

Water-Energy-Food Tradeoffs

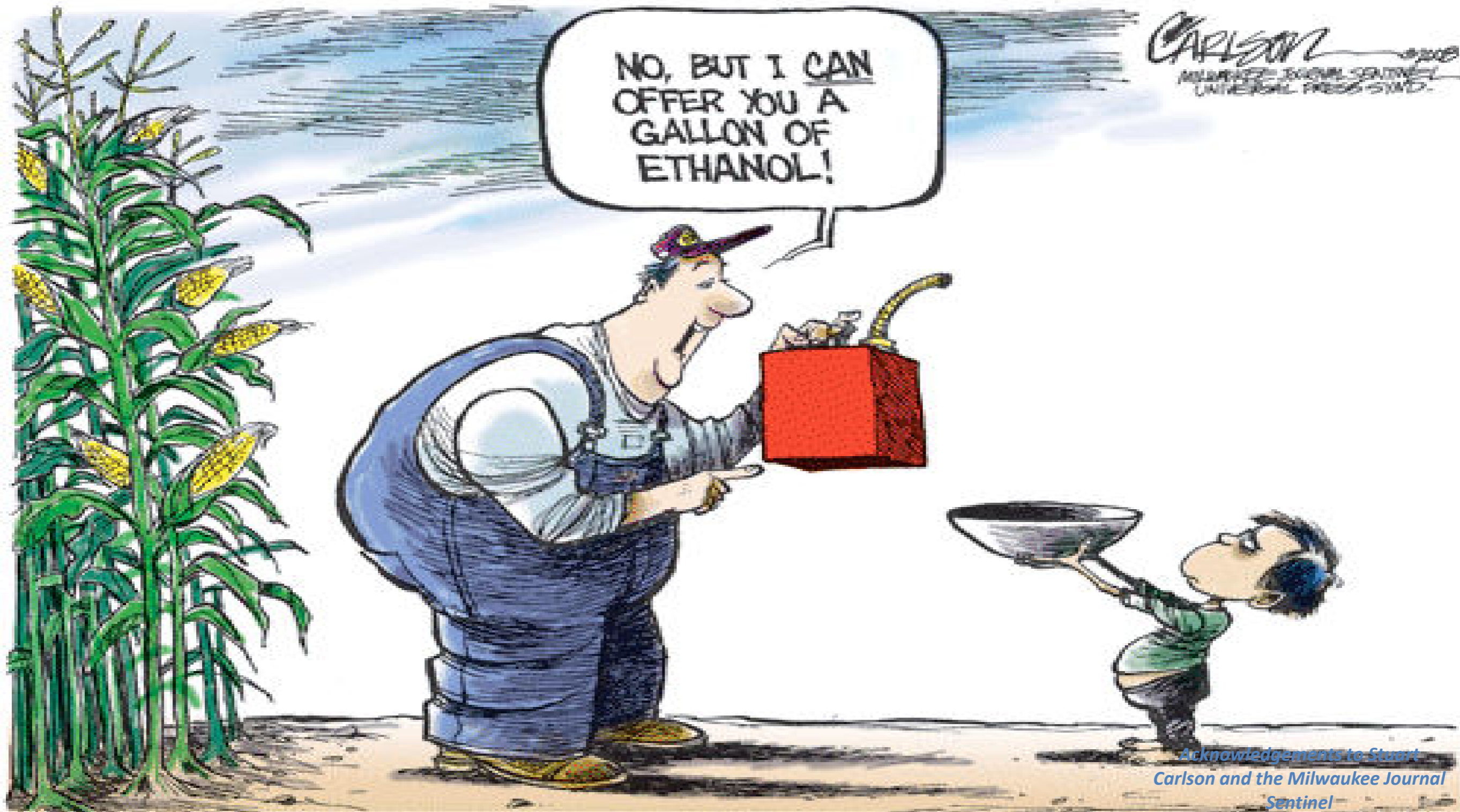
Scientific approaches to implementing the nexus—Examples from the CGIAR Research Program on Water, Land and Ecosystems (WLE)

