



Presentation from
**2015 World Water
Week in Stockholm**

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Towards Water Security?

Stockholm Water Prize Seminar 2015
26 August 2015, Stockholm

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Securing Water, Sustaining Growth

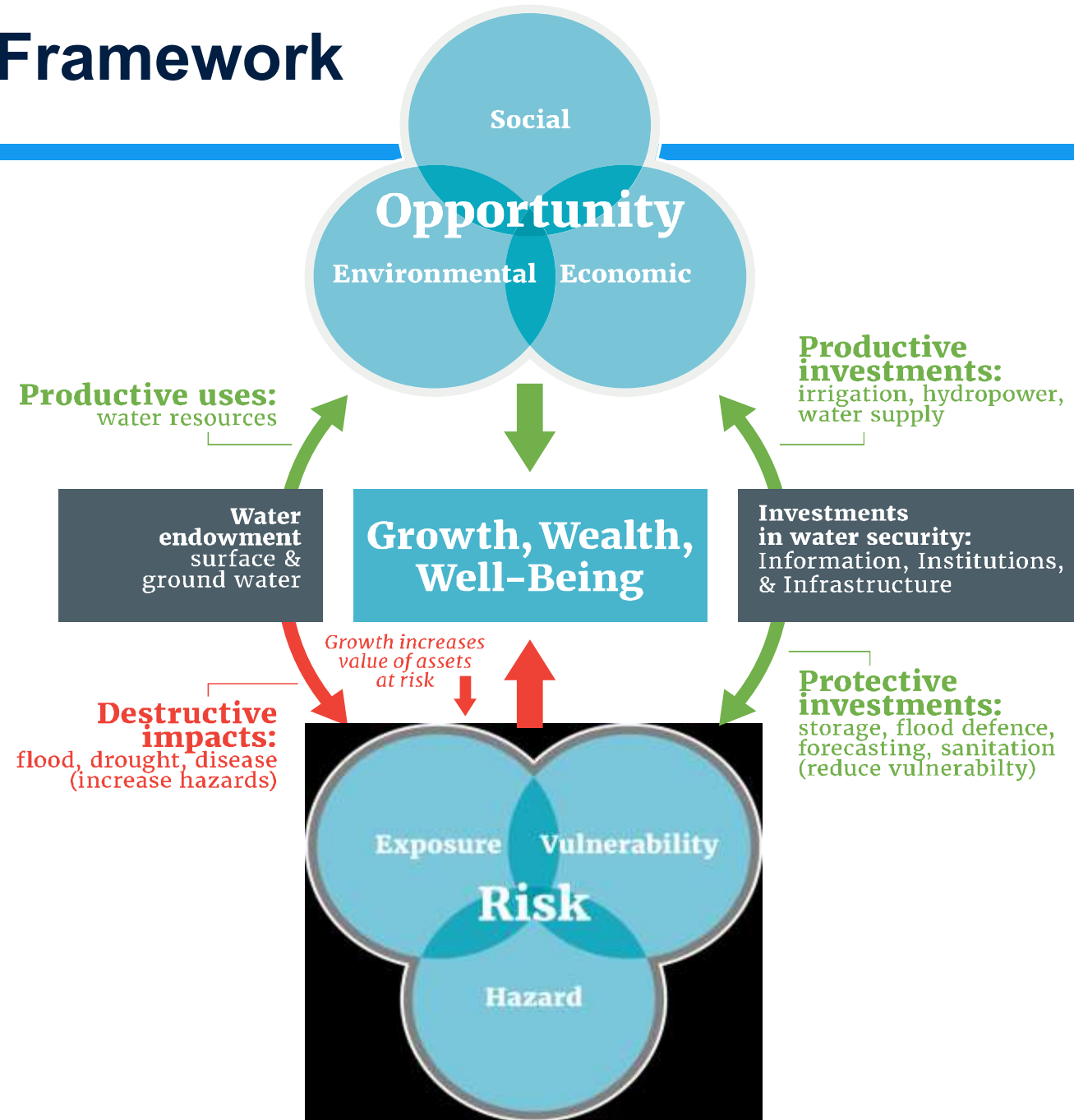
The Findings of the GWP/OECD Task Force on Water Security & Sustainable Growth

