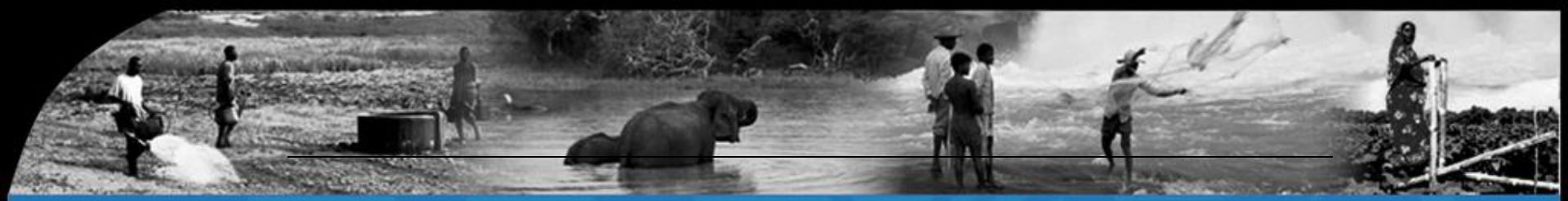


IWMI's Water Accounting Research: Some Highlights

Upali Amarasinghe

Senior Researcher

International Water Management Institute

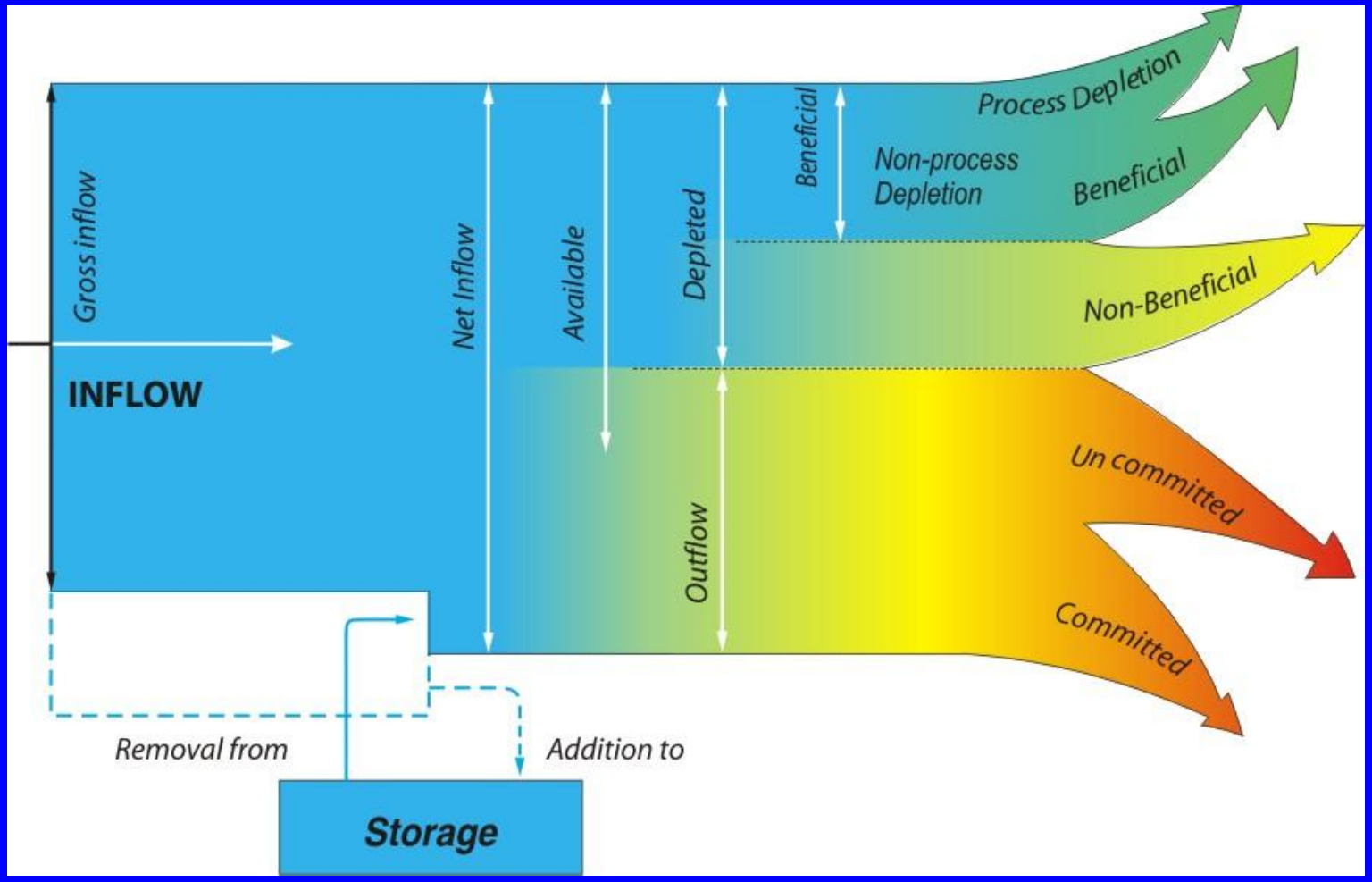
New Delhi Office

IIMI to IWMI

- Formerly International Irrigation Management Institute
- Changed to International Water Management Institute in 1995
- One of the 15 centers under CGIAR
- Offices in Africa and Asia
- Vision: Water for a Food Secure World
- Mission
  - Improve the management of land and water resources for food, livelihoods and nature.

- Has four themes
  - Theme 1- Water Availability and Acess
  - Theme 2- Productivity Water Use
  - Theme 3- Water Quality, Health and Environment
  - Theme 4- Water and Society

