CENTRE FOR SUSTAINABLE CONSUMPTION AND PRODUCTION

Framework on life cycle methods for companies – taking the needs of different company types into account

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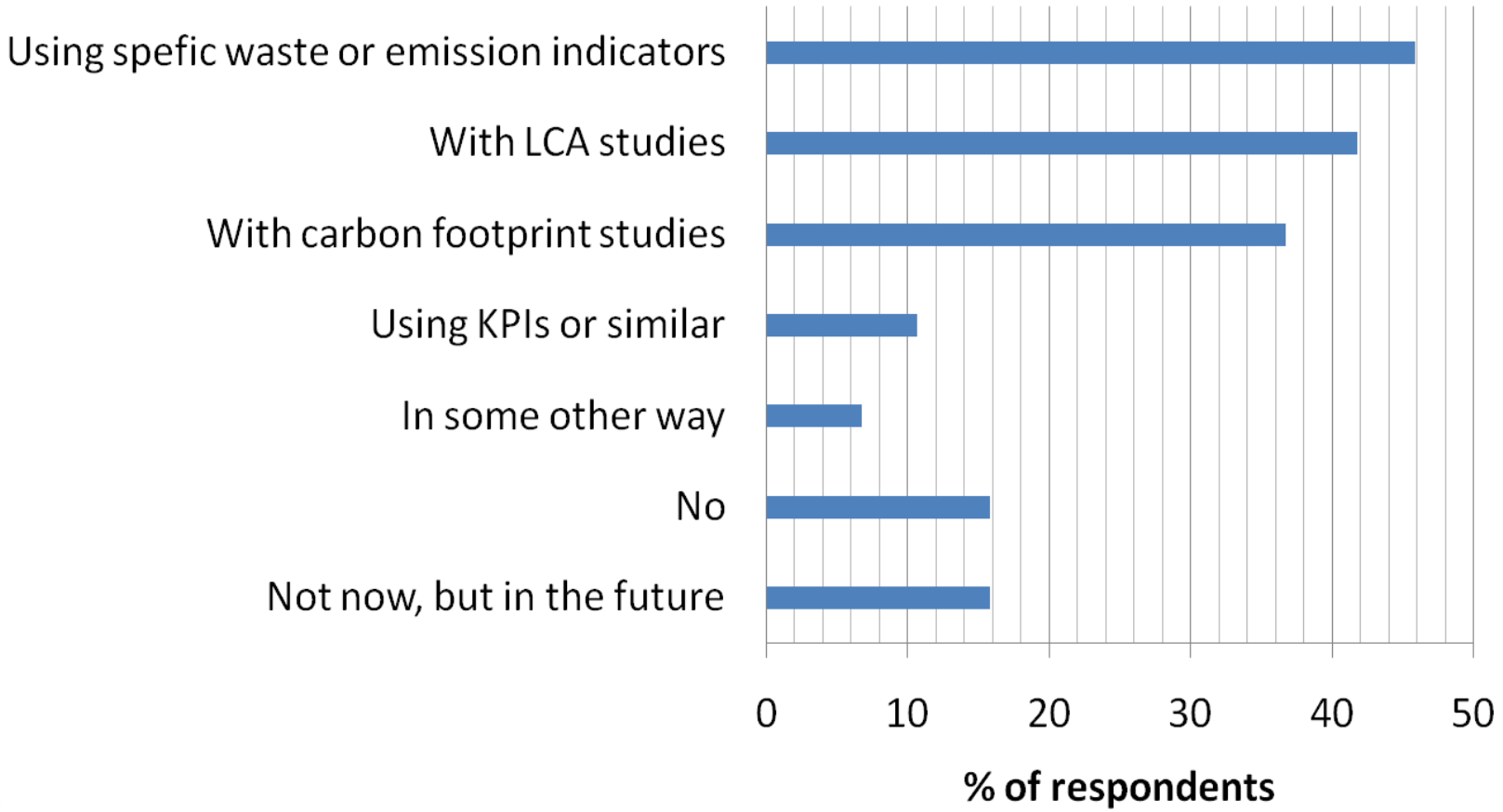
SYKE