Objective: To provide new evidence of the **relationship between water security & economic growth – taking a risk-based approach**

- analyze the dynamics of water security & growth
- quantify water-related risks and opportunities and their trajectories through time
- evaluate pathways towards water security

The Task Force included representatives of: OECD, GWP, University of Oxford, IFPRI, IWMI, IIASA, University of Massachusetts, McMaster University, University of Manchester, VU University, University of Rio de Janeiro

Conceptual Framework



The dynamics of water security & economic growth

A correlation:

Most of the world's wealthy economies face less hydrological variability & have made more investments in water management

WATER SECURITY

Coping with the curse of freshwater variability

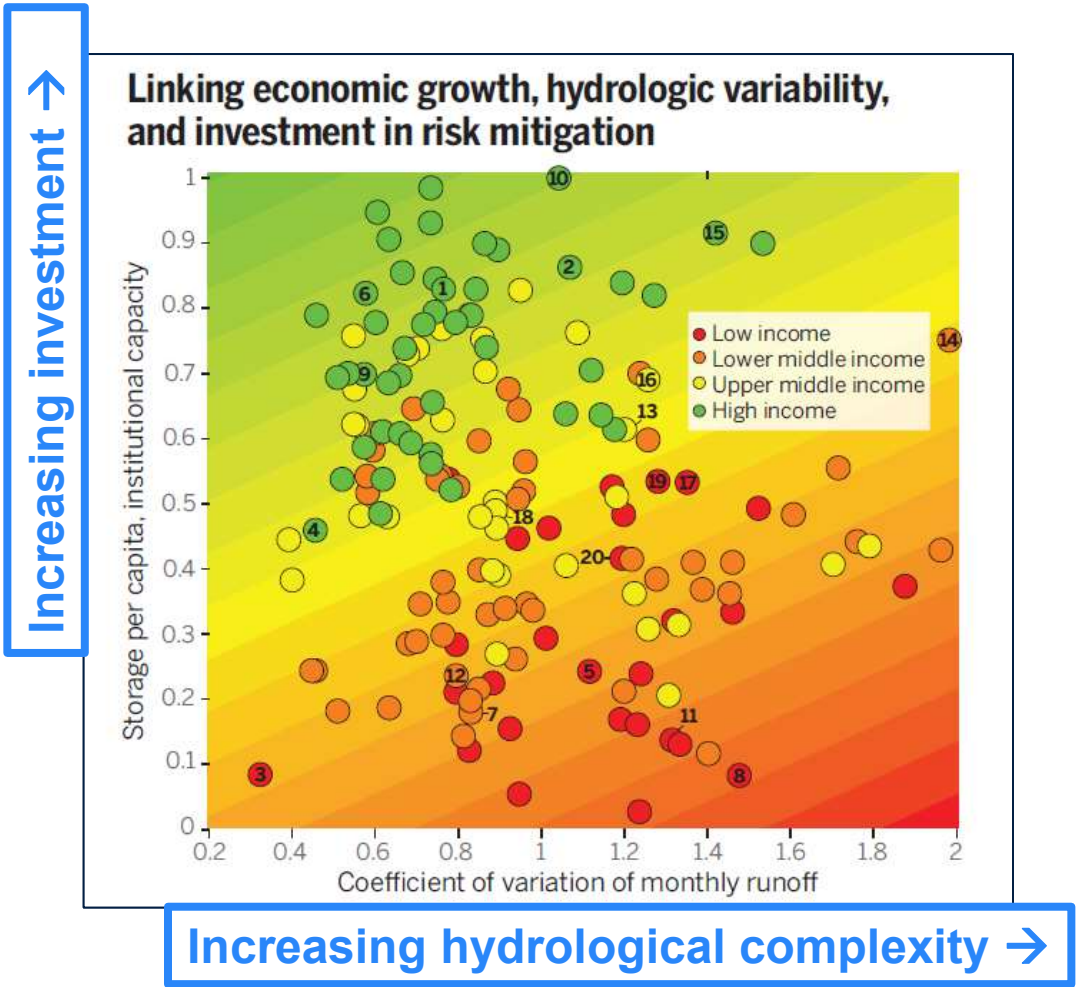
Institutions, infrastructure, and information for adaptation

