



2nd Asian Irrigation Forum
Securing Water and Food for the Future

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Can We Secure Asia's Water by 2050?

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International Water Management Institute

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Productive and sustainable water management - the business case for the planet



SUSTAINABLE DEVELOPMENT GOALS



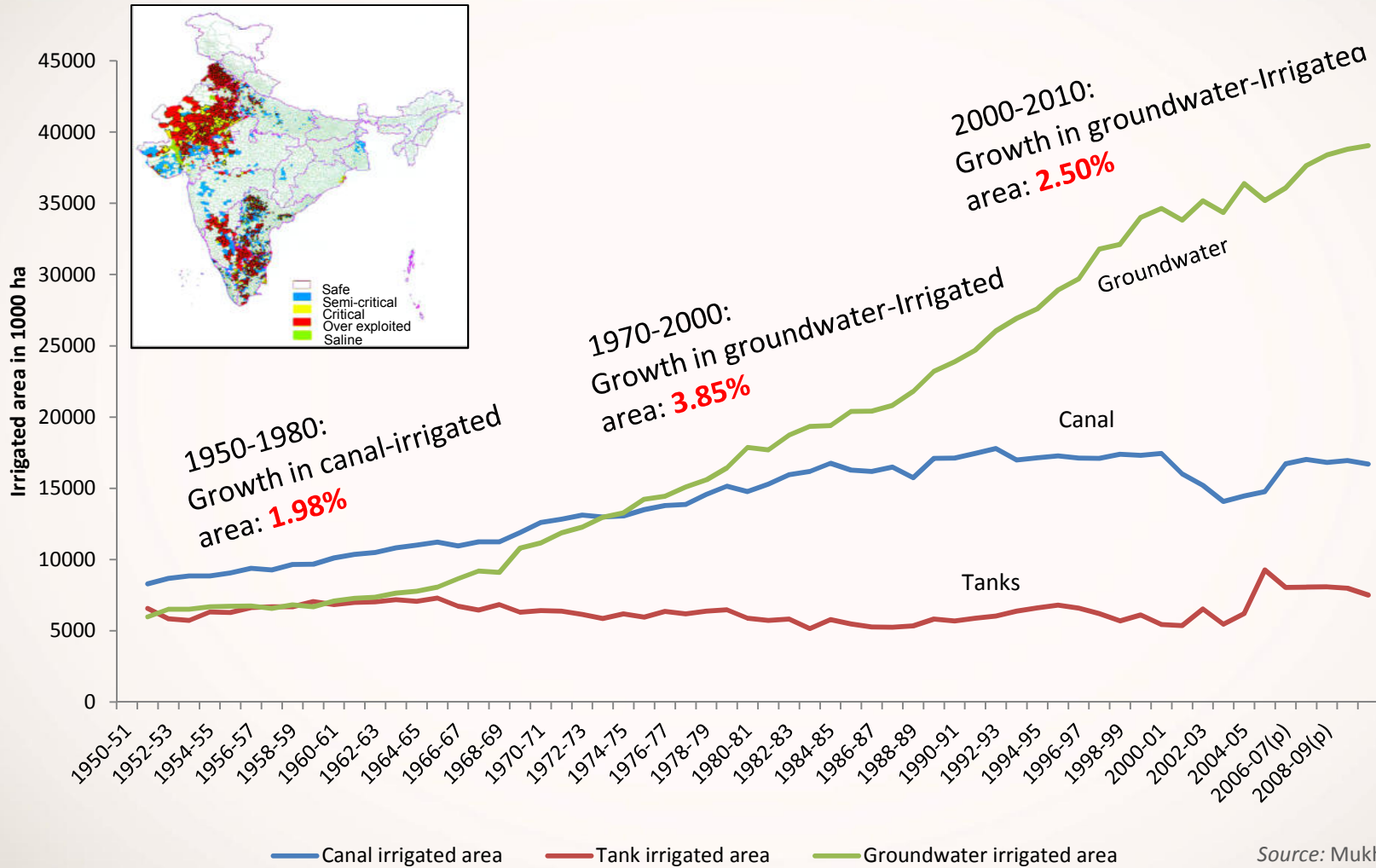
Four areas to reflect on:



- Groundwater – *‘hidden’ enabler of growth, but sustainable?*
- Water productivity – *is irrigation sector ready for change?*
- Urbanization – *can we adapt to the pace of change?*
- Managing variability – *does ‘big data’ offer solutions?*

Solutions cut across sectors

Growth of irrigation – driven by groundwater, at what cost?



