# Making it count where it matters the most: Stewardship Strategies for the Agriculture Sector

Seminar on Water Risk and Water Stewardship
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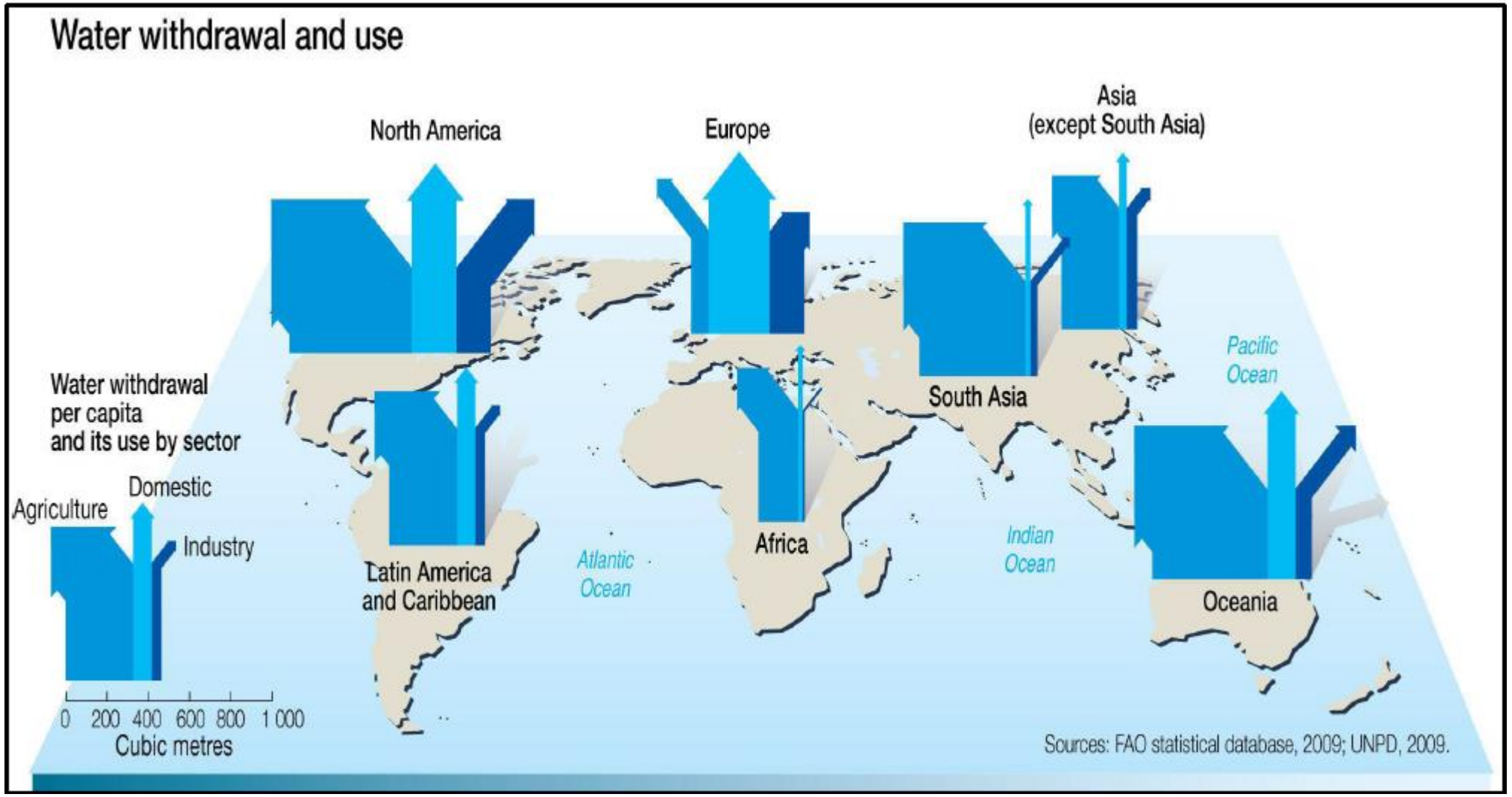
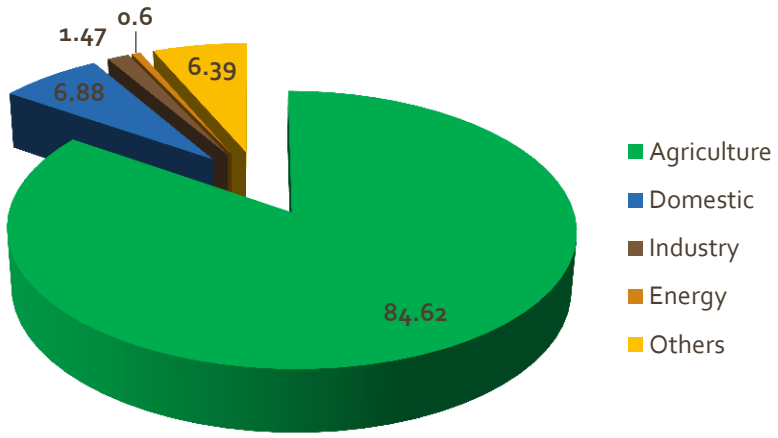
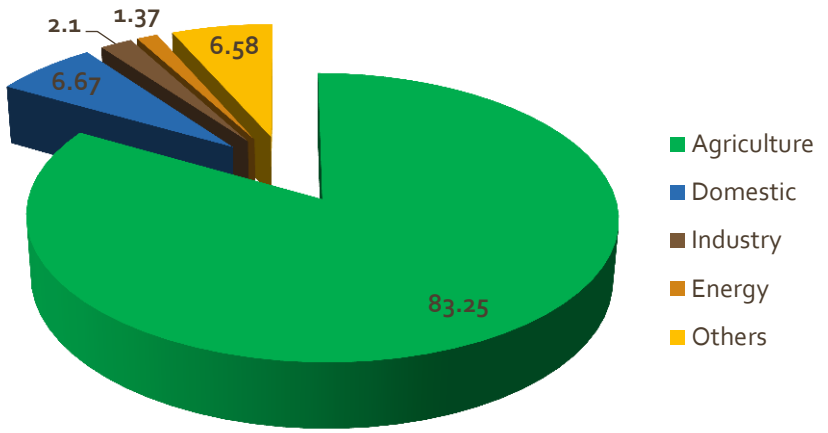
# Per capita agri water withdrawal one of the highest in the world



