



What is LCA? ISO overview

Nydia Suppen



- ✓ **Technically credible** as ISO standards represent the sum of knowledge of a broad pool of international expertise and stakeholders
- ✓ **Fulfill stakeholder needs** as the ISO standards development process is based on international input and consensus
- ✓ **Facilitate the development of uniform requirements** as the ISO standards development process is built on participation by its national member institutes from all regions of the world
- ✓ **Promote efficiencies** when the same standards are implemented across markets, sectors, and/or jurisdictions
- ✓ **Support regulatory compliance** when the standards are used to meet market and regulatory needs
- ✓ **Enhance Investor confidence** because the standards can be used for conformity assessment such as by audit, inspection or certification. This enhances confidence in products, services and systems that can be demonstrated to conform to ISO standards and provides practical support for regulation.



ISO International Standards

practical tools for addressing climate change



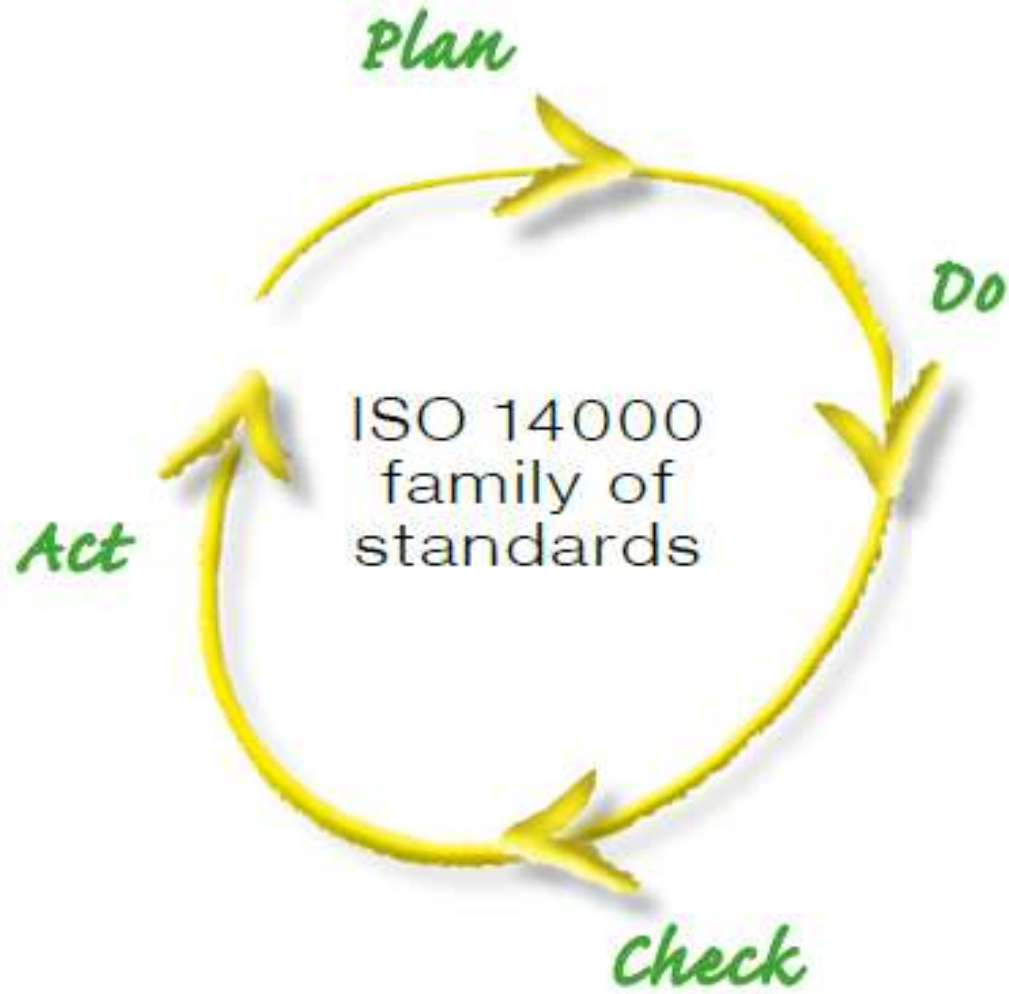
ISO & water

Global solutions to global challenges



Technical/Subcommittee		Chair	Vice-Chair	Secretariat
TC	Technical Committee	Canada	Brasil	Canada
SC1	Environmental Management	UK	Indonesia	UK
SC2	Environmental Auditing	Netherlands	Brazil	Netherlands
SC3	Environmental declarations	Australia	Zimbabwe	Australia
SC4	Environmental performance	USA	Argentina	USA
SC5	Life Cycle Assessment	Germany	Singapore	France
SC7	GHG management	Canada ¹	na	Canada ²

