

Overview of Water “Footprinting” Protocols

**Optimizing Industry Water Use
Great Lakes Protection Fund**

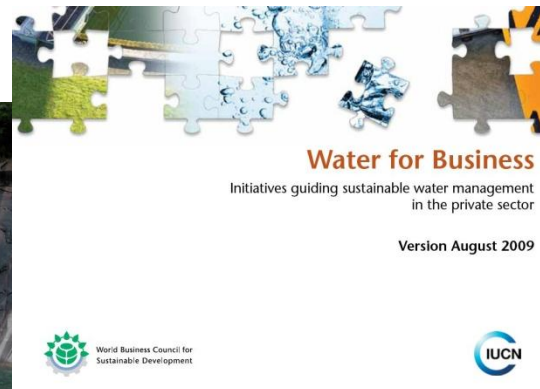
(Project No. 926)

Expert Panel Meeting July 16, 2010



Overview

- water-related initiatives
- drivers/motivations
- elements (measures)
- initiatives getting the most attention
- themes





Water for Business

Initiatives guiding sustainable water management
in the private sector

Version 2
March 2010



World Business Council for
Sustainable Development



Water Initiatives

sustainability / stewardship / footprint

- Aquawareness
- Alliance for Water Stewardship
- Blue Certification Program
- Corporate Water Gauge
- European Water Partners
- Federation House Commitment to Water Efficiency
- Global Environmental Management Initiative
- Global Reporting Initiative
- Global Water Tool (WBCSD)
- UNEP/SETAC Life Cycle Initiative
- Strategic Water Management Framework (Australia minerals)
- UN CEO Water Mandate
- Water Brief for Business SEE Initiative
- Water Footprint Network
- Water Neutral Foundation
- WaterSense Certification Scheme
- Water Stewardship Initiative

Drivers for Water Accounting

- 2008 – increased attention on water as a metric for business performance
 - water scarcity
 - UN World Water Development Report: *Water in a Changing World (2009)*
 - water use and water availability
 - concern over water transfers, both ‘real’ and ‘virtual’
 - corporate environmental reporting
 - an opportunity for certification

Stated Motivations

focusing public attention on water scarcity

1. calculate current water use/consumption for purposes of measuring comparative performance
2. develop or comply with certification or standards programs
3. measure progress against corporate sustainability policies or goals
4. assess business risks associated with water scarcity near manufacturing operations and in the supply chain
5. facilitate communications with the public, customers, or suppliers

don't allow one use to disenfranchise another



24/07 2006.430P © John Ditchburn

Elements in Water Initiatives

require business to describe water management by:

1. accounting for the use of water
2. measuring/describing impacts related to their use of water



Water Use Terminology

water use accounting

1. withdrawals and discharges
2. consumption
3. supply chain and product use

green water

consumptive
use

blue water

freshwater

water intensity

runoff

water source

saltwater

seepage

groundwater

off-stream use

in-stream use

evaporation

Terms re: Impacts of Water Use

impacts due to use of water

1. denial of access to humans or aquatic systems
2. alteration of water quality
3. irresponsible management

*Global Reporting Initiative
Environmental Indicators*

EN 23 EN 25 EN 9 EN 28

water stress index (WSI)

green water

blue water

grey water

"net" green

Water “Footprints”

Methods and Tools





Water Footprint Network

- quite popular in Europe
- potentially applicable to products and business
- other initiatives have indicated an intent to be “compatible” with the *water footprint*



Water Footprint



Green Water: volume of evapotranspiration from agricultural or forest crops

Blue Water: volume evaporated or otherwise lost from the manufacturing process

Grey Water: volume required to dilute pollutants to achieve local standards for water quality

