

Using Water Accounting to Address Business Risks



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Research for People and the Planet

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November 23, 2009

Presentation Overview

- About the Pacific Institute
- Water-related Business Risks
 - How water use and wastewater discharge lead to risks
 - Risk mitigation approaches → water stewardship
- Corporate Water Accounting
 - Business needs
 - Emerging and evolving methods and tools
 - Deficiencies and gaps

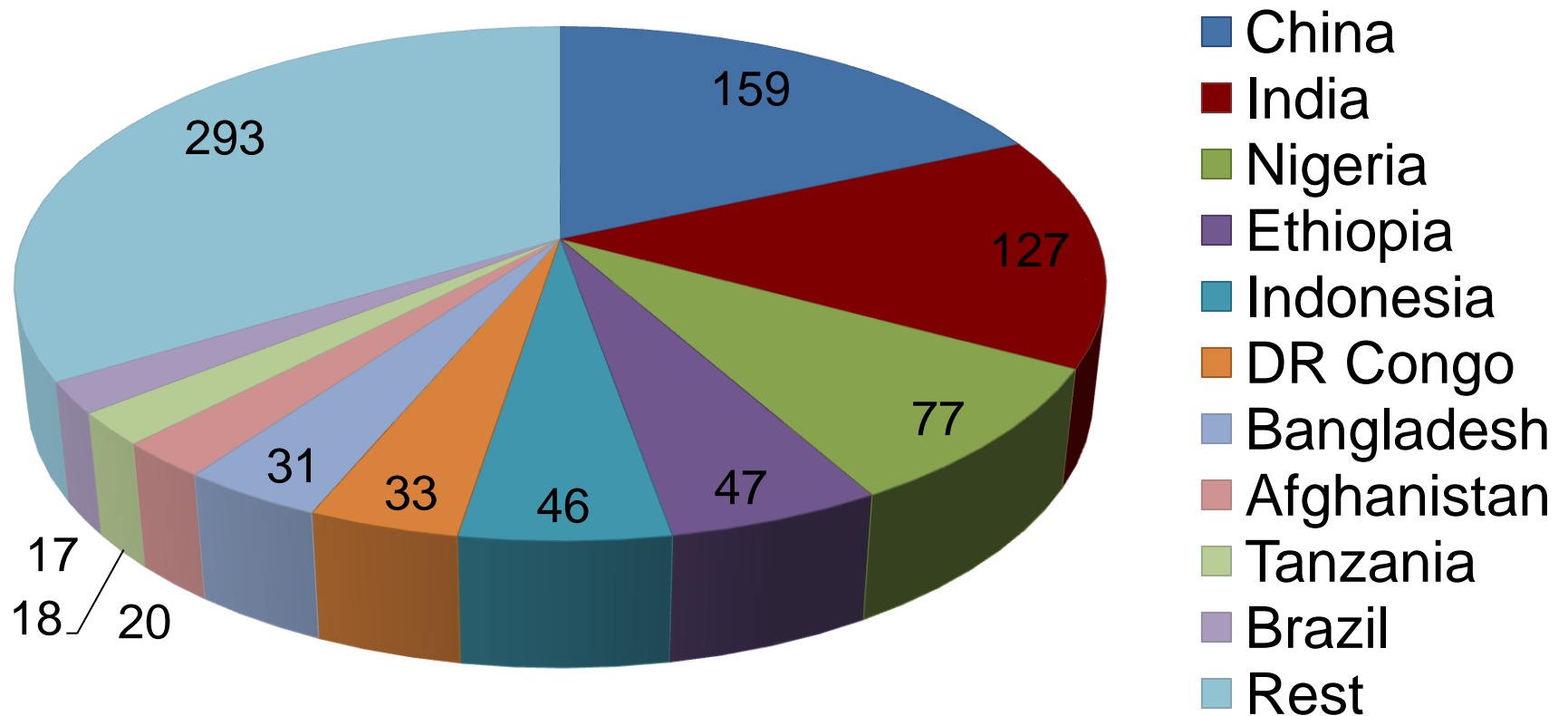
About the Pacific Institute

- Non-profit (501(c)3), charitable organization established in 1987
- \$1.9M annual operating budget (less than 20 employees)
- Focus Areas:
 - Freshwater resources/climate change
 - Community strategies/environmental justice
 - Globalization/ethical trade/corporate social responsibility
 - Part of CEO Water Mandate Secretariat