1. Canada and Malaysia.
2. SC7 Secretariat with China



ISO 14001:2004

ISO 14004:2004

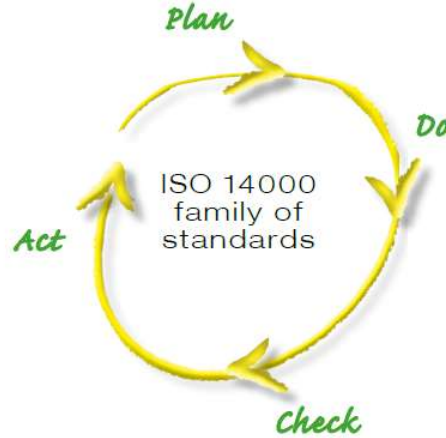
ISO 14005

ISO 14006

ISO/TR 14062:2002

ISO 14050:2009

ISO Guide 64:2008



Plan



Do



ISO 14040:2006

ISO 14044:2006

ISO/TR 14047:2003

ISO/TS 14048:2002

ISO/TR 14049:2000

ISO/14051

ISO 14045

ISO 14064- 1:2006

ISO 14064- 2:2006

ISO/TS 14067

ISO/AWI 14069

ISO 14020:2000

ISO 14021:1999

ISO 14021:1999

ISO 14025: 2006

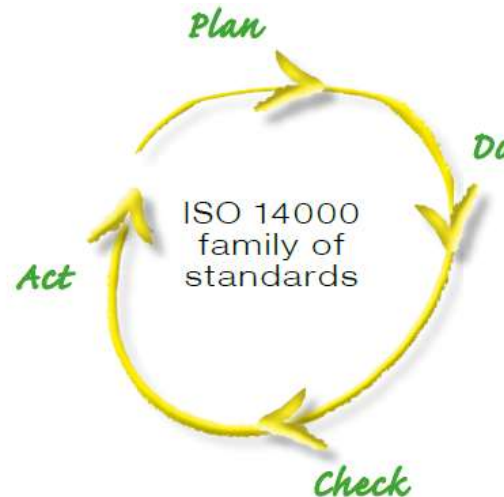
ISO/ 14033

ISO 14063:2006

Act



Check



ISO 14015:2001

ISO 14031: 1999

ISO 19011:2002

ISO 14064-3:2006

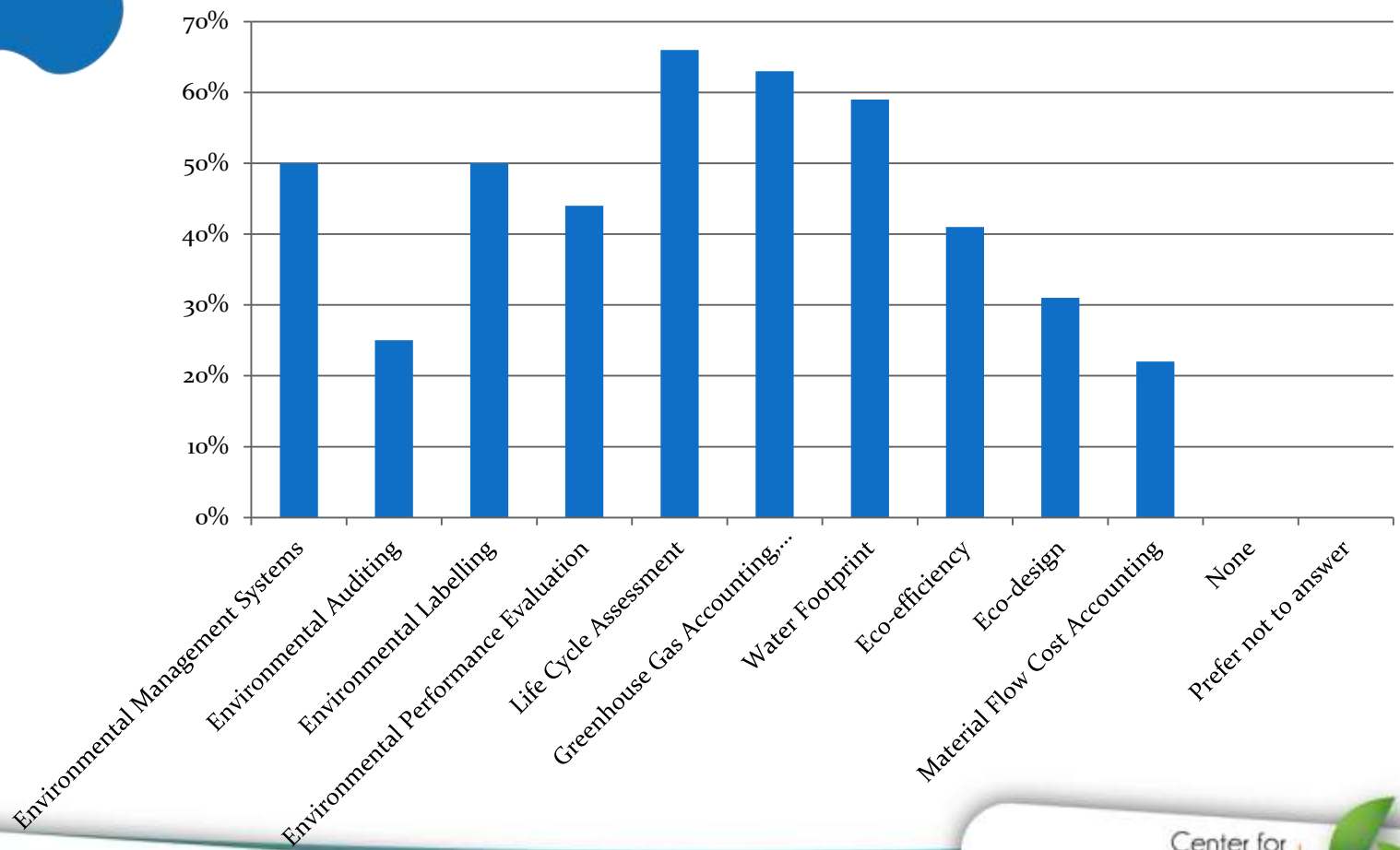
ISO 14065:2007

ISO 14066



ISO TC 207 – Environmental Management Systems

Q. Interest in current ongoing standardization activities:



Internal ISO TC 207 Stakeholder Forum Survey, 2012
59 – both external liaison member organizations and a few key stakeholder currently not members
30 organizations submitted surveys ~51%