By J. W. Hall,^{1*} D. Grey,¹ D. Garrick,² F. Fung,³ C. Brown,⁴ S. J. Dadson,¹ C. W. Sadoff⁵

Coping with variable and unpredictable freshwater resources represents a profound challenge to climate adaptation. Rainfall, snowmelt, soil moisture, and runoff can vary from zero to large quantities, over a range of time scales and in ways not well predicted by cli-

ability, experienced in monsoonal and tropical climates, limits the productive portion of the year. In parts of India, 50% of annual precipitation falls in just 15 days, and over 90% of annual river flows are concentrated in only 4 months of the year (7). Arid regions, like the southwestern United States, Australia, Middle East, North Africa, and Central Asia, are characterized by strong interannual variability, increasing the likelihood of multi-year droughts and also of intense rainfall

Early results, published in *Science*

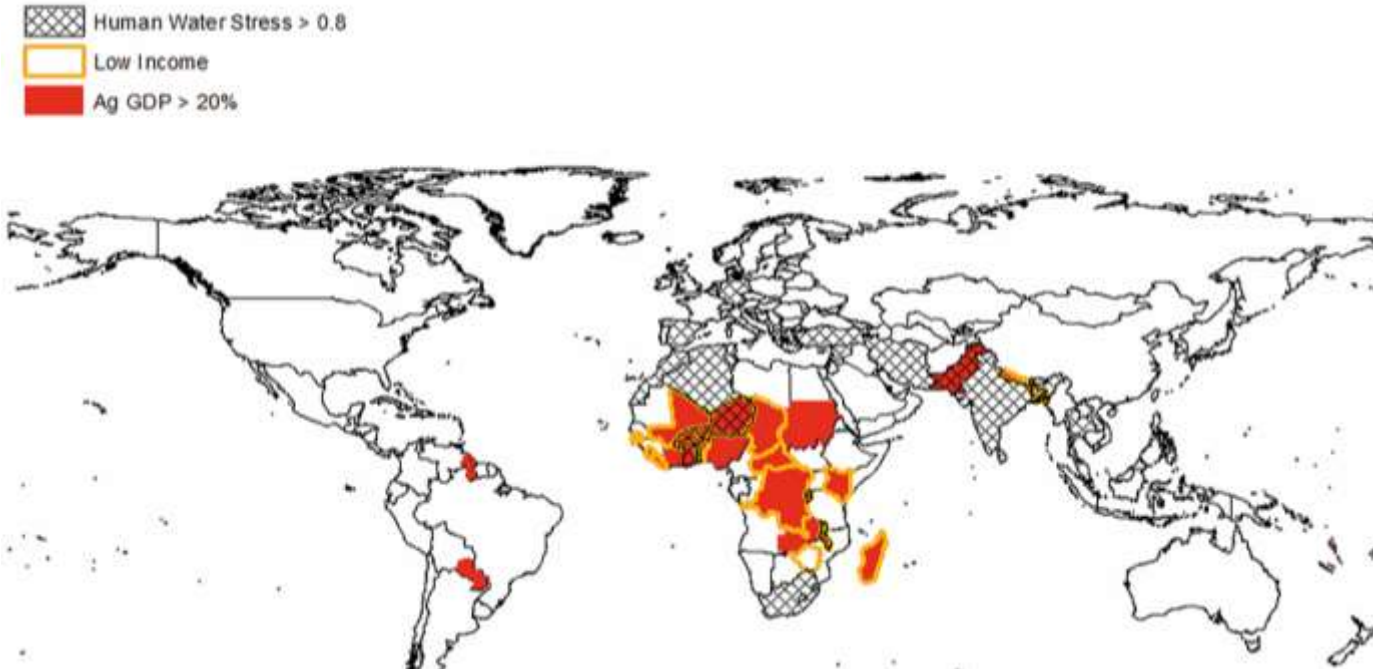


The dynamics of water security & economic growth

A causal effect:

Water insecurity acts as a drag on growth

Water-related hazards have a statistically significant, causal effect on economic growth



Global econometric analysis confirms the impact of hydro-climatic variables on growth, but impacts are unevenly distributed across countries.