Water Accounting Methodology

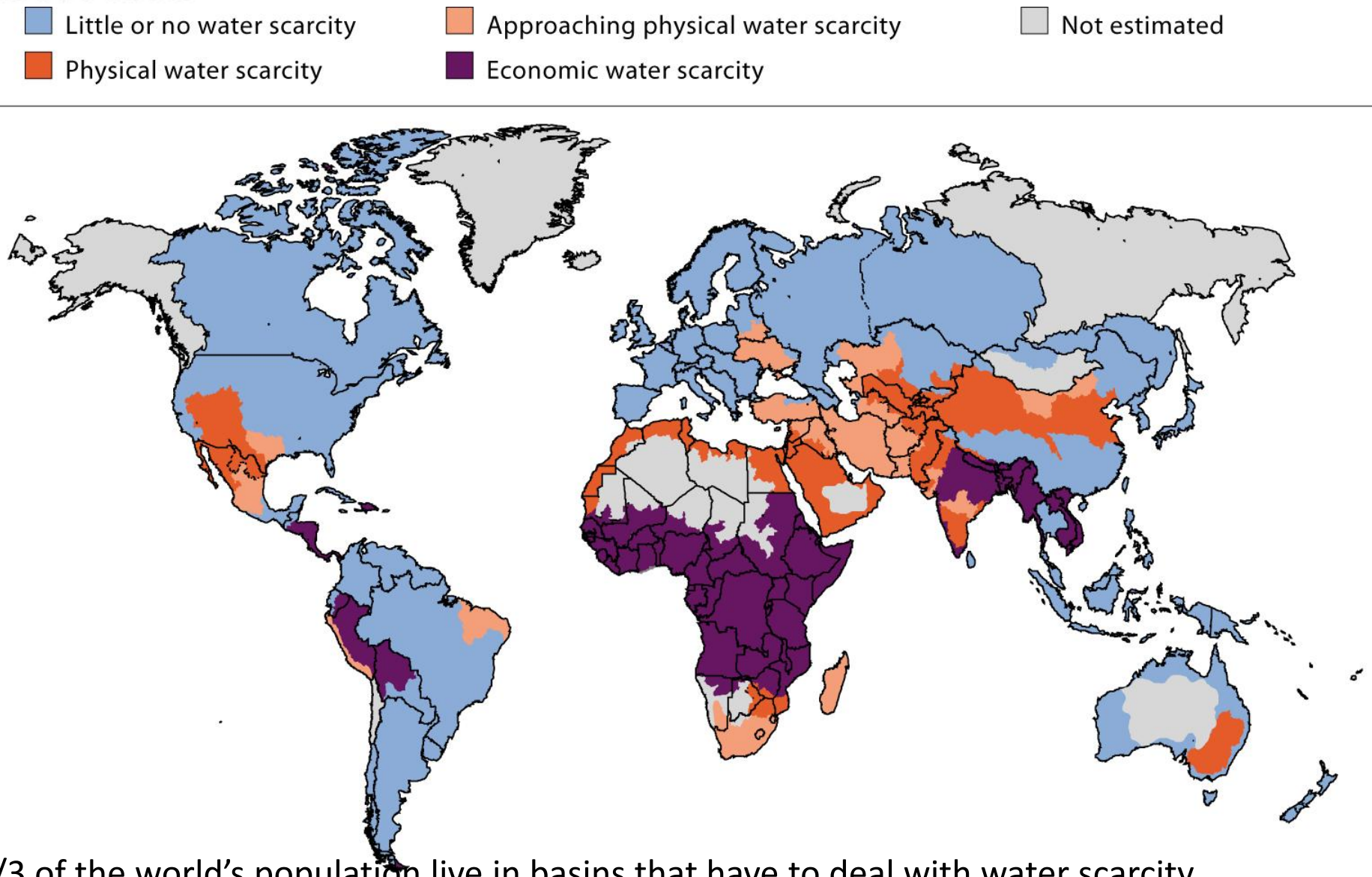


- **David Molden 1997, Accounting for Water Use and Productivity, SWIM Paper 1**

Global Water Supply and Demand Modelling

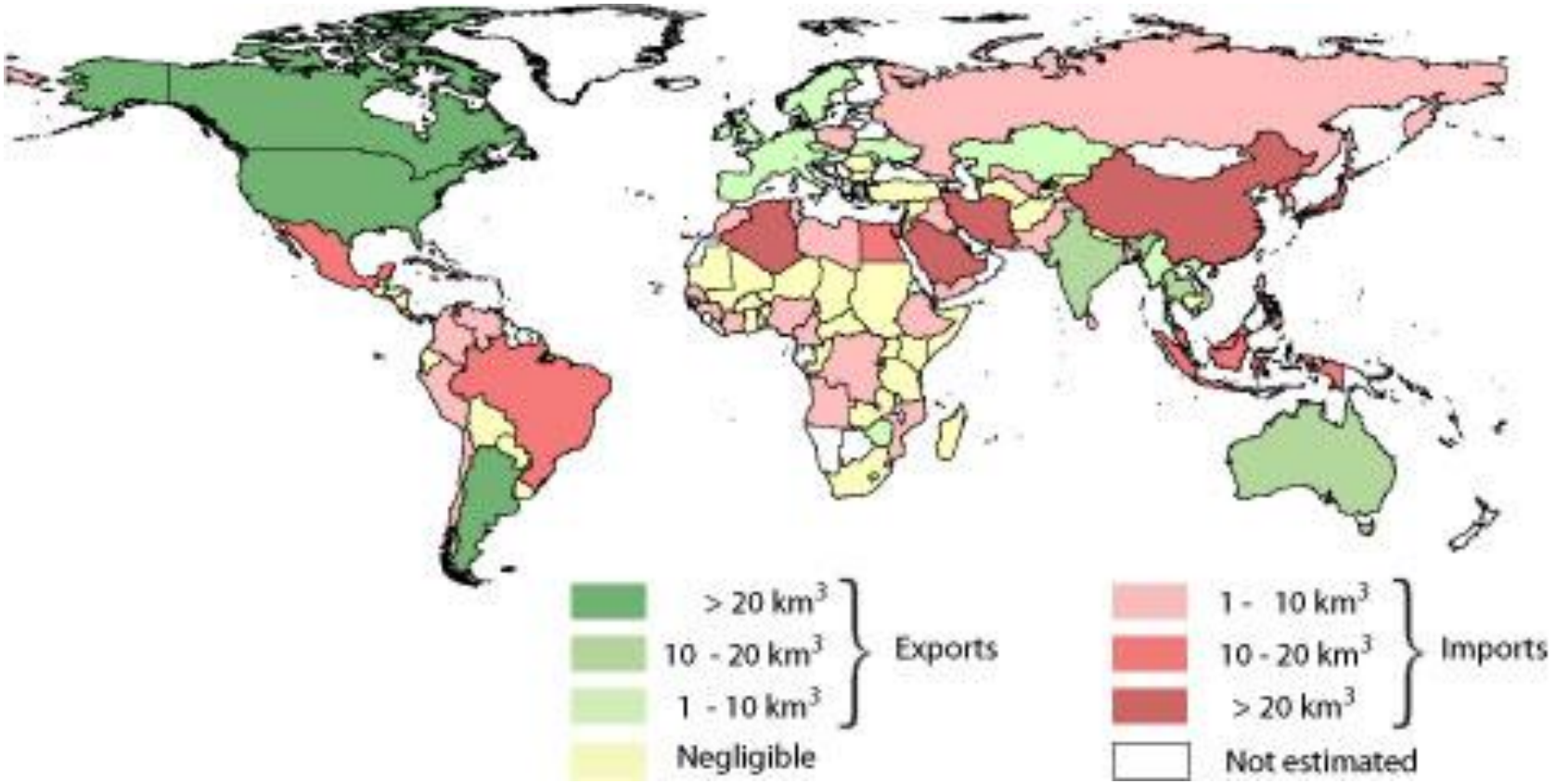
- World water demand and supply, 1990 to 2025: Scenarios and issues.
  - *Research Report 19 .* ***Seckler et al 1998***
- World water demand and supply, 1990 to 2025: Scenarios and issues.
  - *IWMI 2000 (internal draft)*
- Does international cereal trade save water? The impact of virtual water trade on global water?
  - *Comprehensive Assessment Research Report 4 (Fraiture et al 2004)*
- Looking ahead to 2050: scenarios of alternative investment approaches. (Fraiture, C. de and Wichelns, D. 2007.)
  - *WATERSIM model*
  - *Contributed to IWMI's Comprehensive Assessment of Agriculture*