Major Water Trends and Challenges

- **Unmet demand:** Failure to meet basic human needs; Aquatic ecosystems are being degraded and destroyed
- **“The Squeeze”:** Growing population and increases in agricultural and industrial water demand constrained by a static and in some places declining water supply
- **Changing socio-economics:** Geopolitics of water and societal expectations around water stewardship are changing
- **Climate change:** Hydrologic cycle changing; Less snowpack, longer droughts, more intense floods, less access to water

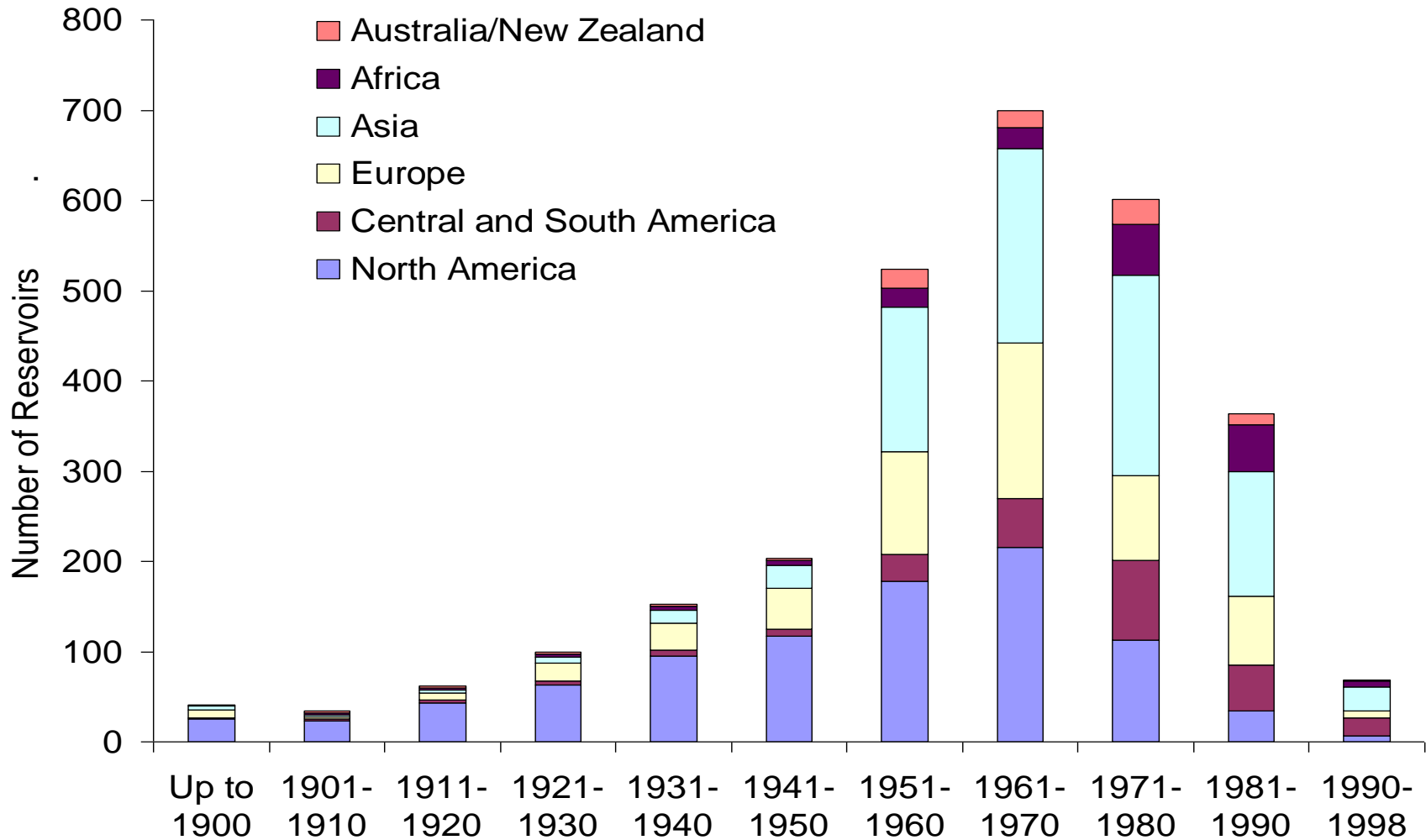
Numbers without improved water supply



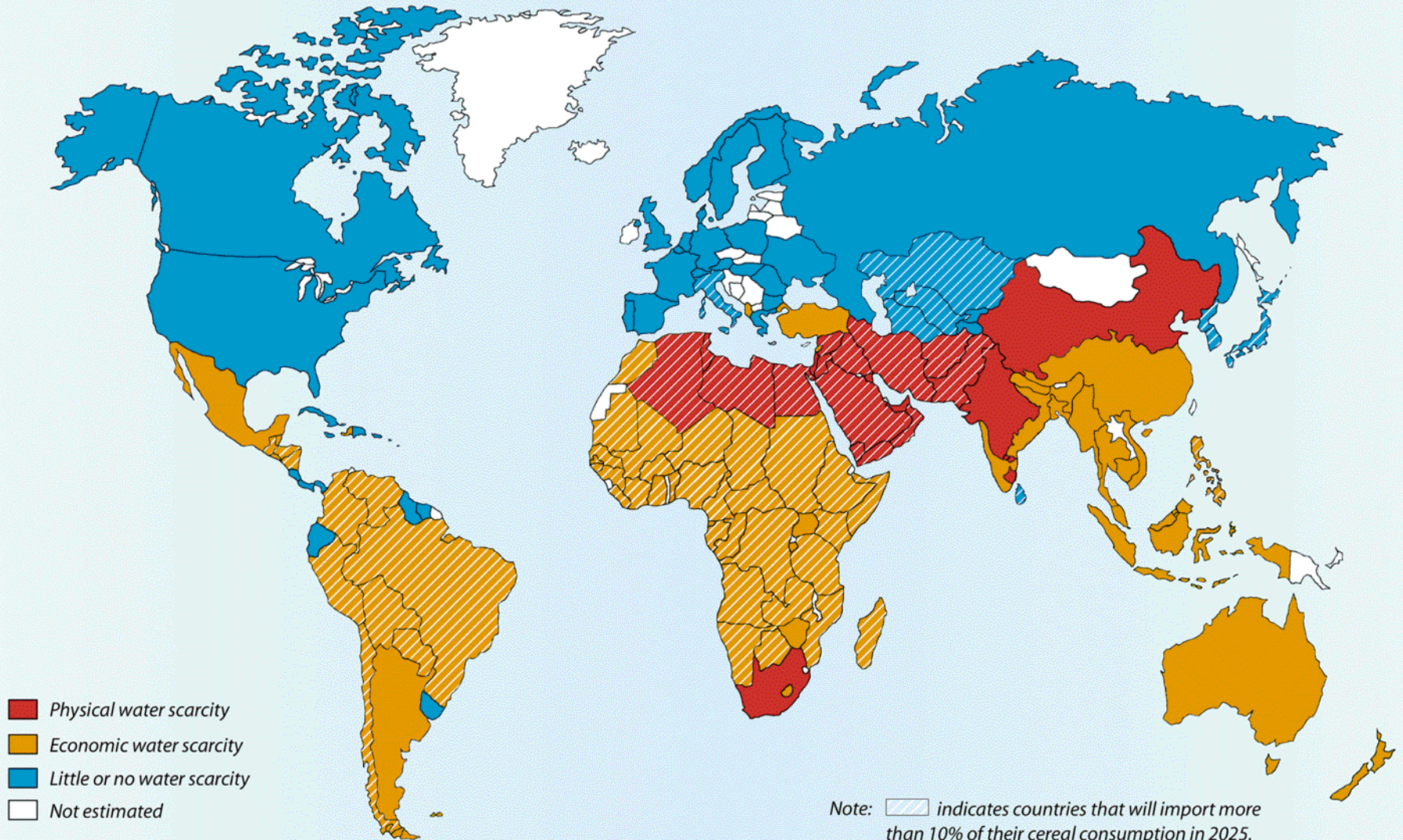
Total is 867 million

Source: Paul Edwards, UNICEF 2008

Reservoir Construction Has Slowed

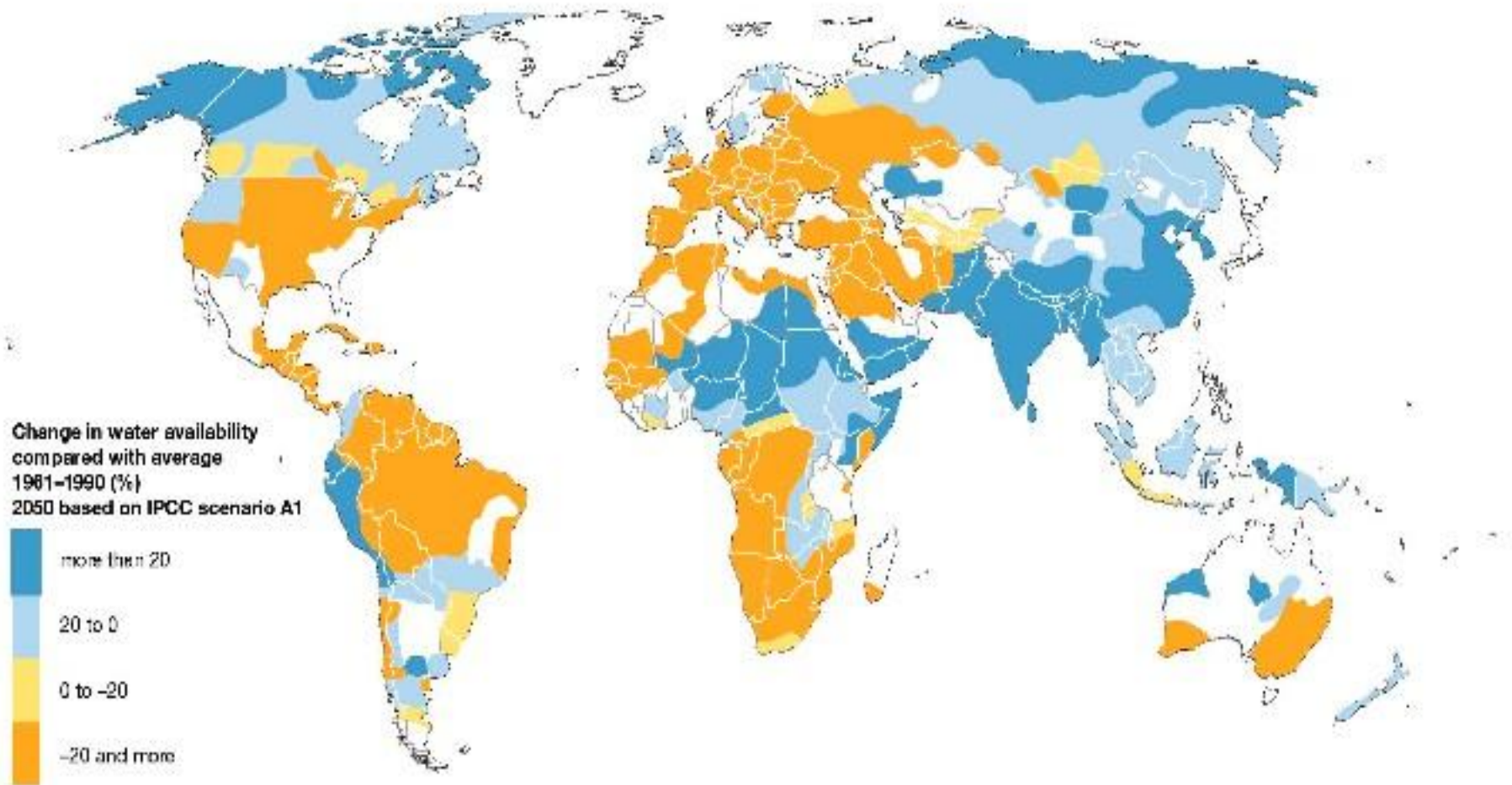


Projected Water Scarcity, 2025



Source: International Water Management Institute, 2000

Climate Change to Compound Water Stress

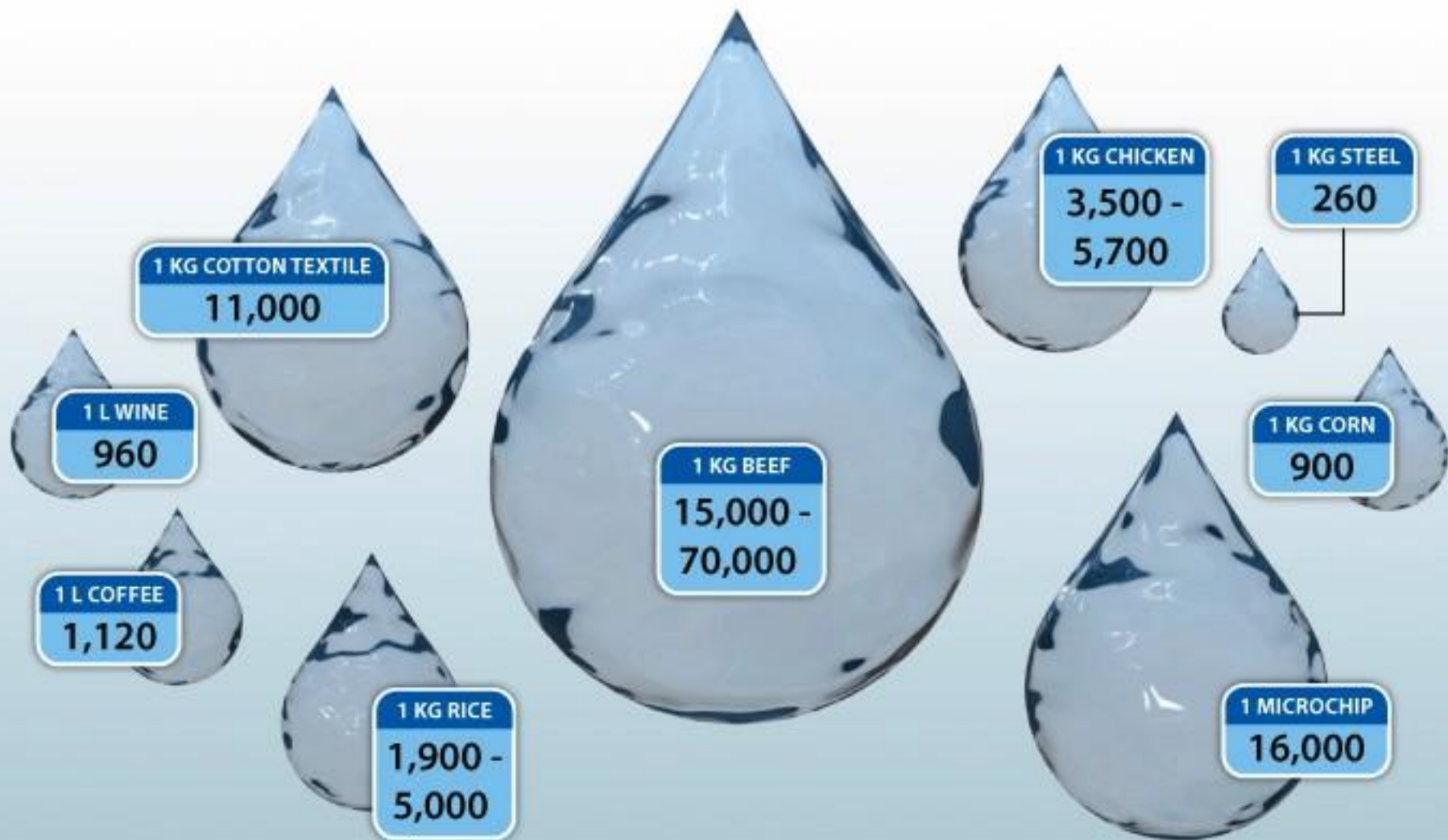


Source: Arndt 2004.

Water-Energy Collision

Water Consumed by Energy Type in the US