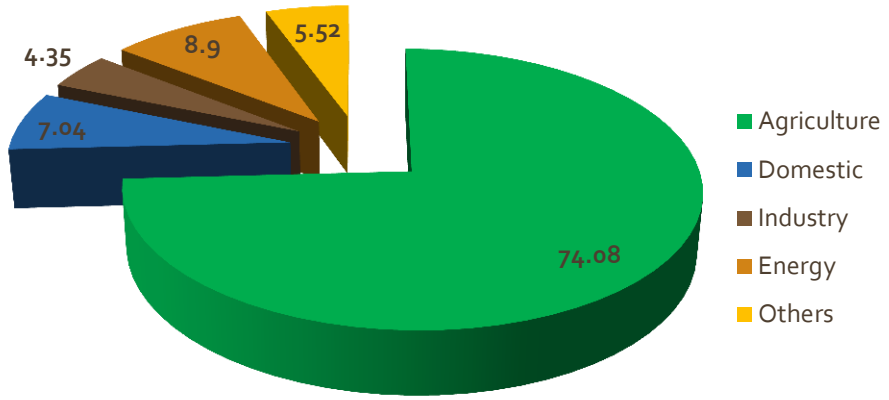
# Maximum share of freshwater allocation in India




2010



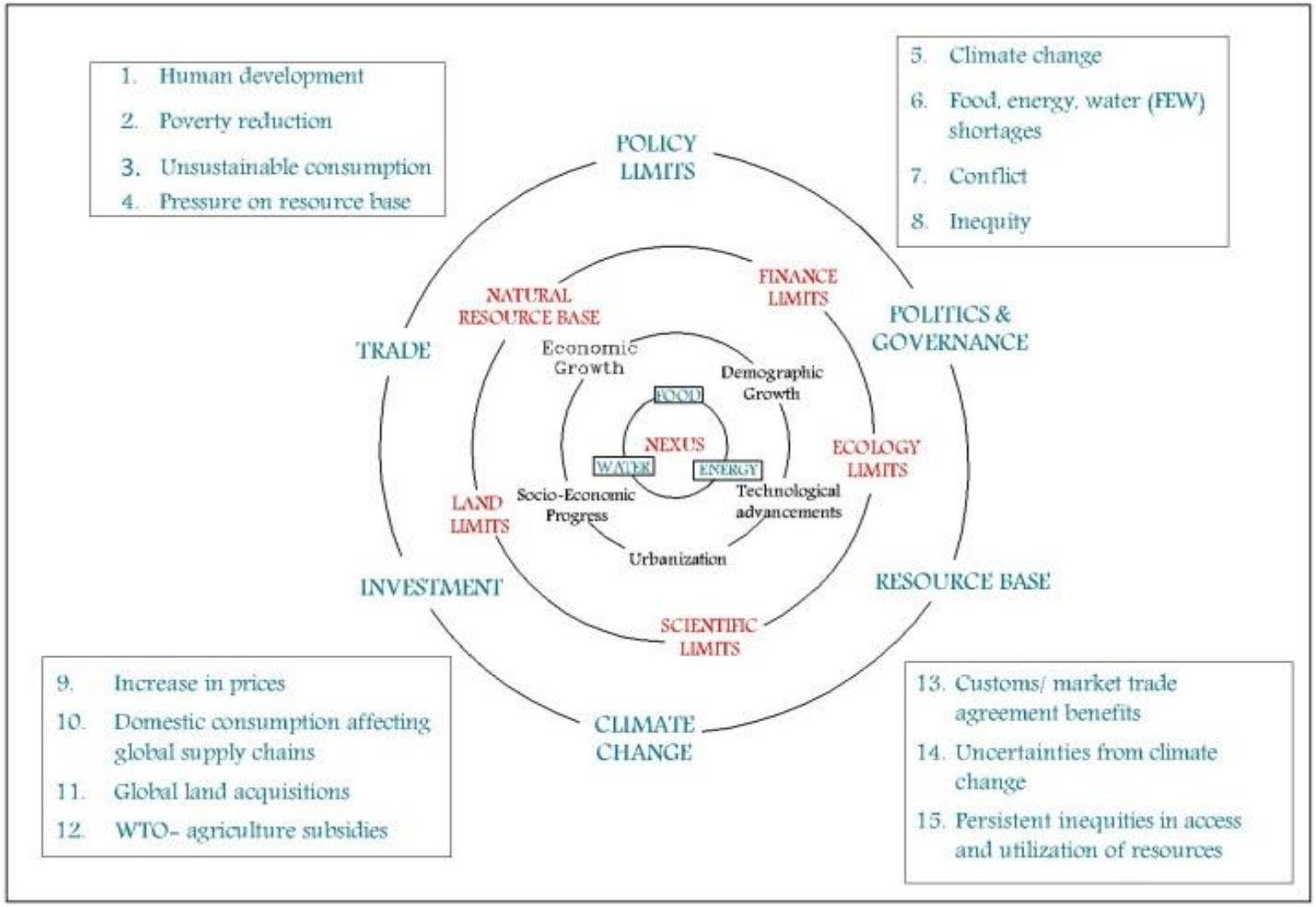

2025