Water Scarcity 2000



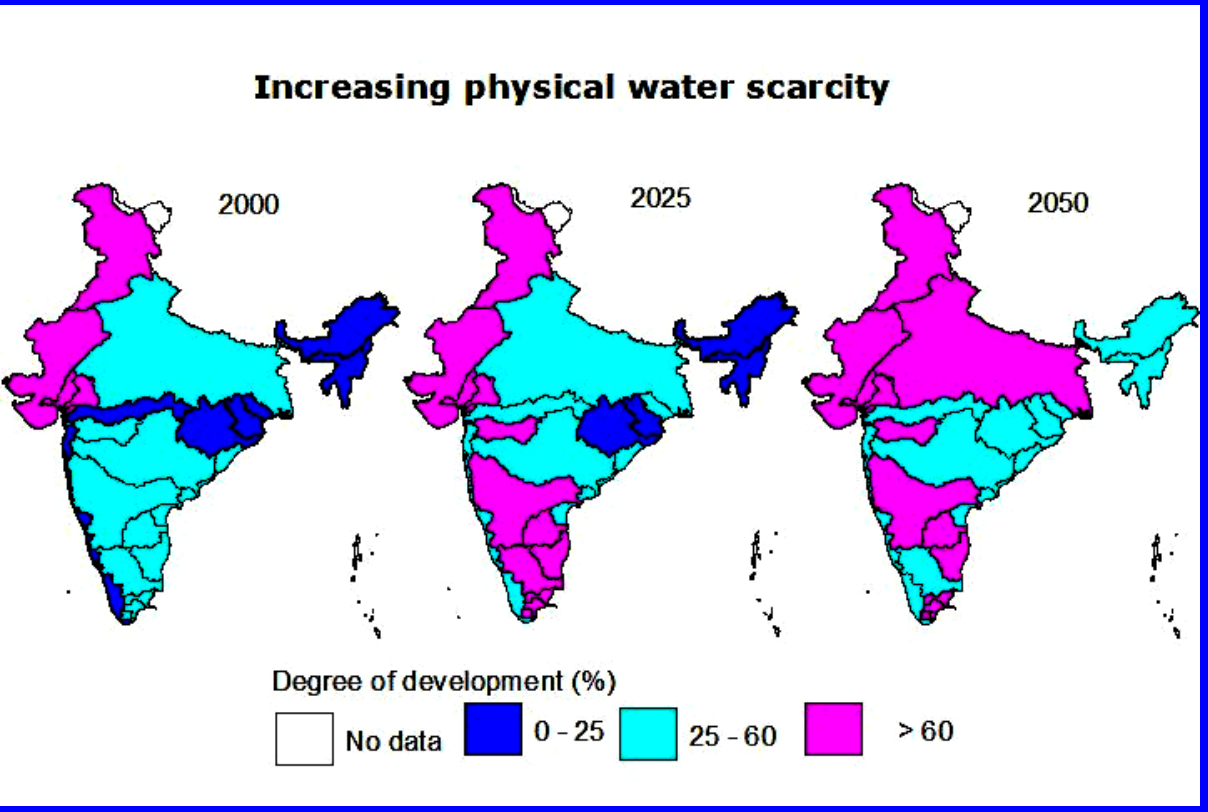
1/3 of the world's population live in basins that have to deal with water scarcity

