

# Growing Water Challenges and Corporate Response



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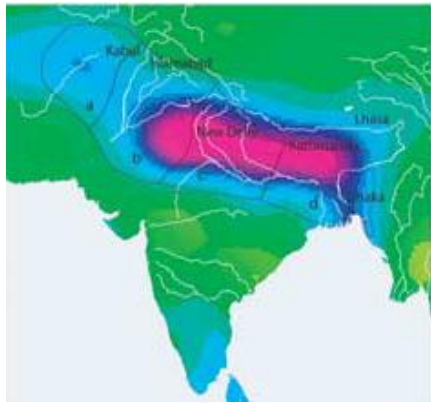
Conference on Corporate Water Stewardship  
CEO Water Mandate, Working Conference  
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**Columbia Water Center**  
EARTH INSTITUTE | COLUMBIA UNIVERSITY

**cipt**  
*Centers for International Projects Trust*

# The Setting



India is a poster child for groundwater depletion and chronic water stress



National and state policies prioritize domestic and agricultural use over industrial use.



GDP, employment and water productivity high for industries.

Excited about the prospect of growing Indian economy amidst the resource challenges



Water scarcity impacts the communities sharing the watershed

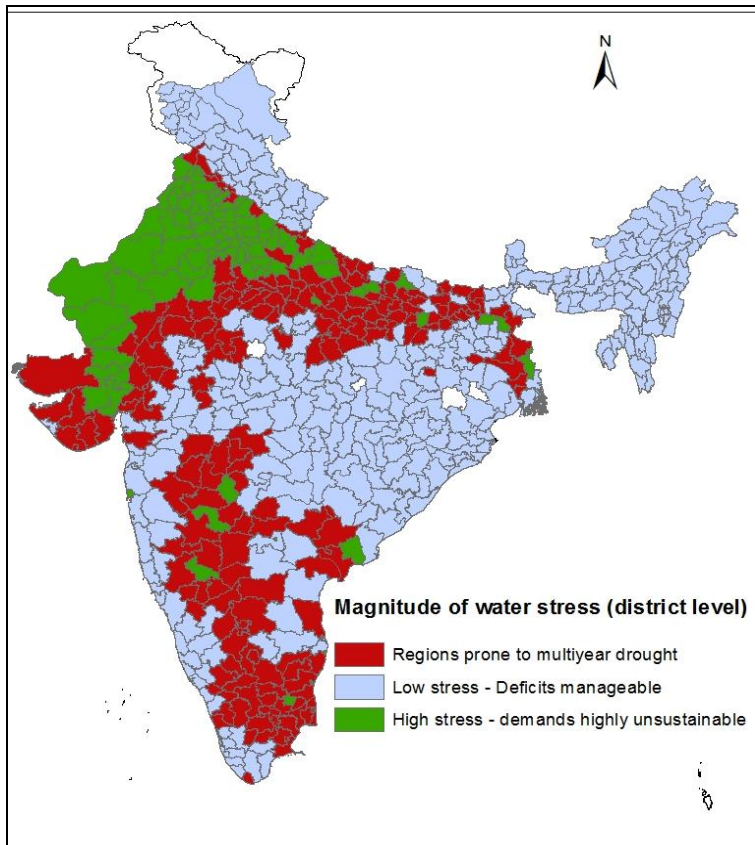
E.g., drought in Maharashtra

Competing industry and urbanization demands



# The Setting

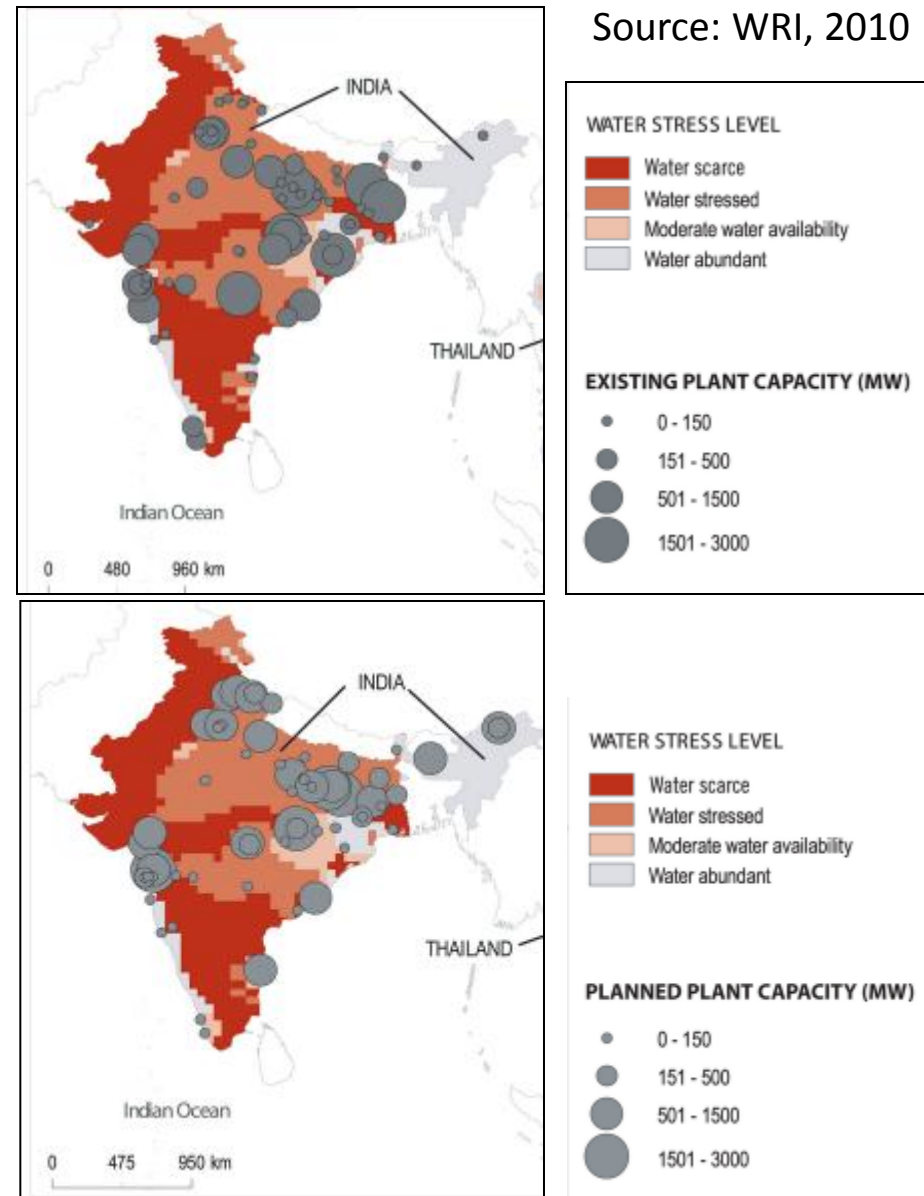
## Water Stress : increasing



Devineni, N., S. Perveen and U. Lall (accepted) Assessing Chronic and Climate Induced Water Risk Through Spatially Distributed Storage Indices: A New Picture Of Water Sustainability In India. *Water Resources Research*.