Andrew Noble, Director WLE



Uniting agriculture and nature for poverty reduction

Focus on land, water and ecosystems – build sustainability and resilience

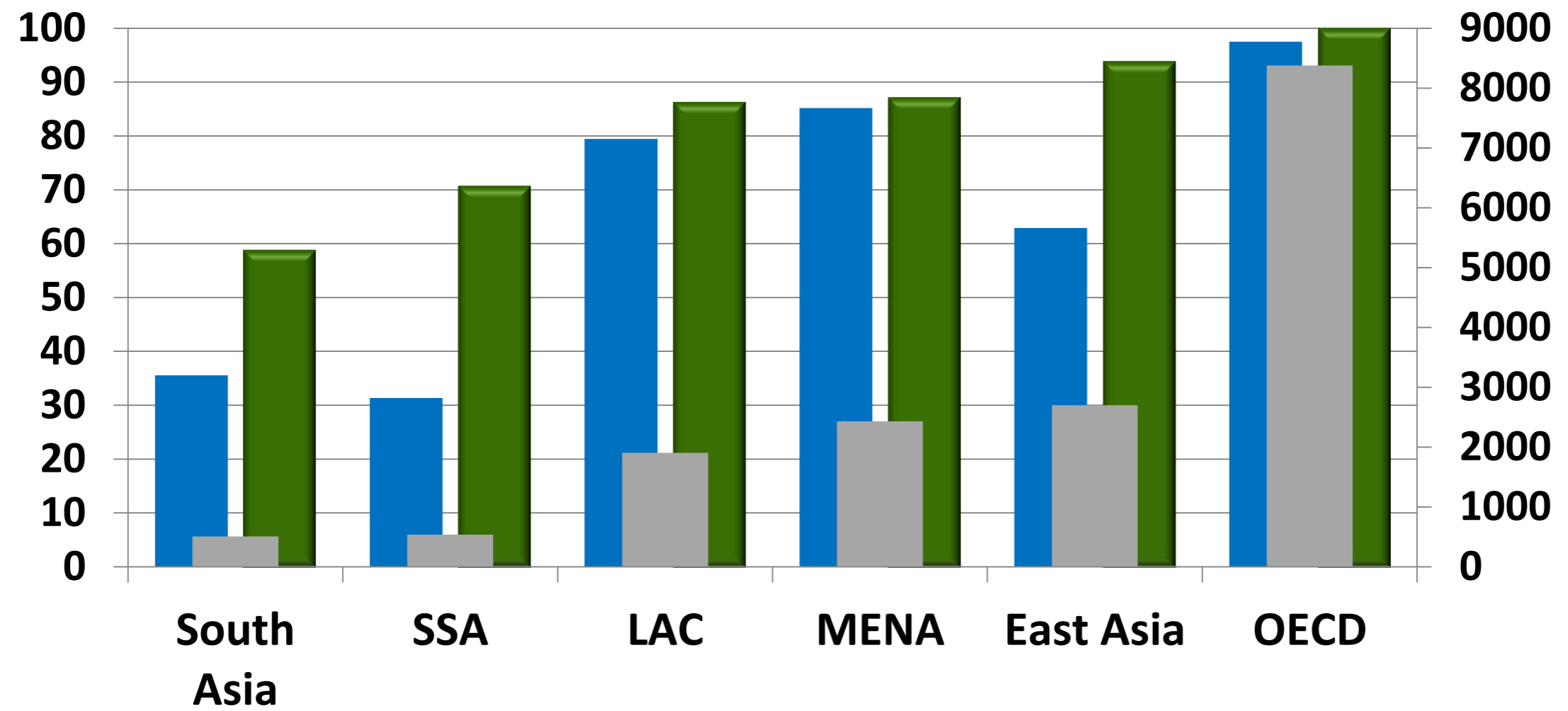


The poorest have limited access to water, food and modern forms of energy

Access to sanitation (%)

Energy use (kwh/cap)

Share of non-malnourished children (%)

