

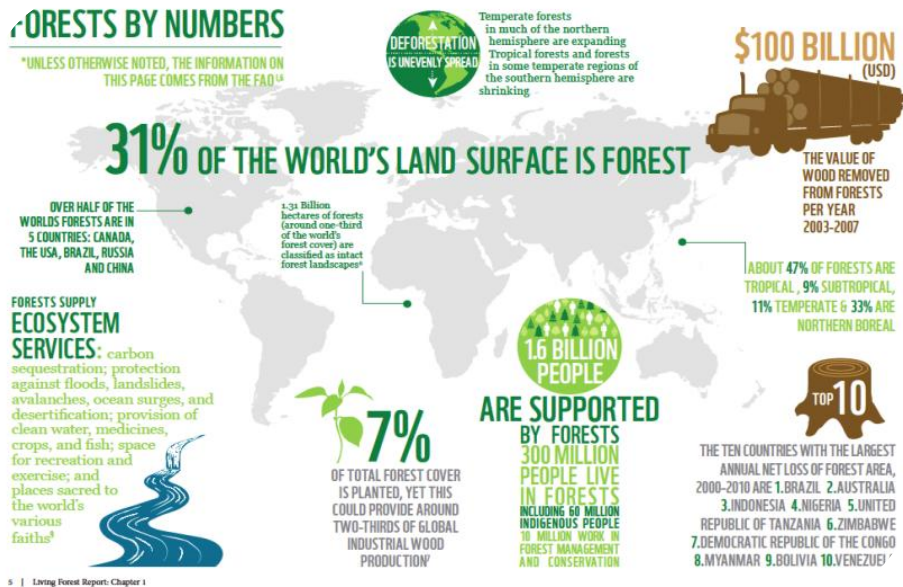
Wrapping the solution – eco-efficiency, carbon footprint, water footprint

Water webinar 12.03.2013

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Environmental communication is a challenge to the industry



1. Simplified science-based indicator
 - Results and communication should be science-based, hence easy-to-communicate indicators are needed
2. Knowledge causes pain – too many indicators and methodologies available
3. The entity matters
 - A tool-kit of methods should be used