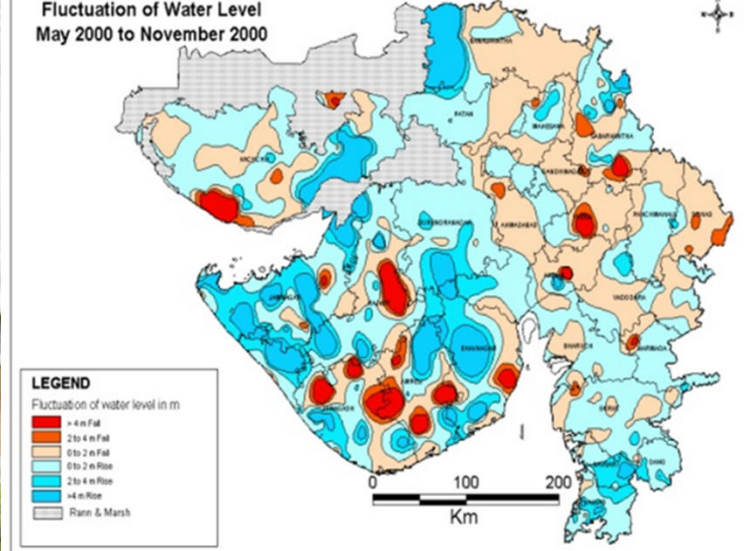
Source: Mukherji et al. 2013.

Improving groundwater management: *Jyotigram Yojana, India*

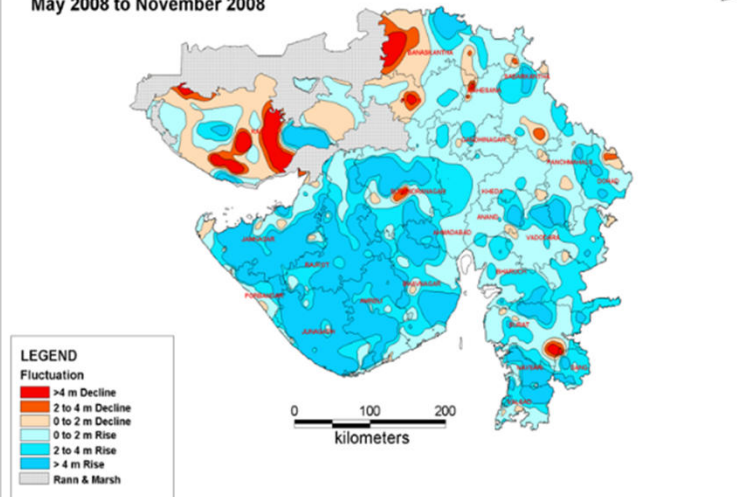


Separate feeder lines and rationing led to more sustainable groundwater use, reduced electricity use and increased yields

Gujarat and UT of Daman & Diu
Fluctuation of Water Level
May 2000 to November 2000



Gujarat and UT of Daman & Diu
Fluctuation of Water Level
May 2008 to November 2008



Technology and financial incentives: solar powered irrigation with water savings



The opportunity

- Carbon mitigation – replacing 130,000 GW of electric and diesel tube wells
- Water savings – incentivize through feed-in tariff to sell excess electricity to grid



Triple wins:

- Reduction in greenhouse gas emissions
- Sustainable use of groundwater
- Higher income to farmers

Water productivity – are irrigation systems ready for new technology?



*Photo: Arif
Anwar, IWMI*

Precision surface irrigation: a low cost alternative to drip irrigation



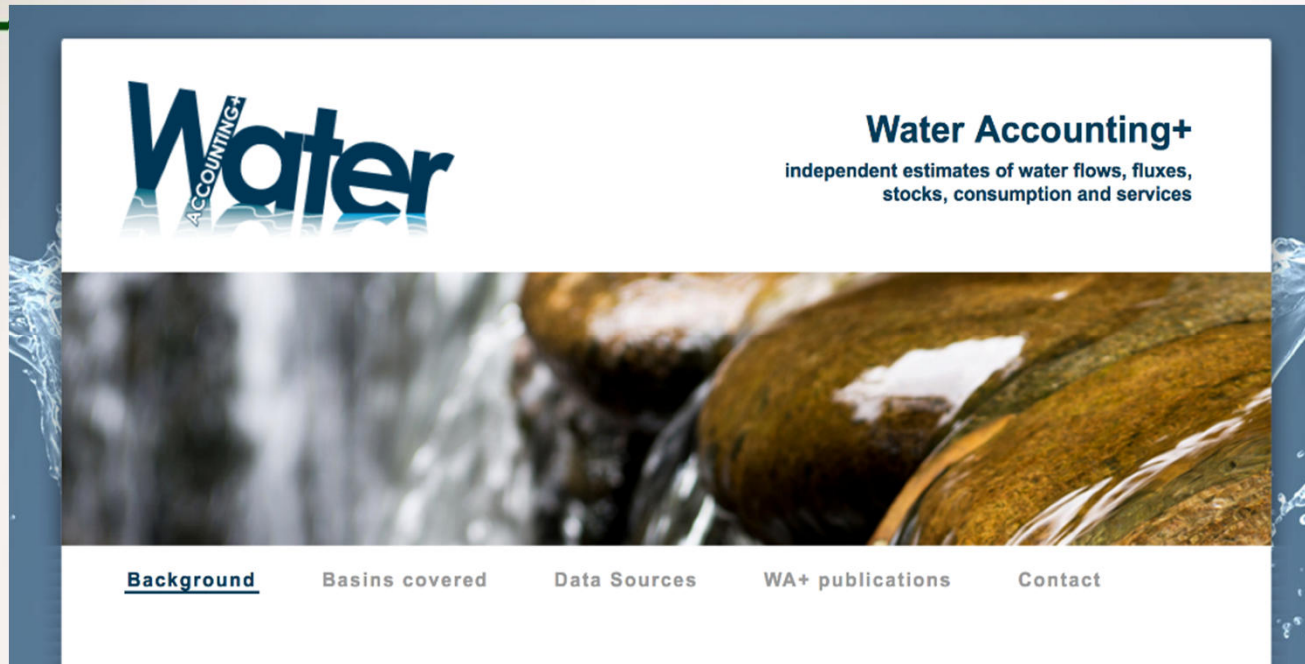
Pakistan- laser grading:

- land and water productivity increases
- reduced diesel costs
- reduced emissions



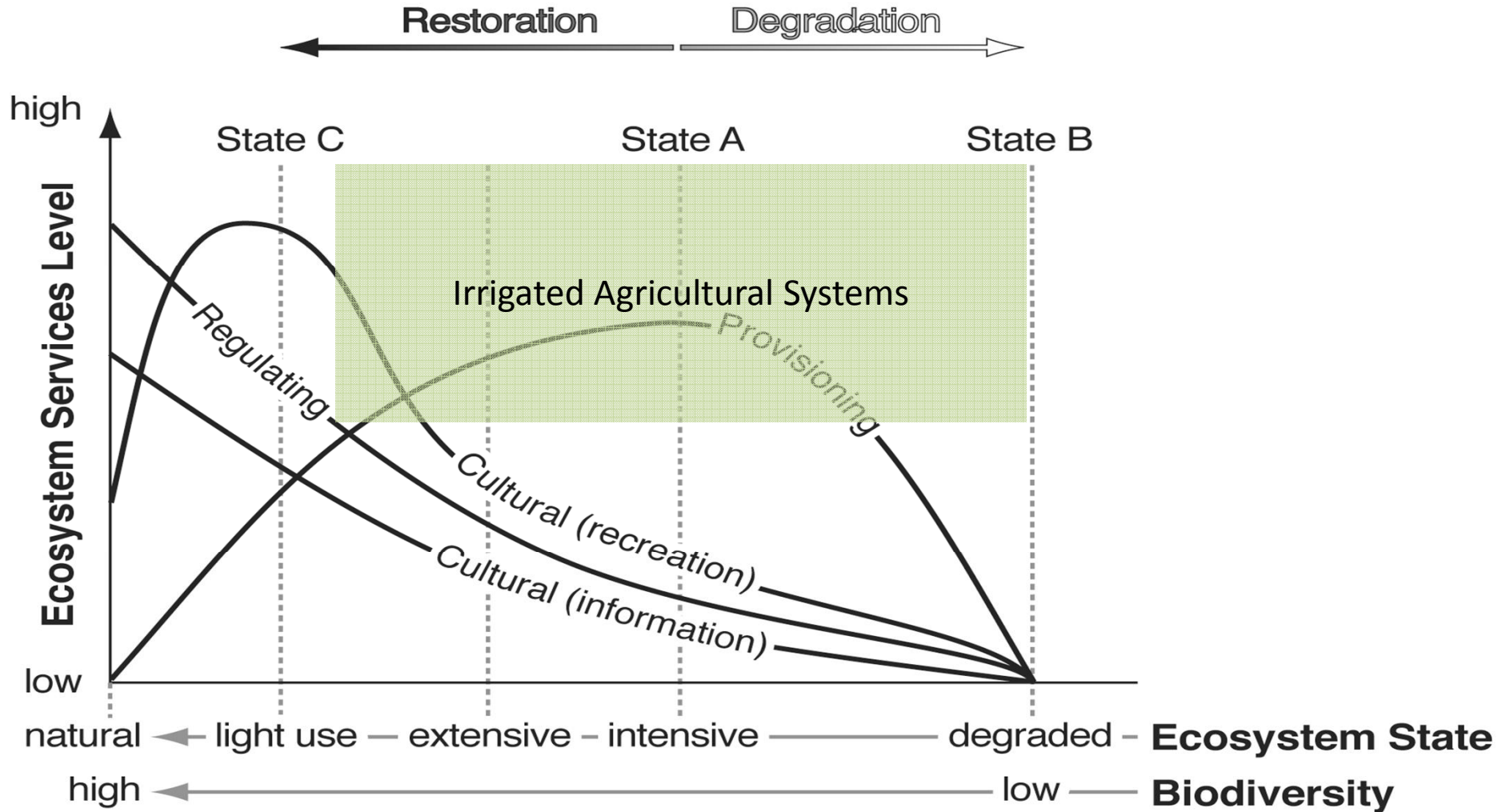
Photos: Arif
Anwar, IWMI

Water accounting – raising awareness beyond the water sector

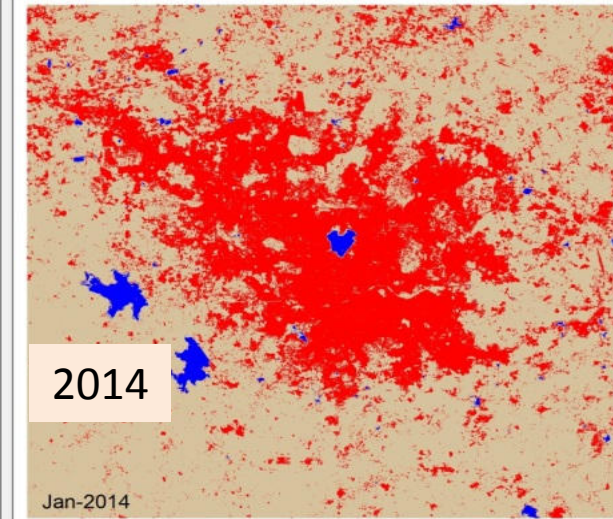
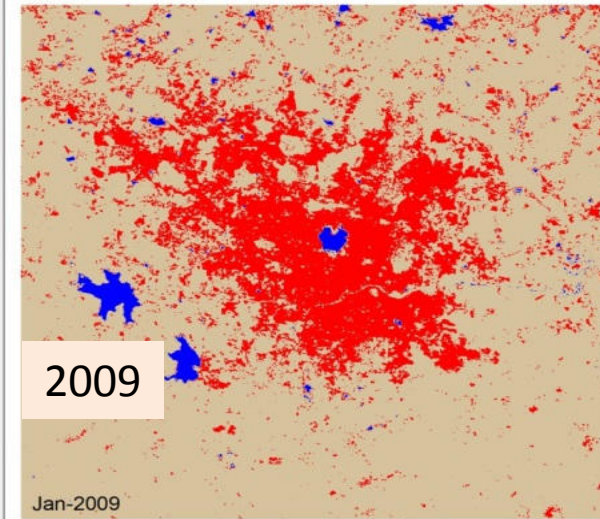
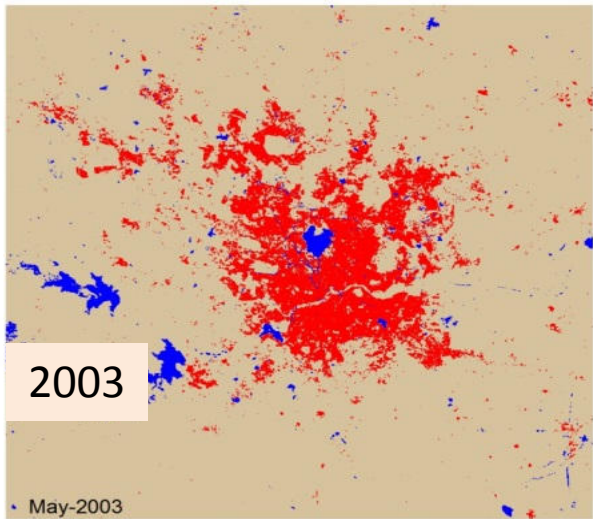


- Multi-institutional initiative by UNESCO-IHE, FAO and IWMI
- Combines remote sensing and global hydrological models to better understand state of water resources
- Allows users to target interventions – critical for understanding trade-offs