## Existing and Planned Power Plants and Water Stress levels

Source: WRI, 2010



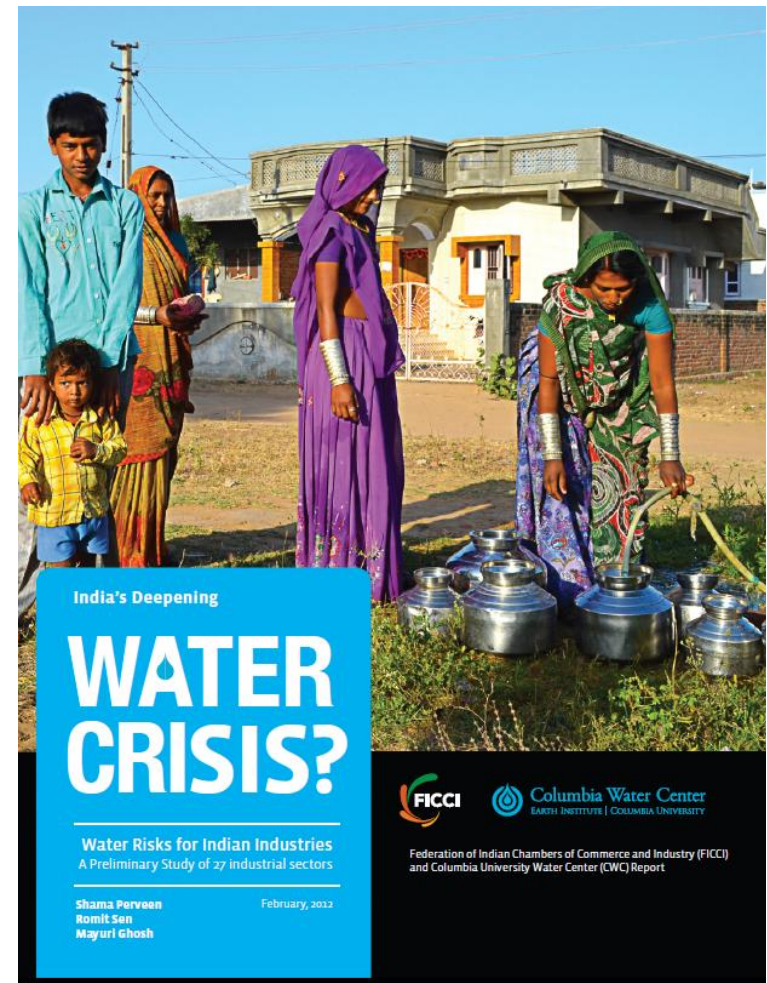
*The central question then is no longer who is threatened by climate impacts and water scarcity, but given the diverse interests and overlapping resource base how can industry and other sectors adapt for sustainable co-evolution?*

# India's Deepening Water Crisis: Water Risks for Indian Industries

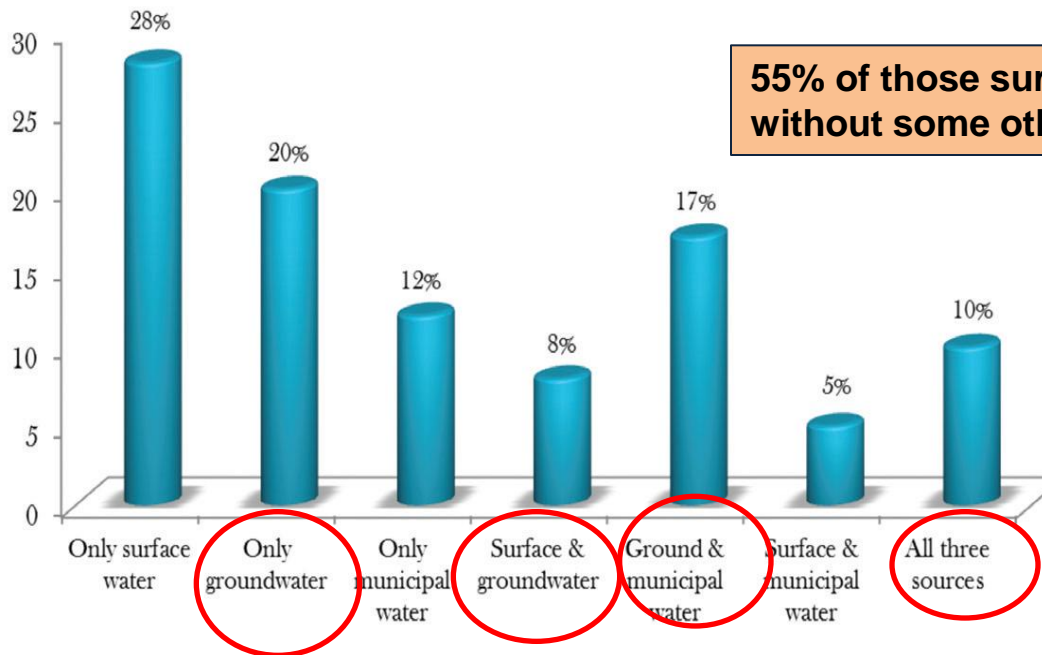
## FICCI and Columbia Water Center study: *Geospatial assessment of industrial water risk perception and response*

