CEO Water Mandate Working Conference
16/17Nov 2010, Cape Town, South Africa

Emerging efforts to contextualize water quantity/quality information to give it meaning to respective stakeholders

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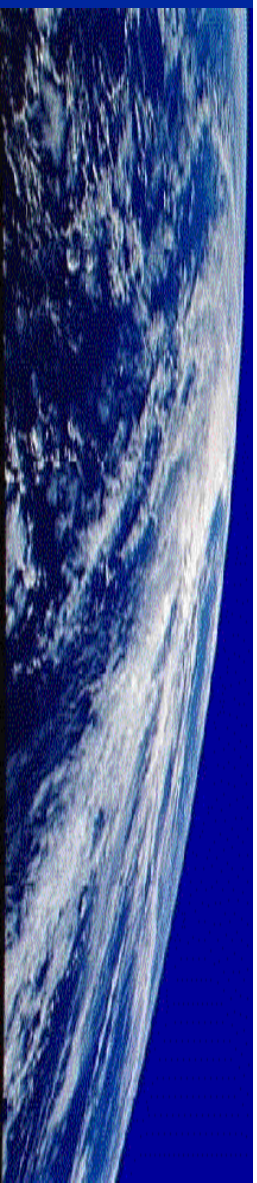
Overview

UNEP and
the RE/ SCP subprogramme

UNEP/ SETAC
Life Cycle Initiative

Water Footprint Network
and ISO

From what is possible to what
is needed



UN Environment Programme
Thematic priorities

- Climate change
- Disasters and conflicts
- Ecosystem management
- Environmental governance
- Harmful substances and hazardous waste
- **Resource Efficiency/ Sustainable Consumption and Production**

Resource Efficiency defined…

Efficiency at economic level

+

Environmental dimension

=

Resource efficiency
(materials, energy, water, land & emissions)

Reducing the environmental impact

of consumption and production

of goods and services over their *full life cycles*

→ By producing more wellbeing with less resource consumption, RE enhances the means to meet human needs while respecting the ecological carrying capacity of the Earth.

