INDUSTRY

DHI SOLUTION

WATER FOOTPRINT ANALYSIS AND ECO-EFFICIENCY ASSESSMENT IN PRODUCTION

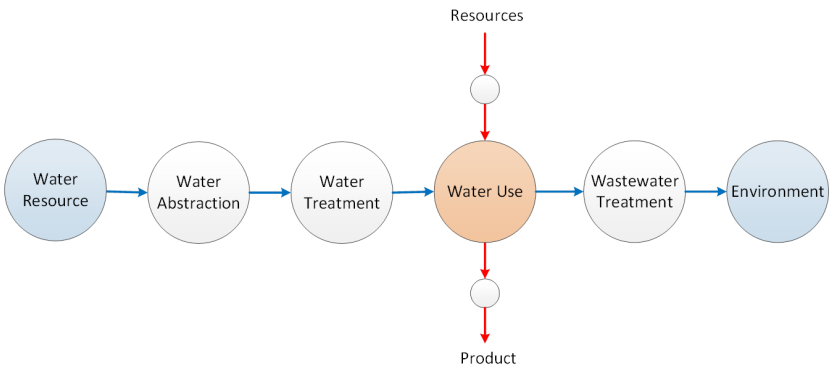
Improving knowledge and awareness of eco-efficiency, water use and water quality

Water use and management are key considerations for any organisation in light of growing demand for resources and increasing water scarcity. Water management is required at local, regional and global levels – and this also requires a consistent assessment technique. ISO 14046 is the new standard for water footprinting that will provide this consistency and give water footprint results credibility. ISO 14045 (Standard on eco-efficiency assessment of product systems) establishes a common methodological framework to assess both water systems and products as well as the way eco-efficiency can be assessed and reported.

ASSESSING WATER FOOTPRINT AND ECO-EFFICIENCY OF WATER USE

We have experience conducting water footprint analyses. We also have access to Life Cycle Analysis (LCA) software, which can help calculate the water footprint of water use systems and products in accordance with ISO Standard 14046.

In cooperation with several partners, we have developed an IT based online tool to assess the eco-efficiency of water use value chains in accordance with ISO 14045. The tool calculates the environmental impact using a life cycle approach. It assesses 13 LCA indicators and the total added value of using the water in the water system.



Understanding water services and water use, resource and money flow, and the actors in the water value chain

SUMMARY

CLIENT

- Industries that use water
- Water utilities
- Industrial consultants
- Industrial investors

CHALLENGE

Need to:

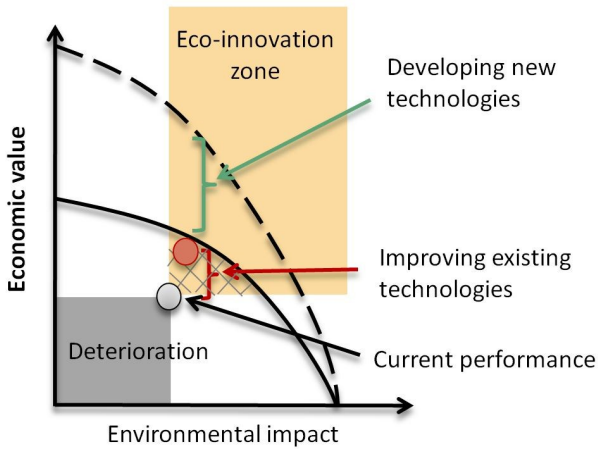
- ensure access to reliable water sources
- ensure sufficient capacity of wastewater treatment
- decrease risk of water scarcity and supply shortfalls in industrial production processes
- reduce water and other resource uses as well as impacts on water quality
- involve water service providers and other users in the water value chain
- consider resources in the water value chain

SOLUTION

- Life Cycle Analysis-based (LCA) water footprint analysis (ISO Standard 14046)
- Calculating total economic value of water-use chain and environmental impact (ISO Standard 14045)
- Decision Support System to encourage stakeholders to upgrade the economic and environmental performance of the water value chain

VALUE

- Assesses future risks to water use
- Identifies ways to reduce environmental impacts of water use
- Improves efficiency at product, process and organisational levels
- Increases environmental responsibility
- Identifies cost-saving potential
- Ensures cost-efficient compliance with environmental and product quality regulations



Identifying eco-innovative solutions that improve both the economy and environmental performance

DETERMINING GOALS AND SCOPES OF ANALYSES

We will initially discuss the goal and scope of the water footprint and water efficiency assessment with you. Typical goals and scope of clients include:

- using the water footprint in product marketing
- identifying the main processes that use water to reduce water risks
- analysing scenarios of upgrading the water value chain
- identify eco-innovative technologies

WHAT WE OFFER

We provide several services to help you reduce your water footprint and increase eco-efficiency, including:

- setting up water use system and water value chain boundaries, including identifying its actors
- analysing water footprint and assessing baseline eco-efficiency of the economic and environmental performance of a water service and water use system
- identifying technologies that have the potential to improve the performance of the water service and water use system
- conducting scenario assessments of innovative technology solutions by developing predictive technology assessments and comparing them with baseline results
- recommending improvements for water service and water use systems, including developing business cases
- assisting with the implementation of the ISO 14045 water footprint standard in industries

After establishing clear goals, we will then work with you to determine water use system boundaries (such as a production process, a catchment or a region). We can split the system into a number of stages to make the analysis more useful to you.

Finally, we will help you determine a functional unit (like water use per kilogramme of product) and select the indicators to be analysed. As water and energy uses are closely linked, emission of greenhouse gases is often a relevant indicator.

INVENTORY AND IMPACT ANALYSIS

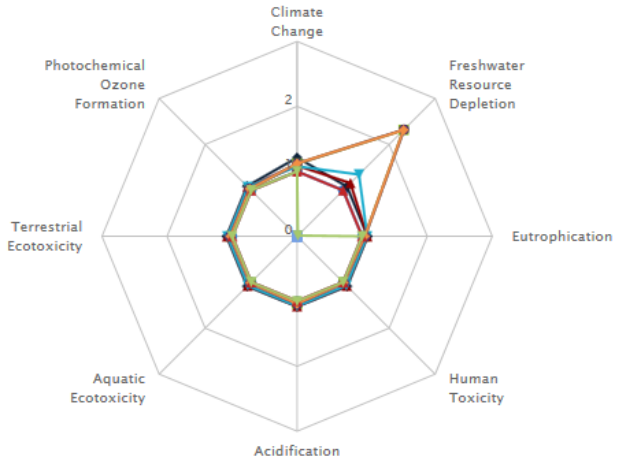
Based the goal and scope, we can set up software-based models for the water use system. We conduct an inventory to collect water use and emission data for the models. If data is missing, it may be estimated or found in literature sources.

This inventory will provide an overview of water use in the system and emissions from it. The result is a baseline that describes the present water footprint or eco-efficiency, depending on the model used.

We perform the impact analysis using the same models used for the inventory analysis, following a life-cycle oriented approach. The models use the midpoint impact categories, which cover all aspects of different impacts on human health, the natural environment, and resource availability.

REDUCING WATER FOOTPRINTS AND UPGRADING WATER VALUE CHAINS

Our impact analysis will identify which processes contribute most to the water footprint and are the least eco-efficient. Using best practice and innovative technologies can often reduce the water footprint and improve eco-efficiency. We can model scenarios and compare the result with the baseline.



Comparing results of technologies to improve eco-efficiency in a dairy water value chain

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