Beyond productivity - potential trade-offs in irrigated agroecosystems

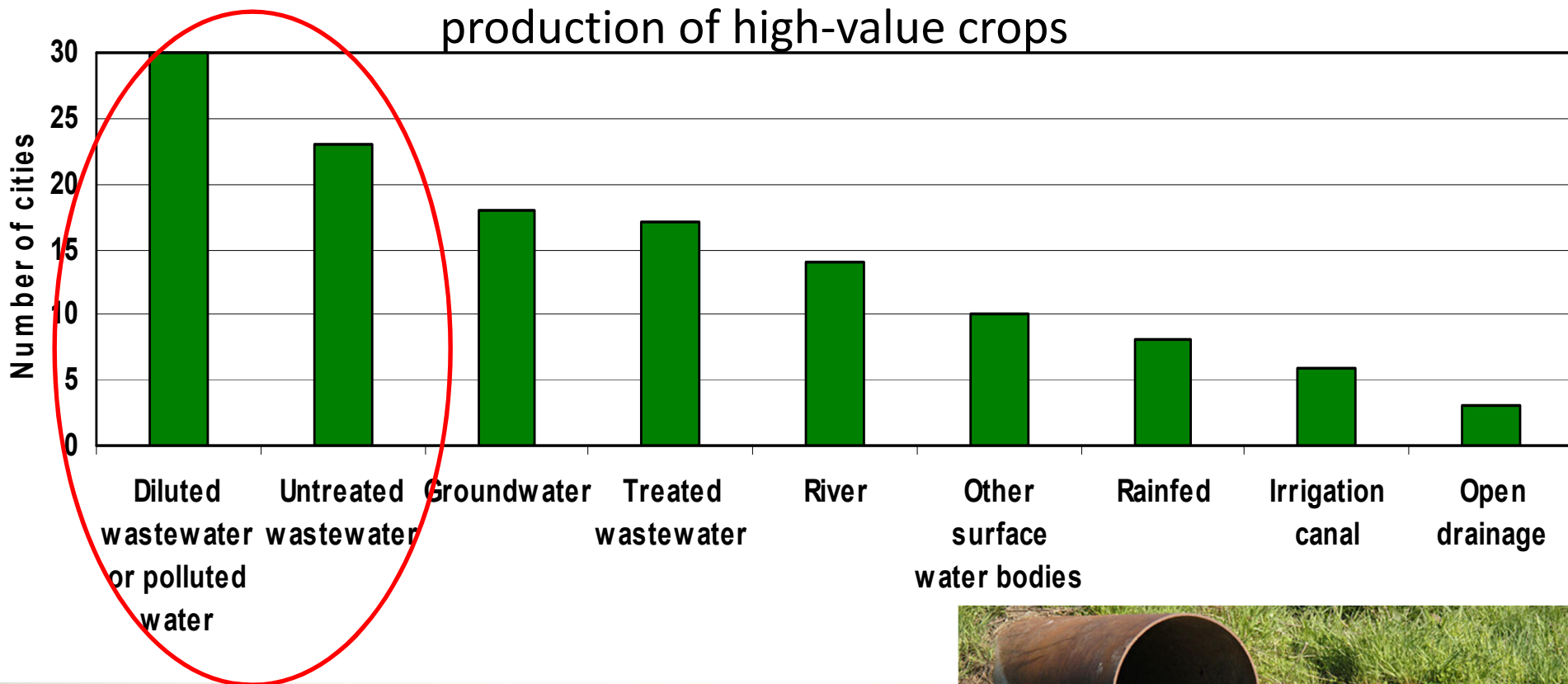


Rapid urbanization driving change across sectors

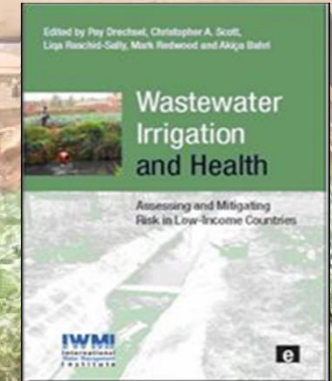
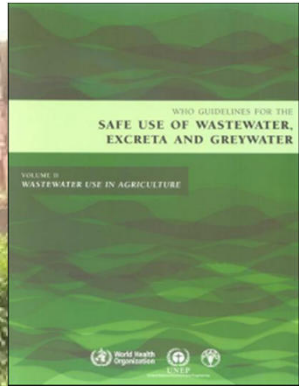