VIRTUAL WATER TRADE in 1990



- **Virtual water trade of cereals in 1990**
- **Significant VWT within countries**

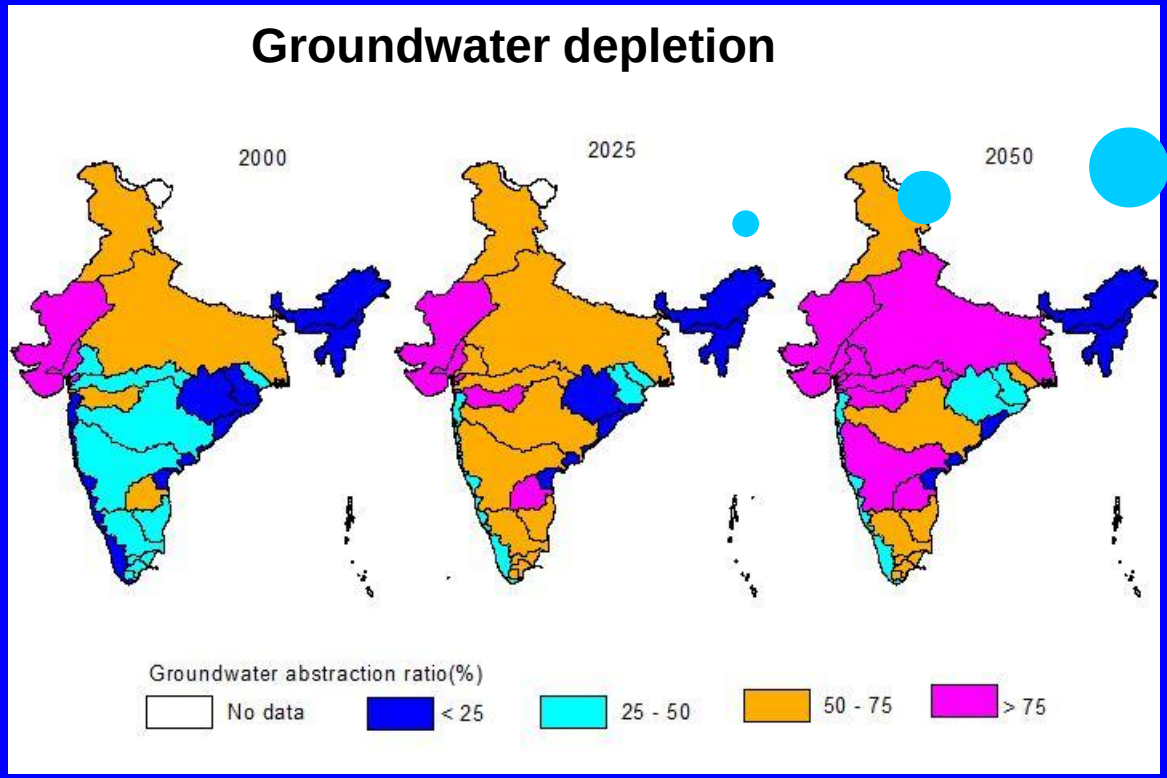
Regional Water Accounting



- Amarasinghe et al 2004. Research Report 83
- Amarasinghe et al 2008. Research Report 123

- 10 river basins will be physically water scarce by 2050
- 8 river basins will withdraw more than 75% of the available groundwater resources
- These basins account for 80% of India's GW withdrawals