### 27 Industrial Sectors Surveyed

Agriculture & Food Processing
Automobile & Automotive
Banking
Cement
Chemicals/Fertilizers/Petrochemicals
Education
Electronics
Engineering & Construction
Fast Moving Consumer Goods (FMCG)
Health Care Diagnostic
Horticulture
Hospitality
Information Technology (IT)
Infrastructure
IT Services
Manufacturing
Metals and Mining
Mobile Manufacturing
Oil & Gas
Petroleum and Natural Gas
Pharmaceutical & Life Sciences
Power & Power Transmission
Real Estate
Steel
Textile & Machineries



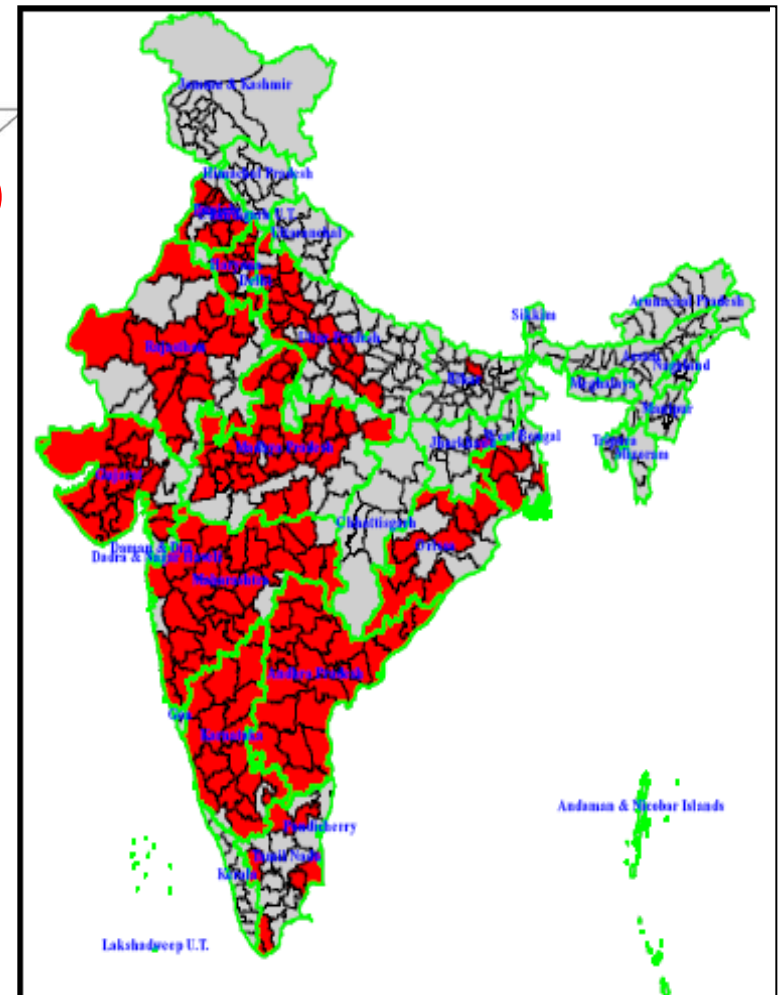
Percentage of respondents



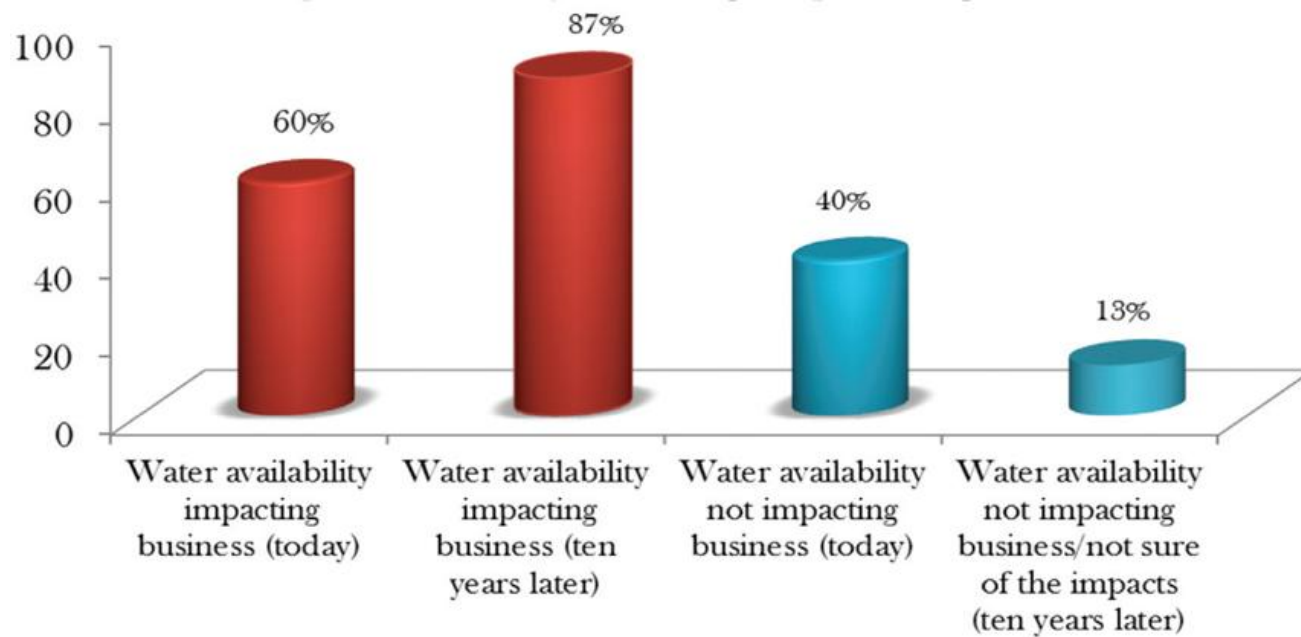
55% of those surveyed used groundwater with or without some other source of water