Wastewater irrigation is a reality

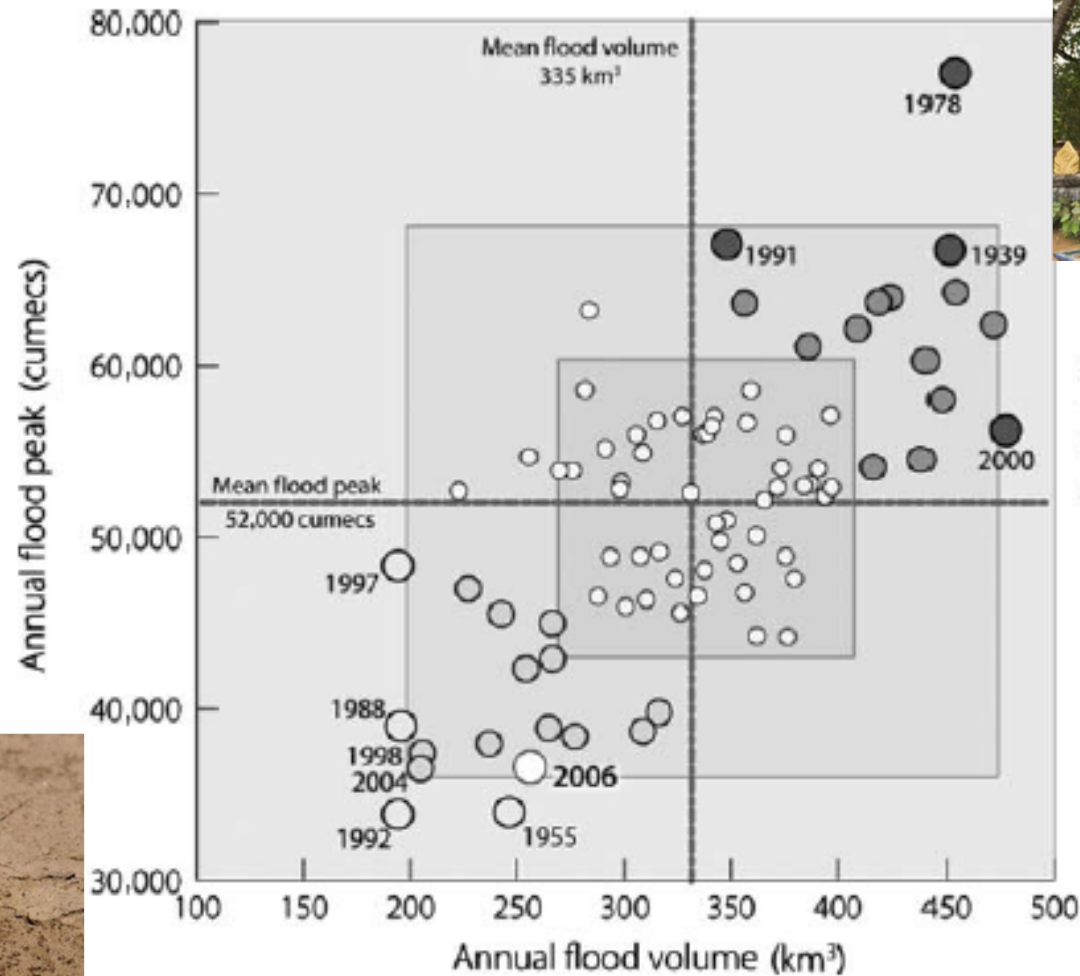
In and around *three* of *four* cities in developing and emerging economies, farmers use polluted irrigation water for the production of high-value crops