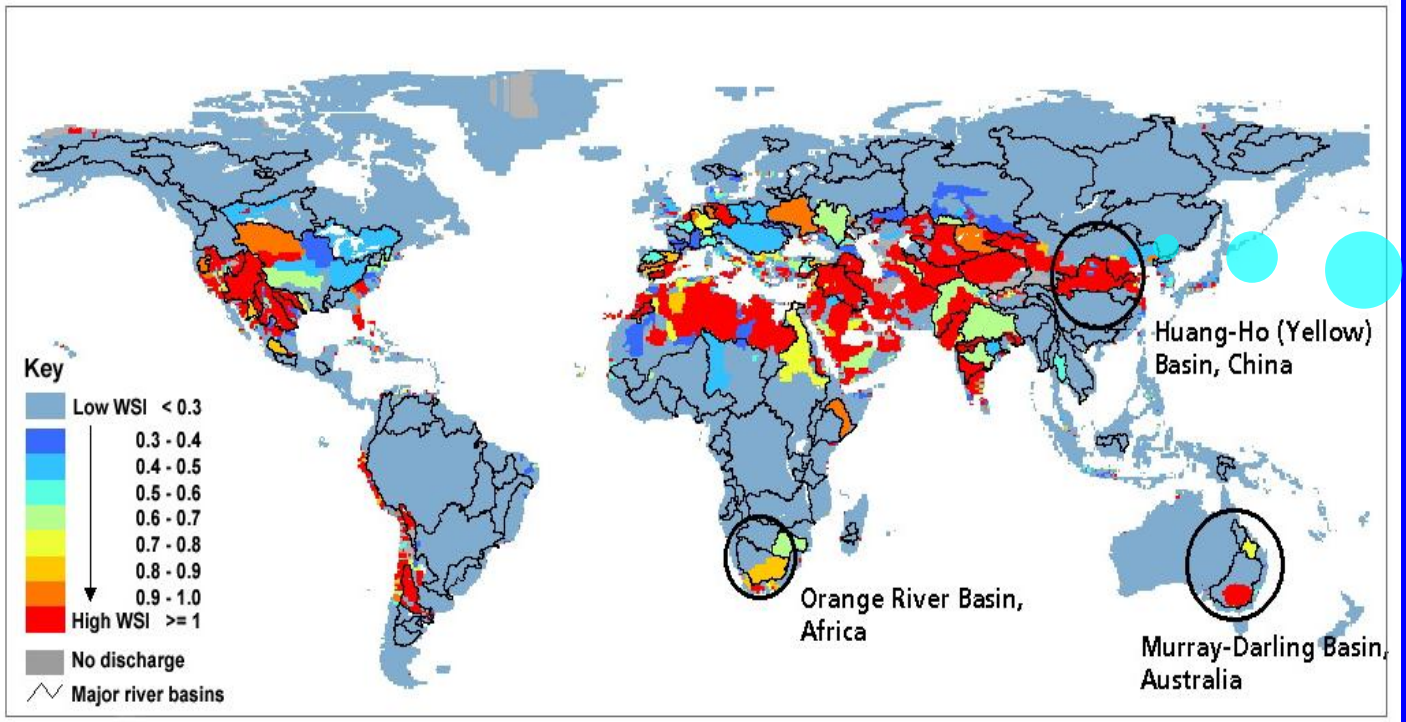
Groundwater depletion



Many river basins are having severe environmental stress

- If groundwater withdrawals remains at the current level, additional surface withdrawal requirement is 65 Bm^3

Environmental Water Stress



WSI high regions show conflicts between human water use and environmental water needs