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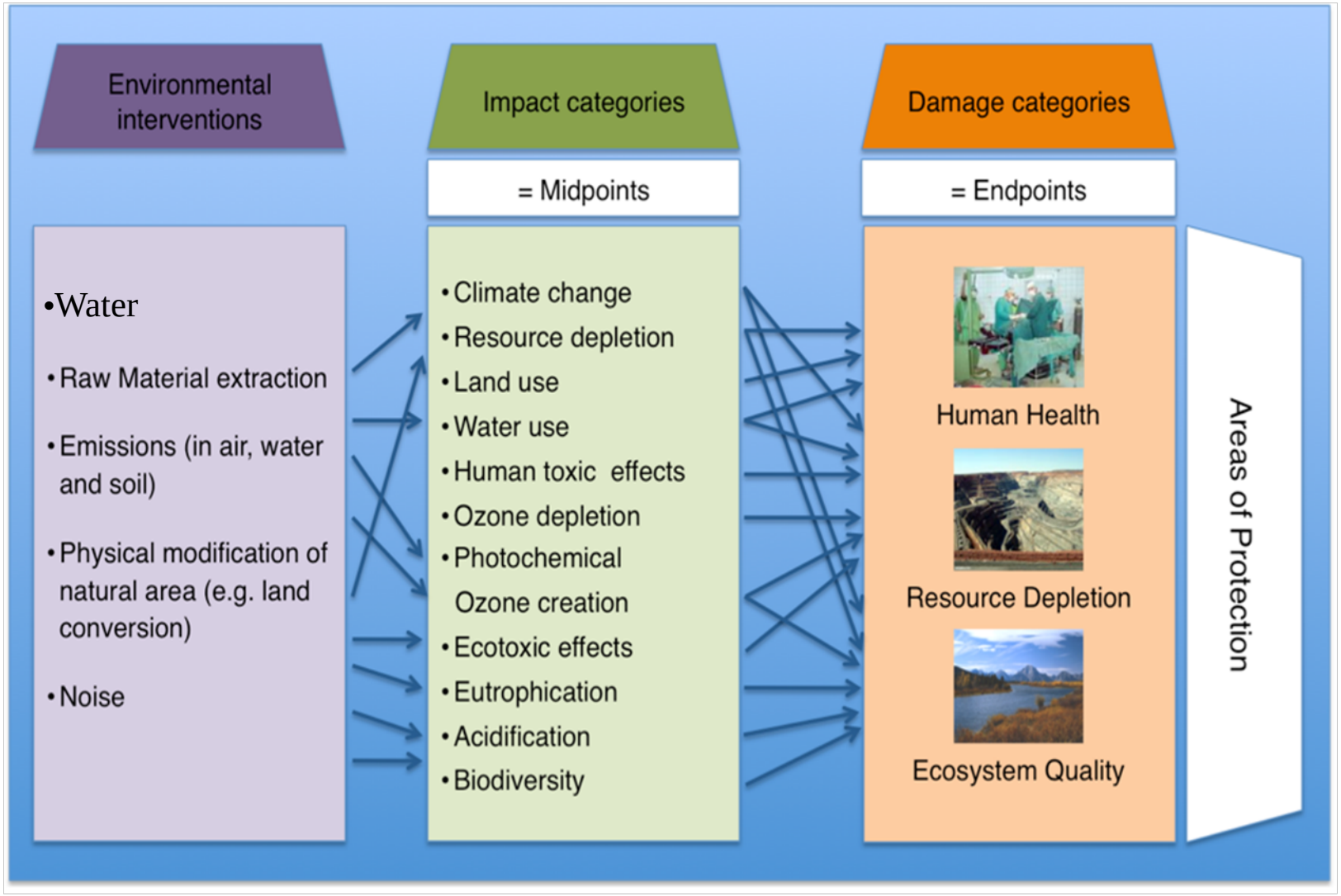
