Global Water Quality Modelling Assessments and the SDGs

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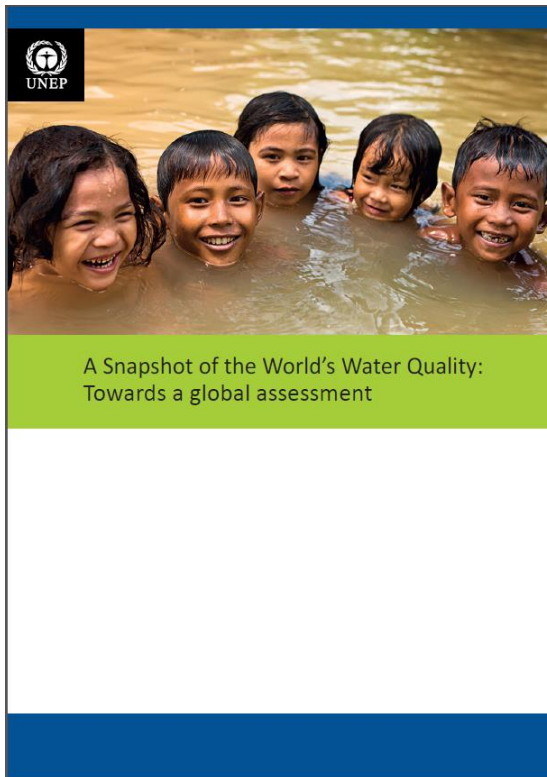
Session "Pollution-driven water scarcity for ecosystems and human uses worldwide"
World Water Week, Stockholm, 26 August 2018
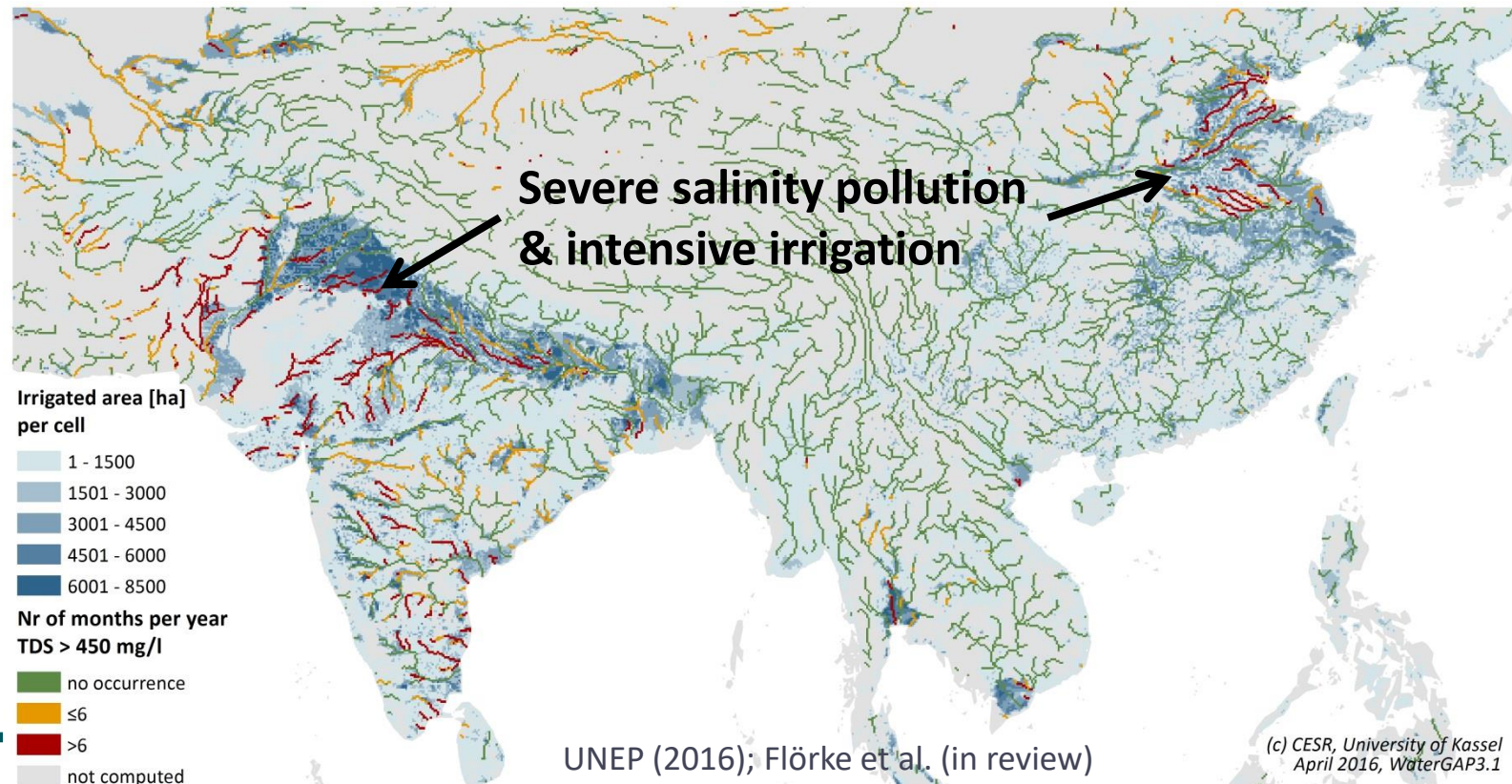
Global Water Quality Assessment – Snapshot report

