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ICID2015
26th ERC & 66th IEC

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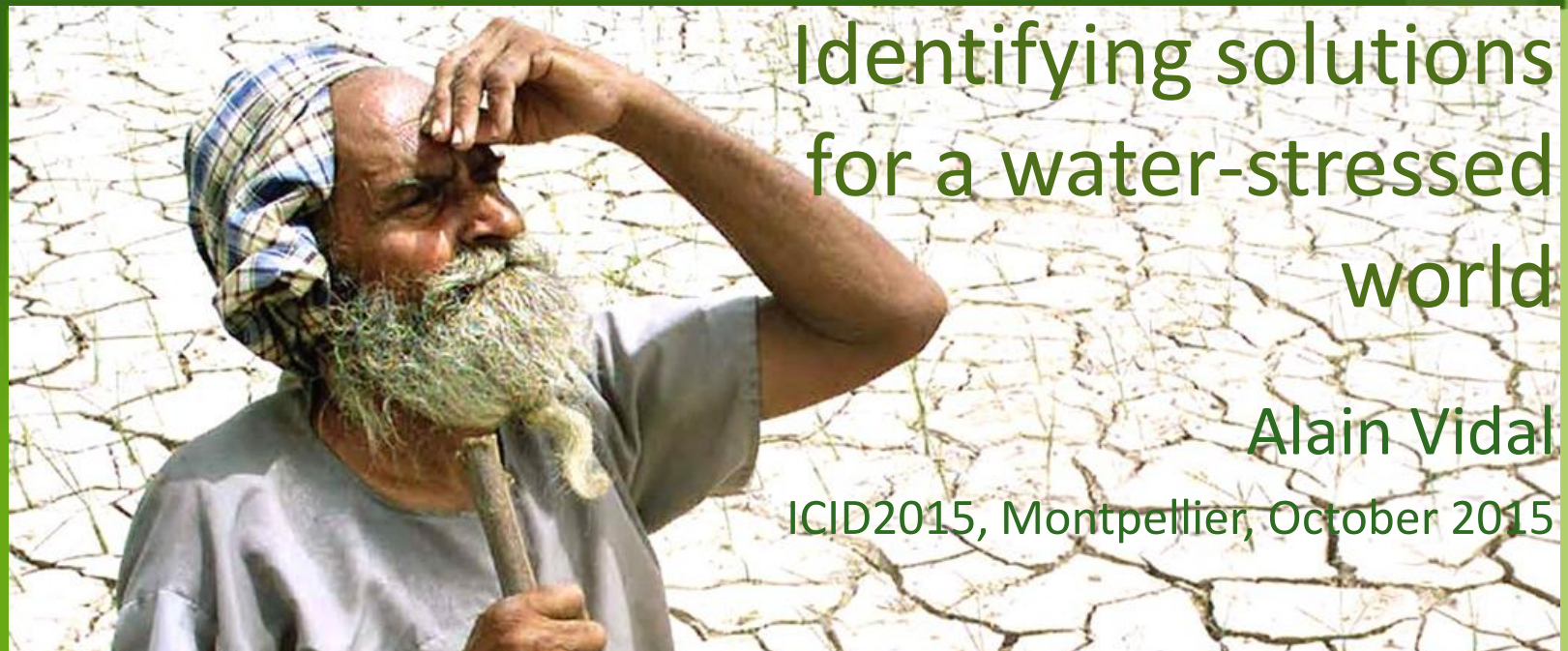
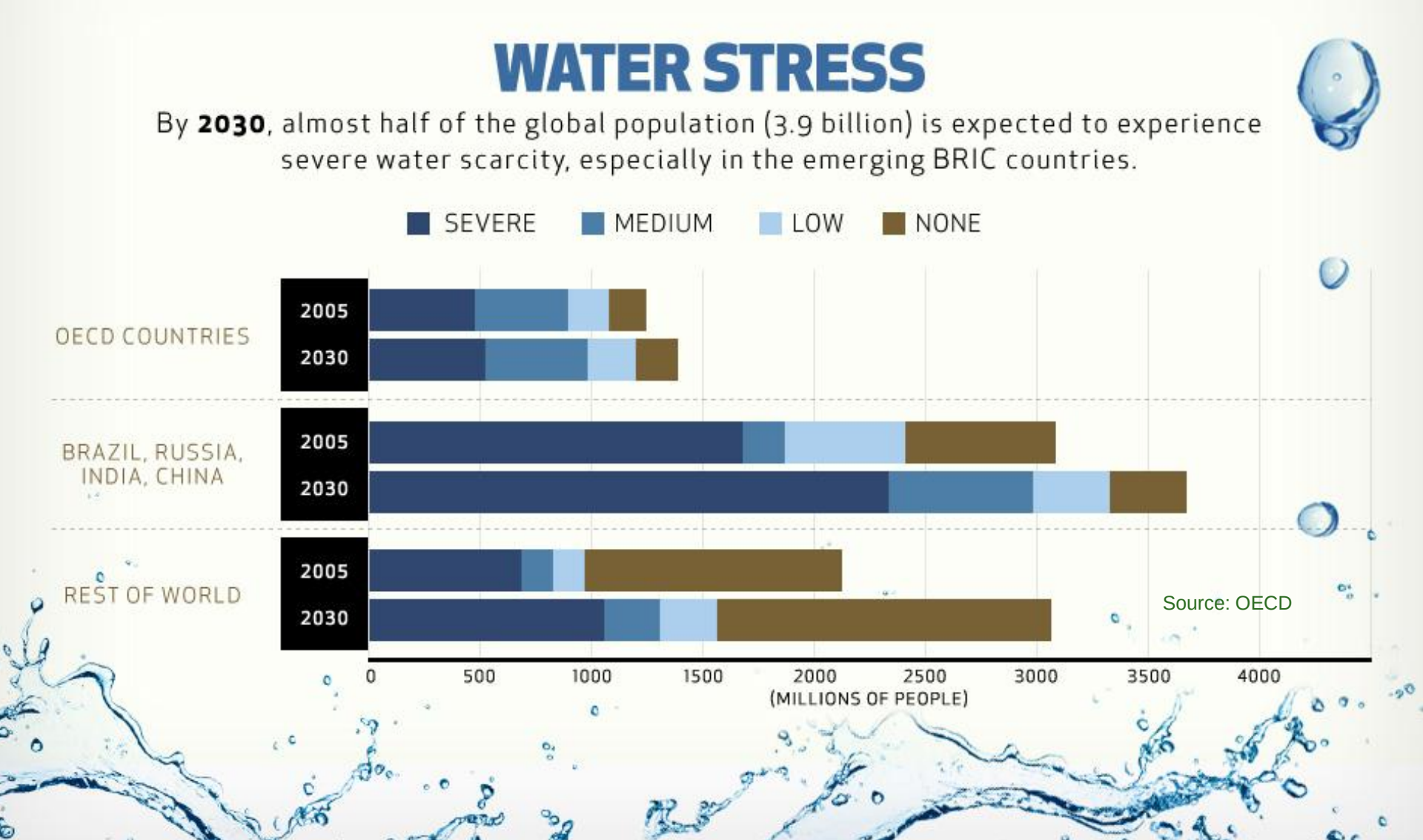