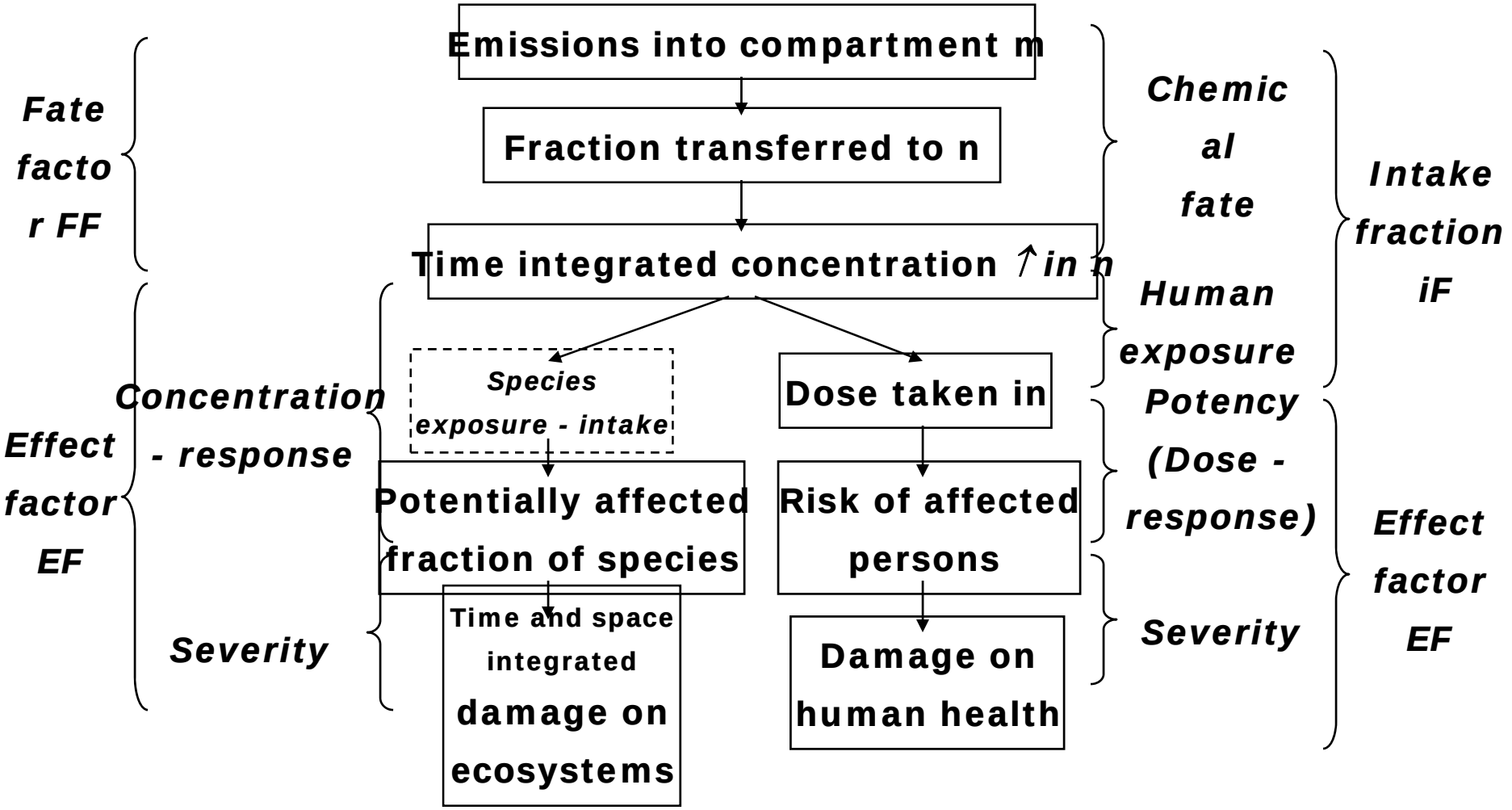
LCIA Midpoint-Damage Framework of the UNEP/SETAC Life Cycle Initiative