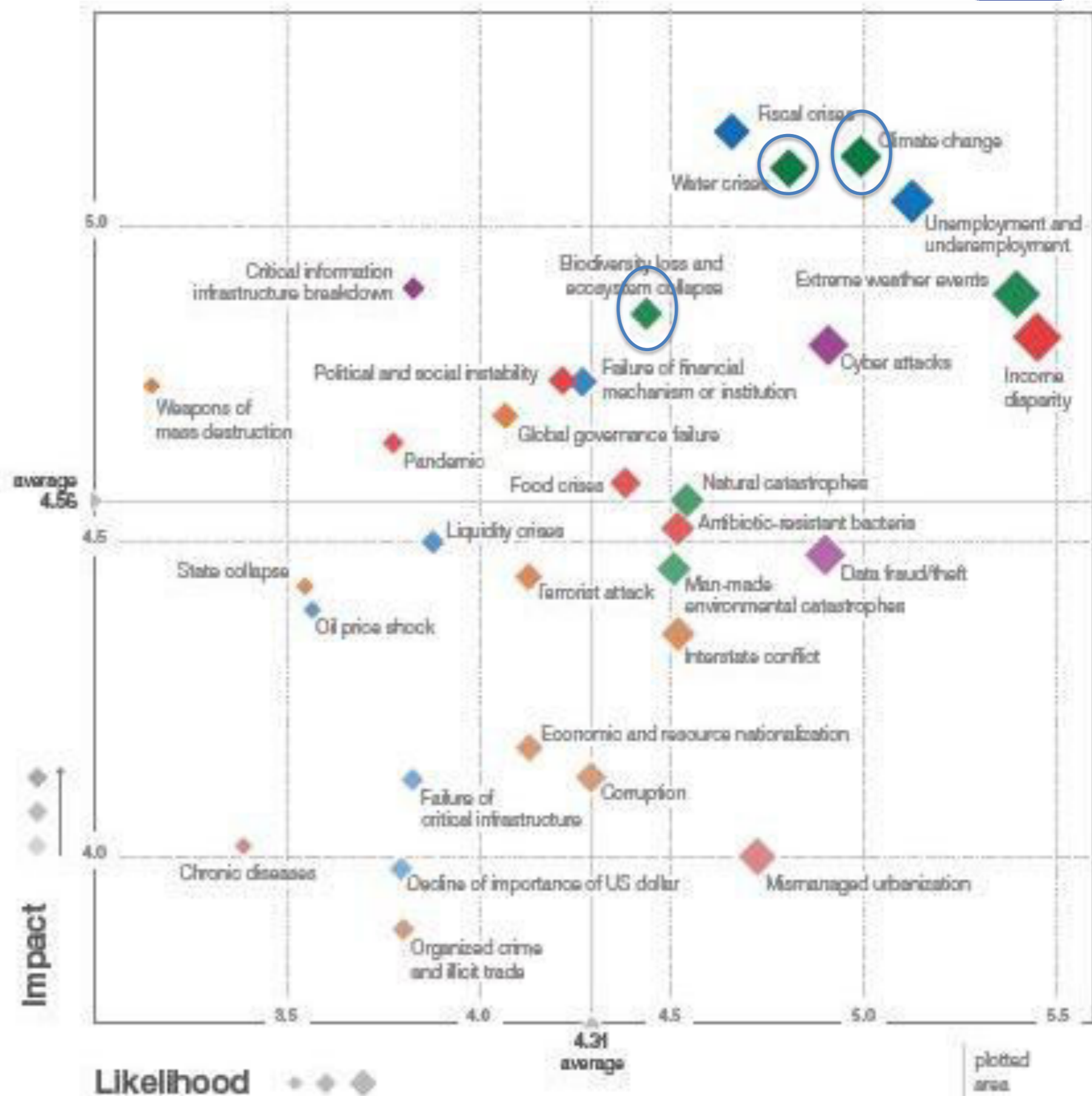


■ Access to sanitation (%) ■ Access to food (%) ■ Energy use (kwh/cap)