# Identifying solutions for a water-stressed world

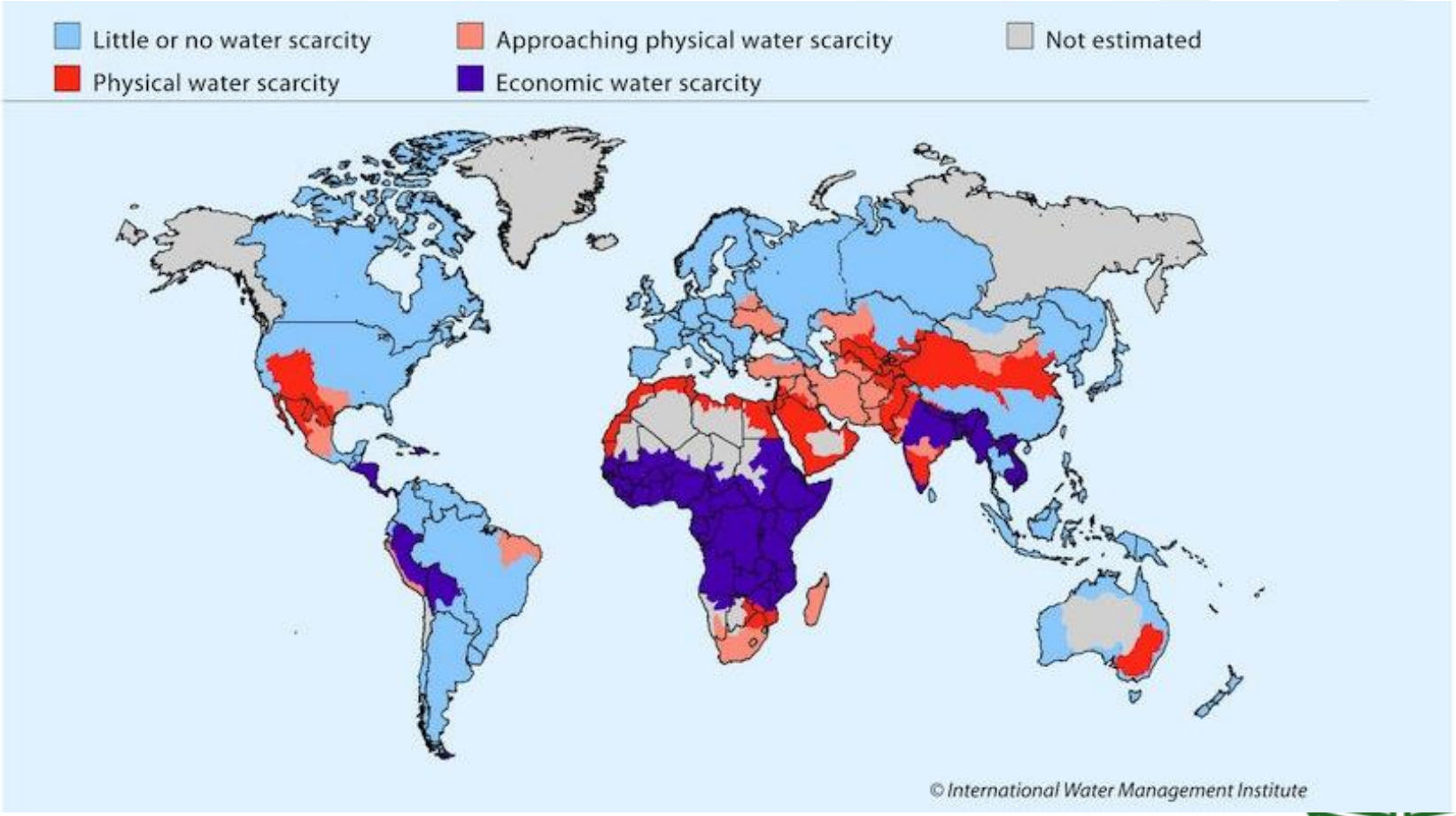
Alain Vidal

ICID2015, Montpellier, October 2015

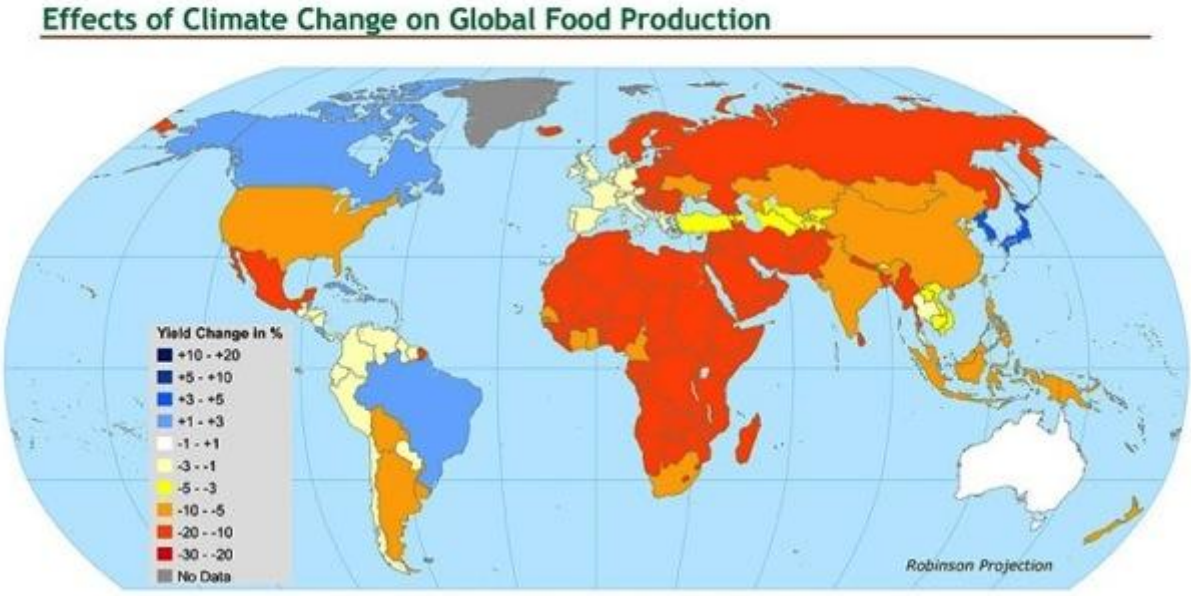
# Challenges for today and tomorrow



# Global water scarcity

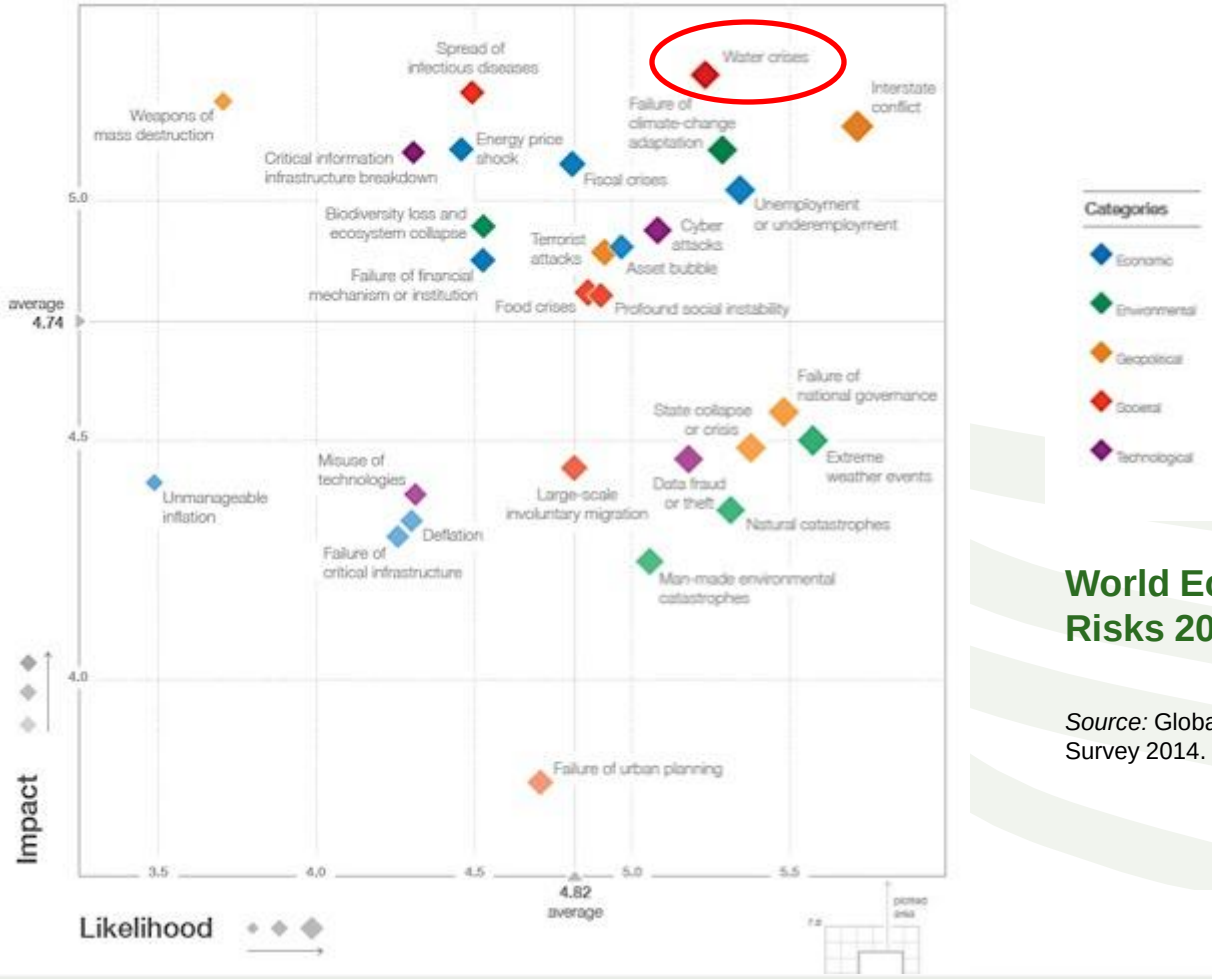


# Climate variability will impact on food production




Source: Socioeconomic Data and Applications Center (SEDAC)