Assessing Chemicals: Usetox Framework

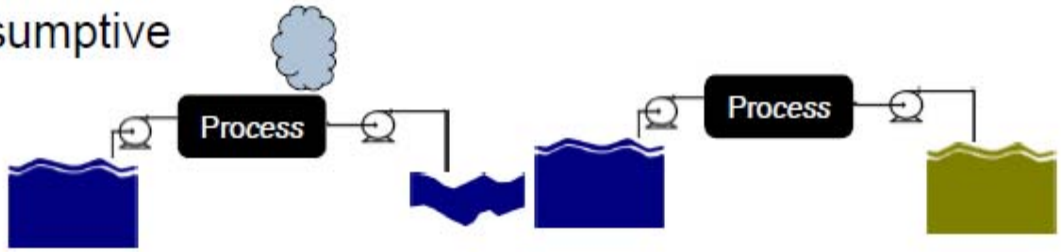


Ecotoxicity: CF = FF·EF

Human toxicity: CF = iF·EF

Water use in LCA - Framework

- Different types of water use
  - In-stream  VS Off-Stream 
  - Degradative VS Consumptive

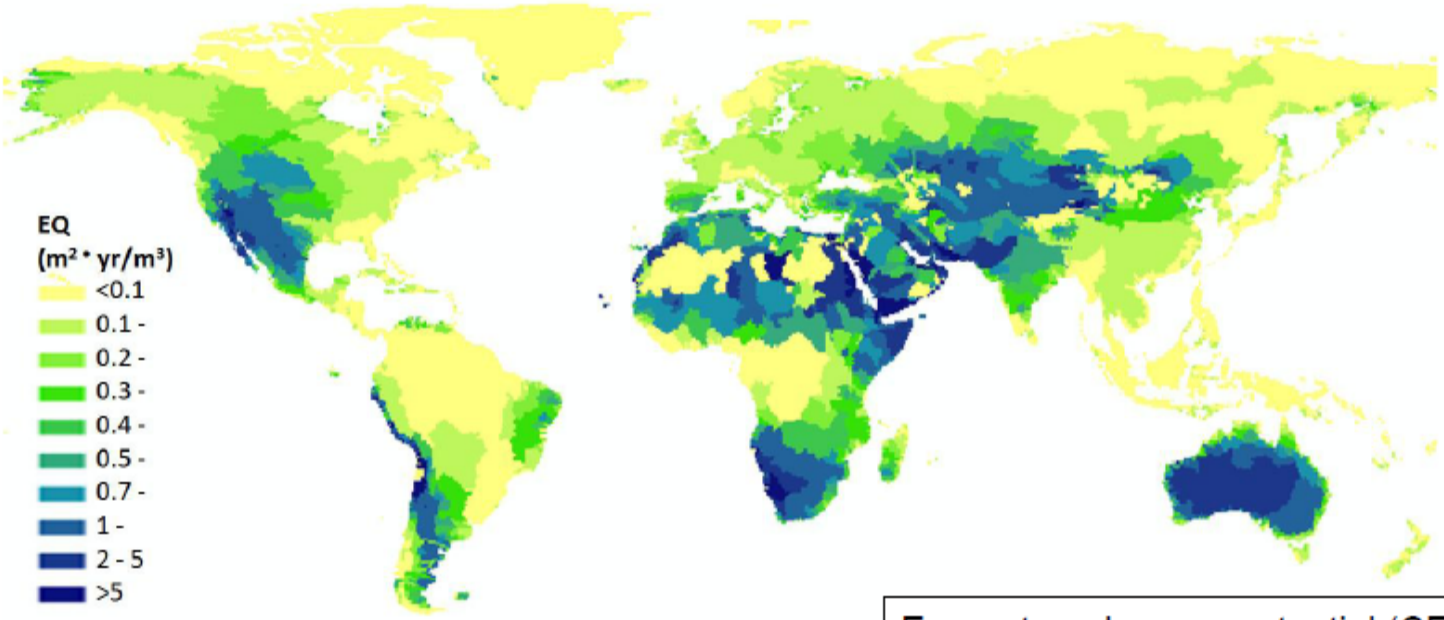


- Different types of water
  - Quality
  - Surface VS groundwater

- Availability

Frequently quoted ‘water’ impact assessment method

- Pfister et al.
  - → Development of
    - « Human Health » Indicator: water used is not available for agriculture -> malnutrition
    - «Ecosystem quality » indicator: ecosystems water needs
    - « Natural ressources » indicator : energy needs for desalination



Pfister, Koehler & Hellweg (2009), ES&T 43(11): 4098–4104

Ecosystem damage potential (CF_{EQ})
- → Per m3 of water consumed
- → Damage factors on watershed level

Other ‘water’ impact assessment methods

- Frischknecht et al.
  - ➔ Ecopoint (Swiss Ecological Scarcity) based on scarcity
- Van Zelm et al.
  - ➔ « Ecosystem » indicator realting the impact of the level of the water table on ecosystems
- Motoshita et al.
  - ➔ « Human Health » indicator
- Mila i Canals et al.
  - ➔ Impacts on ecosystems
  - ➔ Impacts on natural ressources (Stock/ availability ratio)
- Humbert et al.
  - ➔ Impact on ecosystems related to dams
- …

Review of methods addressing water

UNEP

SETAC

Life Cycle Initiative

How much (m^3) / What?

Can it be / Potential problem?

Actual co… quences

Inventory (~accounting)

Ecoinvent | Chapagain Hoekstra | Bayart | GaBi | Global Water Tool | Mila-I-Canals | Vince

Midpoint (~benchmarking)

Chapagain Hoekstra | Frischnecht (Ecopoints)

Humans (health and welfare)	Ecosystems (biotic environment)	Resource (abiotic environment)
Boulay	Mila-I-Canals	Mila-I-Canals
Pfister	Pfister	Pfister