New guidelines based on simple technology



Natural variability increasing - need for more resilient systems



Source: MRC

Breeding climate tolerant crop varieties



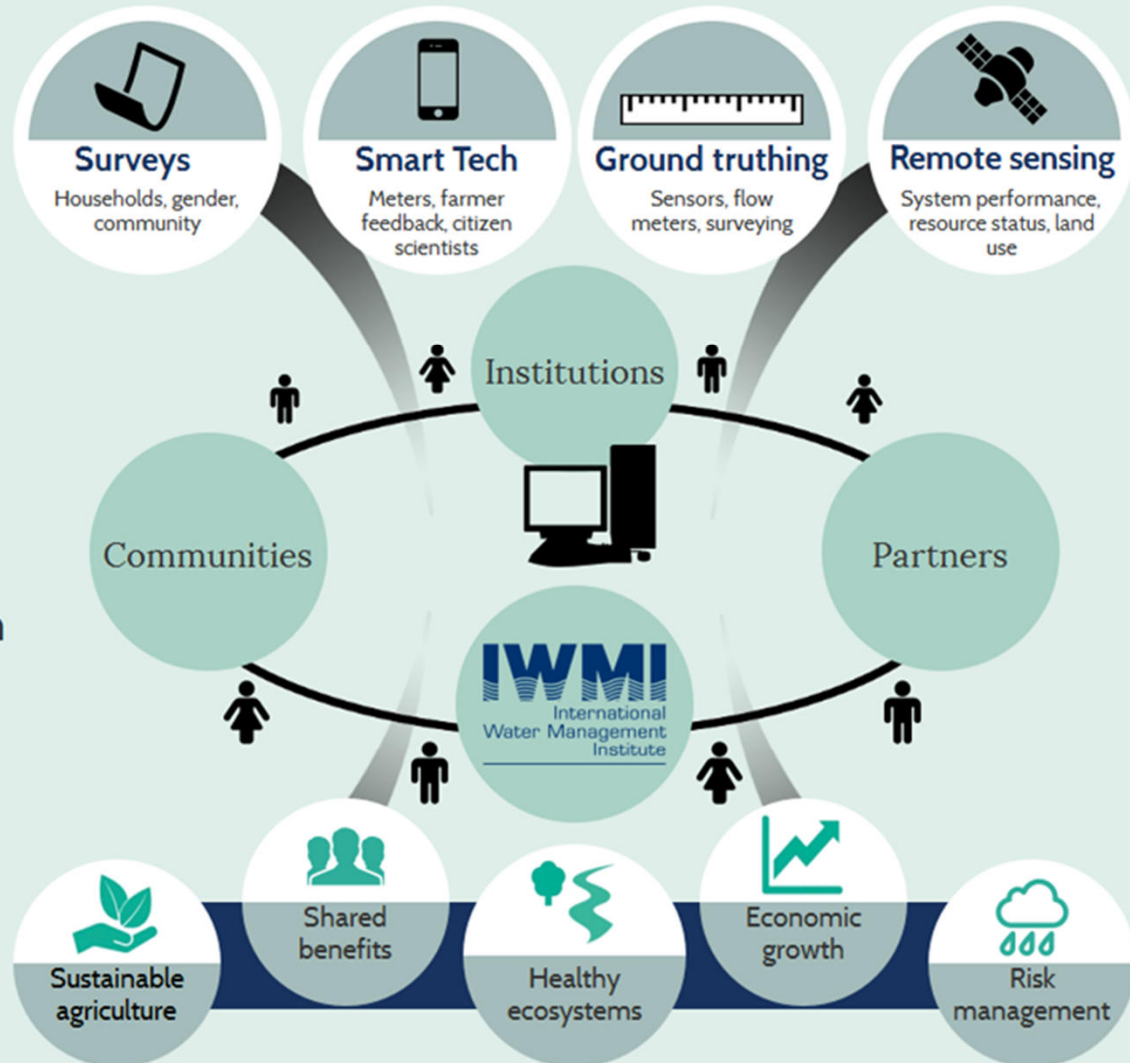
Swarna-Sub1 variety
17 day submergence

