Life Cycle Assessment –News Letter

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In this issue:

We wish all the readers a very happy Deepawali. In this issue please find an article on "Water Footprint". Water consumption and pollution can be associated with specific activities, such as irrigation, bathing, washing, cleaning, cooling and processing. This article is an attempt to increase the awareness in the subject.

We urge our readers to contribute to make this newsletter more effective. Mail contributions at support@simaproindia.com

Sunil Kumar, Head, SIPL.

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The water footprint concept

The idea of considering water use along supply chains has gained interest after the introduction of the 'water footprint' concept by Hoekstra in 2002 (Hoekstra, 2003). The water footprint is an indicator of freshwater use that looks not only at direct water use of a consumer or producer, but also at the indirect water use. The water footprint can be regarded as a comprehensive indicator of freshwater resources appropriation, next to the traditional and restricted measure of water withdrawal. The water footprint of a product is the volume of freshwater used to produce the product, measured over the full supply chain.

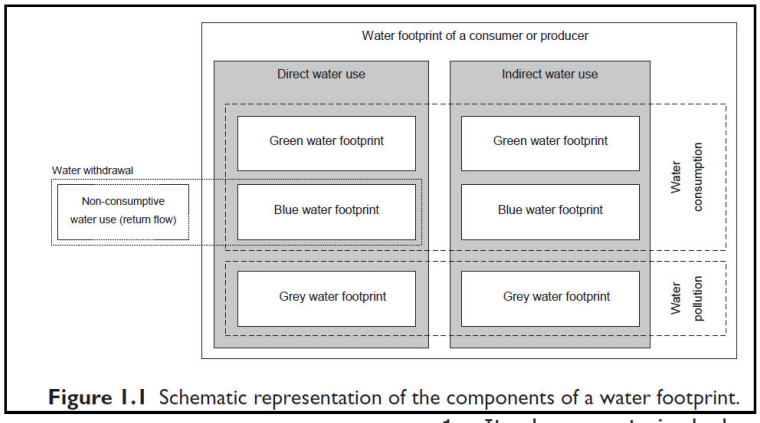

Figure 1.1 Schematic representation of the components of a water footprint.

It is a multidimensional indicator, showing water consumption volumes by source and polluted volumes by type of pollution; all components of a total water footprint are specified geographically and temporally. The blue water footprint refers to consumption of blue water resources (surface and groundwater) along the supply chain of a product. 'Consumption' refers to loss of water from the available ground-surface water body in a catchment area. Losses occur when water evaporates, returns to another catchment area or the sea or is incorporated into a product. The green water footprint refers to consumption of green water resources (rainwater insofar as it does not become run-off). The grey water footprint refers to pollution and is defined as the volume of freshwater that is required to assimilate the load of pollutants given natural background concentrations and existing ambient water quality standards.

As an indicator of 'water use', the water footprint differs from the classical measure of 'water withdrawal' in three respects

1. It does not include blue water use insofar as this water is returned to where it came from.
2. It is not restricted to blue water use, but also includes green and grey water.
3. It is not restricted to direct water use, but also includes indirect water use.

The water footprint thus offers a better and wider perspective on how a consumer or producer relates to the use of freshwater systems. It is a volumetric measure of water consumption and pollution. It is not a measure of the

severity of the local environmental impact of water consumption and pollution. The local environmental impact of a certain amount of water consumption and pollution depends on the vulnerability of the local water system and the number of water consumers and polluters that make use of the same system. Water footprint accounts give spatiotemporally explicit information regarding how water is appropriated for various human purposes. They can feed the discussion about sustainable and equitable water use and allocation and also form a good basis for a local assessment of environmental, social and economic impacts.

Water footprint assessment

'Water footprint assessment' refers to the full range of activities to:

(i) quantify and locate the water footprint of a process, product, producer or consumer or to quantify in space and time the water footprint in a specified geographic area;

(ii) assess the environmental, social and economic sustainability of this water footprint; and
(iii) formulate a response strategy.

Broadly speaking, the goal of assessing water footprints is to analyze how human activities or specific products relate to issues of water scarcity and pollution, and to see how activities and products can become more sustainable from a water perspective.

How a water footprint assessment will look, largely depends on the focus of interest. One can be interested in the water footprint of one specific process step in a whole production chain, or in the water footprint of a final product.

Alternatively, one can be interested in the water footprint of a consumer or group of consumers or in the water footprint of a producer or whole economic sector. Finally, one can take a geographic perspective, looking at the total water footprint within a delineated area such as a municipality, province, nation, catchment or river basin. Such a total water footprint is the aggregation of the water footprints of many separate processes taking place in the area.

Water footprint assessment is an analytical tool, it can be instrumental in helping to understand how activities and products relate to water scarcity and pollution and related impacts and what can be done to make sure activities and products do not contribute to unsustainable use of freshwater. As a tool, a water footprint assessment provides insight, it does not tell people 'what to do'. Rather it helps people to understand what can be done.