# The water crisis : a global risk to business




**World Economic Forum, Global Risks 2015 - Insight Report**

*Source:* Global Risks Perception Survey 2014.

# Identifying solutions for a water-stressed world

1. ‘Smart’ irrigation
2. Re-using waste
3. Ground water governance
4. Help agriculture become part of climate solutions

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*Photo: Hamish John Appleby/IWMI*

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# Incentives to rapid expansion of drip irrigation… Yet suitability depends on context

# Bring smart and affordable ICT to everyday farm management for smallholders


- Mobile-phone and web-based agro-advisory system developed and tested in in Sudan, Ethiopia and Egypt
- Spatial data translated into simple SMSs - both qualitative and quantitative, and both on-demand and weekly “push”

# Precision surface irrigation

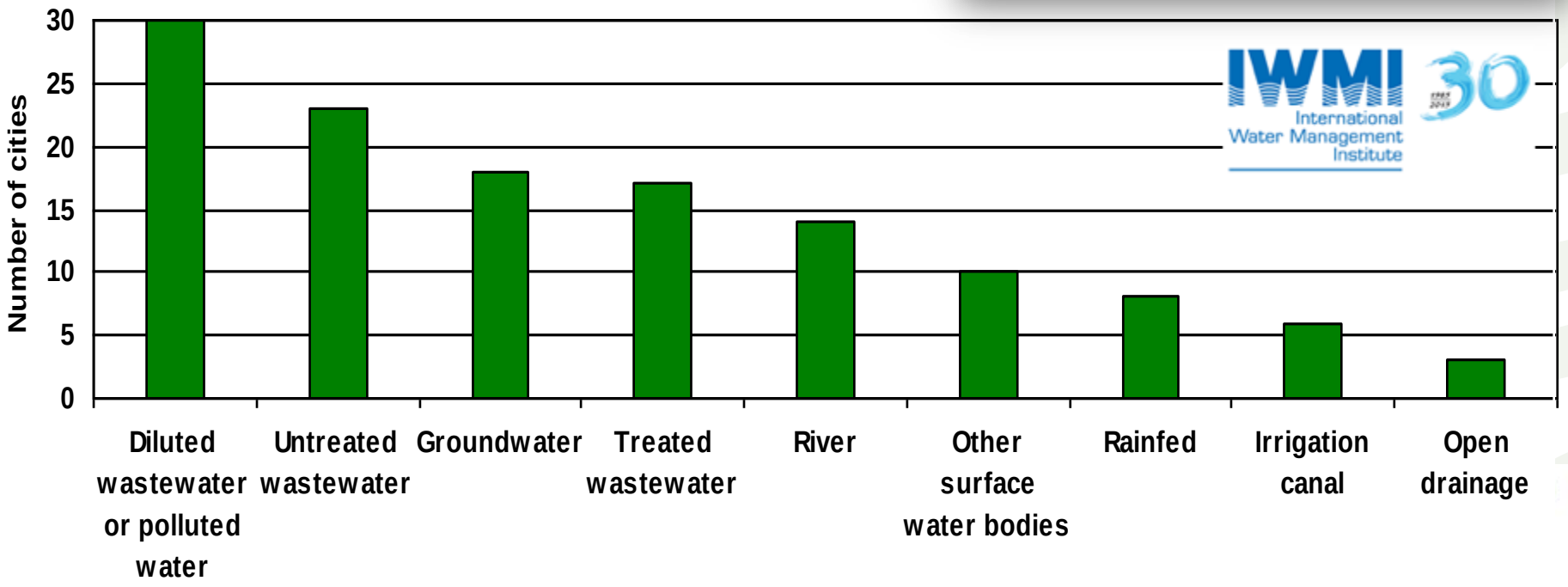
## A viable alternative to drip irrigation