Evolution of LCA application within TC 207

- ✓ “Single-issue LCAs” like carbon footprinting (ISO 14067) or water footprinting (ISO 14046)
- ✓ “Beyond environment LCAs” like life cycle costing MFCA (14051), and eco-efficiency assessments (ISO 14045) or even life cycle sustainability assessments
- ✓ “Beyond product LCAs” like scope 3-type LCAs of organizations (ISO 14072) or sector-based IO-LCAs, “Beyond quantification LCAs” like type III environmental product declarations (ISO 14025 2006) or other types of environmental labels and claims



TC207 – Environmental Management Systems

SC 5 – Life Cycle Assessment

- ✓ **TS 14071** The proposal to develop a Technical Specification “Environmental Management—Life Cycle Assessment Requirements and Guidelines for Critical Review Processes and Reviewer Competencies” was motivated from the discussion on conformity assessment of, e.g., the carbon footprint standards or upcoming labeling initiatives.
- ✓ **TS 14072** “Life Cycle Assessment— Additional Requirements and Guidelines for Organizations.” The main goal is to provide additional guidance to organizations for an easier and more effective application of ISO 14040 and ISO 14044 on the organizational level including the advantages that LCA may bring to organizations.

–Phillippe Osset (Francia), Chen Liang (China)



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Relation LCA (ISO 14040) and Environmental Product Declaration (ISO 14025)

- An EPD is an environmental declaration to communicate LCA results.
- Product category rules (PCRs) are a set of specific rules, requirements and guidelines for developing EPDs for one or more product categories. PCRs set the guidelines for the goal and scope of the EPDs LCA-based information, the rules for including any additional information, and the report format of the EPD.
- Alignment between 14040/44 and 14025 achieved in last revision.



- Secretariat:
 - Marcel Schulze, SNV, Switzerland
- Convener:
 - Sebastien Humbert, Quantis, Lausanne, **Switzerland**
- Co-convener:
 - Nydia Suppen Reynaga, Centro de Análisis de Ciclo de Vida y Diseño Sustentable, **Mexico**,

ISO 14046

Water footprint

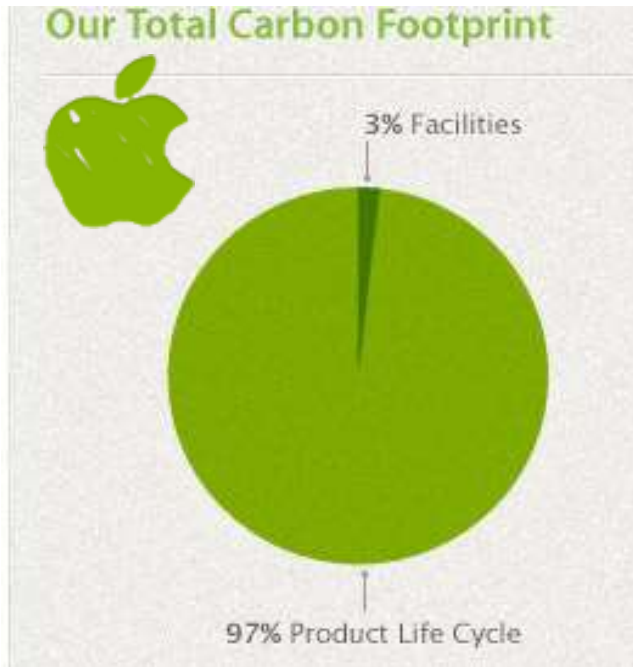




Relation LCA and Carbon Footprint (CF)

- A CF is an “LCA” with the limited focus on one impact category only, i.e. climate change.
- All methodological requirements and principles of LCA apply to CF (except for comprehensiveness).
- Current TS ISO 14067 contains a good share of ISO 14040/44 content.

...address the big impacts and aspects...



Amcor's greenhouse gas performance¹



■ Scope 1+2 GHG emissions intensity (per unit of production), as a percentage of the baseline
■ Scope 3 GHG emissions intensity (per unit of production), as a percentage of the baseline