A full water footprint assessment consists of four distinct phases (Figure 1.2):

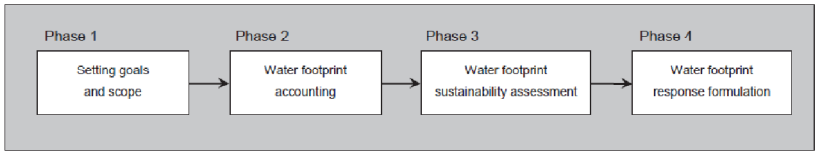

Figure 1.2 Four distinct phases in water footprint assessment

1. Setting goals and scope.
2. Water footprint accounting.
3. Water footprint sustainability assessment.
4. Water footprint response formulation.

In order to be transparent about the choices made when undertaking a water footprint assessment study, one will have to start by clearly setting the goals and scope of the study. A water footprint study can be undertaken for many different reasons. For example, a national government may be interested in knowing its dependency on foreign water resources or it may be interested to know the sustainability of water use in the areas where water-intensive import products originate. A river basin authority may be interested to know whether the aggregated water footprint of human activities within the basin violates environmental flow requirements or water quality standards at any time. The river basin authority may also want to know to what extent scarce water resources in the basin are allocated to low-value export crops. A company may be interested to know its dependence on scarce water resources in its supply chain or how it can contribute to lower the impacts on water systems throughout its supply chain and within its own operations.

The phase of water footprint accounting is the phase in which data are collected and accounts are developed. The scope and level of detail in the accounting depends on the decisions made in the

previous phase. After the accounting phase is the phase of sustainability assessment, in which the water footprint is evaluated from an environmental perspective, as well as from a social and economic perspective. In the final phase, response options, strategies or policies are formulated. It is not necessary to include all the steps in one study. In the first phase of setting goals and scope, one can decide to focus only on accounting or stop after the phase of sustainability assessment, leaving the discussion about response for later. Besides, in practice, this model of four subsequent phases is more a guideline than a strict directive. Returning to earlier steps and iteration of phases may often be necessary. In first instance, a company may be interested in a rough exploration of all phases, in order to identify critical components in its water footprint and set priorities for response, while later on it may like to seek much greater detail in certain areas of the accounts and the sustainability assessment.

Excerpts from the book: The Water Footprint Assessment Manual- Setting the Global Standard by *Arjen Y. Hoekstra, Ashok K. Chapagain,Maite M. Aldaya and Mesfin M. Mekonnen*

'Effective LCA with 'SimaPro'

Date	28th – 29th November 2011
Start & End time	9.30 am to 5 pm on both days
Venue	WebEx : Internet based virtual classroom Code and password for the training will be emailed by 25th November
LCA & SimaPro	Businesses like IOCL, India Glycols Limited, GE, 3M, HP, Procter & Gamble, Unilever and others are using Life Cycle Assessment to develop new product, increase market share and mitigate climate and energy risk. **SimaPro** is world's most widely used **life cycle assessment (LCA)** software, used by major industries and consultants, research institutes and universities. Simapro can aid corporations in - New Product design - Process design - Calculation of carbon footprints - Green procurement - Environmental product declarations - Environmental reporting and many more applications - PAS 2050
Course Objective	LCA training is dedicated to understanding LCA and performing LCA's with SimaPro. You learn the concepts and applications of LCA, data collection, impact assessment and interpretation of LCA results. Every participant will do LCA modelling on SimaPro as hands on training exercise. Developer version of SimaPro will be provided to every participant for a month to facilitate their learning after the workshop. - Concepts and application of LCA - How to build up Inventories - Structure of SimaPro - Modelling a life cycle in SimaPro - Impact assessment - Analyzing and interpreting results - Sensitivity Analysis - Parameters - Monte Carlo uncertainty assessment etc.
Who should attend	- Decision Makers of an Organisation - Process & Production Heads / Managers / Engineers - Environment Consultants

	↓ R&D Heads / Engineers ↓ EHS Heads / Engineers ↓ NGO
Essential	Since the workshop is online the participants must have ↓ Good internet connection ↓ Laptop/Desktop with mic & speaker so that SimaPro could be installed and one to one/many communication is easy ↓ Print out of exercise for ease in modelling on Simapro.
Course Fee	**₹15,000 [inclusive of service tax] per person to be paid positively by 24th November** through Electronic fund transfer/cheque/DD. **The fees includes 'Developer version of Simapro' for approximately one month and soft copy of study materials. Participants will also be given a certificate.**
Bank Details	Name of the Beneficiary :Simapro Software Development India Pvt. Ltd. Account No. Of the Beneficiary : 4052009300000241 Bank Name & Branch : Punjab National Bank, Indirapuram, Ghaziabad, UP, India IFSC : PUNB0405200 SWIFT : PUNBINBBDIB
Discount	10% discount if 2 persons from the same organisation attend.
Cancellation Policy	Simapro Software Development India Pvt. Ltd reserves the right to make changes in the program, date, or to cancel the training if enrolment criteria are not met or when conditions beyond its control prevail.
Information & Registration	For registration send an e-mail confirming your participation to support@simaproindia.com Note that your registration is definitive only after confirmation by e-mail and receipt of payment For **₹15,000 [inclusive of service tax]** only. If you have any questions regarding the seminar, please contact Sunil at : +91-9911921666.