Pakistan: Land and Water productivity increases, reduced diesel costs

*Photos: Arif Anwar / IWMI*

# Global survey - irrigation source in urban & peri-urban areas

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



# Wastewater: a valuable asset


*Photo: Pay Drechsel/IWMI*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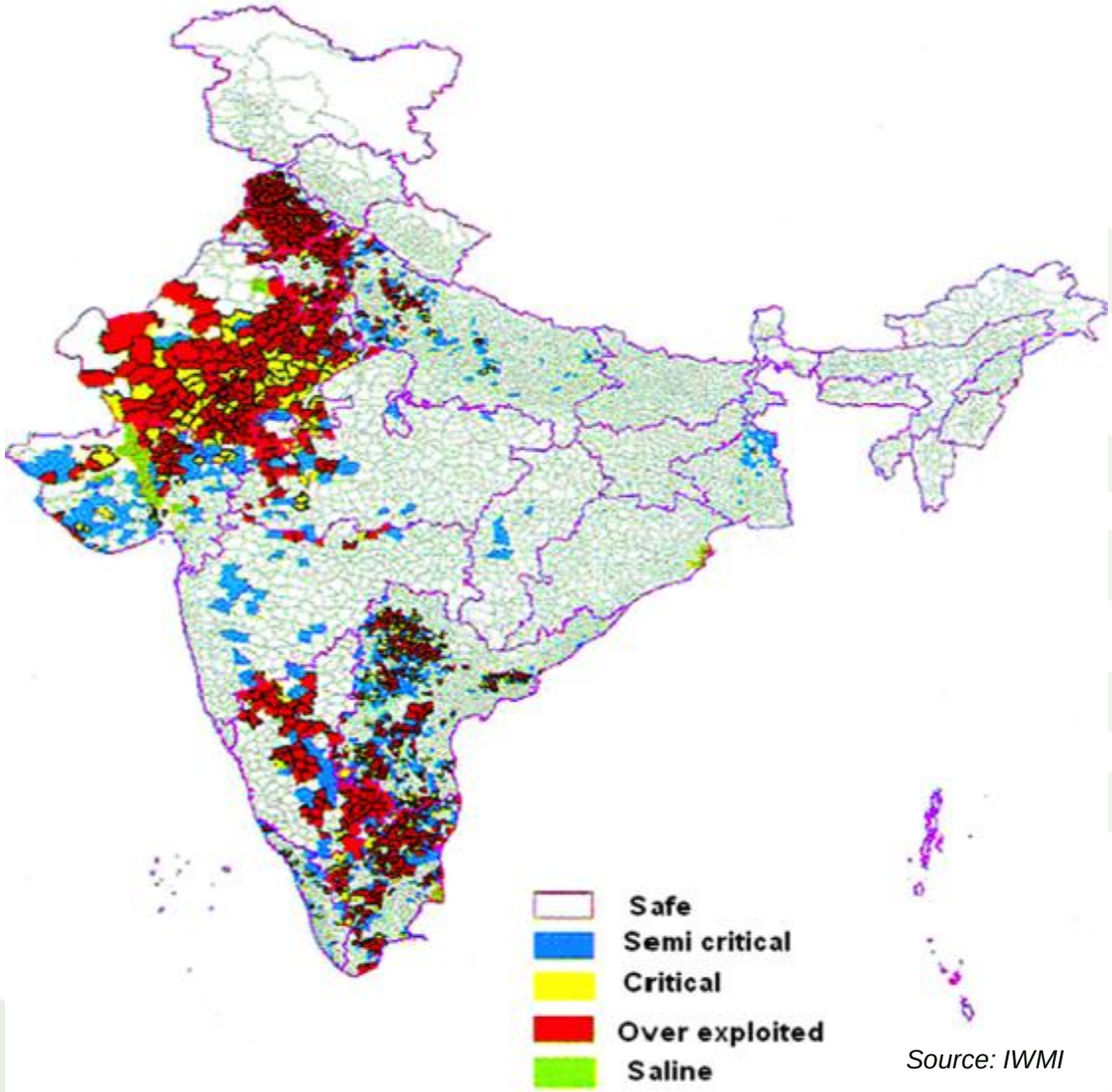
# India: Twin cases of ‘over-abstraction’ and ‘under-utilization’




Source: IWMI

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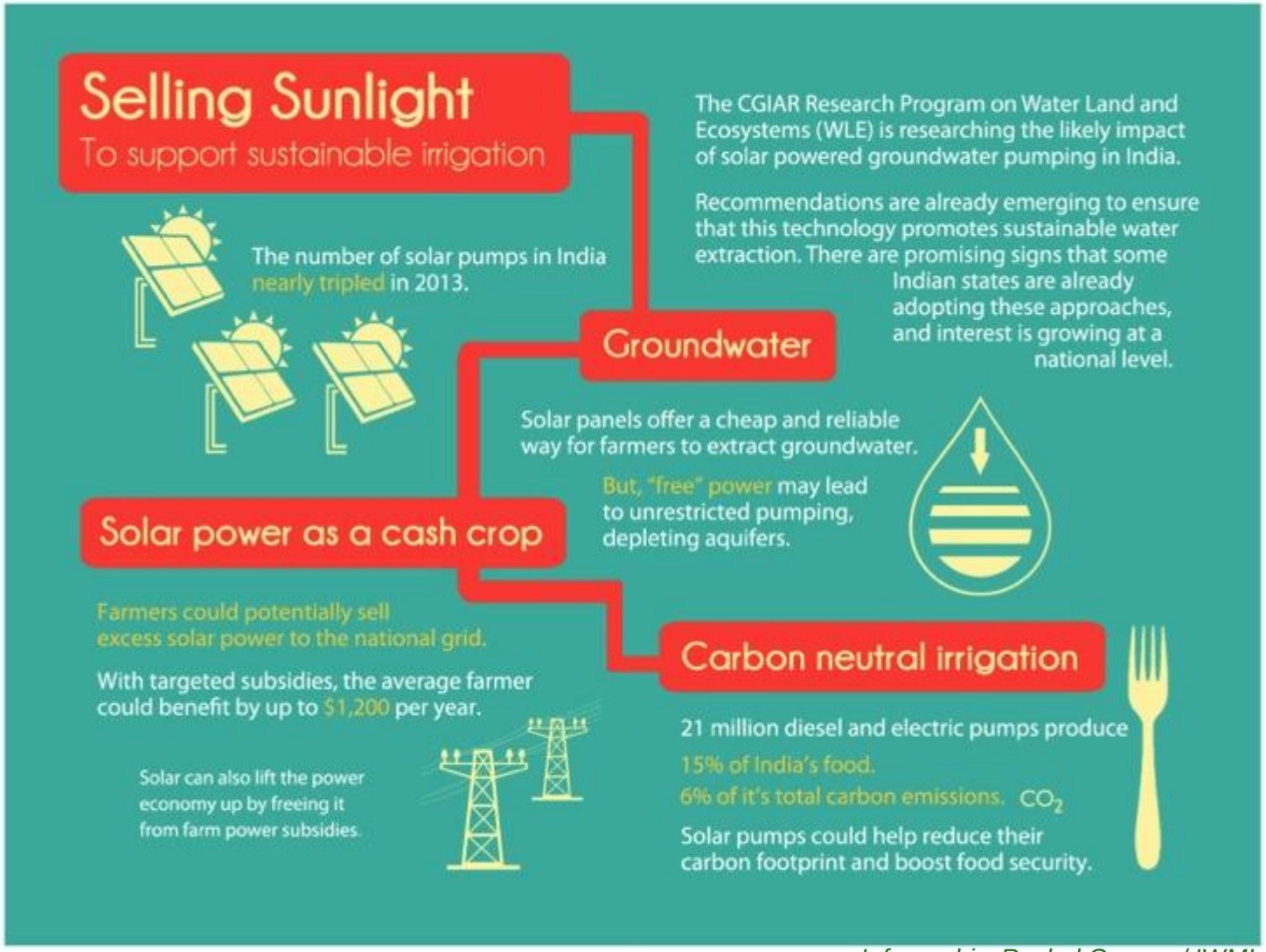
# Solar pumps – renewable, but sustainable? Getting the incentives right