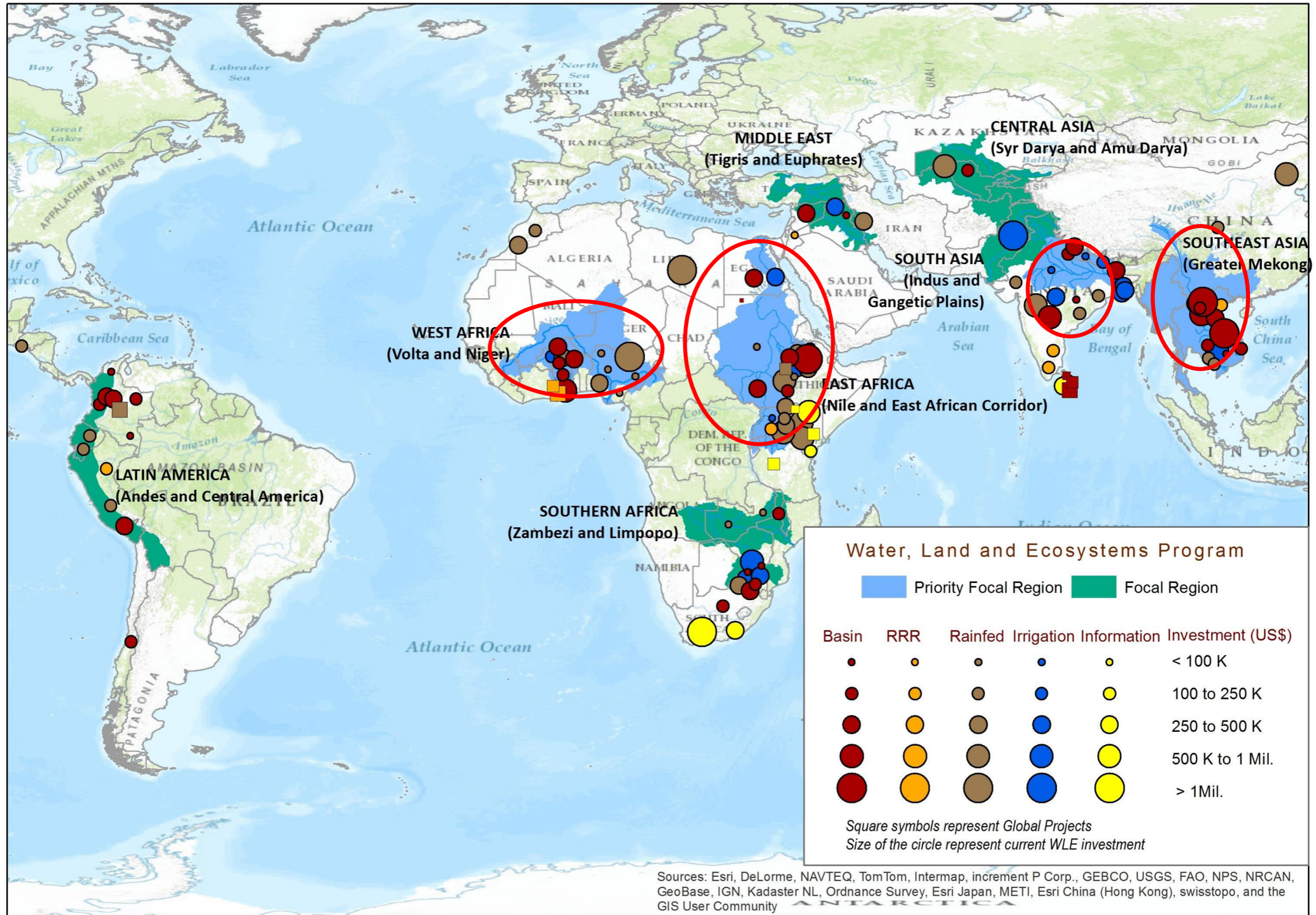
Global Risks Report 2014, World Economic Forum

***'Water crisis'* is
the third
highest global
risk**

**..extreme weather,
climate change and
biodiversity loss also
very high**



Where we work

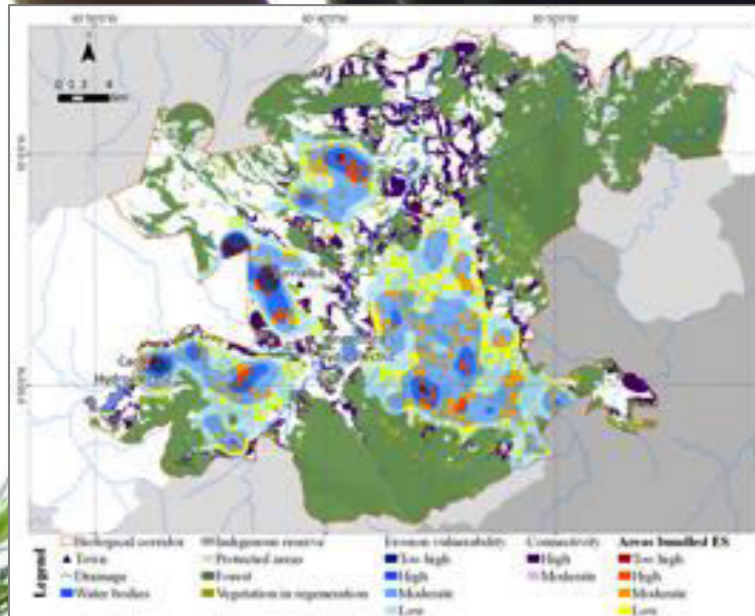


Example 1: Andean Basins

Rewarding
Services

the value of Ecosystem
provided by upstream Farmers ...