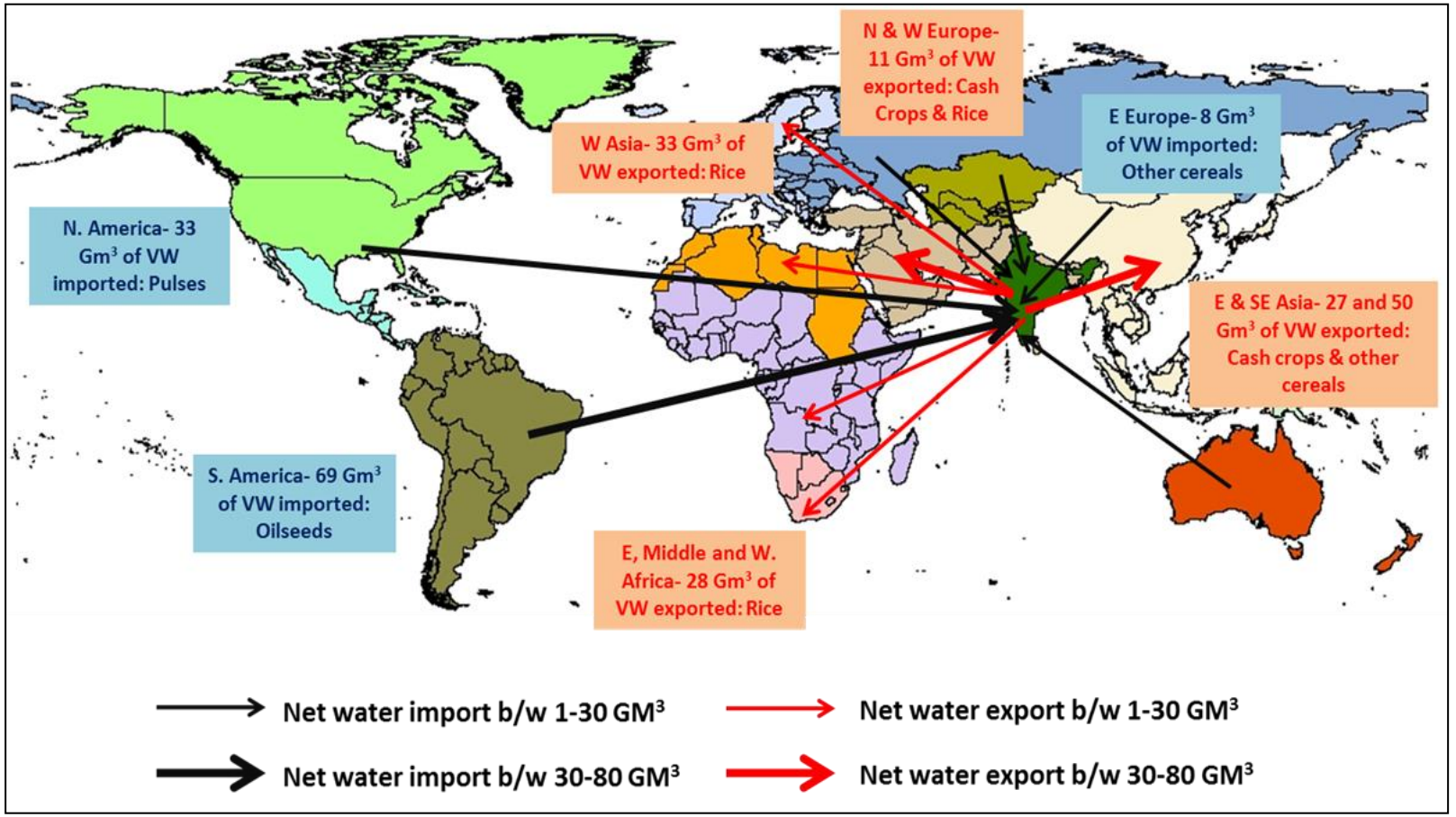

2050

*Source: NCIWRD, 1999*

# Water-energy-climate-food nexus playing out



# Agricultural water trade: are we on the right path?



