Water footprinting:
Context, approach and future perspectives

Agrion, May 10, 2012

Samuel Vionnet
Water project expert
Samuel.vionnet@quantis-intl.com

Sébastien Humbert
VP, Scientific affairs
Sebastien.humbert@quantis-intl.com
Outline

- Introduction to Quantis

- Water footprinting
  - Introduction
  - Timeline and initiatives

- ISO 14046 Water footprint initiative update

- Water footprinting framework

→ Follow up by Sergio Perez (SuizAgua)
Some words about Quantis
Quantis: expert in Life Cycle Assessment

- More than 150 years of cumulated experience
- > 150 clients / > 250 projects
- Internationally recognized experts
- Rapidly growing company

Social LCA
Database development
LUCAS

Impact modeling
(human health, ecosystems)
USEtox

Carbon footprint
Environmental product labelling

Water footprint & database
Impact assessment (IMPACT2002+)
Supply chain impact and risk assessment

CIRAIG
Quantis

LAUSANNE
PARIS, LYON
MONTREAL

BOSTON
Quantis and Water footprinting

Some of our clients
Water footprint
“global warming” … “global drying”
Which value is correct?

Liters of water for one cup (125 ml) of coffee

<table>
<thead>
<tr>
<th>Without irrigation</th>
<th>With irrigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>29</td>
</tr>
</tbody>
</table>

Irrigation
Growing coffee
Distribution
Coffee brewing

Chapagain and Hoekstra

All of them are
But what is important is to know what is behind these numbers in order to know what you can act on
The water footprint stream: Initiatives and timeline

- **2006**
  - January: Minerals Council of Australia
  - August: Global Water Tool

- **2007**
  - August: Global Reporting Initiative
  - June: Stakeholder Workshop

- **2008**
  - June: Water Footprint Network

- **2009**
  - October: WULCA, Framework
  - June: Alliance for Water Stewardship

- **2010**
  - November: Carbon Disclosure Project

Source: Adapted from WBCSD

© Quantis 2012
The water footprint stream: Initiatives and timeline

- **2011**
  - Draft 2, August
  - WULCA, Review of methods
  - AQUEDUCT, Measuring and Mapping Water Risk

- **2012**
  - Draft 3, February
  - Quantis WATER DATABASE
  - Quantis WATER RISK ASS.
  - AQUA GAUGE, October
  - ISO, International Organization for Standardization
  - March
  - March
  - April, Draft 1
  - AWS Water Stewardship Standard
  - April
  - Dec 3
  - WFN tool, December
  - June, Ecoivent v3
  - July

Source: Adapted from WBCSD
ISO 14’046 on water footprint
ISO 14046, Water footprint – Requirements and guidelines

WG 8 set up by ISO/TC 207 subcommittee SC 5, Life cycle assessment.

Timeline:
1st: June 2009, Cairo → launch (NP)
2nd: Fall 2009, Stockholm (PWD)
3rd: June 2010, Mexico (PWD)
4th: January 2011, Lausanne (PWD)
5th: June 2011, Oslo (WD)
6th: Fall 2011, Sao Paolo (CD)
7th: June 2012, Bangkok (CD?)
+ 2 more years...?

→ Draft has been registered and ballot initiated

Standard development steps:
1- NP: New Proposal
2- WD: Working Draft (PWD = preliminary WD)
3- CD: Committee Draft
4- DIS: Draft International Standard
5- IS: International Standard
ISO 14046, Water footprint – Requirements and guidelines

**Participants:**
15 – 30 Countries
35 – 80 experts

→ Goal is clearly defined to be in line with life cycle based indicators, such as carbon footprints
  – Impact assessment has to be integral part of it
  – Standard will be largely based on the same material as presented in this training
Introduction

What “most” agree about what a Water Footprint is:
- Includes impact assessment
  - Not only an inventory of volumes
- Considers quantity and quality
- Is regionalized

- Technical details:
  - Still being settled in ISO Water Footprint Working Group

- 14046: *Planned for 2014*
Demystifying…

1- Water footprint standalone versus in a full life cycle assessment (LCA)

2- Single indicator versus multiple indicators

3- Midpoint versus endpoint assessment

4- Consumption of water resource versus water pollution
Water footprint framework
Life cycle assessment (LCA)

From cradle to grave: a global vision of the production-consumption chain of company/product/service/site
Deliver synthesized indicators for decision making (science-based decision-making with a science-based aggregation)
Water footprinting: Going from inventory to risk and impacts

Inventory of water use (incl. affected)

Impact (midpoint) (risk assess.)