Energy Type	Total water consumed per megawatt hour (m ³ /MWh)	Water consumption required for U.S. daily energy production (millions of m ³)*
Solar	0.0001	0.011
Wind	0.0001	0.011
Gas	1	11
Coal	2	22
Nuclear	2.5	27.5
Oil	4	44
Hydropower	68	748
Biofuel (1 st generation)	178	1,958

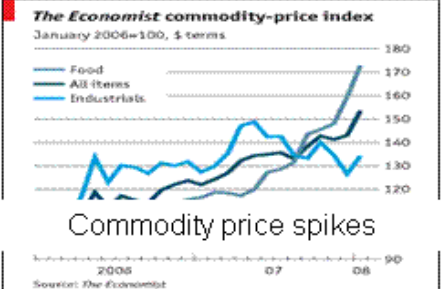







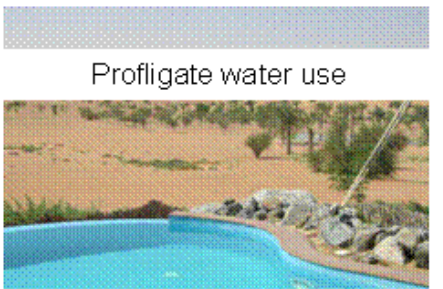


(Liters)

Relative Water Footprint of Various Industry Sectors

	Raw material production	Suppliers	Direct operations	Product use/end of life
High blue and/or green water footprint	1) Apparel	1) Beverage	1) Beverage	1) Apparel
	2) Beverage	2) Electronics/ High-tech	2) Food Manufacturing	
	3) Food Manufacturing		3) Forest Products	
	4) Metals/Mining		4) Metals/Mining	
	5) Electric Power/Energy		5) Electric Power/Energy	
High grey water footprint	1) Apparel	1) Apparel	1) Beverage	1) Electronics/ High-tech
	2) Electronics/High-tech	2) Electronics/ High-tech	2) Food Manufacturing	
	3) Food Manufacturing		3) Forest Products	
	4) Metals/Mining		4) Metals/Mining	
	5) Electric Power/Energy		5) Electric Power/Energy	