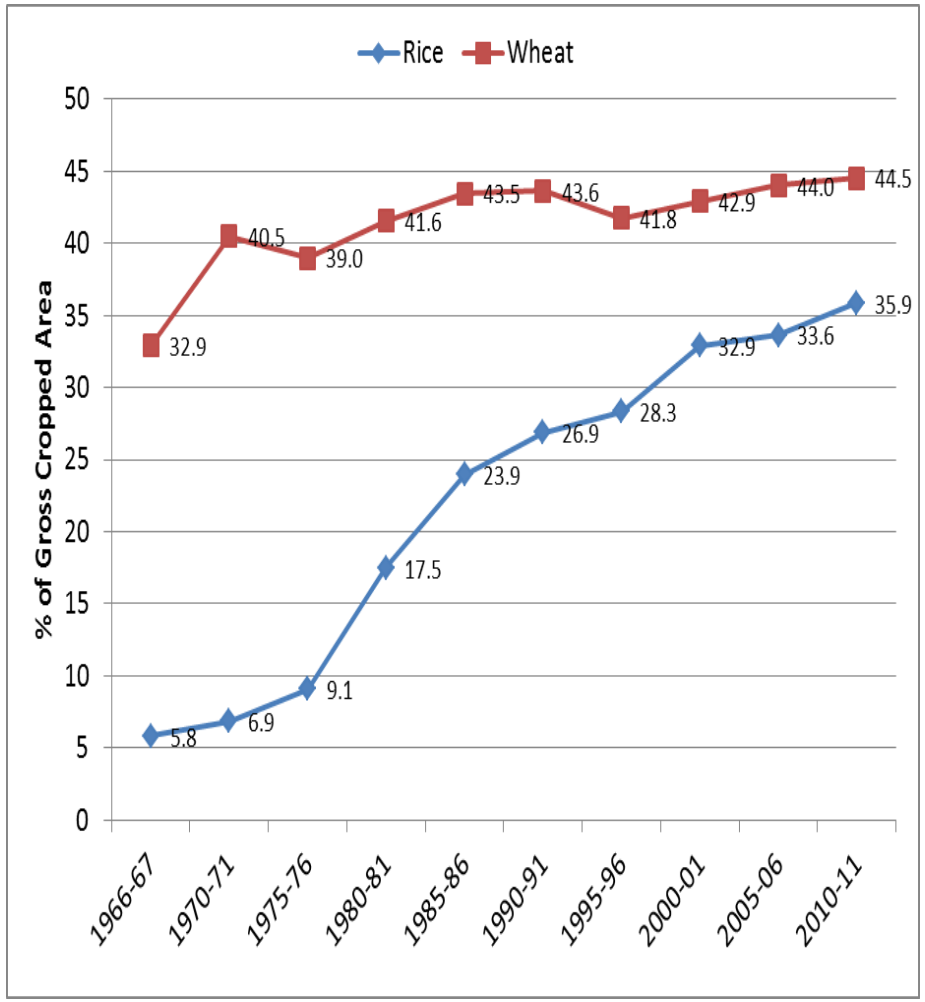

With increasing water stress & changes in climate at local scales, businesses need more resilient supply chains