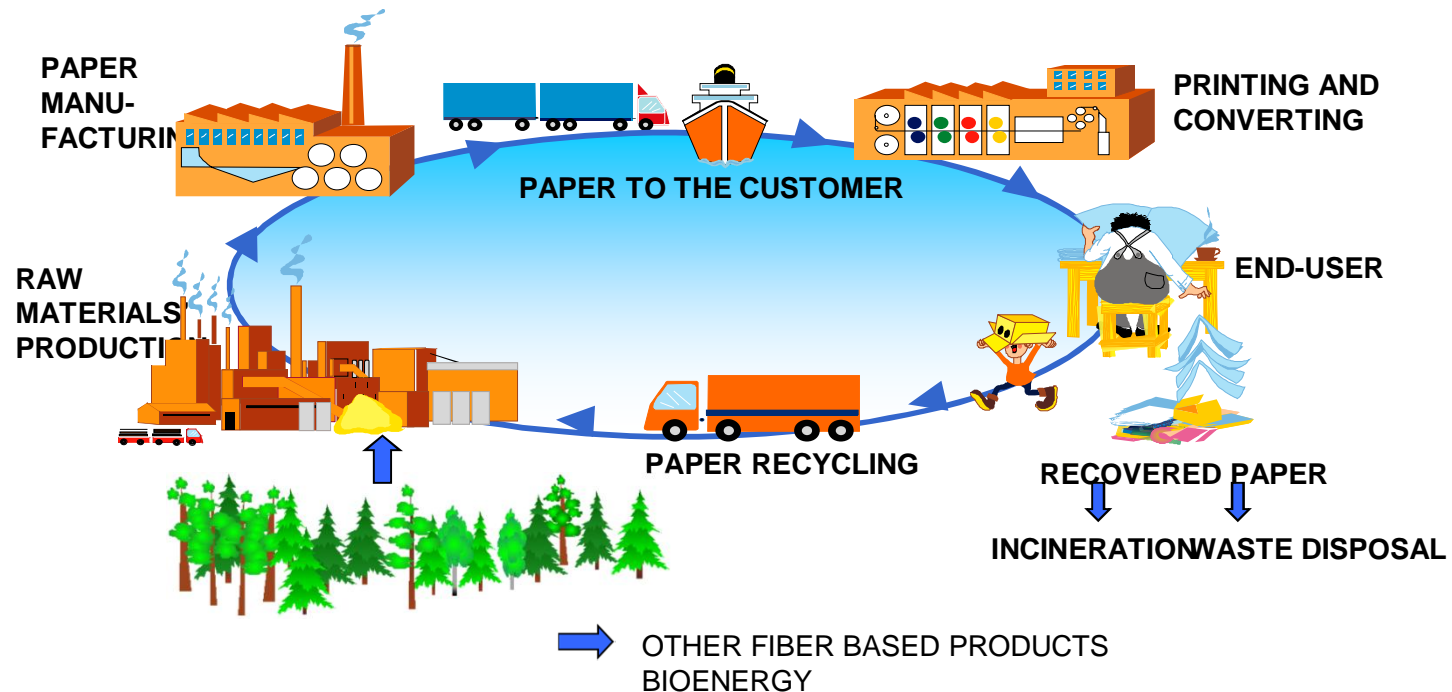
Simplified science-based solution

Life-cycle thinking should be the basis of the sustainability indicators

LCA is based on inventory (eco-balance)

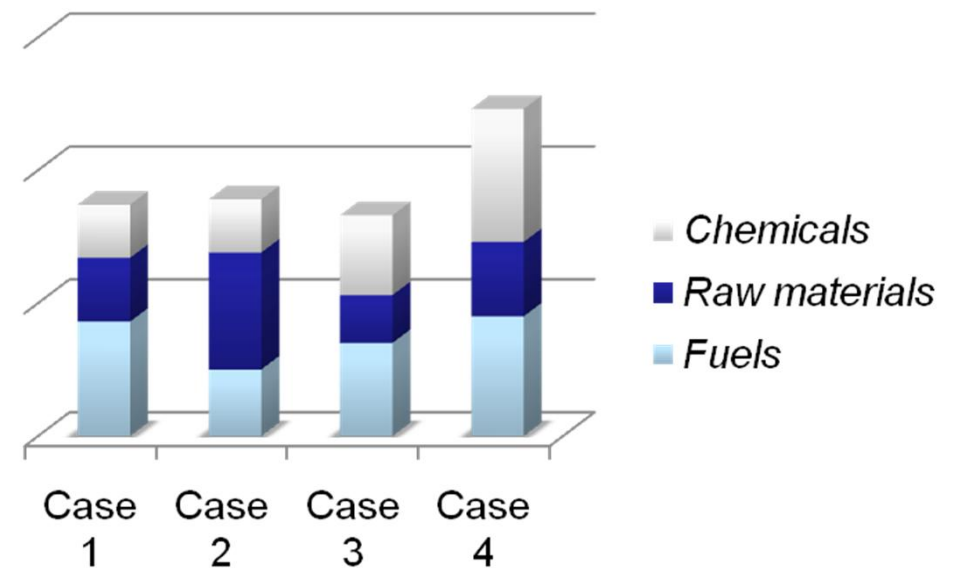
Inventory is based on product value chain

Value chain includes e.g. energy, chemical, raw material use and emissions in a transparent way



Applications for environmental tools and communication

- Strategic decision making
- Product and process development, product benchmarking
- Logistics optimization
- Educational purposes
- Marketing, customer communication
- Ecolabelling, Product declarations