…xes

Scarcity indexes

…lkenmark | Ohlsson | Gleick

Water Use Per Resource

Seckler | Smakhtin | Alcamo | Pfister

Water Resources Vulnerability Index

Raskin

Water Poverty Index

Sullivan

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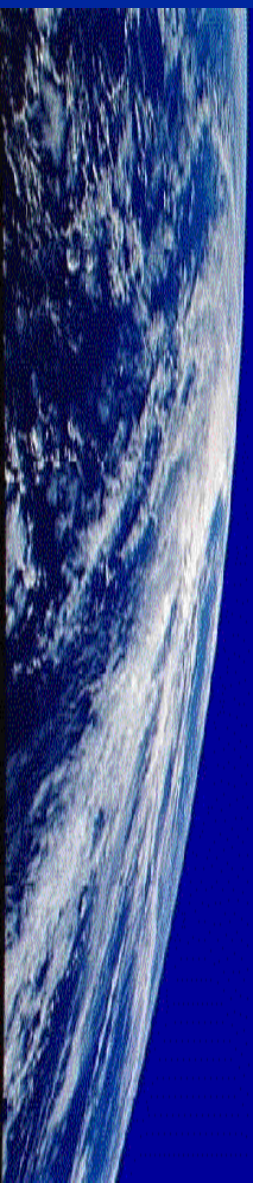
Water Footprint Network (WFN) Manual



Green water footprint

- volume of rainwater evaporated or incorporated into product.

Blue water footprint

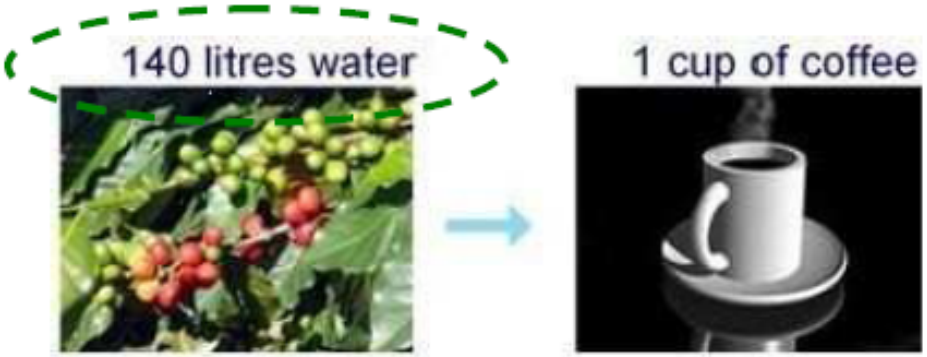
- volume of surface or groundwater evaporated, incorporated or returned to other catchment or the sea.

Grey water footprint

- volume of polluted water

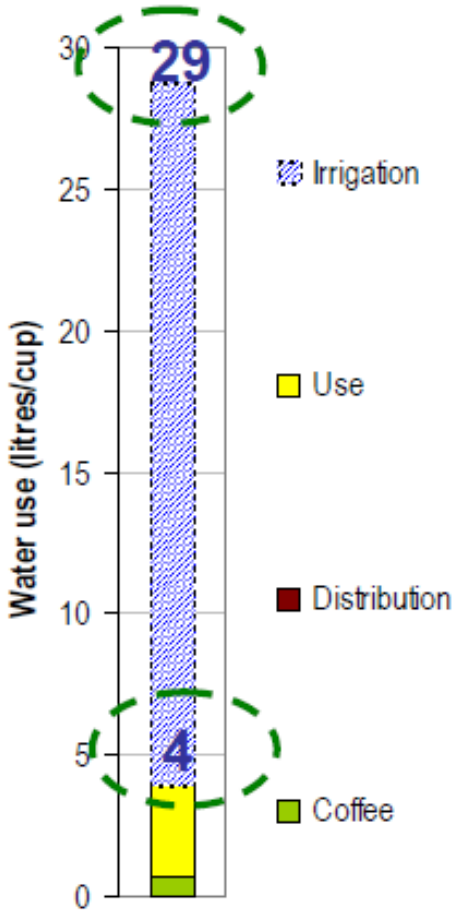
LCA and WFN Methods lead to different results: Coffee example

- Two water footprinting results



Chapagain and Hoekstra

Humbert et al.



