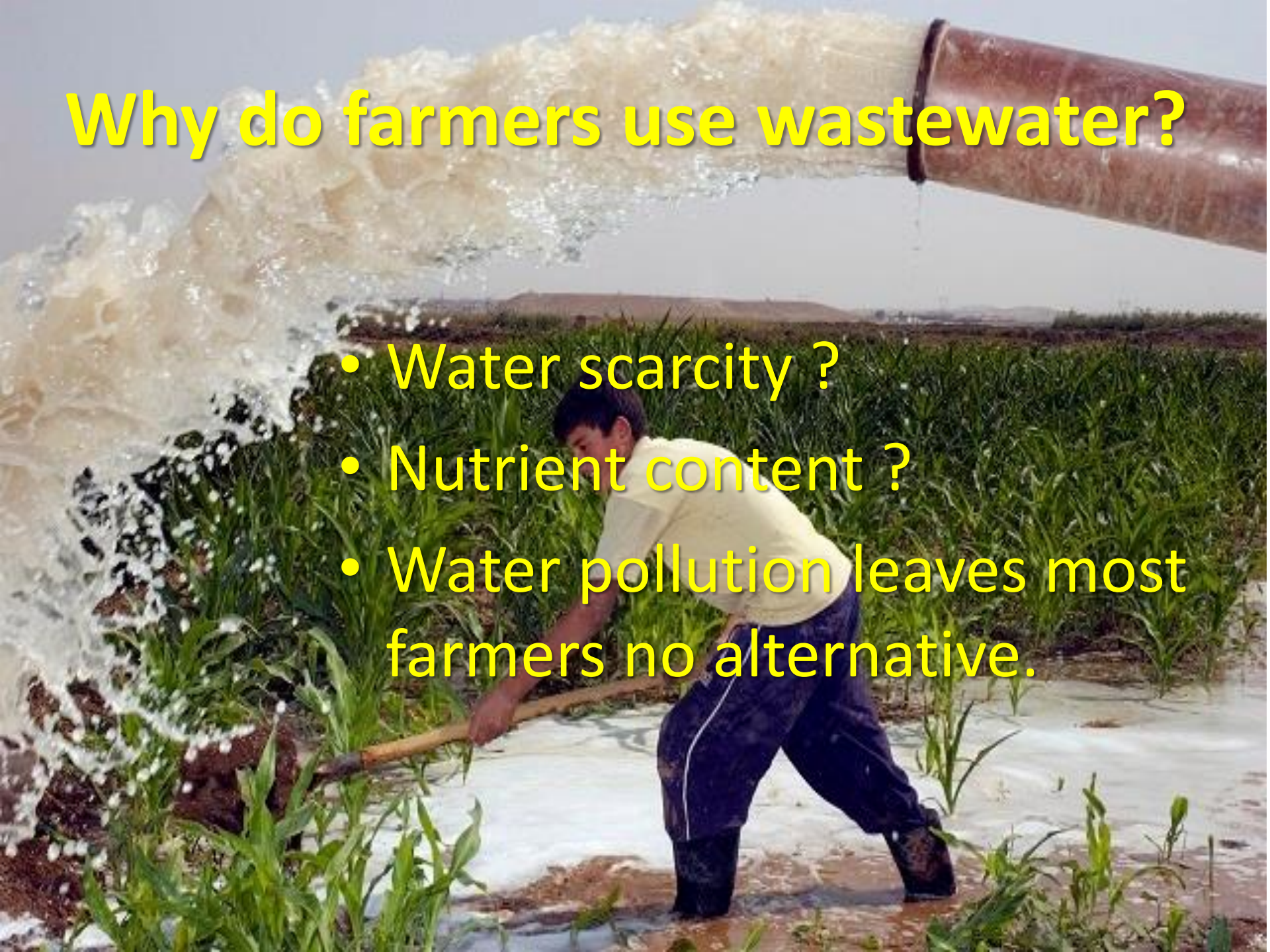
6.3 By 2030, … to substantially increase recycling and safe reuse globally

The challenge in many developing countries is not the planned expansion of treated wastewater reuse.


Globally less than 1m ha


The larger challenge are the 30 m ha under (diluted) untreated wastewater irrigation

Why do farmers use wastewater?



- Water scarcity ?
- Nutrient content ?
- Water pollution leaves most farmers no alternative.

6.3 By 2030, … to substantially increase recycling and safe reuse globally

- Max. 100,000 ha under treated wastewater irrigation.
- Enough wastewater to directly irrigate up to 1,000,000 ha.
- Up to 8,000,000 ha of crops already irrigated with water containing untreated wastewater (Thebo et al., 2017)

6.3 By 2030, … to substantially increase recycling and safe reuse globally

The implication is that for progressing on the **reuse** target of 6.3, countries like India have two options:

- Creating new farmland for treated wastewater? [1m ha]
- Investing in safety where wastewater is already used (via treatment and/or non-treatment options). [8m ha]

What are some future opportunities, and the next gaps that need to be addressed, in research and practice?

Interview Panel