## Depleting aquifers

Groundwater over exploited zones – Source, CGWB

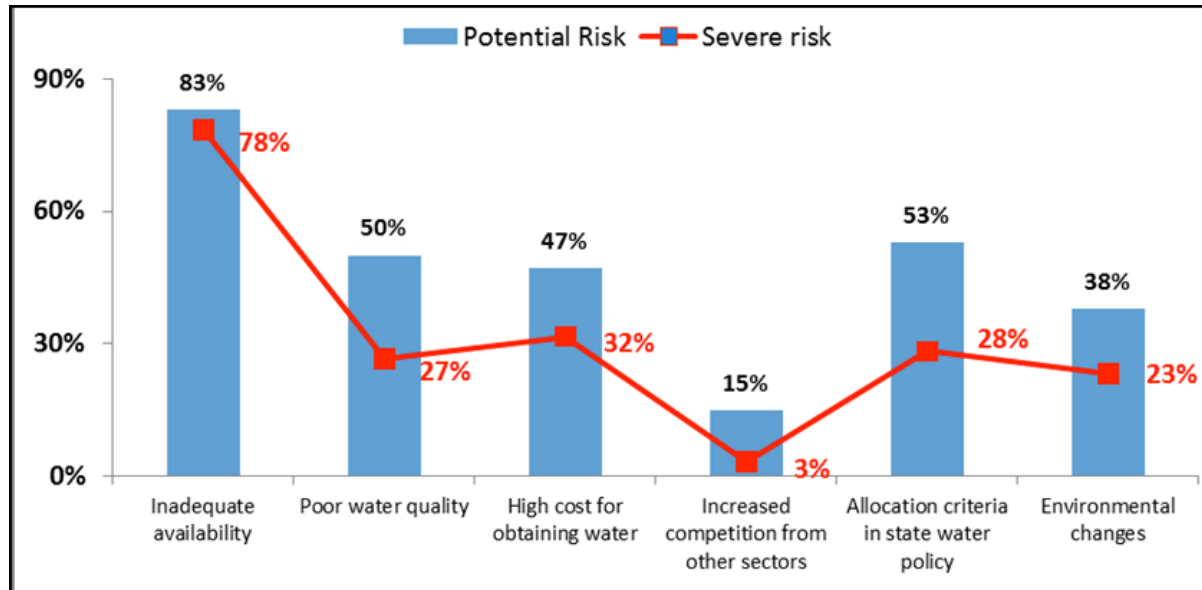


# Industries' response to availability of water impacting business

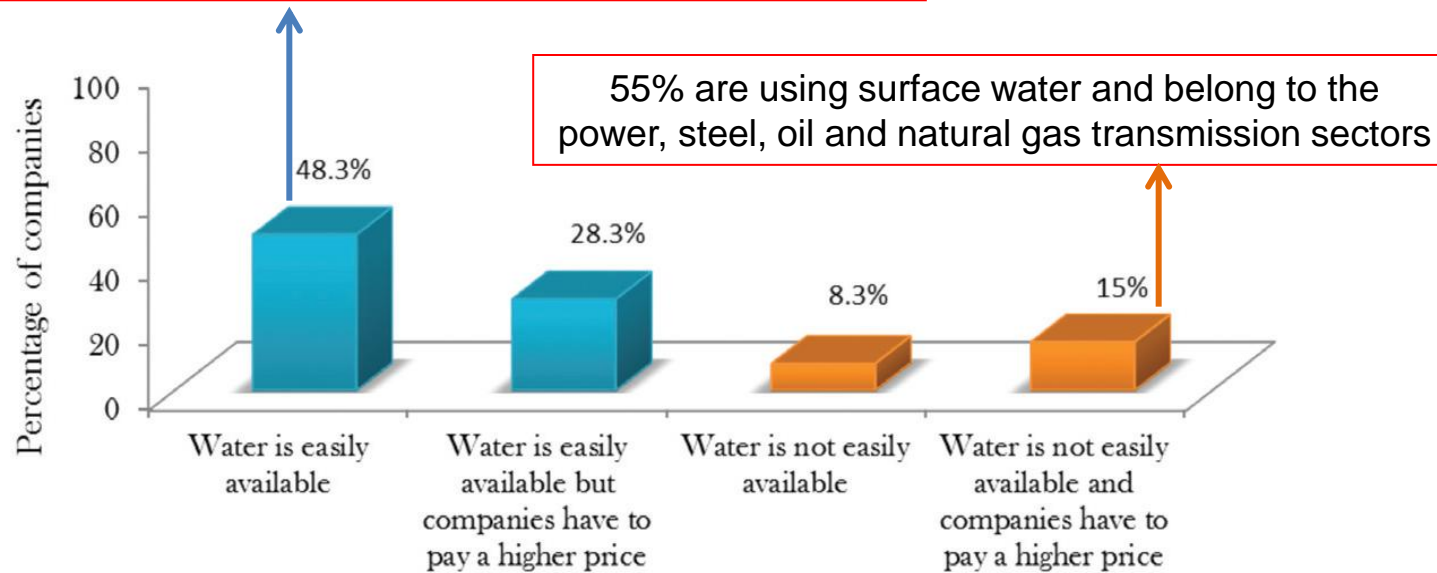


# Opportunities for business

- Water scarcity hitting hard



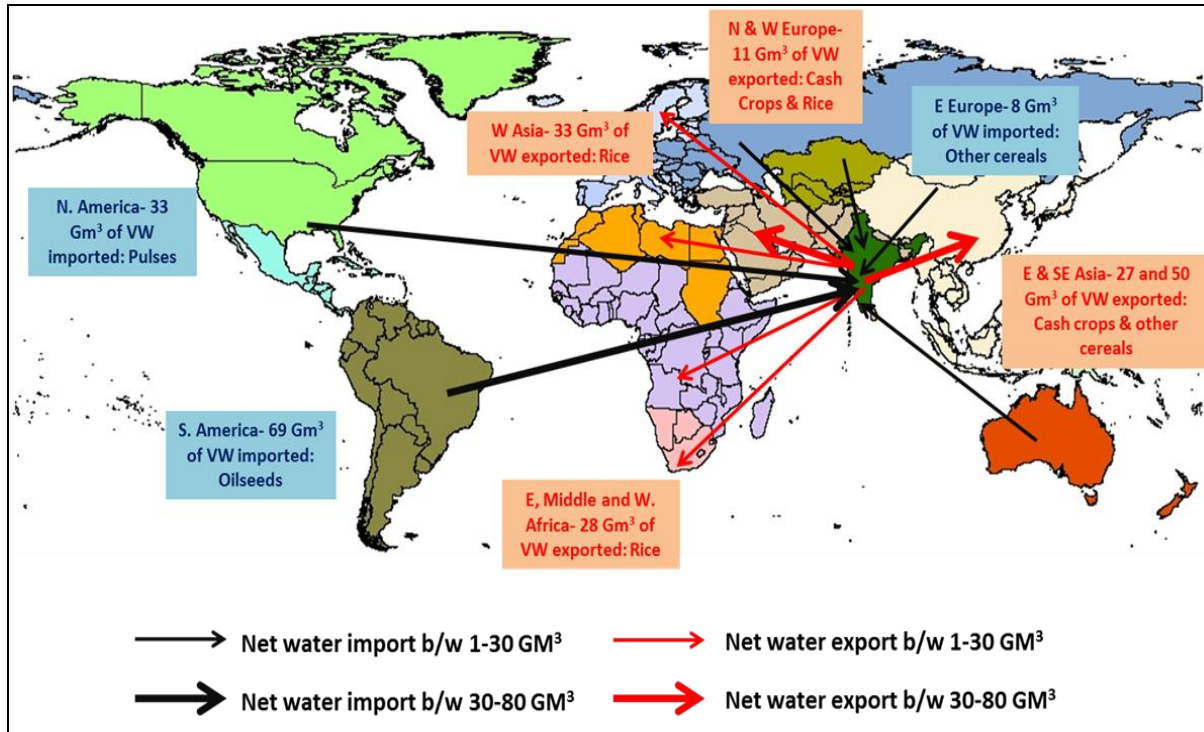
About 31% respondents use only groundwater or a combination of groundwater with another source (62%)