Drivers of Water-related Risk In the Value Chain

Point of impact:	Supply chain	Production process	Product use
Type of risk:			
Physical	 <p>The Economist commodity-price index January 2006=100, \$ terms</p> <p>Commodity price spikes</p> <p>Source: The Economist</p>	 <p>Disruption in water supply</p>	 <p>Scarcity limiting sales</p>
Regulatory (+ litigation)	 <p>Water quality standards constraining power generation</p>	 <p>Court settlement to scale back operations</p>	 <p>Insecure water rights</p>
Reputation	 <p>Multinationals' suppliers singled out for violations</p>	 <p>Competition with social uses</p>	 <p>Profligate water use</p>

Impacts on Business?

- Regulatory caps for water use
- Regulatory restrictions for specific industrial activities
- Increased costs for pre-treatment & wastewater treatment
- Higher water costs due to full cost pricing
- Rising input costs
- Conflicts with local communities
- Limits on future growth, social license to operate
- Operational disruptions & associated financial loss
- Increased health costs for employees
- Expectations to implement community & watershed restoration projects

Emerging Shareholder Expectations



“Corporate disclosure of water-related risks is seriously inadequate and is typically included in environmental statements prepared for public relations purposes rather than in the regulatory filings on which most investors rely.”

*JP Morgan Global Equity Research
March 2008*

Emerging Responses for the Private Sector



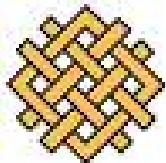
World Business Council for Sustainable Development



GEMI®



The CEO Water Mandate



WORLD
RESOURCES
INSTITUTE

Life Cycle



Initiative



PE INTERNATIONAL
EXPERTS IN SUSTAINABILITY



Water Footprint
NETWORK

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Developing a Proactive Corporate Water Strategy

PHASE 1: Establish baseline and develop strategic water goals

Conduct water footprint

Assess water-related risks

Full cost accounting of water

Prioritize issues and chart a course for the future

PHASE 2: Implement corporate water strategy

Identify process and product innovations

Invest in water-related environmental services

Align goals with policy advocacy + multi-stakeholder initiatives

Stakeholder engagement

Source: At the Crest of a Wave: A Proactive Approach to Corporate Water Strategy, Business for Social Responsibility & Pacific Institute 2007

A Framework for Corporate Action to Mitigate Water Risk

1. **Measure** corporate water use and wastewater discharge
2. **Assess** the physical, regulatory & reputational risks; align assessment with climate & energy risk
3. **Engage** key stakeholders
4. **Integrate** water issues into strategic business planning & governance
5. **Disclose** water performance & associated risks

Source: *Water Scarcity & Climate Change*, Ceres and Pacific Institute 2009

CEO Water Mandate: Call-to-Action and Strategic Framework

- Developed by companies in partnership with the UN Global Compact (Launched July 2007)
- Conceived with recognition that:
 - Water crisis is increasingly a business issue
 - Comprehensive sustainability strategies will be needed
 - Sound implementation can benefit business and societies
 - Collective action will be necessary



The CEO Water Mandate



CEO Water Mandate Core Elements

Direct Operations:

water-use assessments; targets for conservation and waste-water, etc.

Supply Chain and Watershed Management:

supplier sustainability strategies; assess and respond to watershed risk, etc.

Collective Action:

civil society, governments, UN, other water initiatives, etc.

Public Policy:

inputs to public-policy making; advocacy on water sustainability, etc.

Community Engagement:

support local groups; water education; infrastructure, etc.

Transparency:

report on implementation and progress



The CEO Water Mandate



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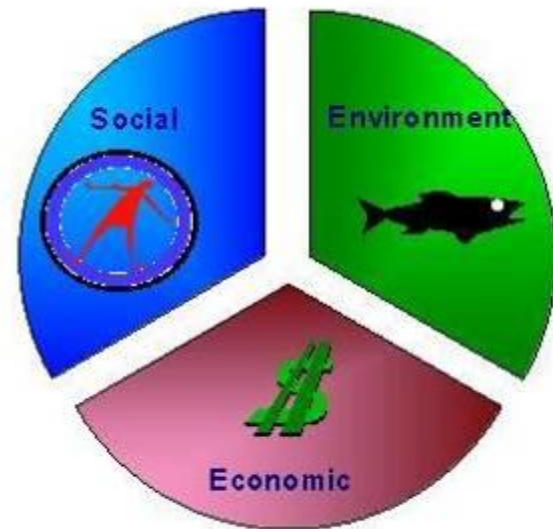
Water stewardship: response to risk

