ISO standard on Water footprint: Principles, Requirements and Guidance

Foreseen plan

World Water Week 2009
CEO Water Mandate
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Objective

• ISO standard on principles, requirements & guidelines for measurement and communication (TBD) of the water footprint of products, processes and organizations
  • evaluation and characterization
  • reporting and communication (TBD)

• Consistent with ISO 14000 series
  • including environmental metrics such as Carbon footprint, Life cycle assessment (ISO14040), Greenhouse gases quantification and communication (ISO14064, 14067) and Environmental communication (ISO14020)

• Consistent with existing and ongoing work on greenhouse gas emissions measurement and reporting
  • same boundaries, scope, etc.

• Within ISO
  • internationally recognized standardization body
  • democratic process
Current developments in water assessment

• **Increasing communication on water**
  – Publication of « water footprint » results of products in the news, etc.

• **Increasing demand for standards**
  – E.g., “The company said it was the world’s first food company to add an H2O label to product packaging and that it had developed its own calculation model because no internationally established formula and product label yet exists. […] we need to ensure that there are consistent standards across the board,”
  
  *From Carbon Footprints to Water Footprints (The New York Times, April 17 2009)*

• **Multitude groups active in water**
  – World Business Council for Sustainable Development (WBCSD)
  – Water Footprint Network (WFN)
  – UNEP/SETAC Life Cycle Initiative
  – Alliance for Water Stewardship (AWS)
  – World Resource Institute (WRI)
  – Pacific Institute
  – Water Environment Federation (Water Quality)
  – Etc.
Complex assessment!
Propose a framework and principles to enable:

- **Development of different methods** (e.g., water footprint network, UNEP-SETAC life cycle initiative, water tool from WBCSD, etc.)
  - **consistent** among each other
  - **consistent** with other **standards**
    - E.g., ISO 14040/14044; ISO 14064;
    - E.g., terminology, system boundary (direct water use, upstream (indirect) water use, downstream (indirect) water use), regionalization, communication, double counting (e.g., grey water vs aquatic ecotoxicity), etc.

- **Products**
- **Companies** (TBD)
- **Entities** (countries, cities, etc.) (TBD)

- **Communication** that is **meaningful, consistent** with other impact assessment methods, etc. (TBD)

- One or several standard? (TBD)
Scope

- **All type of water** will be considered, including rainwater, water reuse, agriculture and water with hydro projects

- **Regionalization** (scarcity, development level, specific issues), **Consumptive vs non-consumptive use**, etc. will be considered

- The goal is not to achieve a ready-to-use-method but a consensus on important elements that any ISO-compliant method needs to address
  - It is not the aim to develop a (generic) impact assessment method, but guidelines for such methods and their reporting

- **Accounting vs footprinting**
  - “Inventory” versus “impact assessment”
    - Accounting is a first needed step for good footprinting and
Plan foreseen

• **3 years plan**
  – 09.03.2009: Circulated in ISO/TC 207/SC 5
  – 09.06.2009: Submitted to vote
    • 26/32 acceptance
  – 26.06.2009: Explanation and kick-off at Cairo
    • Accepted as a Preliminary Working Item (PWI)
  – August (mid) 2009: Short information meetings at the World Water Week in Stockholm
  – August (end) 2009: List of P and O participants (i.e., experts) to be made

• **2 meetings per year**
  – September: First draft structure sent to experts
  – November (end) 2009: First **working meeting**
    • (TBD, in Stockholm, Sweden, in marge of the ecoefficiency group SC5_WG7 meeting, 20-24 November 2009)
    • Draft structure discussed
  – July (3rd wk) 2010: Second **working meeting**:
    • (Mexico, TBD)

• **2010**: Vote on the PWI draft to advance it to Advance WI
Organization

• WG 8, part of TC 207 / SC 5

• Contact:
  – Proposer & Secretariat:
    • SNV, Swiss Association for Standardization
  – Convener:
    • Sebastien Humbert, Econtesys - life cycle systems, Lausanne, Switzerland. Sebastien.Humbert@ecointesys.ch, +41-79-754-7566
  – Co-convener:
    • Nydia Suppen Reynaga, Centro de analisis de ciclo de vida y disenio sustentable, Mexico, nsuppen@centroacv.com.mx (TBC by national committee)

• List P and O members
  – TBF by end August 2009
Supporting info
Inventory: information needed?

Amount

• Origin of water (e.g., groundwater, etc.)
• Type of use (e.g., cooling, cleaning, etc.)
• Location (e.g., Tucson AZ)
• Water scarcity
• Development level
• Net precipitation

Of what?

fraction evaporated, polluted, etc.