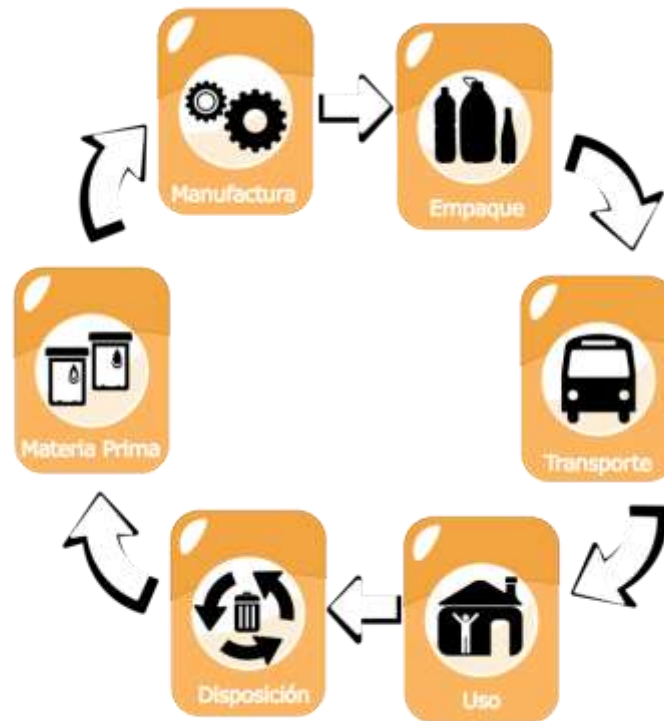
→ Task Group LCA for organisations
→ Task Group Critical Review

Finally...

- ISO 14040/44 are THE globally accepted standards for life cycle based environmental assessments.
- We strive to keep this leading position as the only globally relevant standard in the field.
- We appreciate the growing use of ISO 14040/44 inside and outside TC207.
- We work towards applying, improving, deepening and broadening of our core standards.



Life Cycle Assessment (LCA)



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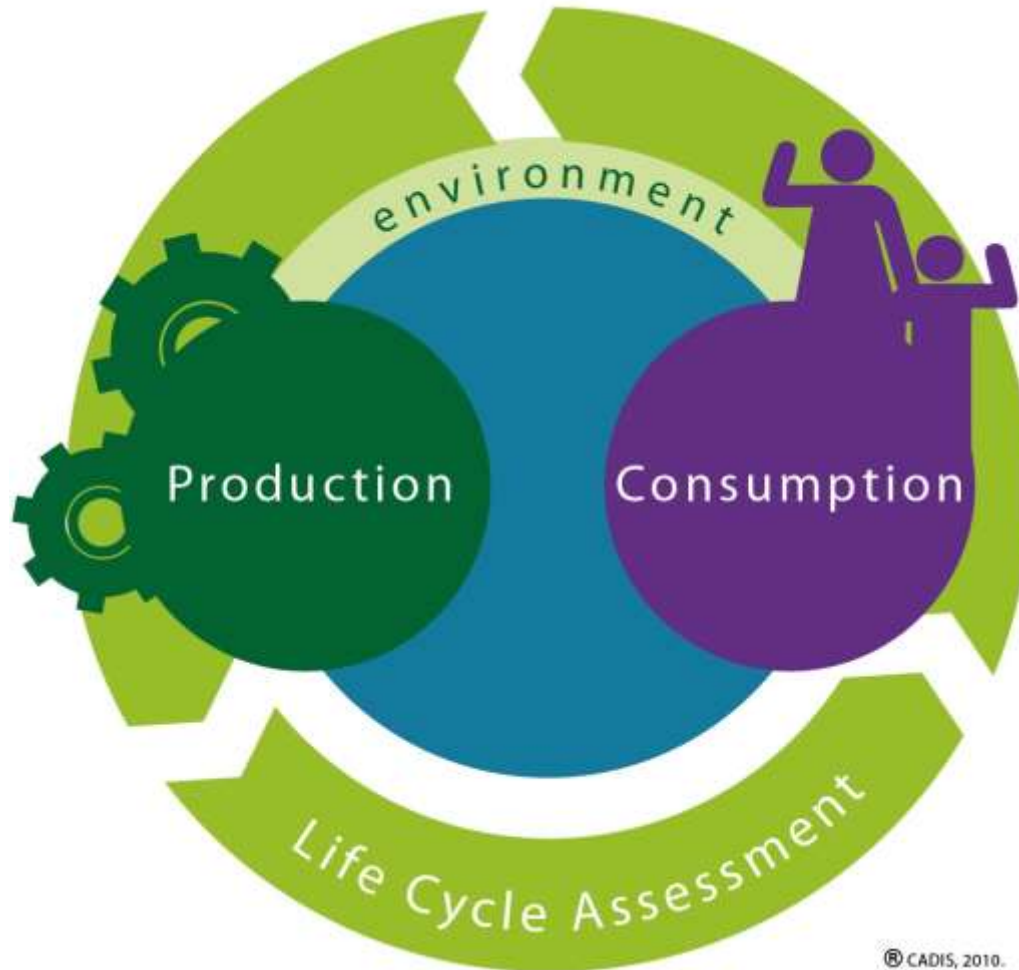


All that is manufactured has many consequences, focusing on an isolated problem does nothing to change all other effects. ”