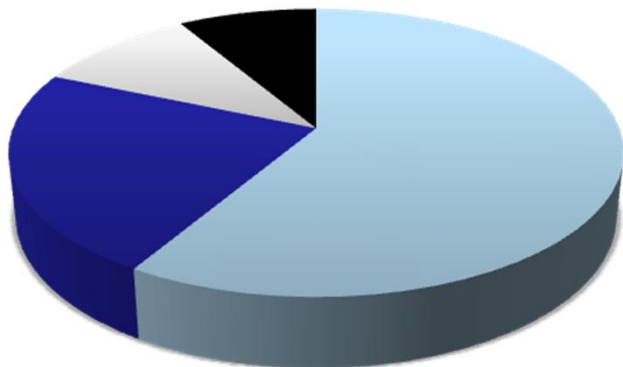




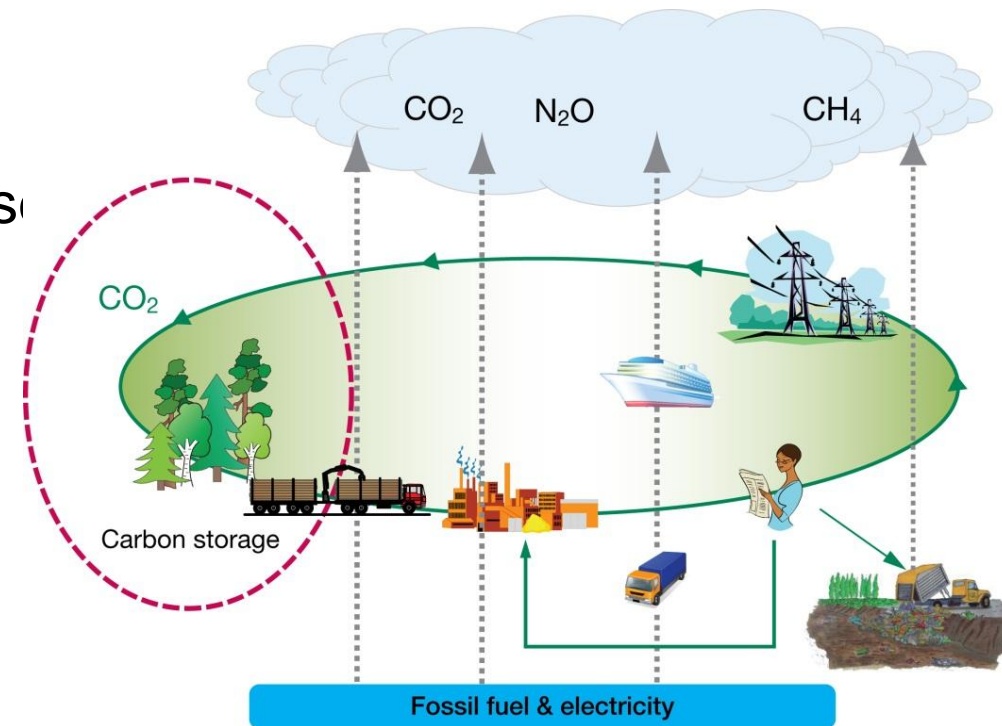
Carbon footprint

- Carbon footprint is the amount of greenhouse gases produced during product's life cycle
- Product-based carbon footprint calculations for different industrial sectors

Carbon footprint (CO_2 eq / ton products)



- Energy prod.
- Raw material supply
- End of life
- Transport



Other environmental indicators

Land use

Productive land is becoming locally limited resource with the current increase in population and raw material consumption, especially with biomass production for food, feed, fibre and fuels and ecosystem services

Biodiversity

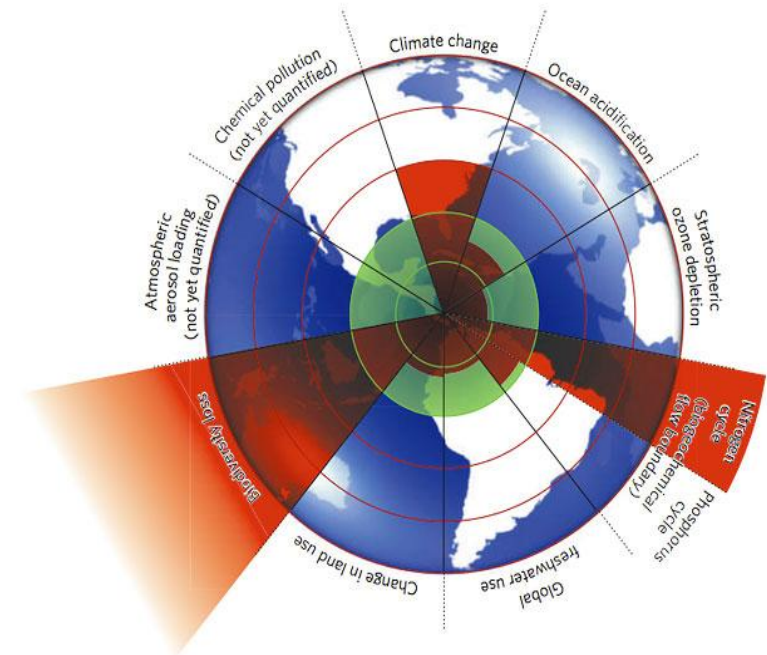
Will be the next major issue.