### As a result, one can expect:

- Changes at the policy level – move towards measurable action
- Greater understating of shared risks
- Some voluntary measures taking shape – as a response to the growing scarcity

# Trade in agriculture and livestock commodities (2000-2008)

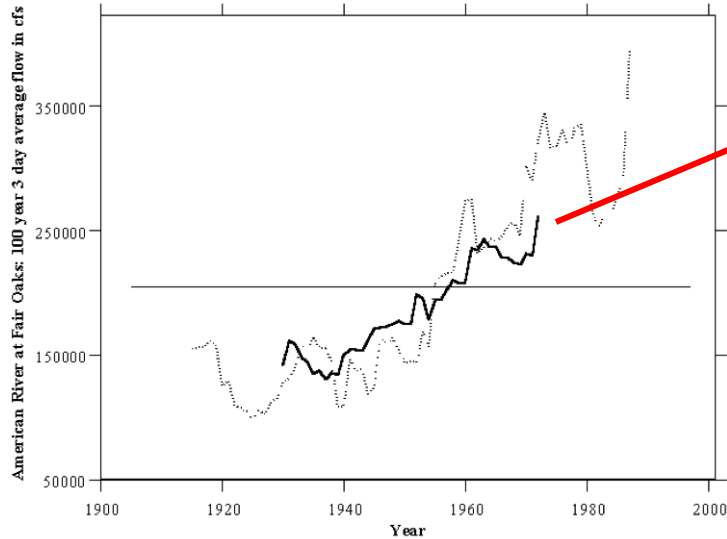


Perveen, S. et al. 2012. *Virtual water trade: Revisiting the assessments to incorporate regional water stress*. Columbia Water Center white paper.