My farm
participates in the
Management of the
Reventazon
River Watershed
(ICE)



For better hydropower outcomes



Example 2: West Bengal – easing regulatory and pricing barriers

- Agricultural growth in West Bengal had slumped by more than half
- Research identified that a major obstacle to agricultural productivity was getting access to groundwater
- New policies recommended by IWMI were adopted to reduce ‘red-tape’ and improve groundwater access for smallholder farmers.
- The policy change could benefit more than 5.6 million smallholders

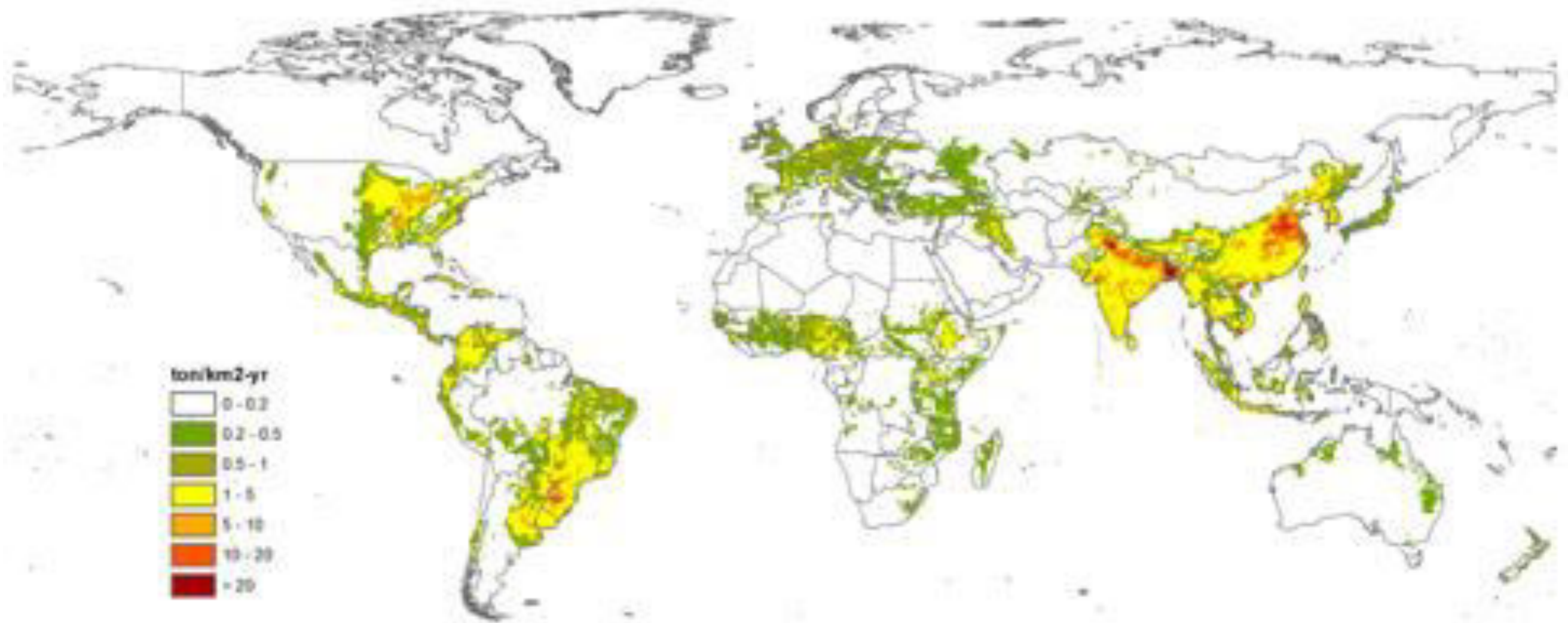


Under previous groundwater regulations, many poor farmers in West Bengal were forced to water by hand. The reformed policy should open up new opportunities.

Source: Aditi Mukherji

Example 3: Global: Water Pollution

Agricultural N emissions increase by 47-61% between 2003 and 2050 and emissions of P by 6-20%, depending on climate change scenario; Improved nutrient use efficiency and RRR can substantially reduce but not reverse increases in N & P emissions



N emissions from agriculture, 2050, baseline

Using business models to turn waste into an asset – addressing urbanization.

Turning septage into Fertilizer



- Solid waste and fecal sludge composting in Asia and Africa could save billions of US\$ per year, assuming a market for only 25% of the urban organic waste.
- Greenhouse gas emissions could be reduced to up to 13 million tons CO₂-e per year.

WLE's research and projects are at the heart of the nexus thinking

WLE brings together the research power of 11 CGIAR centres and the FAO along with hundreds of regional and local partners to:

- Look beyond the farm-level to sustainable development within global ecosystems at different scales – staying within the Planetary Boundaries
- Behavioral change by ALL and political will is required to achieving sustainability and resilience in our food, water and energy systems.
- Support big, bold solutions to address 'wicked' problems through out-of-box thinking and multidisciplinary approaches.





Thank You

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