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A Stewardship Response

- Water Stewardship: responsible use of fresh water that is socially, environmentally and economically sustainable
 - ▷ Maintains or improves biodiversity and ecological processes at the watershed level
 - ▷ Meets basic human needs and ensures long-term benefits
 - ▷ Provides a cost effective response to business risk, as well as potential opportunities

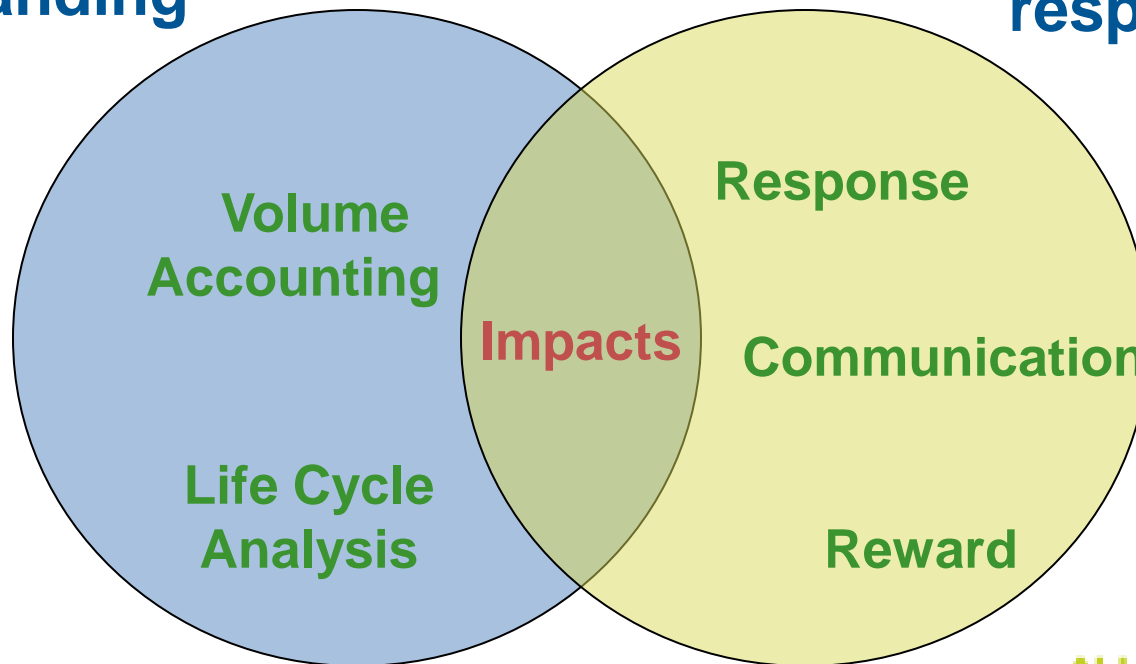


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Relationship Between Stewardship and Accounting

**Footprinting:
understanding**

**Stewardship:
responding**



UNEP WaFNe Umbrella Project: Corporate Water Accounting

- UNEP DTIE commissioned the Pacific Institute in its role as part of the CEO Water Mandate to conduct an analysis of corporate water accounting methods and tools
- Part of the UNEP Water Footprinting, Neutrality, and Efficiency (WaFNE) Umbrella Project
- Draft currently out for public review (until December 11th)
- Comments for this review period as well as those heard at this UNEP workshop will inform final report to be released in March 2010.

UNEP WaFNe Umbrella Project: Corporate Water Accounting

Overarching goal: Stocktaking exercise will fulfill the need to clarify commonalities and differences among existing and emerging water accounting methods and tools being used in the private sector.

Specific goals:

- Elucidate applicability, strengths, and weaknesses among emerging methods and practice,
- Identify gaps and challenges, and
- Suggest where accounting methods might benefit from harmonization and increased field testing.

Aspects of Corporate Water Accounting

1. Measurement of water use and wastewater discharge (for both direct operations and suppliers)
2. Assessment of the local and regional water resource context
3. Identification of water-related business risks and impacts

“Impacts” refer to the extent to which the corporate water use affects the availability of water for other uses(e.g., meeting basic human needs or in-stream flows) or harms human well-being or ecosystems in any other way.