**With increasing water stress & climate variability at local scales, businesses need more resilient supply chains.**

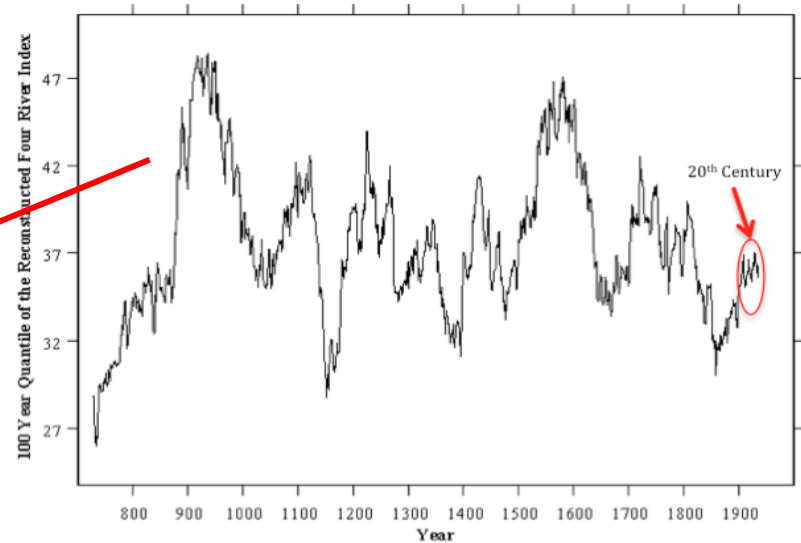
**Different industrial sectors will be impacted differently.**

## Putting a perspective on the changing climate and impacts...



American River at Fair Oaks (Sacramento, California)

Reconstructed flows going back to the 8th century, A.D. suggests that 100-year floods from this river may show a marked cyclical or “regime-like” pattern



# Industrial response

- **Understanding on creating shared value**
- **100 top Indian companies that produce Corporate Sustainability Report address water issues in their reporting. This is the highest reporting amongst all the countries surveyed.**
- **Power companies: Water conservation measures; Return on investment : 2-5 years**
- **Food companies: technological innovation, water savings from 40-80%. Higher economic returns**

# Industrial response

## Improving irrigation efficiency

Company	Region	Intervention	Impacts
Coca Cola India Inc.	Rajasthan	Drip and Sprinkler Irrigation – 507 acre	Water Savings : 1200 cubic metre annually Savings on electricity: Rs. 2000 per ha/ year 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! Civic work generated 2.6 million person Impacted 90,000 households
Pepsico India	Punjab, Maharashtra	Direct seeding of paddy (DSP) – 14,000 acre Drip irrigation (DI) for potato – 4,150 acre	Water savings – 11.2 billion litres (DSP) and 0.9 billion litres (DI) Savings on electricity (200 units per acre), man days (10 man days per acre), 75% less methane emission. 20-40% higher yields
CWC	Punjab, Gujarat	Developing low cost tensiometer and better irrigation scheduling	Adopted by 525 farmers Water savings in the order of 22 per cent per acre
Monsanto	Across India	Drip irrigation – 2285 acre	Water Savings - 49,78,285 – 817,029 – KLD

# Industrial response

## Water conservation in TPPs

Company	Region / Capacity	Intervention	Impacts
Essar Power	Hazira, Surat – 515 MW	Increase CoC Waste water recycling and use Recharge	Water Savings : 11,03, 000 KL per annum
Adani Power	Mundra, Kutchh – 4620 MW	ETPs, STPs, Coal runoff treatment (660 MW commissioned)	Water Savings : 7,84, 000 KL per annum
Jindal Power	Raigad Dist Chhattisgarh – 1000 MW	Waste water treatment and usage for ash handling	Water Savings – 65,000 KL per annum
NTPC	Singrauli, MP – 3260 MW	Reducing specific consumption of water in cooling towers - 2.5 to 1.5 WW recycling and reuse Plugging leakages	Specific water consumption lowered to 4.80 m3/MW
TATA Power	Jamshedpur	Optimizing water usage in ash handling WW treatment	

# Challenges facing stewardship efforts

- **Aligning international standards with domestic priorities and existing initiatives**
- **Needs to move beyond site demonstration to policy advocacy**
- **Incentives are still unclear for many – the business case needs to be articulated**
- **Awareness is low so training and exposure will be critical**
- **Who will bear the costs and mitigate risks**
- **Companies see it as additional work**