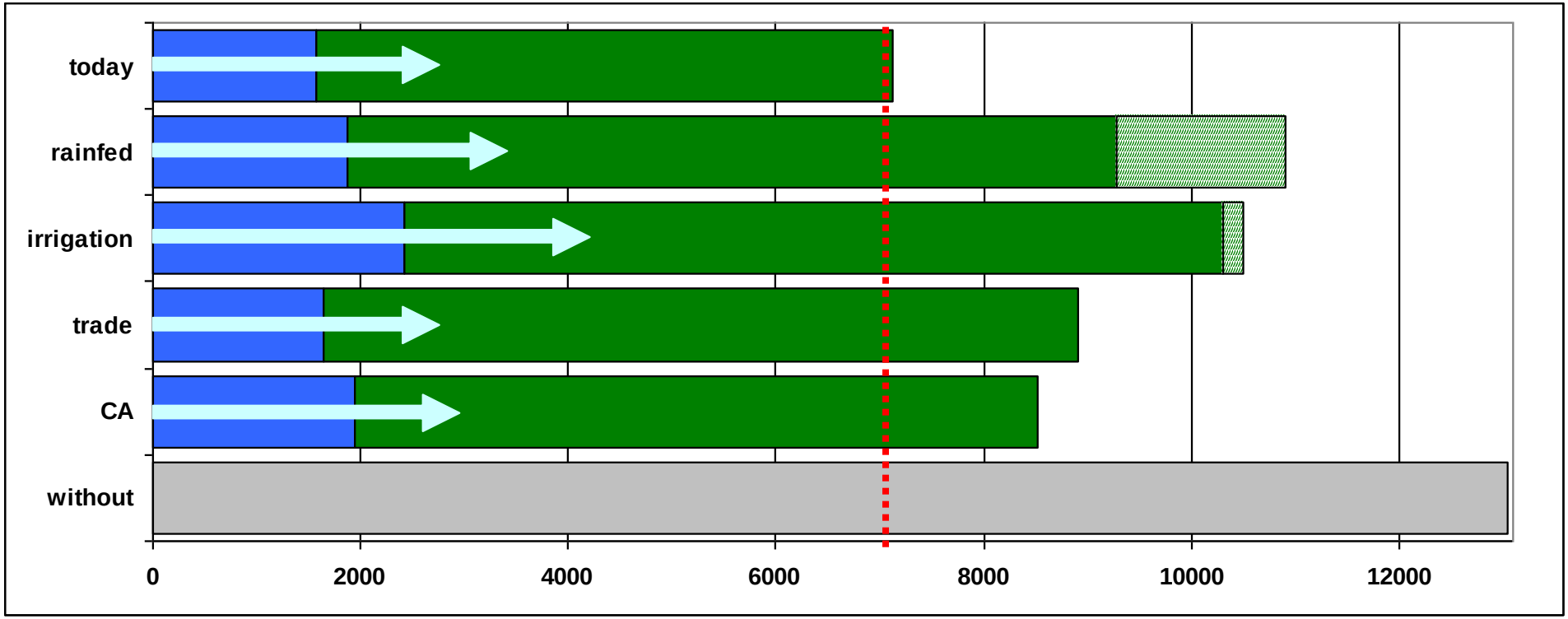
Smakhtin *et al.* 2004 *Taking into Account Environmental Water Requirements in Global-scale Water Resources Assessments*

CA Research Report 2

Overcoming water scarcity

- Increase water productivity
- Increased focus on rainfed agriculture
  - Rainwater havesting
  - Improve rainfed productivity
- Demand management
  - Water markets, pricing
  - Energy regulation
  - Water saving technologies
  - Water rights, water users associations

- Changing cropping patterns, agronomic practices, water use patterns
- Increase virtual water trade



Depletion met by irrigation

Depletion met by rainfall

Difference pessimistic-optimistic

Without productivity improvement (worst case)