Preliminary Findings

- Lack of commonly understood terminology problematic
 - In particular, an important starting point is establishing a shared understanding of the term “water footprint”
- Corporate water accounting poses new challenges for established accounting methods
 - Water footprints/virtual water has been in existence for decades, but used for corporate water accounting only in the past few years
 - LCA well established method although efforts to incorporate water use into LCA are still quite nascent.

Preliminary Findings (cont)

- Numerous methods (e.g., WFN, LCA, WBCSD Tool) useful for identifying general water risk - “hotspots” - across the value chain and different geographic locations/regions
 - Such methods provide good “big picture” view of the corporate use, which can help prioritize action and set long-term objectives
- Approaches for accurately assessing the local social and environmental “impacts” of corporate water use are underdeveloped and inconsistent

Preliminary Findings (cont)

- A strength of LCA is its ability to enable companies to understand water risks/impacts in relation to other sustainability issues
 - It is particularly well suited to integrate water risk-impact assessments and decision-making with climate and energy issues
- WF's green-blue distinction helpful in understanding key differences in risks-impacts, particularly for agriculture-based industry sectors
 - It is also well suited for policy engagement with WRM community, given the holistic picture it provides

Preliminary Findings (cont)

- While there is broad agreement that water quality issues must be addressed in corporate water accounting, current approaches are inadequate
 - LCA has well tested methods for assessing impacts of various water pollutants but may be more involved than practicable depending on the company's needs
 - Grey WF concept/approach does not address numerous companies needs
 - Further work is needed to identify the precise questions companies are trying to answer with regard to water pollution. This in turn will inform the advancement of water quality accounting methods

Preliminary Findings (cont)

- More research is needed to determine which methods/tools are best suited for communicating water issues to key stakeholders and why
- Harmonization among methods in the following areas is needed and would benefit all methods:
 - Terminology
 - Data collection/categorization
 - Criteria for evaluating the social and environmental local/regional water resource context
 - Characterization factors to determine impacts of water use

Possible Amendments to Current Draft

1. Restructure report to emphasize applications of method (e.g. product design, risk or impact assessment, “hotspotting,” communication tool)
2. Address limitations of quantitative accounting and evaluate the importance of qualitative information such as governance, regulatory framework, and cultures of watersheds in which companies operate
3. Further explore current limitations due to a lack of data, as well as the types of data that can advance corporate water accounting efforts

Questions

1. Are the methods and tools evaluated in this report accurately, objectively, and fairly?
2. How can this framework for describing and evaluating water accounting methods and tools be improved so as to provide more value for businesses and the water accounting community?
3. Are there any additional areas of analysis that could be added? Are there any that could be deleted?



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Accounting Approaches to Water-related Impacts

Criteria	Water Footprint	Life Cycle Assessment	WBCSD Global Water Tool	GEMI Water Sustainability Tool
<i>Assesses water-related impacts?</i>	As yet, No. WFs do not attempt to assess impacts. However, methods to quantify WF Impact Assessments have been tested.	Yes. However, methodologies are nascent and need further development and harmonization.	Yes, but not directly or comprehensively. Provides local watershed data.	Yes, but not quantitatively. Only identifies possible business risks due to water pollution
<i>Types of impacts assessed</i>	NA	Water use: <ul style="list-style-type: none"> • Ecosystem quality • Resource depletion • Human health Water discharge: <ul style="list-style-type: none"> • Ecotoxicity • Eutrophication • Acidification 	Identifies water use hotspots and facilities located in water stressed areas	Focuses on possible impacts of industrial effluent on water quality
<i>Characterization factors used</i>	Approaches proposed or being pilot tested for Water Footprint Impact Assessment	Numerous approaches proposed or in development, from simple approach such as Water stress index to complex approaches	None	None

Accounting Approaches for Water Quality

Criteria	Water Footprint	Life Cycle Assessment	WBCSD Global Water Tool	GEMI Water Sustainability Tool
<i>Assesses water quality?</i>	Yes	Yes	No	Yes
<i>Basic approach</i>	Dilution volume	Direct measurement of mass or volume of contaminants	N/A	Qualitative analysis
<i>Types of criteria assessed</i>	Most harmful contaminant (often nitrogen) based on discharge quantities and local regulatory standard	Impact categories: <ul style="list-style-type: none"> • Eutrophication • Acidification • Ecotoxicity • Climate change • Human health 	N/A	Types of pollution caused by different pieces of value chain
<i>Potential limitations</i>	Only accounts for primary pollutant (i.e. disregards additive and synergistic effects). Uses standards based on local regulatory framework rather than science.	Does not typically quantify impact to specific local receiving bodies; results are relative to functional unit	N/A	No measurement or quantification