- Differences?

International Organization for Standardization

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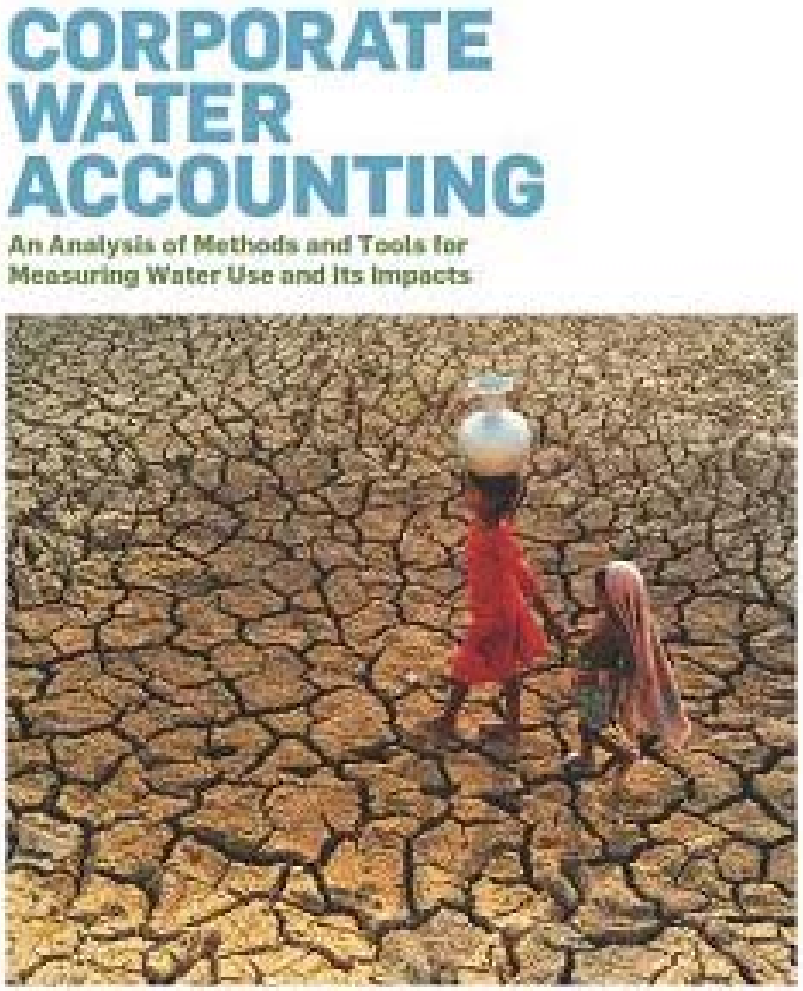
Report on corporate water accounting

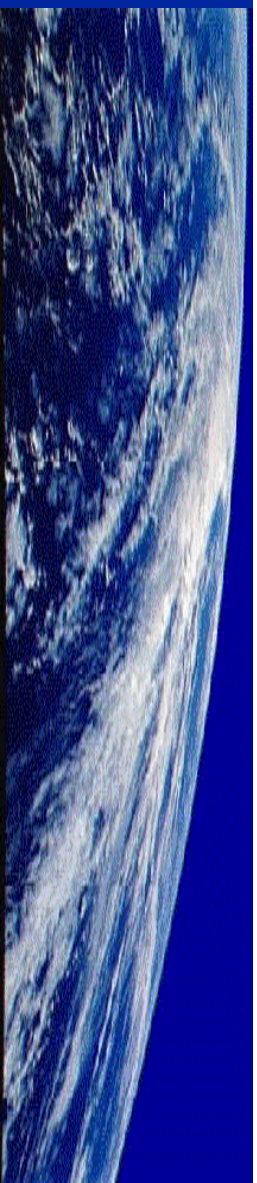


Overarching objective:

Stocktaking exercise to clarify commonalities and differences among existing and emerging water accounting methods and tools in private sector