The effect is greatest in countries with:

- High water stress
- Low incomes
- High % of agriculture in GDP

Four 'headline' risks & their relative economic impacts

Droughts & water scarcity

US\$94 billion/year economic loss to food producers & consumers, on average



Floods

US\$120 billion/year damage to property, on average



Inadequate water supply & sanitation

US\$260 billion/year economic losses, including time (WHO)

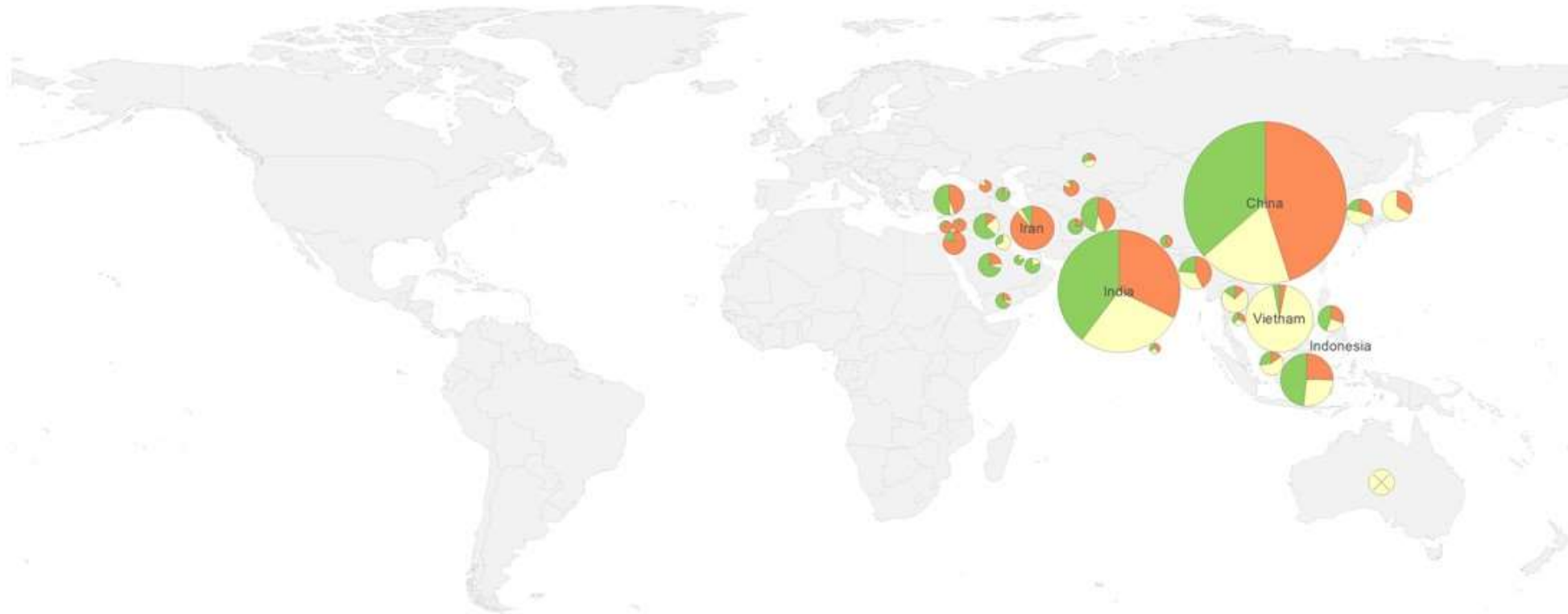


Ecosystem degradation & pollution

Risks not monetized

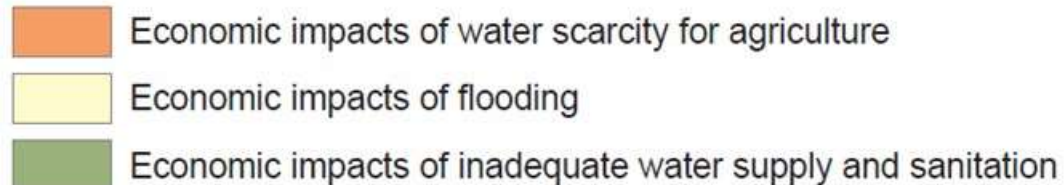


Relative economic impacts of water insecurity

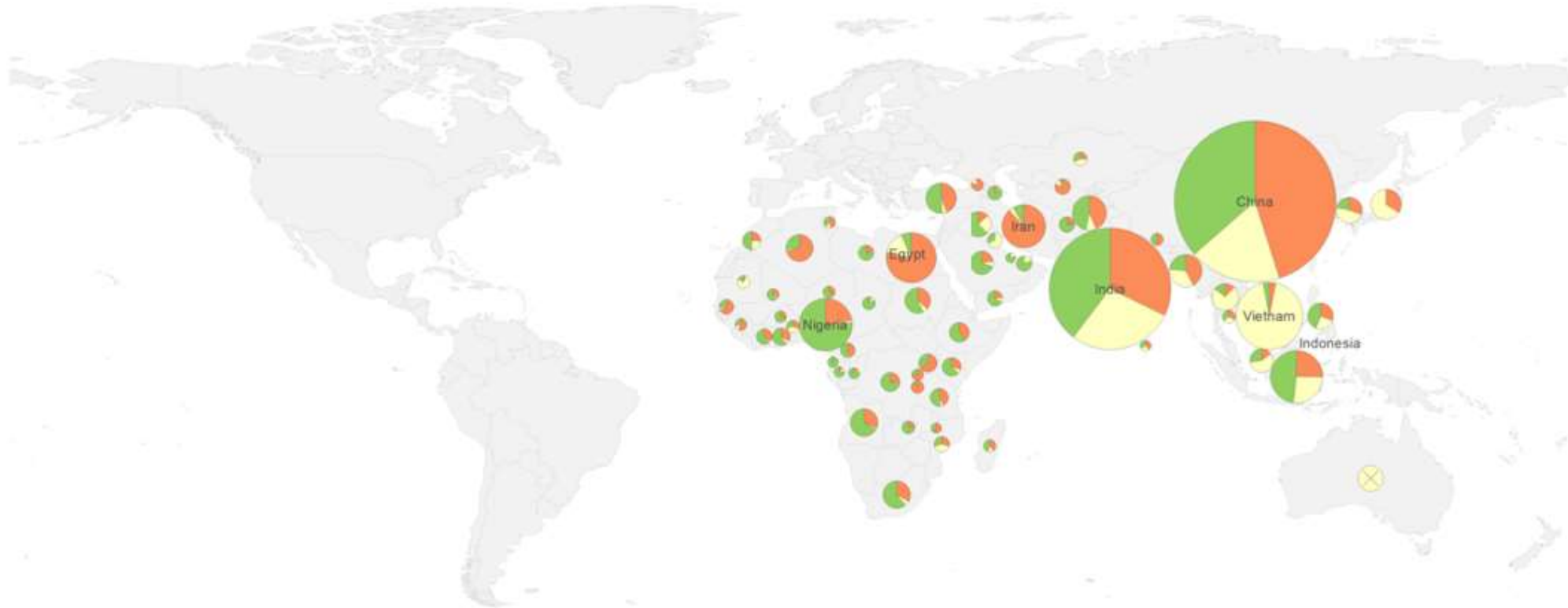


Asia

Total economic impact


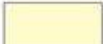
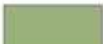