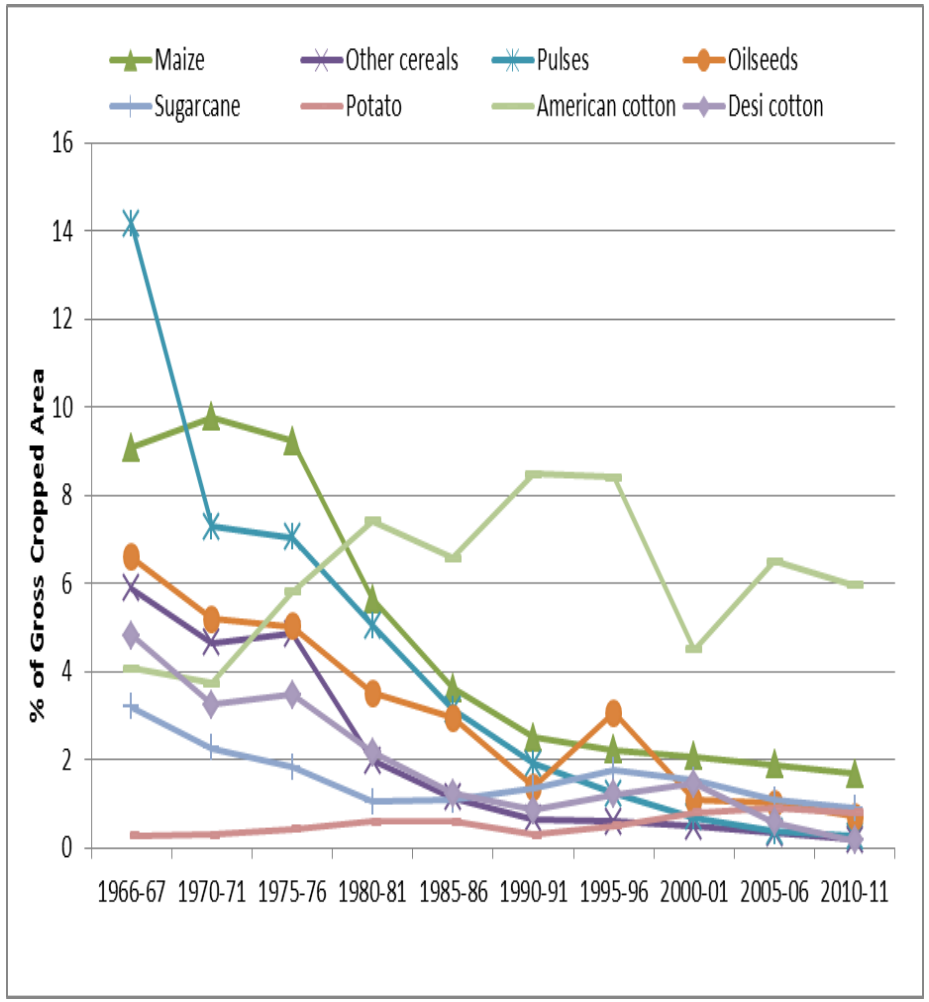
*Source: Perveen, S. et al. 2012. Virtual water trade: Revisiting the assessments to incorporate regional water stress. Columbia Water Center white paper.*

# Story of the food bowl of India: Punjab

- Only 1.5 per cent of the total geographical area
- Produces 18% of the total wheat; 10% rice and 7% cotton
- Cropping intensity 189% - (India: 138%)
- N+P+K use:  243 kg/ crop ha - (India: 135 kg/crop ha)
- Area under rice-wheat rotation: 80.5% of cropped area
- 76% of the total area irrigated by groundwater
- 80% of the blocks over-exploited their groundwater reserves
- States power subsidy bill touched Rs. 6,000 crore last year