*Daniel Goleman
Ecological Intelligence*



Life cycle thinking

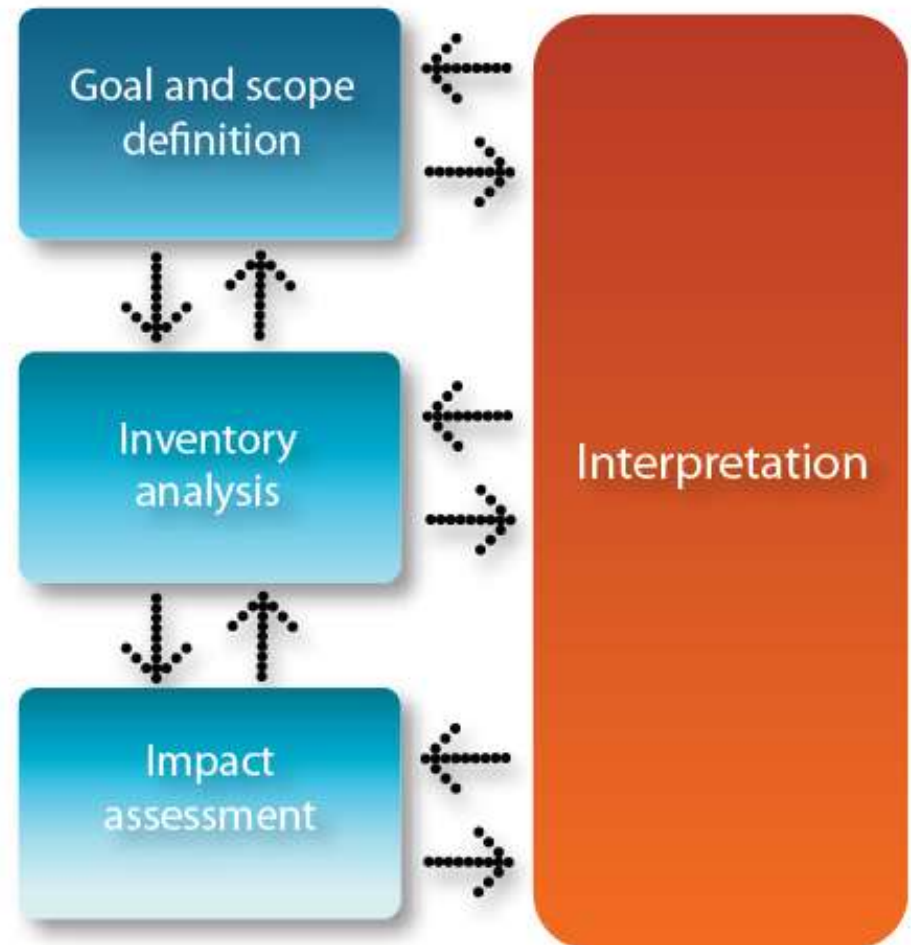


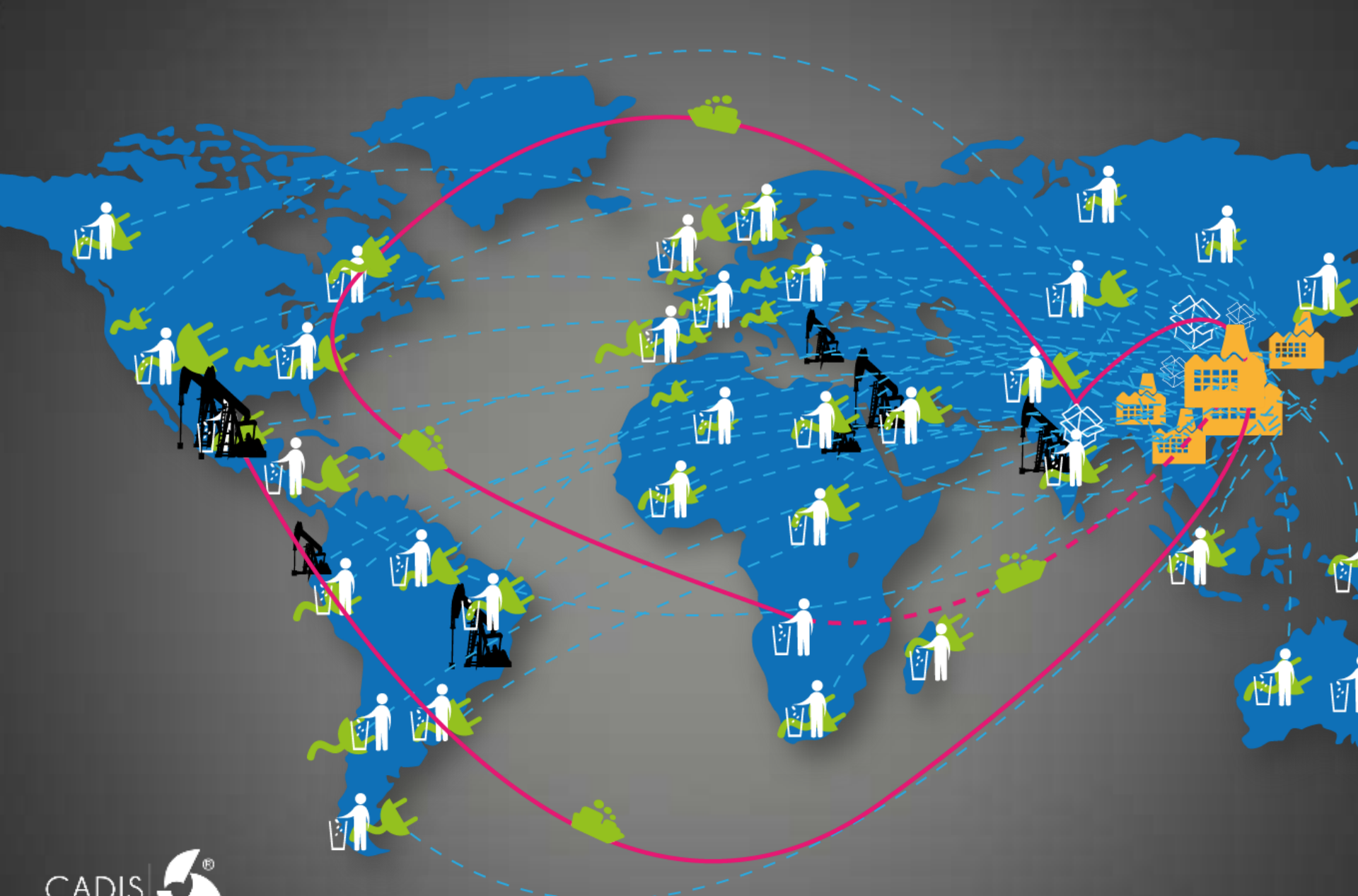
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“