Relative economic impacts of water insecurity

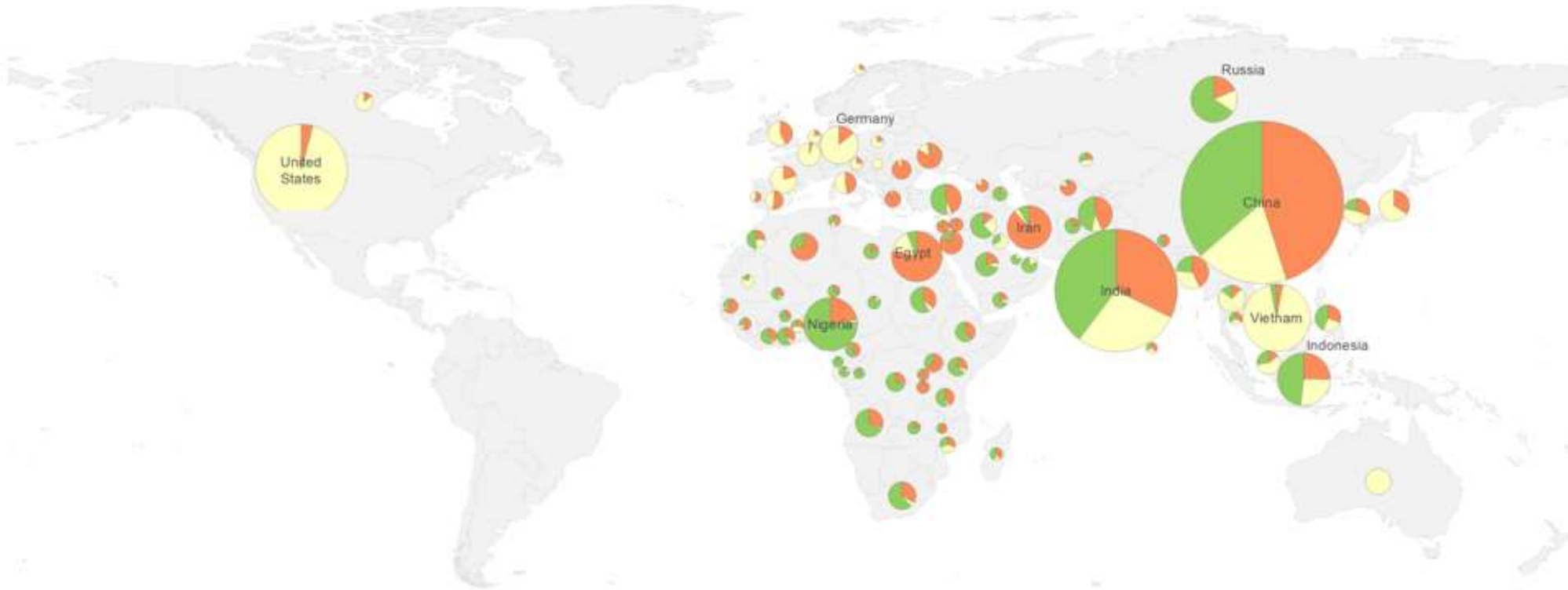


Asia
Africa

Total economic impact


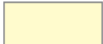

-  Economic impacts of water scarcity for agriculture
-  Economic impacts of flooding
-  Economic impacts of inadequate water supply and sanitation