The objective

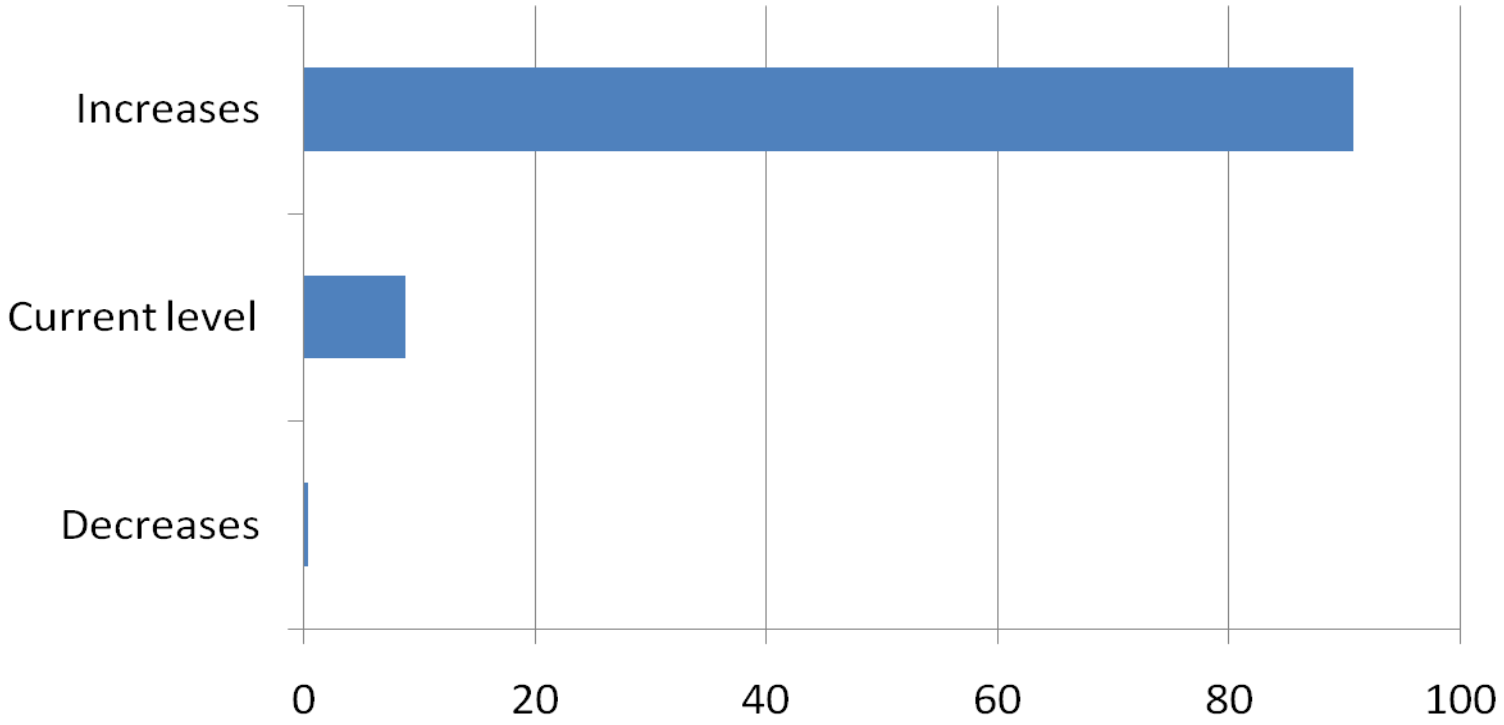
- to develop a framework to guide, which are the most feasible life cycle methods and best practices in their use from company perspective

Does your company measure products' environmental performance; how?



Österlund, H. 2010. Tuotelähtöinen ympäristöjohtaminen Suomessa. Nykytila ja kehitystarpeet. Motiva Oy.
Available at: www.motiva.fi/files/3672/Tuotelahtoinen_ymparistojohtaminen_Suomessa.pdf

Demand for product oriented environmental management in future



Österlund, H. 2010

- **65%** of respondents can imagine a situation, in which product development process is discontinued due to negative environmental performance
- About **90%** of respondents pose demands on environmental properties to subcontractors
- About **90%** of respondents face demands on environmental properties from their customers