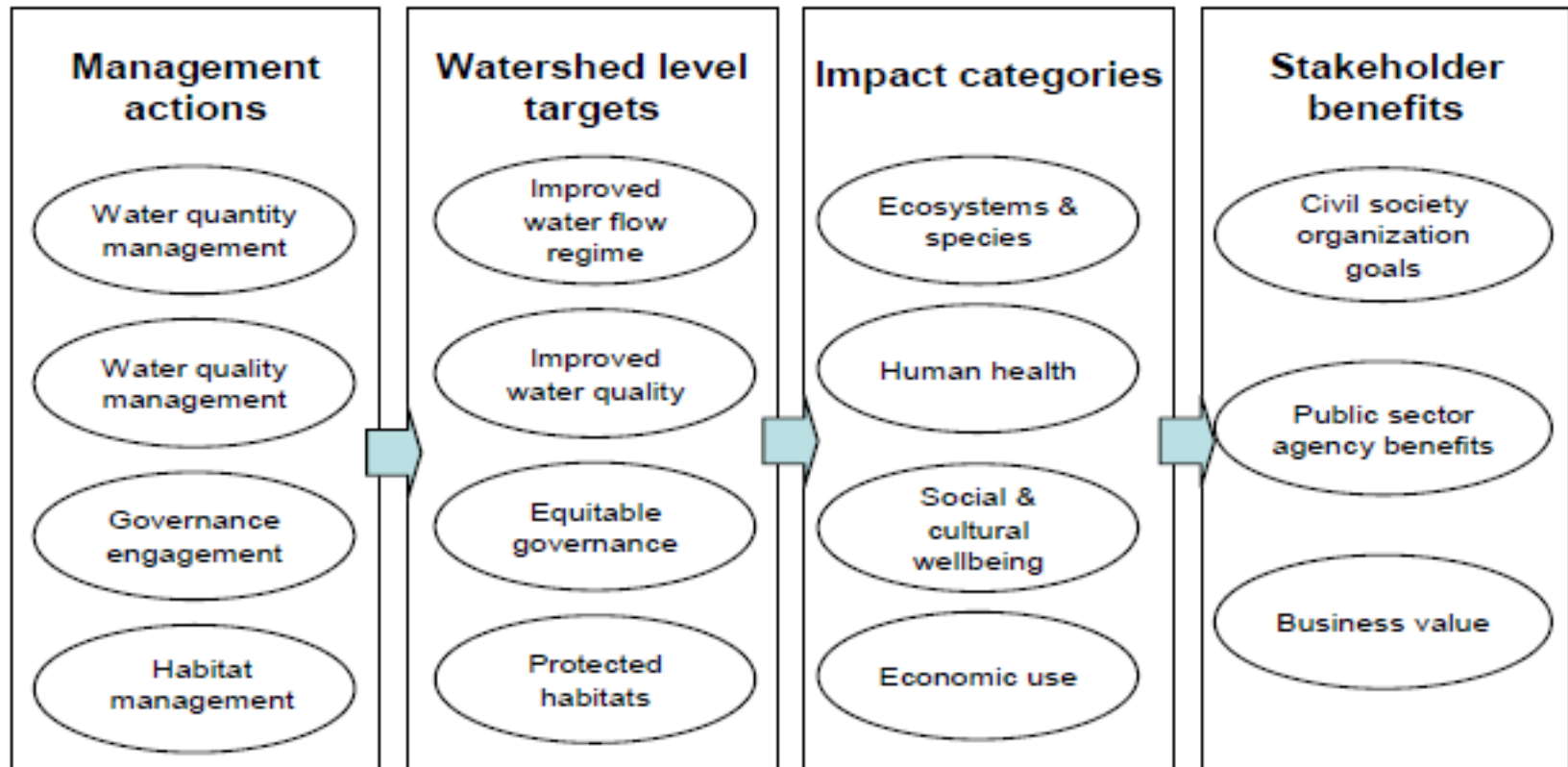
Water Footprint

ALLIANCE FOR WATER STEWARDSHIP

- ENGO driven *The Nature Conservancy, World Wildlife Fund, Water Witness International, The Pacific Institute, Water Environment Federation*
- Framework being established
 - scoring system, sector specific variants of standards, geographical variants of standards for direct and indirect impacts
- an Forest Stewardship Council (FSC) - like certification scheme
 - ‘harmonized’ with other standards (Water Footprint Network, ISO 14001, GRI, and others)

ALLIANCE FOR WATER STEWARDSHIP

- Elements of certification are under development





GEMI[®]

Global Environmental Management Initiative
Business helping business improve environmental, health and safety
performance, shareholder value and corporate citizenship.



- Global Environmental Management Initiative (GEMI)
 - water use, impact, and source reliability
- Global Reporting Initiative (GRI)
 - EN 8 water withdrawal by source
 - EN 9 water sources affected by withdrawal
 - EN 10 water recycled/reused
 - EN 21 water discharged (quantity, quality, destination)
 - EN 23 impact of spills
 - EN 25 biodiversity of water bodies
 - EN 28 fines

Global Water Tool[®]



- developed by CH2MHill for World Business Council for Sustainable Development (WBCSD)
- focus on business risk from water scarcity
- FREE Excel workbook and mapping tool
<http://www.wbcd.org/templates/TemplateWBCSD5/layout.asp?type=p&MenuId=MTUxNQ&doOpen=1&ClickMenu=LeftMenu>
- 2010 update to be rolled out at World Water Week in Stockholm (September).



The Global Water Tool

- Compares your **company's water uses** (including staff presence, industrial use, and supply chain) with key **external** water-related **data**
- Creates **key water GRI Indicators**, inventories, risk and performance metrics and **geographic mapping**
- Establishes **relative water risks** in your company's **portfolio** to prioritize action
- Enables **effective communication** with internal and external stakeholders on your company's water issues
- Allows calculation of water **consumption & efficiency**

**FREE
EASY-TO-USE**

Inputs

Water withdrawal
Water consumption
Water pollution
Facility location
Employees
Supplier info.