*Infographic: Rachel Cramer / IWMI*

IWMI International Water Management Institute

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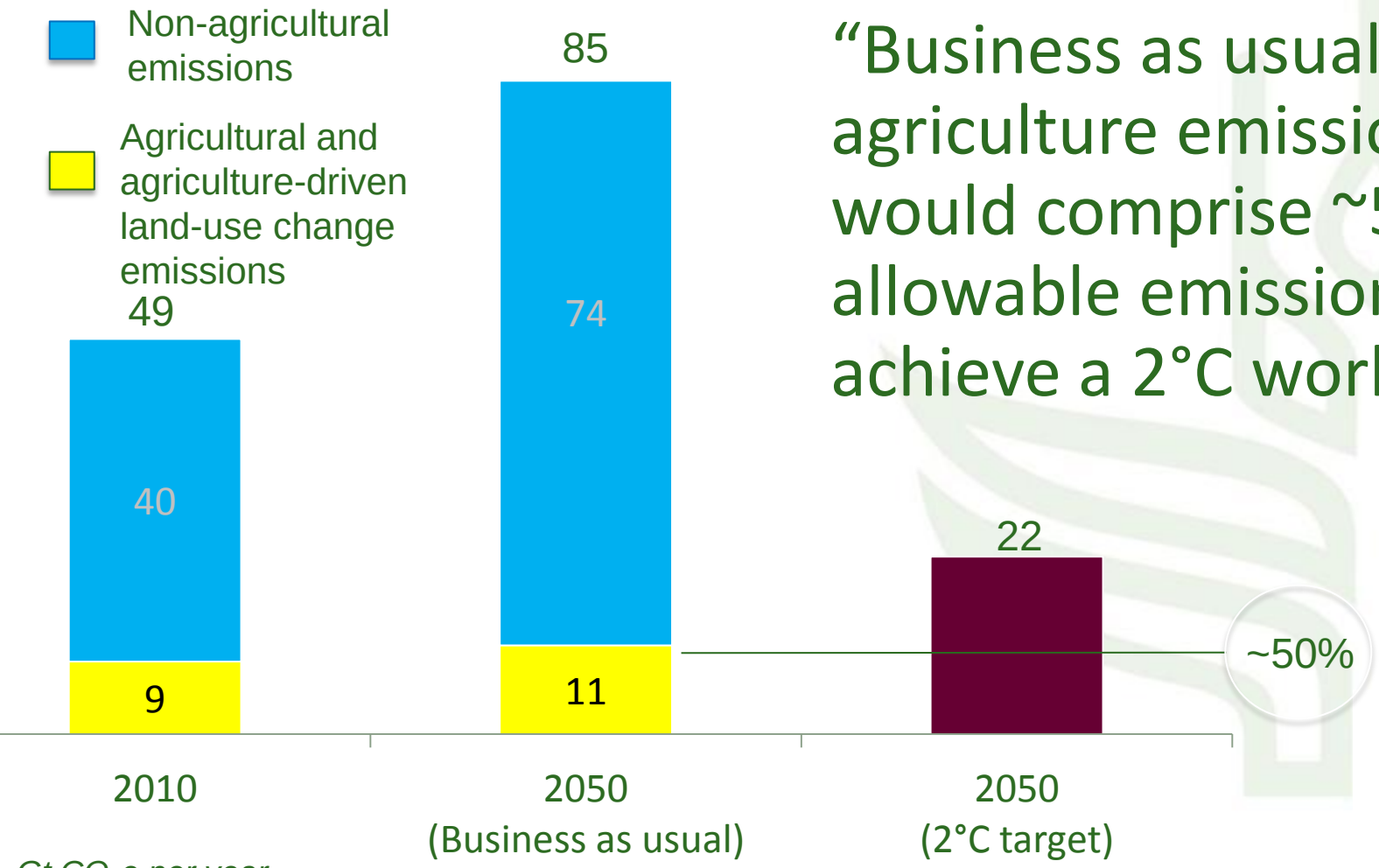
# Help agriculture become part of the climate solutions

