

1 TITLE

LCA Guide for Decision Support 2

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2 LCA GUIDE 2ND EDITION ©CML

*First edition: 1992

*Update commissioned by

- Ministry of Housing, Physical Planning and Environment
- Ministry of Transport, Public Works and Water Management
- Ministry of Economic Affairs
- Ministry of Agriculture, Nature Management and Fisheries

Task: update on basis of existing material; with simplified option

3 LCA: WHY?

- Incorporating environmental considerations, in decision making on products
- Applications central in the following decision situations:
 - Exploration of options
 - Company-internal innovation
 - Sector-wide innovation
 - Strategy development
 - Test/comparison
 - Comparative assertions
- Structural decisions with long term perspective
- Discussion platform, also for policy development

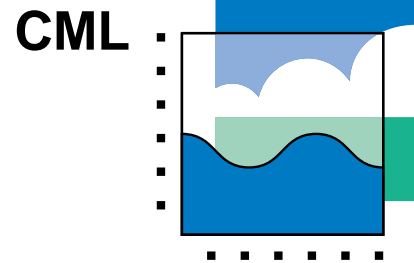
4 A NEW LCA GUIDE: WHY?

- new ISO standards on framework and elements to be considered for each phase
- SETAC Working Groups, two rounds
- Clearer demarcation with other tools, e.g. RA, CBA (CHAINET)
- basic methodological unclarity
 - when "anything goes", any outcome may be produced

Therefore update on:

- numerous new and diverging developments (eg allocation; impact assessment)

Goal: *“uniform LCA method, at different levels of detail,
appropriate for main decision situations”*



5 LCA GUIDE 2: FIVE MAIN PRINCIPLES

- practicability
- flexibility
- transparency
- ordering diversity
- don't go beyond the possible
- [relations to ISO always explicit]

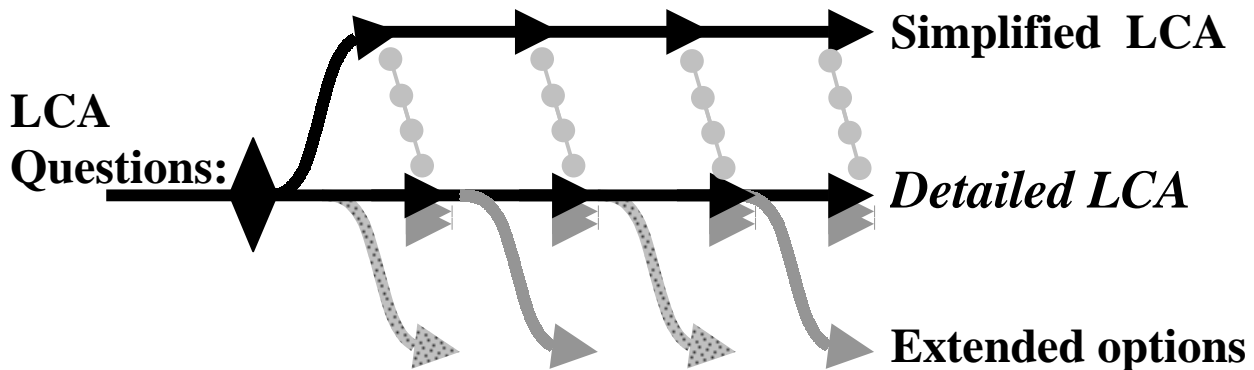
Each item worked out below

6 PRACTICABILITY

All steps operationally 'do-able':

- handling loops
- handling multifunctionality
- full impact assessment method
- fate modelling with time indication
- other impact assessment methods supplied additionally
- software support:
 - matrix inversion, explicit allocation, perturbation analysis
 - ©CMLCA, free downloadable
 - no commercial use, no support

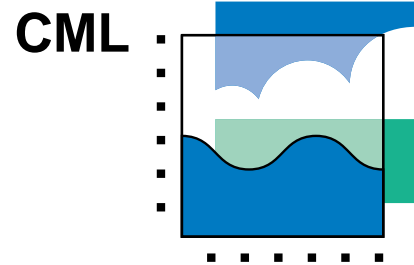
7 FLEXIBLE BUT SYSTEMATIC



- one base line method: detailed LCA line with sensitivity analysis related to level
- one base line method: simplified LCA line
- sensitivity analyses advised
- extended options: partly specified, partly indicated
no independent "extended method" line
- real situations always more complex (eg sunk cost)