Relative economic impacts of water insecurity

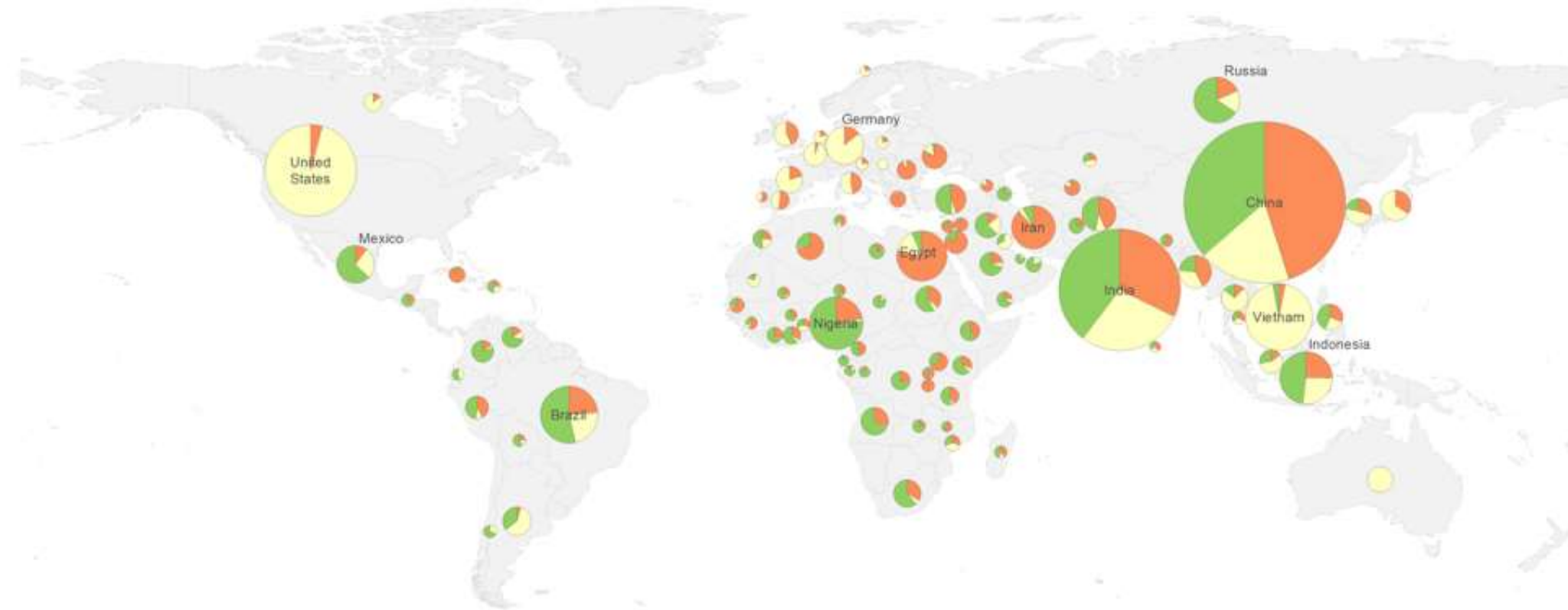


Asia
Africa
**Europe &
N. America**

Total economic impact


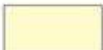
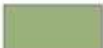
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Relative economic impacts of water insecurity

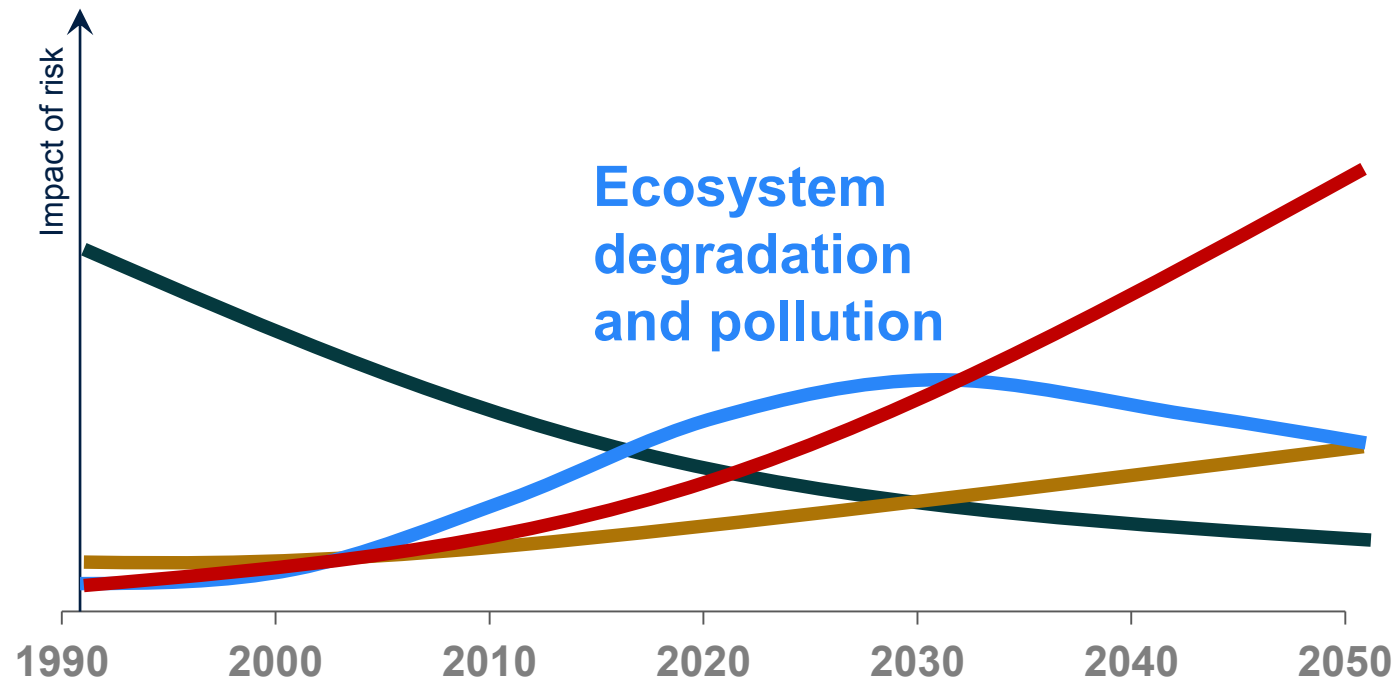


Asia
Africa
Europe &
N. America
S. America

Total economic impact

-  Economic impacts of water scarcity for agriculture
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Trajectories of water-related risks