International Rice Research Institute

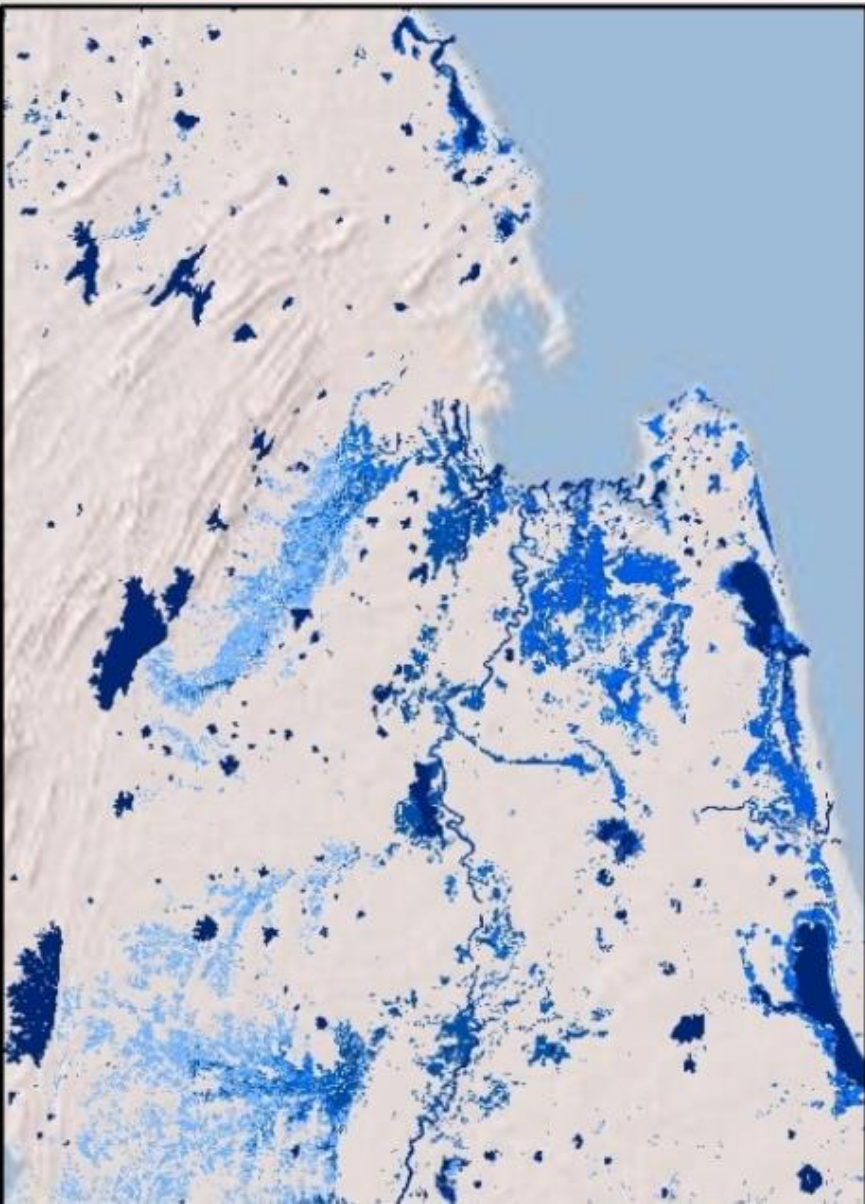
Big Data



Big data analysis can establish previously unforeseen insights and linkages, which could help create new opportunities for water management.