Österlund, H. 2010

Drivers for environmental management in companies

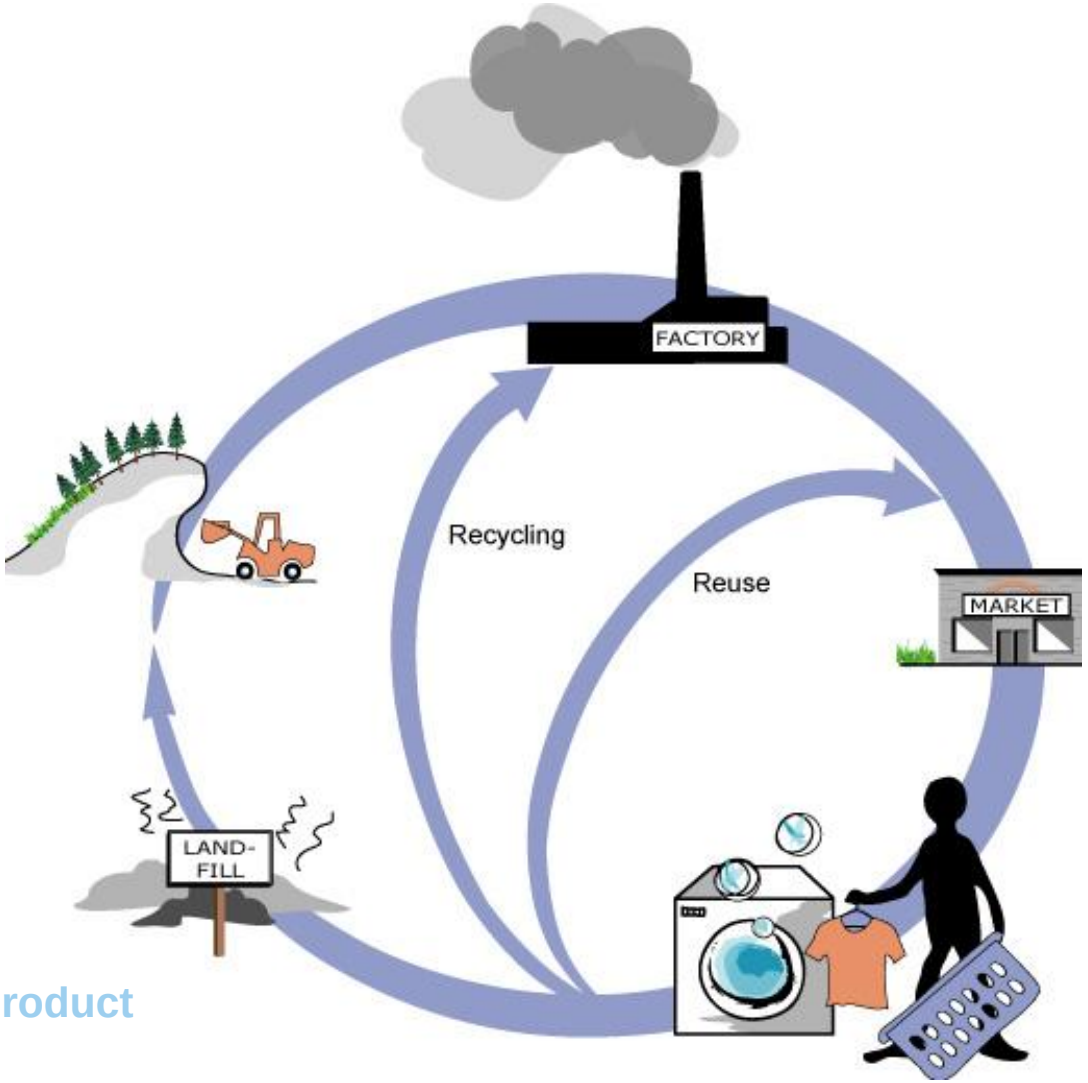
1. Legislation
2. Cost-efficiency
3. Customers' needs
4. Raw material prices
5. Company brand
6. Megatrends
7. Business opportunities
8. Environmental reporting

(source: interviews done within the FINLCA project)

Life cycle thinking is needed

… to support companies' **operational** and **strategic** decision making on environmental sustainability

Why guidance and the framework is needed?



Life cycle of a product

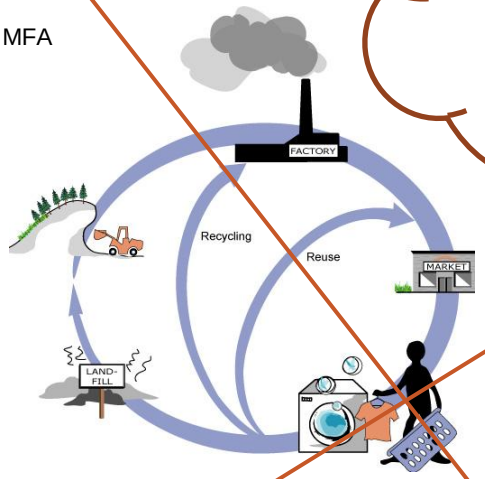
Why the framework is needed?