XXX m³

Issues? Risk?

Humans

Ecosystems

Resources

potential impacts
The life cycle perspective
(life cycle stages and impacts)
Typical impact assessment method

- **Midpoint categories**
  - Human toxicity
  - Respiratory effects
  - Ionizing radiation
  - Ozone layer depletion
  - Photochemical oxidation

- **Damage categories**
  - Human health
  - Ecosystem quality
  - Resource consumption
  - Climate change
  - Water impact

- **Factors**
  - NOx
  - Crude oil
  - Iron ore
  - Phosphates
  - CO2
  - Irrigation water
  - Dams water
  - Hundreds more

**Impact sources**
- Crude oil
- Iron ore
- Phosphates
- CO2
- Irrigation water
- Dams water

**Impact categories**
- Acidification
- Eutrophication
- Terrestrial acidi/nitri
- Land occupation
- Aquatic ecotoxicity
- Terrestrial ecotoxicity
- Mineral extraction
- Non-renewable energy
- Climate change
- Water (non-turbined)
- Water (turbined)
Reduction in freshwater availability or change in freshwater quality

**Direct stress**
- Elevated consumption of low-quality water
- Food production stress (irrigation)

**Indirect stress**
- Increase in socio-political stress
- Displacement of population, conflicts, wars, etc.

**Impacts on human health**
- (illness, injuries, malnutrition, death, etc)

**Thermal stress**
- Temperature increase
- DO reduction
- Stress on aquatic life

**Physical stress**
- Reduction in aquatic habitats (size or equilibrium)
- Stress on aquatic life
- Reduction in aquatic life (amount and diversity)

**Impacts on (aquatic) ecosystems**
- (stress, reduction of amount or diversity)
Future generations
Less water for future generations

Ecosystems
Less water for ecosystems

Human use
Less water for humans

Human health

Modified availabilities

Compensation
All impact categories

Water use

UNEP-SETAC Framework
(Bayart et al. 2009)
**Scarcity indexes**
- Basic Water Requirement (BWR)
  - Water Resource per Capita (WRPC)
  - Social Water Stress Index (SWSI)
- Expanded WUPR
- Water Use Per Resource (WUPR)
  - Alcamo: criticality ratio
- Alcamo: criticality index

**Water Resources Undeveloped Index**
- Use-to-resource ratio
- Reliability index
- Water Poverty Index (WPI)
  - Water quantity, quality variability
  - Environmental aspects
- Capacity for water management
  - Water use for domestic, food and productive purpose

**Inventory**
- Ecoinvent
- Global Water Tool
- Bauer
- Vince

**Midpoint**
- Expanded WUPR
  - Seckler
  - Smakhtin
- Pfister
  - Alcamo: criticality index

**Endpoint**
- Sufficiency of freshwater resource for contemporary human users
  - Pfister
  - Bayart and Boulay
- Sufficiency of freshwater resource for existing ecosystems
  - Motoshita
  - Mila‐I‐Canals
- Sustainable freshwater resource basis for future uses of current generations

**Environmental aspects**
- Water Quantity, Quality, Variability
- Environmental aspects
- Capacity for water management
  - Water use for domestic, food and productive purpose

**WR: Water resource**
**EWR: Environmental Water Requirement**
- Indicator which describes critical threshold for human uses
- Indicator which describes critical thresholds to maintain ecosystems in fair conditions
Some concerns

- **Treated within ISO 14040?**
  - Water, like carbon footprinting, is having an extra focus and relevance
  - Treated consistently with ISO 14040, but:
    - ISO 14040 too broad and does not tackle enough several of the specificities of water footprinting
  - A specific norm allows to better focus on specificities of water
    - E.g., regionalization poorly addressed in 14040

- **Scope**
  - All type of water will be considered, including rain water, water reuse, agriculture and water with hydro projects
  - Regionalization, Use vs Consumption, etc. will be considered
  - Too broad?
    - Because the topic is new, it is proposed to draft the standard with the different stakeholders and not for the different stakeholders
    - The exact scope will partly be defined by the level of agreement among the members
  - The goal is not to achieve a ready-to-use-method but a consensus on important elements that any ISO-compliant method needs to address
  - It is not the aim to develop a (generic) impact assessment method, but guidelines for such methods and their reporting

- **Accounting vs footprinting**
  - “Inventory versus impact assessment”
  - Accounting is a first needed step for good footprinting and management