# Punjab Story

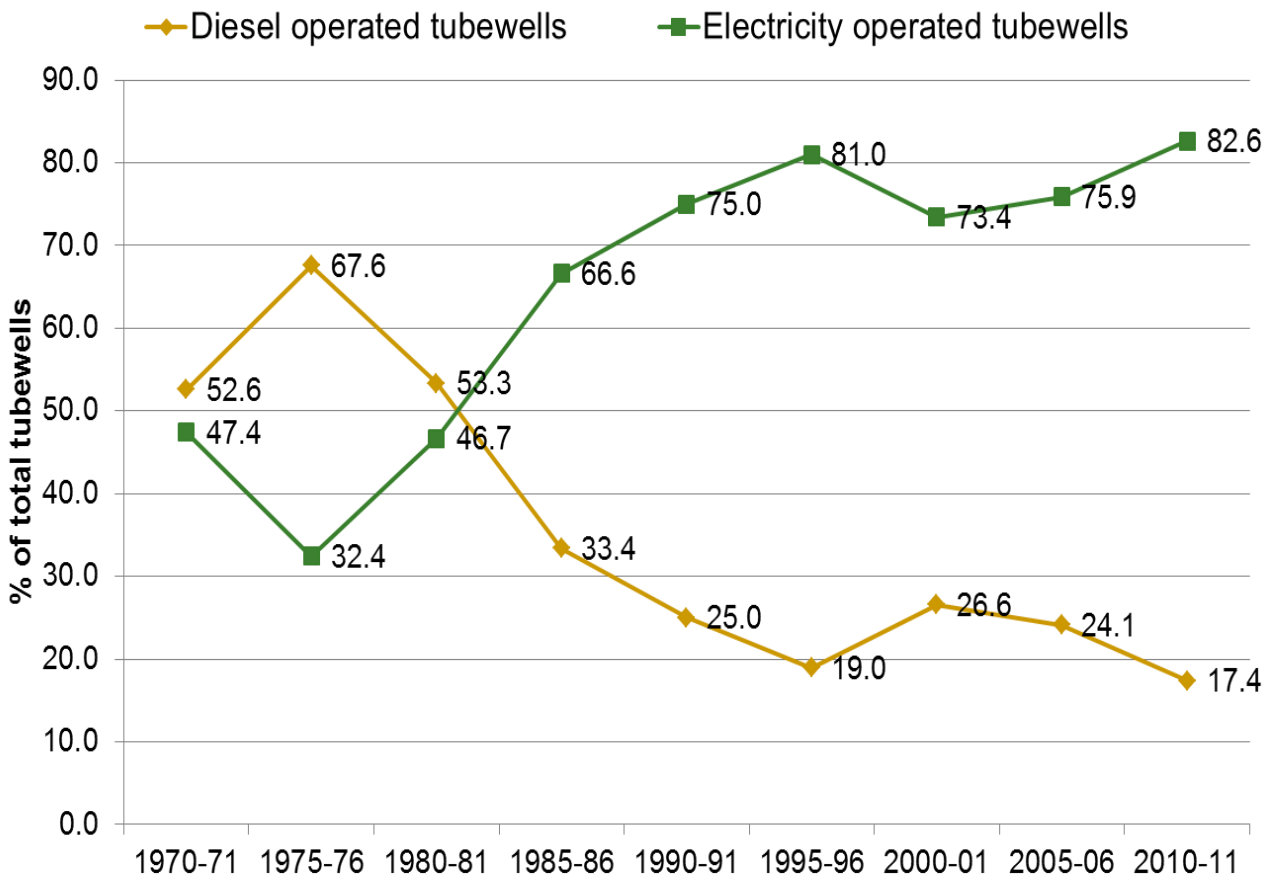



**Predominant rice-wheat cultivation – burden on water and energy sources**

***Source: Statistical Abstract of Punjab***

# Punjab Story




| Year | % area under different water table depths | | |
|---|---|---|---|
| | Below 10 meter | Below 15 meter | Below 20 meter |
| 1980 | 5.7 | 0.6 | 0.4 |
| 1990 | 26.7 | 2.9 | 0.4 |
| 2000 | 53.2 | 14.1 | 0.1 |
| 2005 | 85.4 | 42.1 | 14.5 |
| 2010 | 91.6 | 75.1 | 50.5 |

**Phenomenal rise in number of tubewells – impacting groundwater sources**

***Source: Statistical Abstract of Punjab***

# What are the manifestations?

- Groundwater contamination
- Increasing competition amongst sectors
- Soil salinity
- Declining crop diversity

# Stewardship strategies

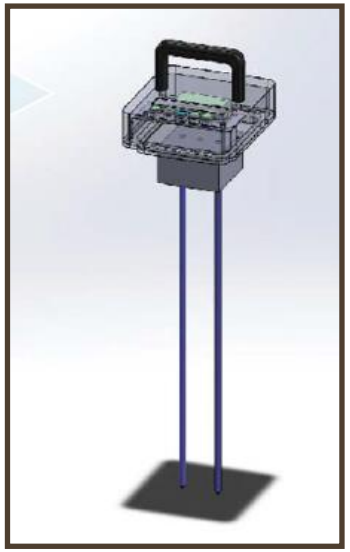
## Need for demand management!