Life cycle methods…

- Life cycle thinking
- Life cycle assessment, LCA
- Streamlined LCA
- Thermodynamical methods
- Ecological footprint
- Carbon footprint
- Water footprint
- Material flow analysis, MFA
- EE-IO
- Substance flow analysis, SFA

Methodological challenges…

- Allocation
- Impact categories
- Uncertainties
- System boundaries
- Missing data
- ALCA
- Tools
- Indicators
- CLCA
- Impact assessment



+ standards and guidance (ILCD…)

Decision-making situations…

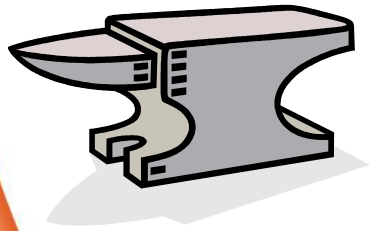
- Product development
- Benchmarking
- Communication
- Internal / external
- Future trends
- Past trends
- Strategic management
- Ecolabels
- Operational management

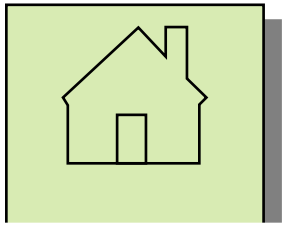
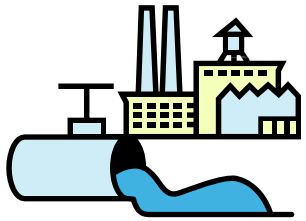
Different types of companies…

- Interested outsiders
- Forerunners
- Learners
- SMEs
- Economic sectors
- Global companies
- Unaware / not interested

Approach

- **Overview**: Life cycle (LC) methods
- **Theoretical part:**
  - land use, ecotoxicity, environmental aspects of nanomaterials, natural resources, uncertainties and missing data, and use of engineering methods.
- **Strategic life cycle management** improvement
- **Case studies** are related to diverse materials and sectors: metal materials, biomaterials, construction materials, process industries residues and wastes, and painting industry.
- **Synthesis:** development of the framework




Life cycle methods: current use, best practices and development needs

Gives an overall picture on:

- characteristics and potential uses of different life cycle methods
- different impact assessment methods, allocation and substitution methods for inventory data
- use of key performance indicators
- how input-output analyses and other methods such as, material, thermodynamic and energy analyses can be used to provide missing data

Is based on literature reviews, international guidelines and recommendations, and analysis of the research groups own experience.

- www.ymparisto.fi/syke/finlca -> julkaisut

Methodological considerations

- Challenges of *land use* and *use of natural resources*: still developing methodology, limited data availability, difficult to understand and communicate the results
- In LCIA of *hazardous substances* different models give differing prioritizations so care must be taken in model selection
- Life cycle aspects of *nanomaterials* or *–technologies* need to be evaluated on a case by case approach
- Dealing with *uncertainties* is necessary in decision-making.
- *Engineering metho*ds can help to estimate missing data, and improve the quality of assessment and reduce uncertainties.

- Taking these aspects into account need high expertise and resources for data compiling, modeling and interpretation of results

Case studies – examples of use in different decision making situations

- *New metal materials* – comparison of two different products for product development and also public communication
- *Bioproducts* – consumer choice between two products based on one environmental aspect
- *Construction industry* – sectoral assessment of life cycle thinking principles and crucial factors
- *Use of process industries' residues and recycled materials* – multi - sectoral assessment to improve life cycle environmental performance with industrial ecology perspective
- *Painting industry* - design of a tool for internal improving eco-design processes and understanding of environmental aspects

Synthesis

- Many problems with assessing the life cycle environmental impacts still remain unsolved
- Companies are on different level of know-how and capability to utilise life cycle methods – LCA is often too complicated and demands too much resources
- Case by case consideration of appropropriate methods and other choises are always needed
- General principles on choosing the most feasible methods and best practices from company perspective for different types of strategic decision making situations will given in our final report (to be published at the end of 2011)

Aknowledgements & more information

Life Cycle Assessment Framework and Tools for Finnish Companies (FINLCA)

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