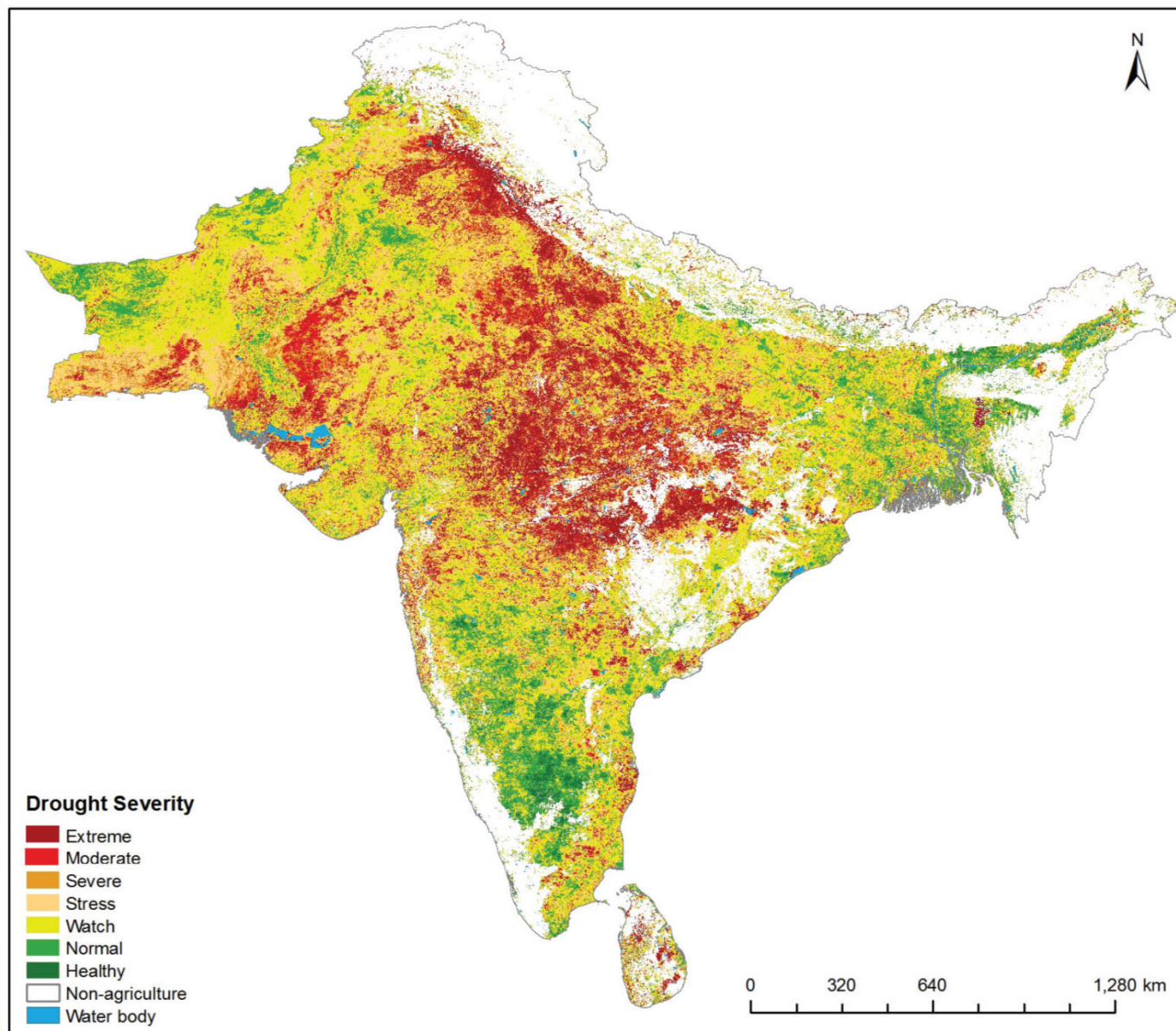


Using geo-spatial data to improve flood planning and response



- Improve planning capacity
- Target flood management measures
- Provide objective basis for index-based crop insurance
- Improve flood relief efforts

Drought monitoring services – the starting point for improved guidance to farmers?



Mobile Apps to provide flood and drought information



Liquid Rain



Liquid River



It's a challenge, but there are solutions...



<http://www.iwmi.org>

<https://wle.cgiar.org>

<https://wle.cgiar.org/thrive>



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PROGRAM ON
Water, Land and
Ecosystems