8 TRANSPARENCY

- documentation requirements per LCA-phase, worked out
- simplified/detailed/extended continuum, recognizable and comparable
- updatability of operational part of methods
- old versions and new versions of method comparable
- different methods directly comparable
- still main elements lacking in all software packages



9 ORDERING DIVERSITY

- descriptive or change oriented? Hot discussion!
change oriented for practical decision support
- spatial detail
 - only limited spatial detail possible
- “time detail”: comparative static or dynamic?
 - comparative static equilibrium modelling
 - steady state inventory modelling
 - impact assessment still diverse)
 - really dynamic not possible
- default: global and time integrated
locational and temporal aspects:
 - additionally
 - partially
- splitting up procedure and method
many types of iterations
Choices made and starting points formulated

10 DON'T GO BEYOND THE POSSIBLE / BROADLY ACCEPTABLE

- no economic modelling (partial equilibrium, AGE)
 - no dynamic modelling
 - no long term dose-effect curves available generally
 - no endpoint modelling (compare EI99, example climate change)
 - no “objective” weighting (but subjective examples given)
- ‘Conservative’ but comprehensive approach

11 HIGHLIGHTS FROM THE GUIDE:

- decision situations: operational functionality prime task
- foundations and operational choices related
- multifunctionality and allocation
full main method, with main sensitivity options specified
- cut-off principles: including IOA
- fate modelling (Mark Huijbregts, IVAM)
- interpretation, ordered and mandatory steps specified
- detailed LCA now most operational standard (we hope)
- simplified “5-days LCA”
- procedures made explicit

12 HIGHLIGHTS WORKED OUT 1:

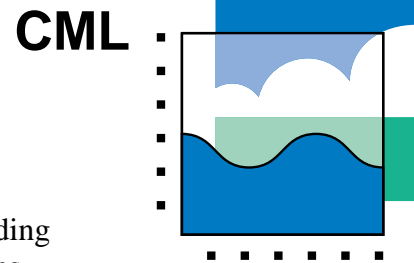
CUT-OFF PRINCIPLES

Problem in comparative LCA: *doing less seems better*

- leave out economic flows, and processes behind them
- leave out environmental flows

Solutions

- do **not cut off**, but **estimate** processes behind flows otherwise cut off
- **adapt normalisation** procedure for missing environmental flows



**13 HIGHLIGHTS WORKED OUT 2:
MULTIFUNCTIONALITY AND ALLOCATION**

Split two aspects of allocation:

- first inventory modelling of product system, including physical causalities, identifying allocation problems
the better the model, the more allocation problems
- then solving allocation problems

Modelling and substitution

- Inventory modelling **without** economic mechanisms:
then no substitution and **no** avoided burdens
- Inventory modelling **with** economic mechanisms:
then substitution, but hardly ever 100%; only **partially** avoided burdens