Waste Footprint

Expresses efficient material recycling and re-use

Social indicators & ethics

Needed in sustainability evaluation. Under development



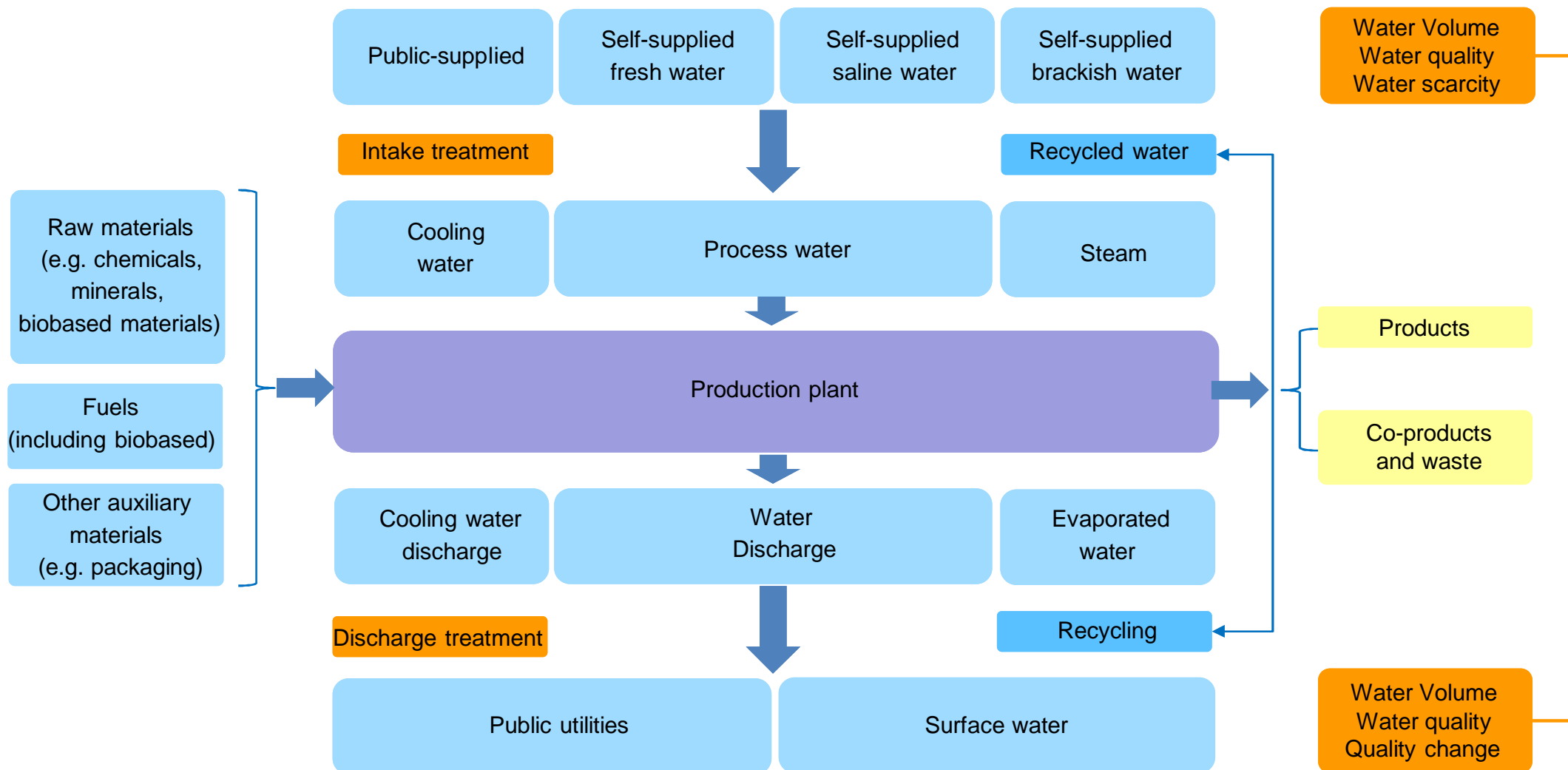
A safe operating space for humanity
- Planetary boundaries (Rokström et al 2009)