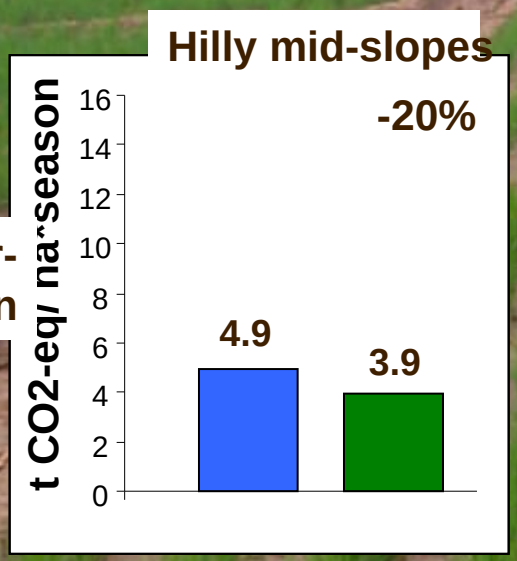


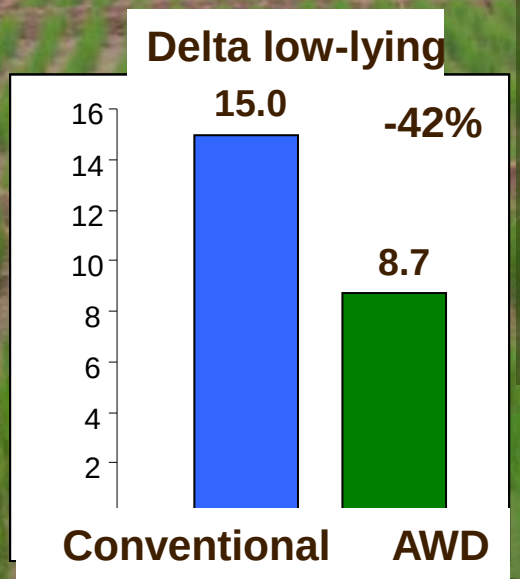

"Business as usual" (BAU) agriculture emissions would comprise ~50% of allowable emissions to achieve a 2°C world

# Alternate-Wetting-and-Drying (AWD)

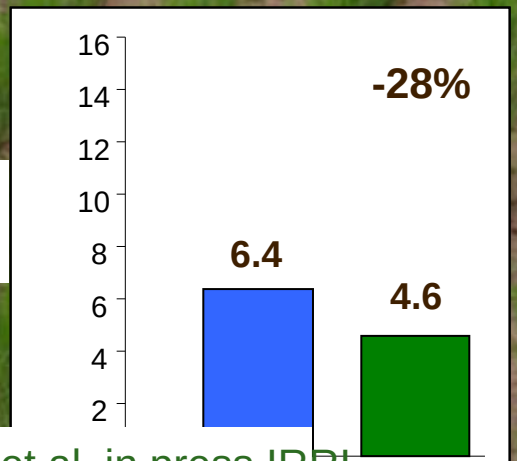
IRRI
INTERNATIONAL RICE RESEARCH INSTITUTE

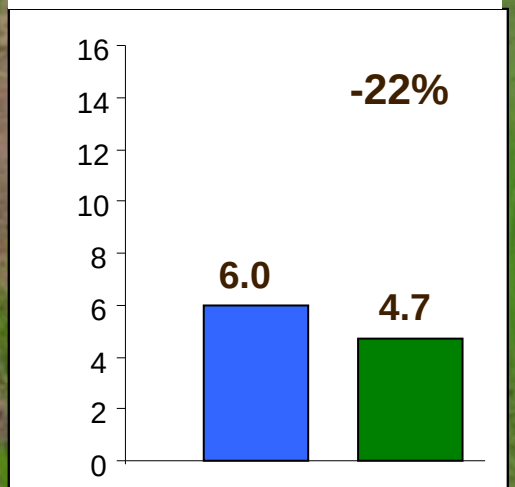
- Keep flooded for 1st 15 days and at flowering
- Irrigate when water drops to 15 cm below the surface