Key findings:

- Water pollution serious and getting worse in Latin America, Africa, and Asia,
  - Severe pathogen pollution →1/3 all river kms
  - Severe organic pollution → 1/7 all river kms
  - Severe & moderate salinity pollution → 1/10 all river kms
- Emerging and persistent water quality problems in industrialized countries – e.g. pharmaceutical residues, eutrophication, …
- Majority of rivers in developing countries still in good condition → Great opportunities for short-cutting further pollution and restoring the rivers that are polluted. → Mix of management & technical options supported by good governance

UNEP (2016)
http://www.wwqa-documentation.info

A Snapshot of the World's Water Quality:
Towards a global assessment

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Threat of water pollution to food security using salinity pollution as an example

Constrains water use for irrigation → Agricultural production → Food security

→**Cost of no action may result in 15-69% losses (depending on the crops grown)**

→**Scarcity of suitable water supply**

Severe salinity pollution & intensive irrigation

Irrigated area [ha] per cell
- 1 - 1500
- 1501 - 3000
- 3001 - 4500
- 4501 - 6000
- 6001 - 8500

Nr of months per year TDS > 450 mg/l
- no occurrence
- ≤6
- >6
- not computed

UNEP (2016); Flörke et al. (in review)

(c) CESR, University of Kassel
April 2016, WaterGAP3.1

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Important global water quality changes are occurring and they are linked to the SDGs

There is an SDG water quality target:

Goal 6. "Ensure availability and sustainable management of water and sanitation for all"

Target 6.3 Water quality and wastewater:

"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"

→ **Linkage with agriculture and food, energy production, sustainable consumption and production, freshwater ecosystems,...**

Water quality in the context of SDGs
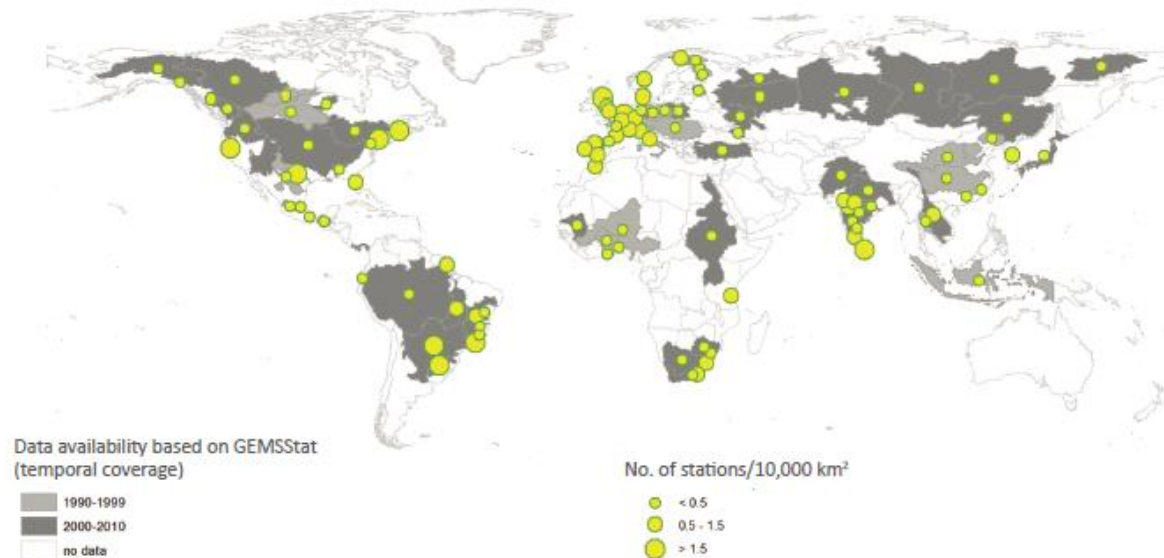
Flörke et al. (in review)

Water quality and SDGs: Core questions to be answered

- How can the water quality target be achieved?

- How will worsening water pollution affect the SDGs for health, food & energy security, consumption & production, biodiversity … ?

- How can actions to protect and enhance water quality help to meet other SDGs?

- How can major investments be made to exploit synergies and manage trade-offs among SDGs?

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Water quality modelling assessments and SDGs

✓ Analysis and evaluation of complex interlinkages requires systems
approach → based on measurements <u>and</u> supported by modelling tools

Data availability based on GEMSStat
(temporal coverage)

- 1990-1999
- 2000-2010
- no data

No. of stations/10,000 km²

- < 0.5
- 0.5 - 1.5
- > 1.5

✓ Development of solutions that turn trade-offs into synergies

✓ Assessing scenarios to be better prepared for the future

✓ Generation of policy-relevant information for policy makers & stakeholders

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Thank you for your attention

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