Irrigation withdrawals

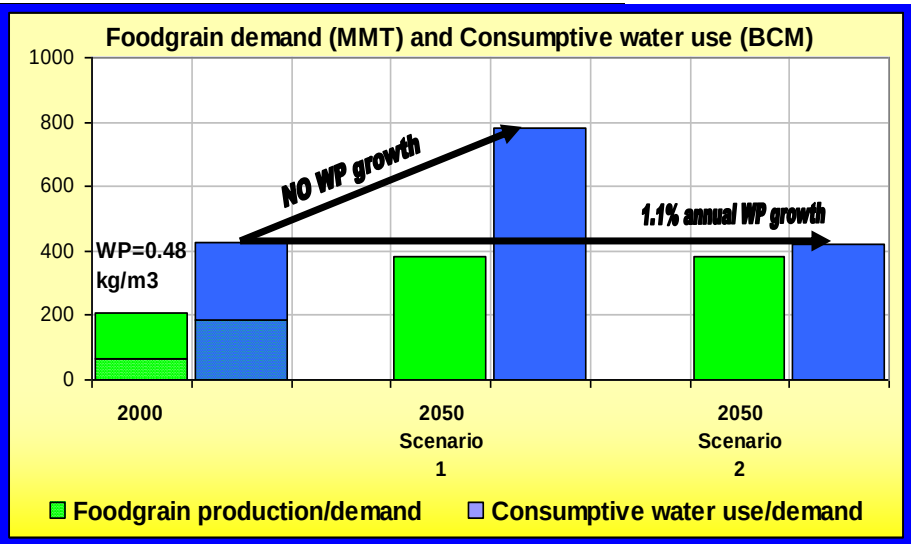
Source: WATERSIM simulations

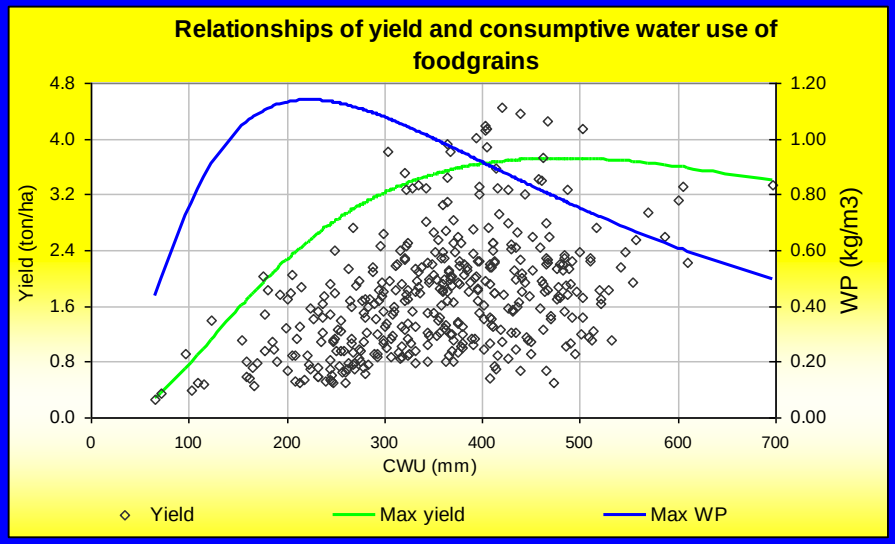
COMPREHENSIVE Assessment of water management in agriculture

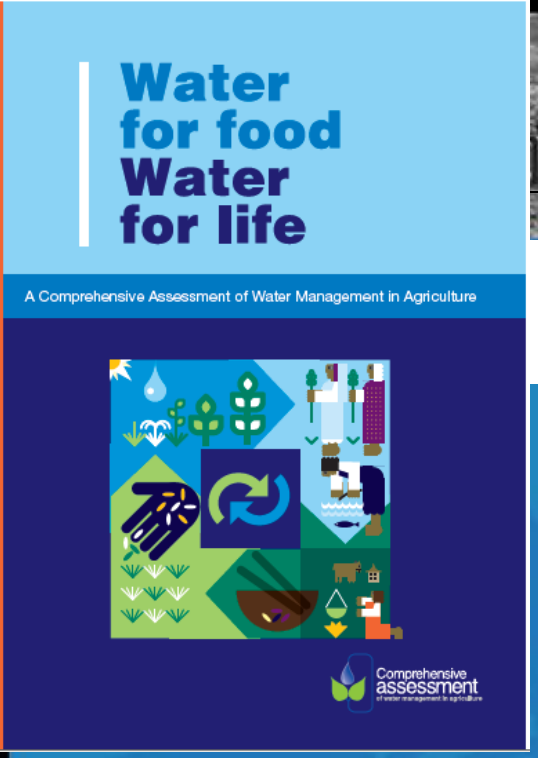
How to face the pending water crisis?

Improve Water Productivity

- If no growth in WP, CWU demand is close to potentially utilizable water resources
- 1.1% annual growth in WP demand no increase in CWU
- Potential of improving WP in India? Very high!
  - Supplemental irrigation in low CWU regions (rainfed)
  - Bridging the yield gap (Water and input management)
  - Deficit CWU (high CWU regions







Http://www.iwmi.org

Thank You

http://www.iwmi.nrlp.org