LCA is a compilation and evaluation of the inputs, outputs and the potential **environmental impacts** of a product system throughout its **life cycle**





Life Cycle Assessment

pocket
LCA



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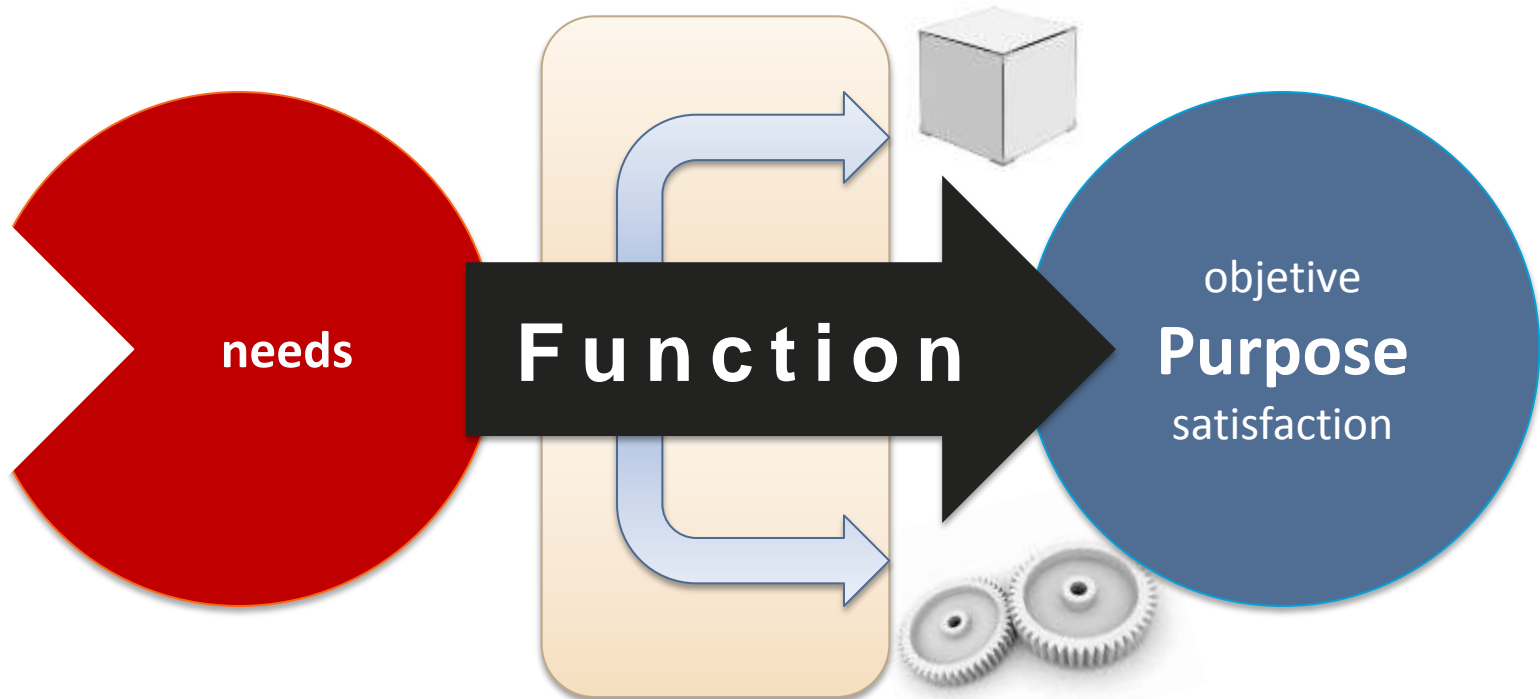