Eco-efficiency: linking environment and economics



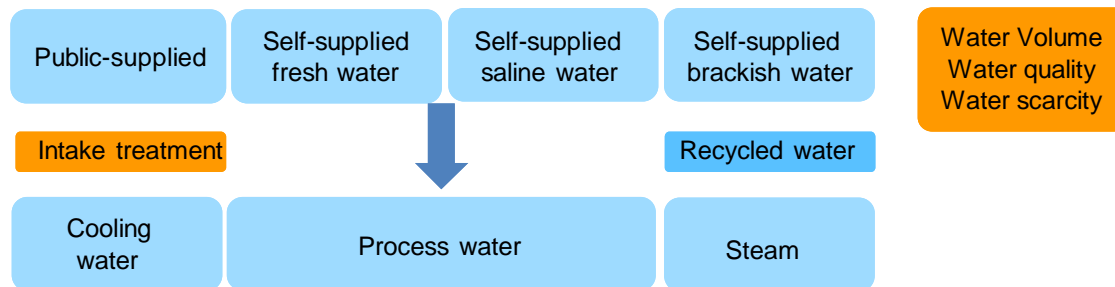
- Links environmental and economic aspects together: to create more value from less with less impact
- Indicator to assess energy, material and resource use and to evaluate technology
- WBCSD (World Business Council for Sustainable Development): company examples of value-added energy and material use due to company's eco-efficiency
- Eco-efficiency assessment shares many important principles with LCA such as life cycle perspective, comprehensiveness, functional unit approach and transparency. Standardized method: ISO 14045

Framework for industrial water eco-efficiency



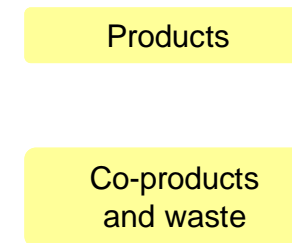
Industrial water eco-efficiency, examples of economic data

Water intake



- Availability, price and sufficiency of water
 - Water use permit and its terms
 - Scarcity factors
- Acquisition cost (water source)
- Treatment cost (water quality vs. process needs)
- Initial investment cost, operating cost, (residual value)

Final products and waste



- Water footprint / eco-efficiency branding
 - Local/global label
 - Willingness to pay for low water footprint
 - Negative publicity in water issues may decrease sales and market value
- Water content
 - Volume, mass
 - ->Transportation costs
- Allocation of indirect water consumption and indirect water-related costs is challenging

Tool-kit of methods

- Environmental indicators like water footprint and carbon footprint are widely used to perform sustainability of product, process, technology or company.
- Industry needs simple indicators or footprints to help their environmental communication but a wider sustainability view is often lacking if a single footprint is used.
- In many industrial processes water footprint is linked with energy use and most likely economic savings will be gained in water efficient process. Furthermore, carbon footprint, that is the indicator to show GHG emissions from e.g energy production, will be reduced.
- Depending on the industrial case in question, there are also interactions between water, land use, resource use and/or waste management. The entity matters and a tool-kit of indicators should be used.