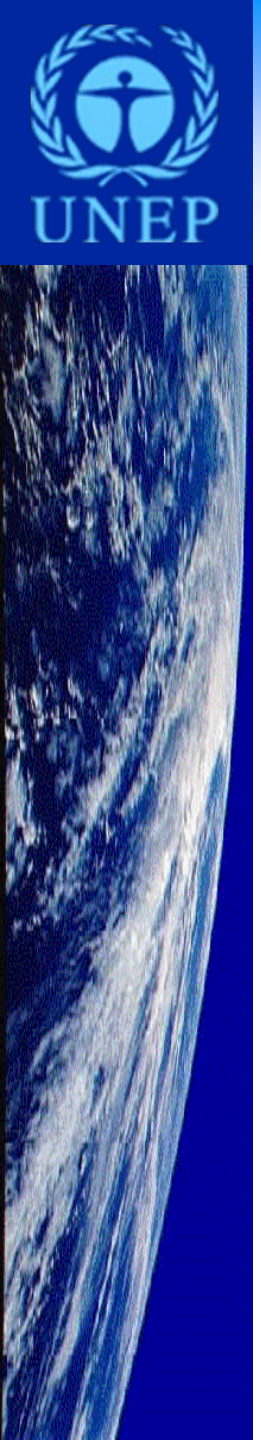
- Elucidate applicability, strengths, and weaknesses
- Identify gaps and challenges
- Suggest benefits from harmonization and testing

Accounting Methods and Tools



Focus on four key accounting methods/tools:

1. Life Cycle Assessment (LCA)
2. The Water Footprint Network's "water footprint"
3. WBCSD Global Water Tool
4. GEMI Water Sustainability Planner/Tool



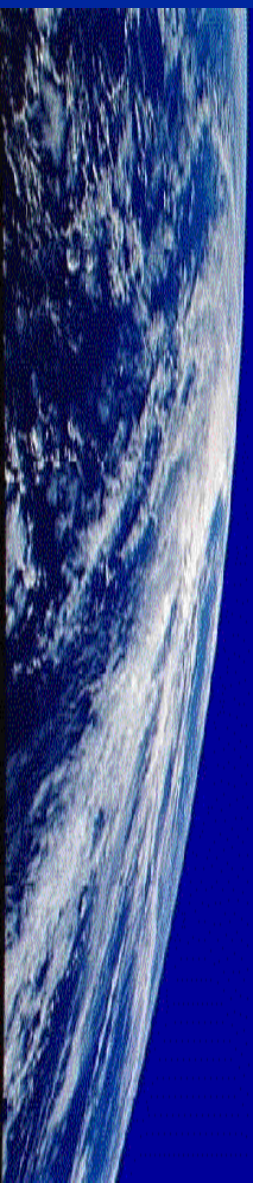
Applications of Corporate Water Accounting

Corporate water accounting can be seen as serving four general purposes:

1. Operational efficiency, product eco-design, sustainable manufacturing
2. Water risk assessment
3. Managing social and environmental impacts and response
4. Communicating with stakeholders
5. Addressing the water-energy-carbon nexus

Findings on Methods and Tools

	WFN Water Footprinting	Life Cycle Assessment	WBCSD Global Water Tool	GEMI Water Sustainability Tools
General Strengths	•Good tool for "big picture" strategic planning purposes •Easily understood by non-technical audiences •Best for volume assessments, as opposed to water quality	•Uniquely well-suited for cross-media environmental assessments •Mature science-based methods for assessing water quality impacts	•Good first-tier risk screen •Inexpensive, fast, and does not require company expertise •Simple inventory for companies to compile their water data	•Useful for companies just beginning to think about water stewardship •Inexpensive, fast, does not require expertise
General Weaknesses	•Generic, aggregated blue-green-grey WF figures are misleading •Grey WF deemed ineffective by companies	•No universally accepted method of assessing water use impacts •Results can be difficult to communicate to nontechnical audiences	•Does not address water quality/discharge-related risks •Does not address impacts •Assessments provide only rough estimates of risk	•Rudimentary assessment of relative risks •No quantified results



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