Impact (endpoint) (damages; area of protection)

Pollution
- Toxicity
- Acidification
- Eutrophication

Resource
- Human health [DALY]
- Ecosystem quality [PDF-m²-y]
- Resources [MJ]

Water Inputs
- Surface water
- Groundwater
- Turbine water

Water Outputs
- + Water polluted
- Thermally polluted water
- Water consumed
Path to assess water use and related impacts

Database
Methodology & understand business issues
Methodology & tools

Inventory
What? Where? How much?

Midpoint
Is it a potential problem/risk? Water stressed area?

Endpoint (Damage)
Impact on humans, ecosystems and resources?

Reporting & communication
Single score in litres equivalent?

Understanding your water
Strategic risk assessment
Impact assessment & management, decision making
Reporting Communication

Strategy

Objectives
Identification of priorities
Action plan
Quantis Water Database

- Comprehensive inventory (all water categories) and impact assessment (impact methods)
  - 4,000+ processes
  - Regionalized
  - Life cycle approach (indirect and direct water footprint)

- Integrates data from companies
- Sector specific datasets
- Platform of exchange
- Cross-benefits from different sectors
- Consistent with other environmental indicators (carbon footprint)

Product water footprinting
Company water footprinting
Damage - Impact assessment methods – Water resources

- Impacts of **freshwater consumption** on human health, ecosystem quality and resource (Pfister and al. 2009)

- Impact of **freshwater river consumption** on ecosystem quality (Hanafiah et al. 2011)

- Impact of **groundwater extraction** on disappearance of plant species (Van Zelm et al. 2010)

- Impact of **hydropower water use** on aquatic biodiversity damages (Maendly and Humbert 2009)
Damage - Impact assessment methods – Water pollution

- **Acidification** - Impacts of gas emitted in the atmosphere that create acid rains

- **Eutrophication** - Impact of excess nutrients emission in water that stimulate excessive plant growth (N or P)

- **(Eco)-toxicity** - Impact of toxic pollutant emitted to water directly or indirectly, on ecosystems and human health

- Impact of **thermal pollution** in freshwater aquatic environments (Verones et al. 2010)
Measurement is not everything…

The need to support companies throughout all stages of the water strategy

Company Water Strategy

Measurement
- Inventory of water use (direct / indirect)
- Impact assessment
- Product / Company water footprint
- Multi-indicator approach

Management
- Risk assessment
- Governance and policy engagement
- Stakeholder mapping
- Setting priorities and action plans (targets)

Disclosure
- Reporting (CDP Water, GRI, etc.)
- Annual report and CSR reports
- External events and commitments
- Image and reputation management

SuizAgua Colombia
Thank you for your attention
Additional slides
Involved with the major water initiatives

- Collaboration with leading universities and research centers
- Involved in UNEP SETAC Life Cycle Initiative
- Leading working group on ISO water footprinting standard
- Active member of the Water Footprint Network
- Involved in CEO Water Mandate
- Involved in CDP Water Disclosure
- Involved in WBCSD Global Water Tool
- Involved in BIER
- Member of The Sustainability Consortium
- Involved in Environmental labelling initiative (France)
- Involved in European Environmental Footprint Initiative
- Collaboration with ecoinvent on water data collection
Quantis’ strength – A strong positioning in Water Footprinting

Methodology development
- Expert network and universities
- R&D activities
  - ISO
  - UNEP-SETAC WULCA
  - CEO Water Mandate
  - WFN

21 companies trusted us for water footprints

Reporting, labelling and communication
- CDP Water Disclosure
- RSE reports and GRI
- French labelling initiative
  - Strategy, risk assessment and mitigation plans

Unique and complete water DB
Regionalized comprehensive inventory

4000+ processes (aligned with ecoinvent)

Quantis SUITE 2.0
Database Regionalized Tool
GWT/LWT (WBCSD/GEMI) and Excel®
Our values

INNOVATION  QUALITY  COOPERATION  INTEGRITY  COMMITMENT

Our team
70 people in 4 countries

Our partners
The most advanced research centers

Some of our clients