- **Use of technologies**
  - Tensiometers
  - Soil moisture sensors
  - Direct Seeding of Rice
  - Micro-irrigation

- Water and energy savings : the case of tensiometers

| Particular | Value |
|---|---|
| Water saving per acre (%) | 20 |
| Water saving per acre (litres) | 419,062 |
| Energy saving per acre (%) | 24 |
| Energy saving per acre (Kwh) | 90 |

Tensiometer



Soil moisture sensor

***Promoting factors enhancing the spread of technologies***

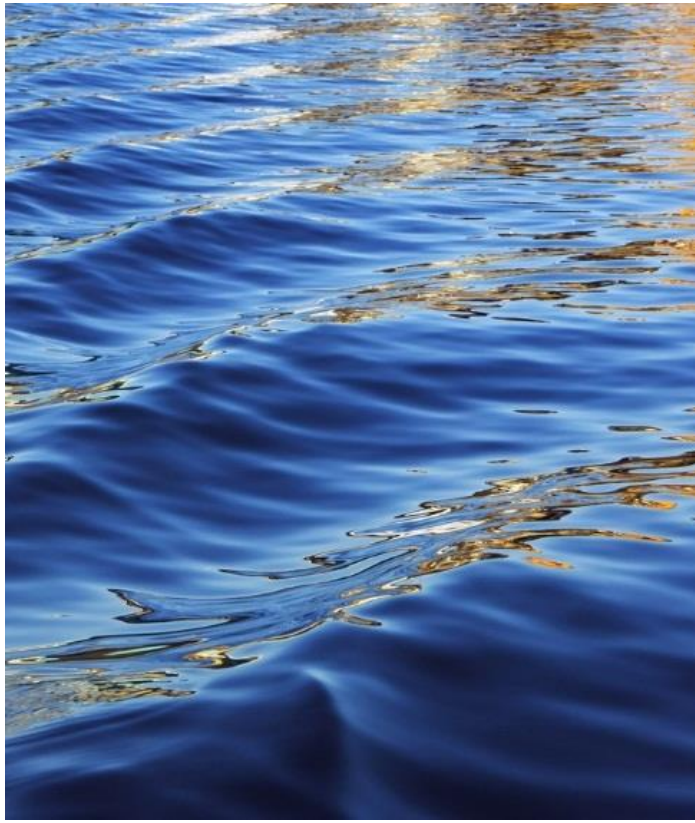
# Corporate interventions

| Company | Region | Intervention | Impacts |
|---|---|---|---|
| **Coca Cola India Inc.** | Rajasthan | Drip and Sprinkler Irrigation – 507 acre | Water Savings : 1200 cubic metre annually<br>Savings on electricity: Rs. 2000 per ha/ year<br>Economic benefit: 20-80 % higher yields |
| **ITC Ltd** | 8 states - AP, BH, KTK, MP, Mah Raj,TN and UP | Watershed development programmes | Watershed development programme – 90,000 ha; 756 water user associations, maintain funds!<br>Civic work generated 2.6 million person<br>Impacted 90,000 households |
| **Pepsico India** | Punjab, Maharashtra | Direct seeding of rice – 14,000 acre<br>Drip irrigation for potato – 4,150 acre | Water savings – 11.2 billion litres (DSP) and 0.9 billion litres (DI)<br>Savings on electricity (200 units per acre), man days (10 man days per acre), 75% less methane emission.<br>20-40% higher yields |
| **Monsanto** | Across India | Drip irrigation – 2,285 acre | Water Savings - 49,78,285 – 817,029 – KLD |

***Source: FICCI-HSBC Knowledge Initiative, 2012***

# Stewardship strategies

- Acceleration of technologies through innovative approaches – **case of insurance scheme**
- Moving towards crop diversification – **encourage less water intensive crops**
- Integrate private sector both for adoption / promoting the use of technologies and market access for crops
- Develop watershed level action plans including farmers, industry and government
- Support to farming communities, cooperatives for participative action



# Thank You