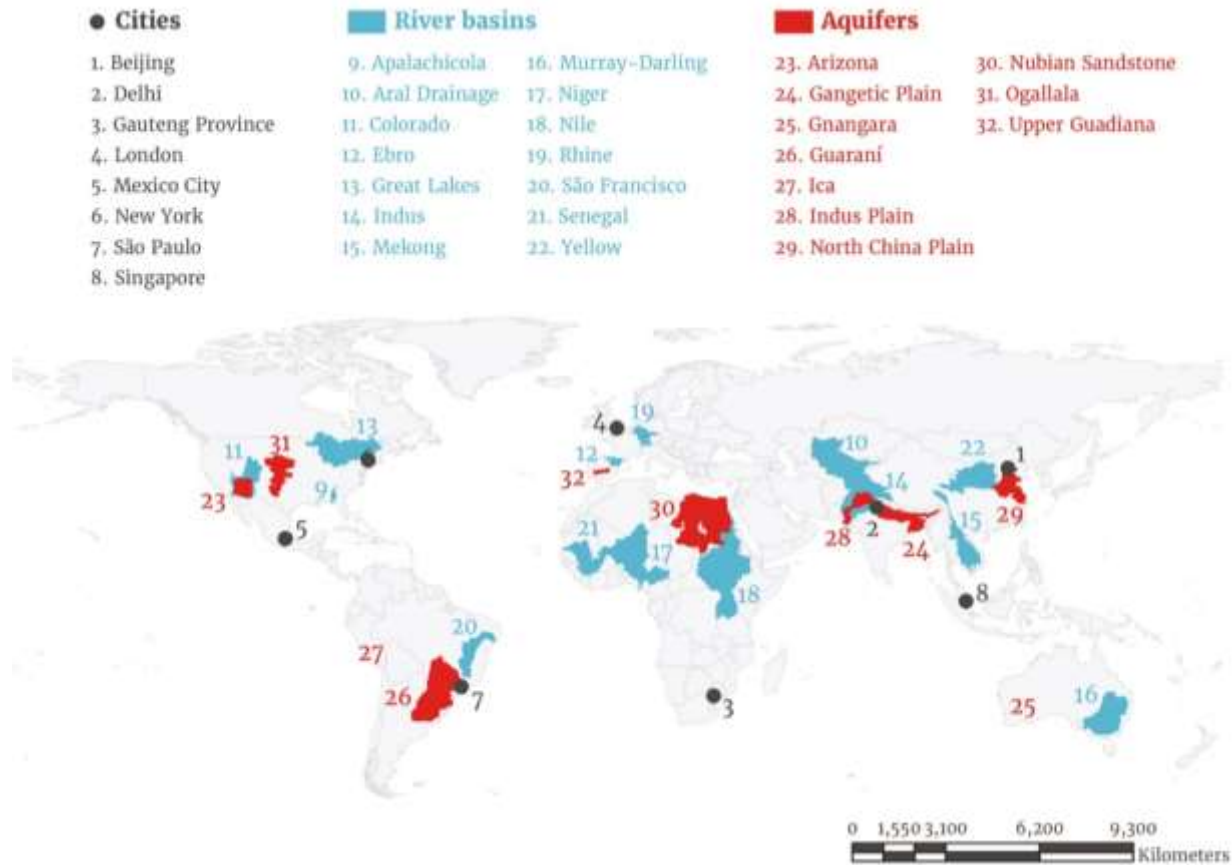


River and coastal flooding

Droughts and water scarcity

Inadequate water supply & sanitation

Pathways to water security



Investment in the 3 “I”s

Information



Institution



Infrastructure



Summary: Towards Water Security?

- Water insecurity creates a drag on growth
- The challenge of water security is global, and growing
- Great progress has been made; tremendous effort, learning & innovation
- Requires a mix of investment: information, institutions & infrastructure
- The richest countries & the poorest must still continue their efforts
- As economic and social circumstances and priorities evolve, water security needs will evolve with them
- Water security is not a static goal

Towards Water Security?

All solutions are provisional.

John Briscoe (1948-2014)

Thank you