Examples of research activities and services

SUSTAINABILITY
ASSESSMENT FOR NEW
PRODUCTS AND
TECHNOLOGIES

LIFE CYCLE
ASSESSMENT
METHOD DEVELOPMENT
CRITICAL REVIEWS
(ISO14040-44)

SUSTAINABILITY
INDICATORS

ECO-EFFICIENCY

CARBON FOOTPRINT
(ISO14067)
WATER FOOTPRINT
(ISO 14046)

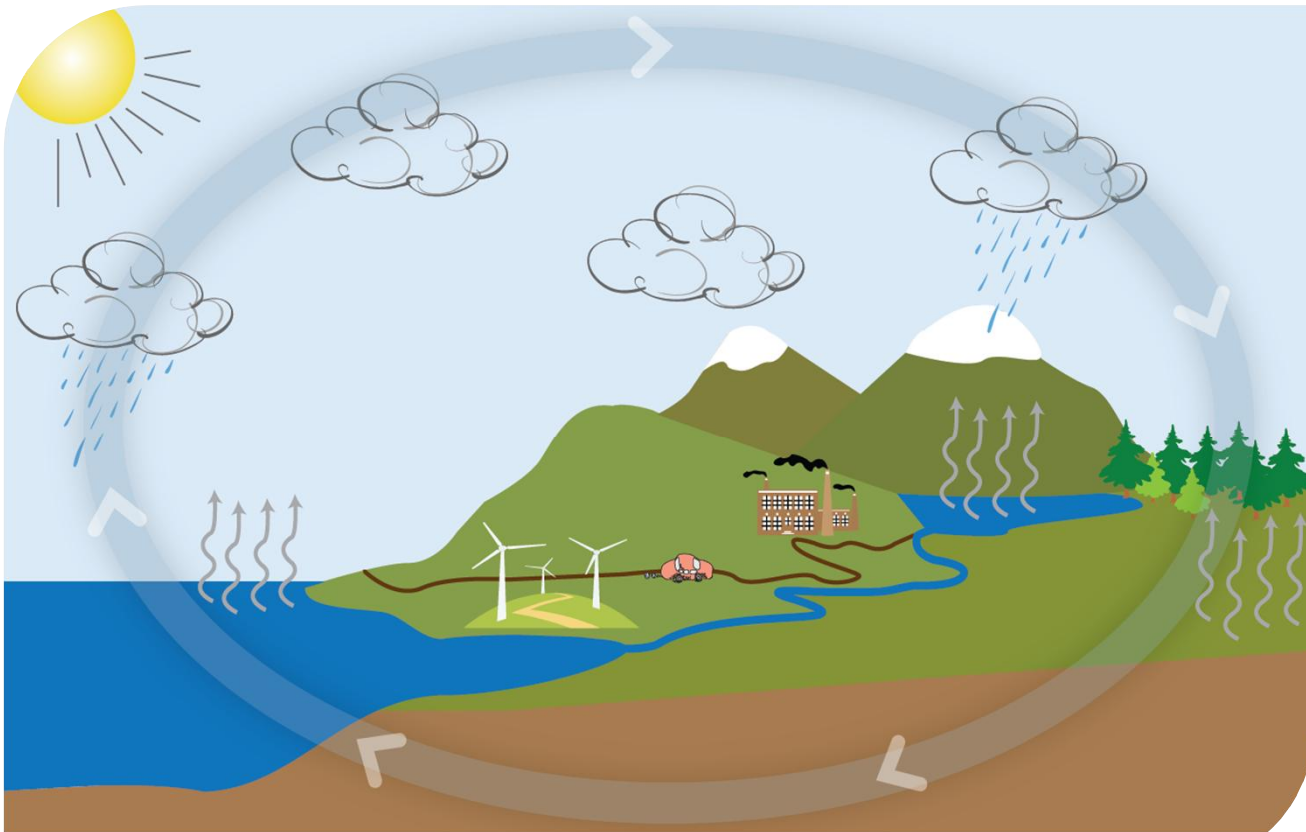
LCA SOFTWARE

ECO DESIGN
DESIGN FOR
ENVIRONMENT

ENVIRONMENTAL
PRODUCT
DECLARATION

MATERIAL FLOW
ANALYSIS
ENERGY FLOW
ANALYSIS





Thank you!
**For more information on
the topic, please contact**

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