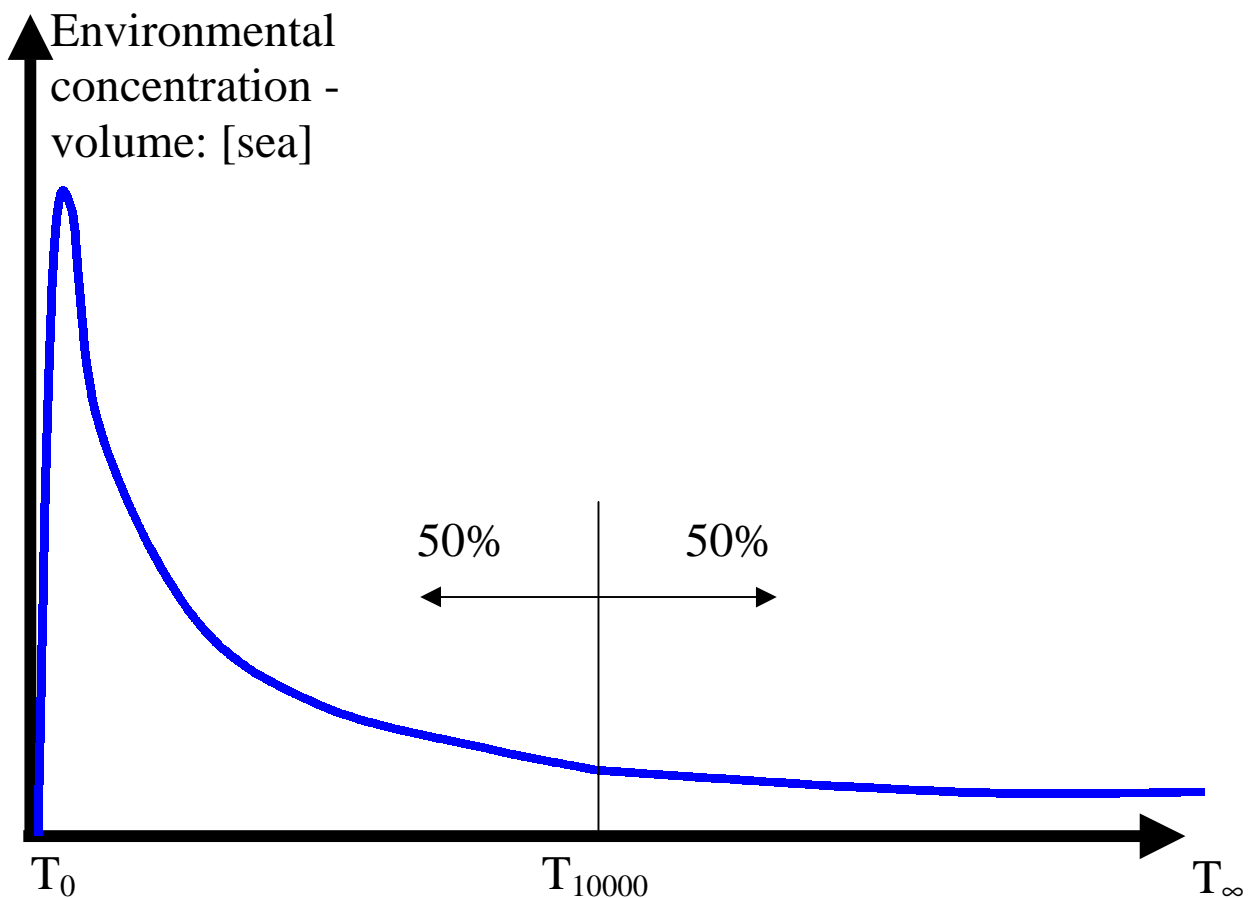
Full substitution:

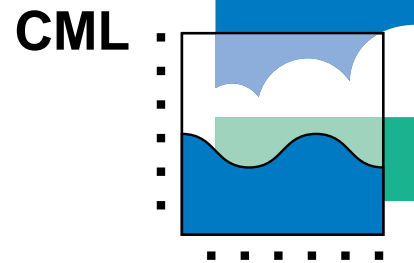
- “artificial” allocation type of solution to multifunction problem

Economic allocation

- Value creation as driver of each process:
-shares in sales as basis for allocation
-prices and shadow prices

**14 COMPLICATIONS OF PRECISION:
HEAVY METALS IN MULTIMEDIA MODELLING
FOR TOXICITY ANALYSIS**





- How to deal with time when assessing emissions?
- Further research (always) needed

15 DELIVERABLES

LCA GUIDE 2

- Part A, guidelines for all steps distinguished for each LCA-phase simplified, detailed, extensions, examples
- Part B, operational elements (like impact assessment methods and factors)
- Part C, scientific backgrounds
summer; Part B regular updates, Part A & B every few years

NORMALISATION DATA

- World, Europe, Netherlands, not other continents yet
september

WEBSITE

- All documents as *currently* and available
- Spread sheet with many operational IA-methods (*in progress*)
continuously open

SOFTWARE

- ©CMLCA
available now already, improvements added

website: <http://www.leidenuniv.nl/interfac/cml/ssp/>

16 GOAL REVISITED

“uniform LCA method, at different levels of detail, appropriate for main decision situations”

How far did we get?

LCA Guide 2:

- reflects now practicable state of the art,
- needs continuous update
- basic update ready this summer