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Functional Unit



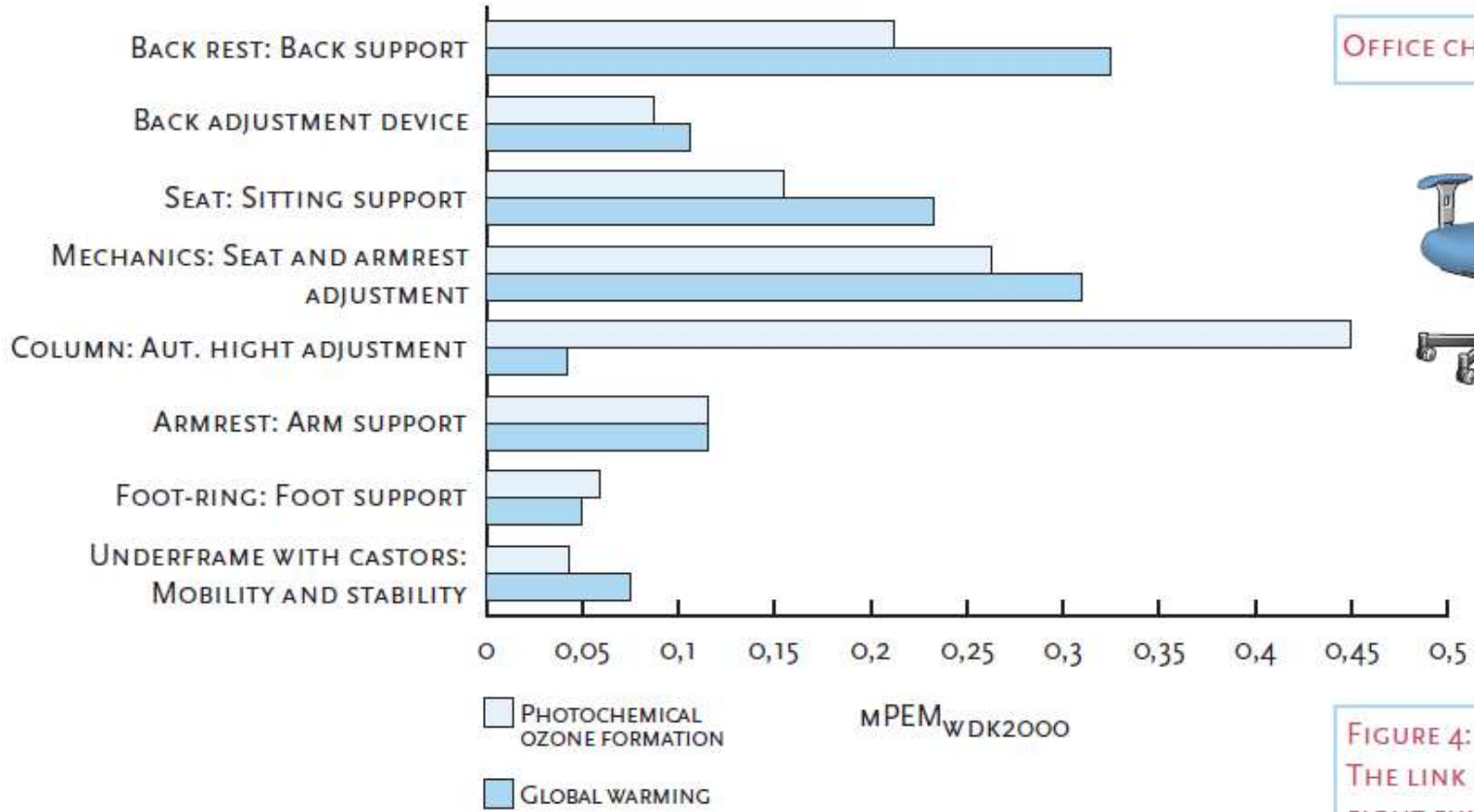
Plastic

Leather

Wood

Metal



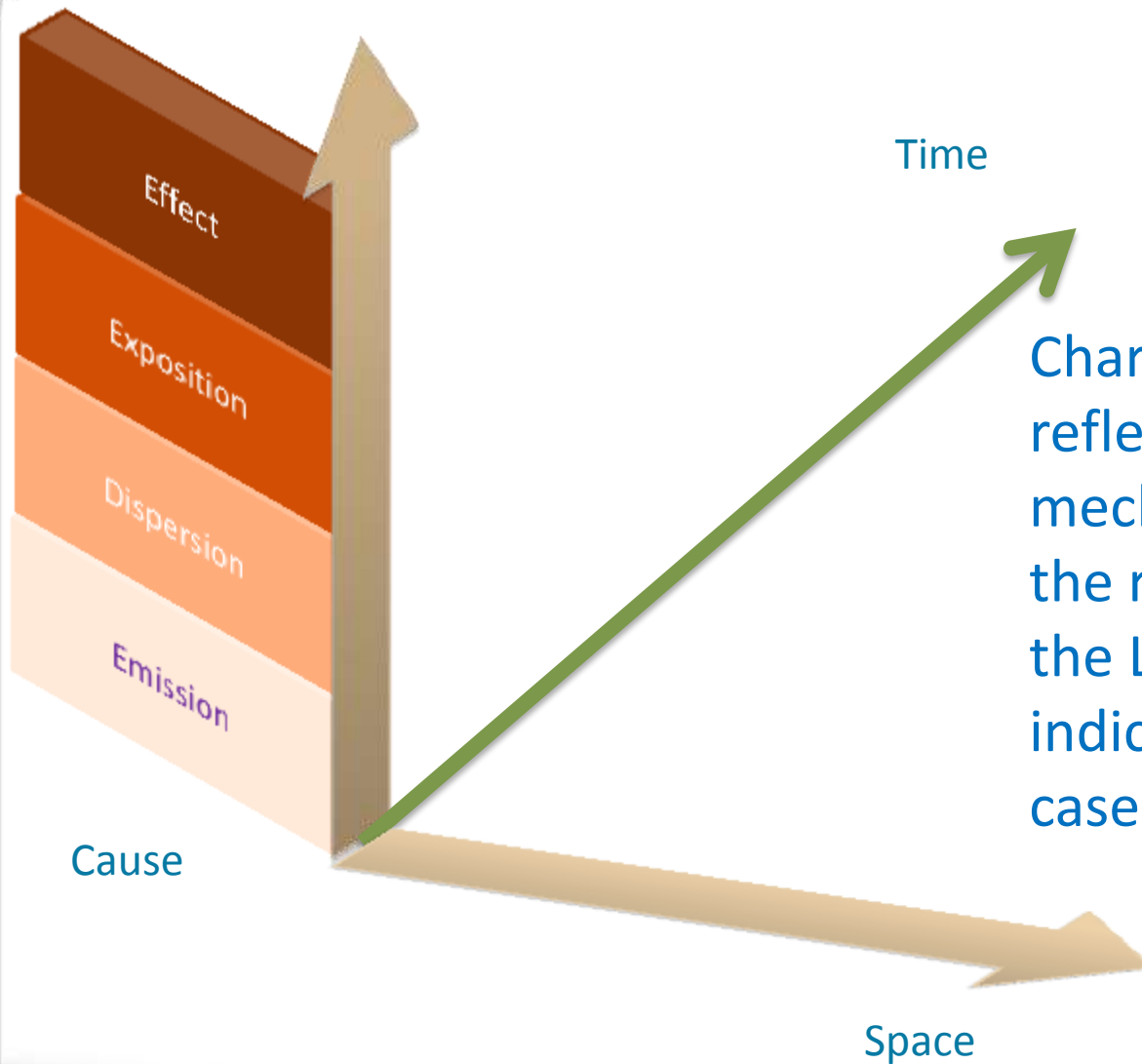


OFFICE CHAIR EXAMPLE



FIGURE 4:
THE LINK BETWEEN
EIGHT FUNCTIONAL
PROPERTIES AND TWO
SELECTED
ENVIRONMENTAL
IMPACTS

Characterization



Characterization models reflect the environmental mechanism by describing the relationship between the LCI results, category indicators and, in some cases, category endpoint(s).



Characterization

The environmental loads are quantified using a characterization factor by the amount emitted or consumed (life cycle inventory).

$$\text{Indicator result (Impact}_{\text{categ.}}) = \sum_i \text{Inventoryresult}(m_i) \cdot \text{characterization factor (cf)}_{\text{categ},i}$$

Characterization - An example

The emissions of a water treatment plant are:

These substances contribute to **global warming**



Sustance	Quantity (kg)
CO ₂	10
CH ₄	2

Impact category

Global Warming Potential=

$$(10 \text{ kg CO}_2) \times (1 \text{ kg CO}_2 \text{ eq}) = 10 \text{ kg CO}_2 \text{ eq}$$

+

$$(2 \text{ kg CH}_4) \times (22 \text{ kg CO}_2 \text{ eq}) = \underline{44 \text{ kg CO}_2 \text{ eq}}$$
$$54 \text{ kg CO}_2 \text{ eq}$$

Sustance	CF (kg CO ₂ eq)
CO ₂	1
CH ₄	22

Characterization Factor

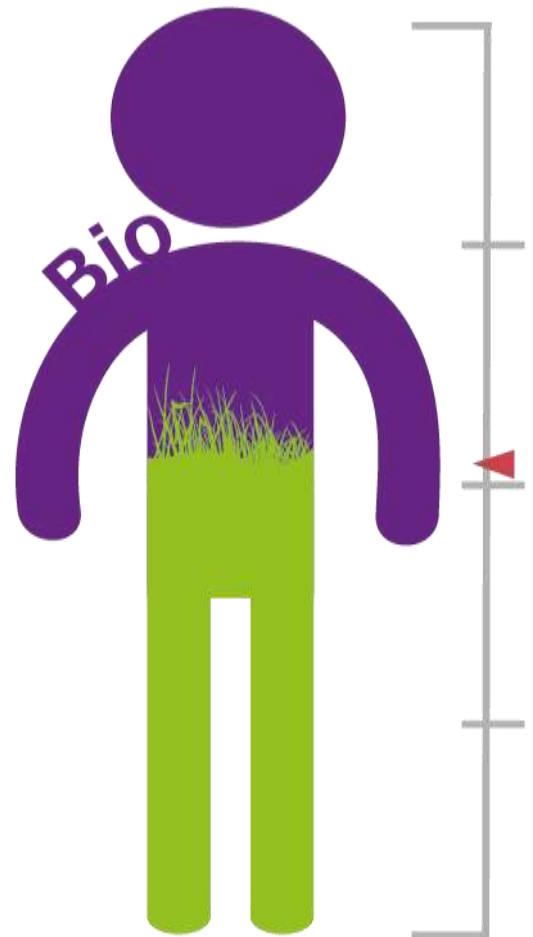
Category Indicator



Life Cycle Assessment

- product from **cradle to grave** (vertical integration)
 - total picture; **avoidance of problem shifting**
- all types of **impact** (horizontal integration)
- role of **functional unit**
 - for comparability of different product systems
- integration over **space and time**
- **standardised** in ISO (14040 series)





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