Resident Data

Water availability
Water stress
Local Population
Local sanitation
Renewable supply
Ratio industrial/total



Outputs

GRI indicators
(EN8,EN12,EN21)
Water risk related
to supply,
sanitation,
equitable access

International Standards Organization (ISO) 14046

- Working Draft underway as of April 2010
- ***Water footprint – requirements and guidelines***
 - General, Goal and Scope
 - Water Accounting
 - Water Impact Assessment
 - Positive Aspects and Compensation
 - Communication
 - Review Validation

International Standards Organization (ISO) 14046

- Accounting:
 - Water withdrawal source and amount (surface, ground, rain, snow seawater, fossil water)
 - In-stream use and off-stream use
 - Discharge locations and amounts
 - Water consumed
 - Water polluted
- Impacts
 - Not explicitly defined (yet)



- a marketed product
- considers:
 - facility inflow and outflow
 - impacted watersheds
 - renewable water supplies in watershed
 - local populations and other water uses
- Produces a sustainability score
- “compliant” with Global Reporting Initiative

Life Cycle Assessment

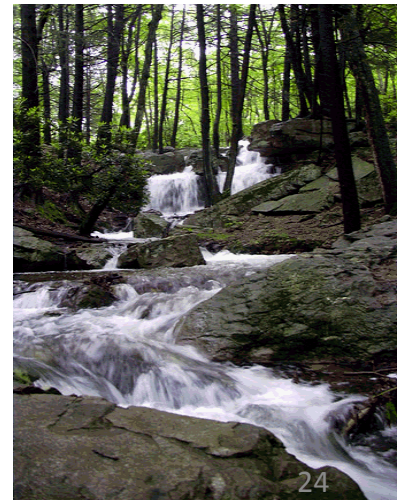
- systematic procedure to measure and analyze extent of environmental impact (**product related**)
- newly proposed impact measures based on:

consumptive water use and water availability

- WSI-based metrics for human health, ecosystem quality, and depletion of non-renewable water

The Future

- consolidation/merging of water initiatives
- more consistent terminology and improved understanding of “measures” for water use and impact
- increased pressure for companies to adopt advanced water reporting practices
- (maybe) a water certification program



Some Important Concepts . . .

- Water use accounting is relatively easy
- water consumption (not water use) is a more relevant water metric
- water impacts are best assessed locally
- Assessing local impacts in a comparative way is difficult
- some water management practices can increase water availability and/or enhance ecosystem quality



Possible Impact Categories

Human Health Impacts

Loss of drinking water (impacts to quantity or quality)

Loss of fisheries, shellfish, and edible aquatic plants

Loss of floodplain or lakeshore farming opportunities

Loss of floodplain or lakeshore grazing capacity

Loss of hunting opportunities (e.g. diminished wildlife and bird populations)

Loss of floodplain/lakeshore vegetables, fruits, spices, honey

Loss of access to shallow groundwater for farming, drinking, cooking

Loss of medicinal plants

Loss of fuel-wood for cooking and heating

Loss of building materials (e.g. timber, reeds, grass, gravel, sand, and clay)

Loss of craft materials (e.g. wood, grass, reeds, feathers, shells, and bone)

Loss of opportunities for clothes washing and bathing

Increased disease vectors (e.g. malaria)

Possible Impact Categories

| |
|--|
| <u>Social and Cultural Well-Being Impacts</u> |
| Loss of water-based transportation or trade routes |
| Loss of recreational opportunities (e.g. hunting, fishing, wildlife viewing, boating, and swimming) |
| Loss of cultural or spiritual practices |
| Other (specify) |
| <u>Economic Impacts</u> |
| Loss of tourism |
| Loss of hydropower generation potential |
| Loss of navigation |
| Loss of agricultural production and/or loss of higher value agriculture |
| Physical disruption of water supply |
| Increased costs for cleaning poor-quality water |
| Regulatory fines for improper waste discharge and associated litigation, insurance, etc. |
| Reputation damaged with loss of physical and social license to operate |
| Regulatory changes to costs, escalating cost of water, access, rights, amounts, timing, standards, laws, etc., that affect the businesses' ability to operate, viability and bottom-line |
| Loss of market share due to perceptions, disclosure, response, actions, inactions, inconsistent supply, etc. |

Possible Impact Categories

Ecosystem and Species Impacts

Loss of native species

Changes in population size of native species

Increase in non-native or invasive species

Loss of high-value habitats

Loss of groundwater recharge capacity

Loss of water purification capacity

Increased salt water intrusion into fresh water supplies

Alteration of sediment delivery; increases or decreases to downstream areas

Loss of carbon trapping (i.e. sequestration) capacity

Alteration of nutrient cycling and deposition on floodplains

Loss of capacity to flush/leach salts or acids from floodplain and lakeshore soils

Alteration of natural soil erosion and sediment deposition processes

Loss of natural controls on pests and disease vectors

Loss of flood retention capacity

Loss of natural flushing of waste products