Summer-Autumn




Winter-Spring

Sander et al. in press IRRI

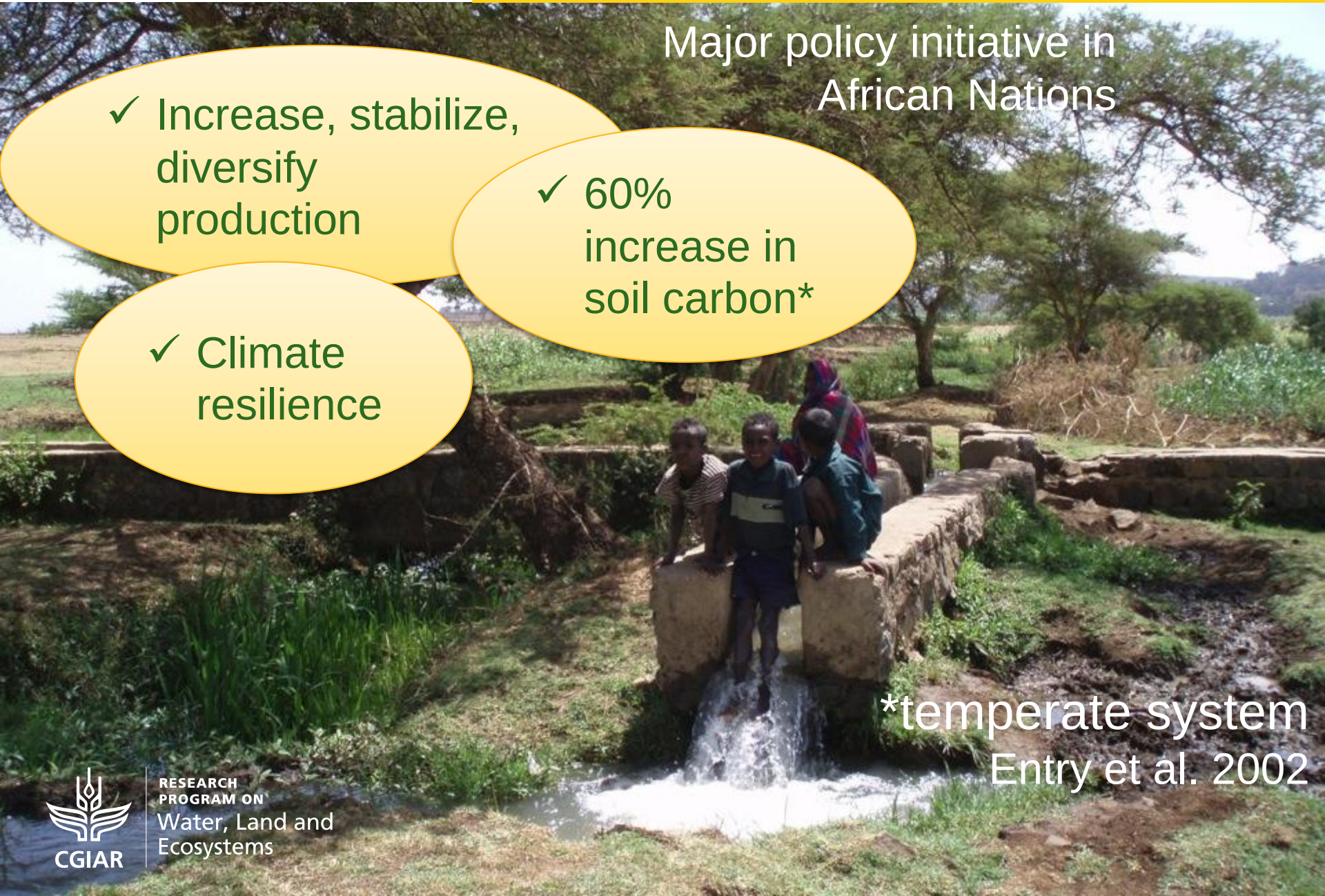
30% water

20-50% GHG

Without compromising yield

# EAST AFRICA

## Irrigation – unexplored opportunity



Major policy initiative in African Nations

- ✓ Increase, stabilize, diversify production
- ✓ 60% increase in soil carbon*
- ✓ Climate resilience

*temperate system
Entry et al. 2002

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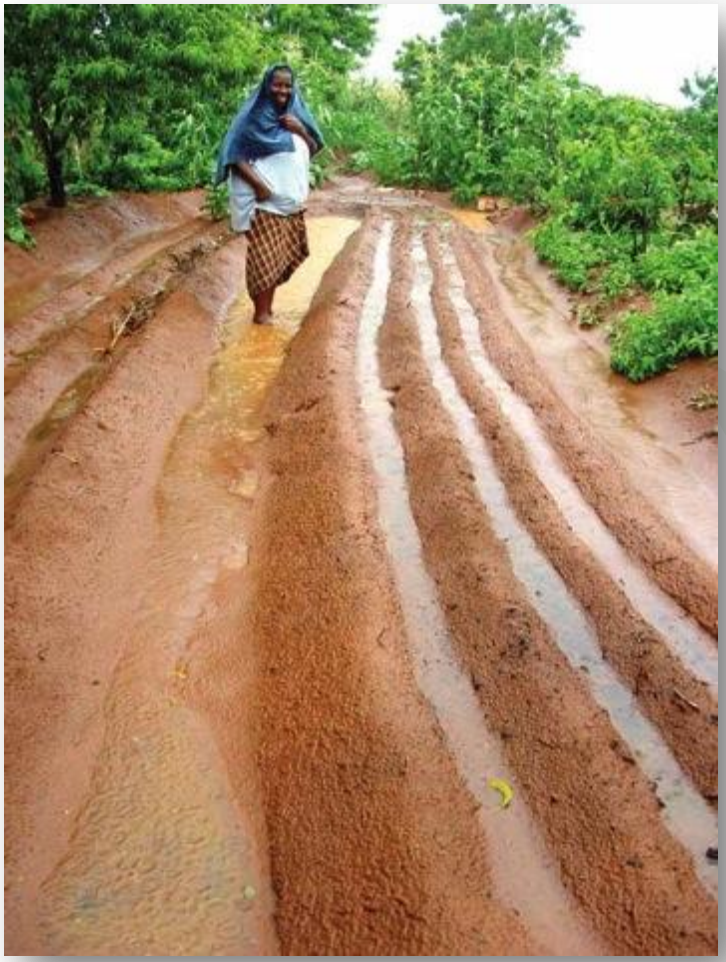
RESEARCH PROGRAM ON
Water, Land and Ecosystems

# Smart water solutions



Because of increased variability, a continuum of water management technical and institutional innovations are needed

- decentralized, adaptable, inexpensive
- applicable under scenarios of increasing or decreasing rainfall