



eLCAR

Goal definition

Second eLCAR Workshop

Aachen 9.10.2012

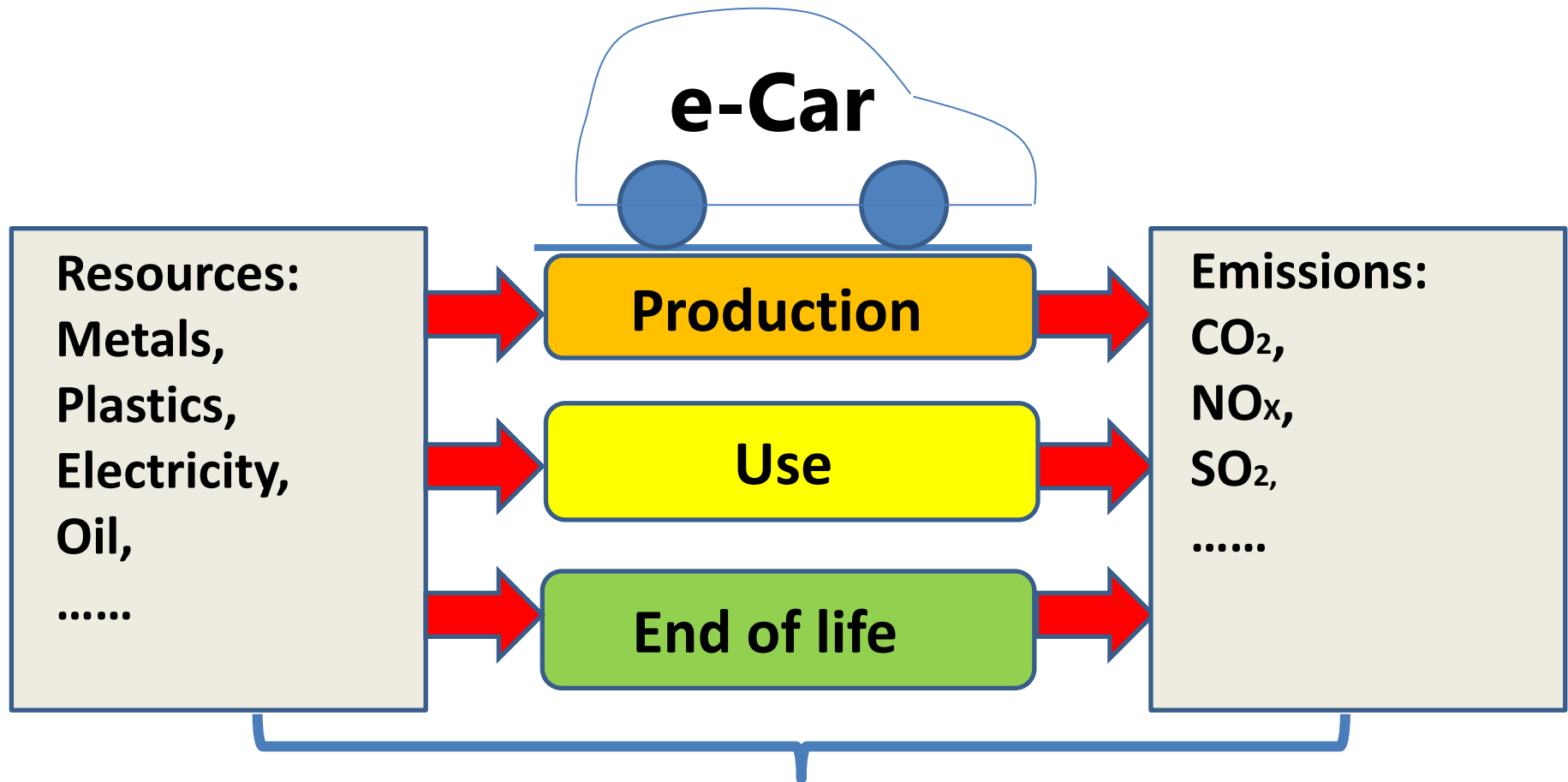
A. Del Duce, T. Dettmer, P. Egede, G. Öhlschläger, H.-J. Althaus



Outline

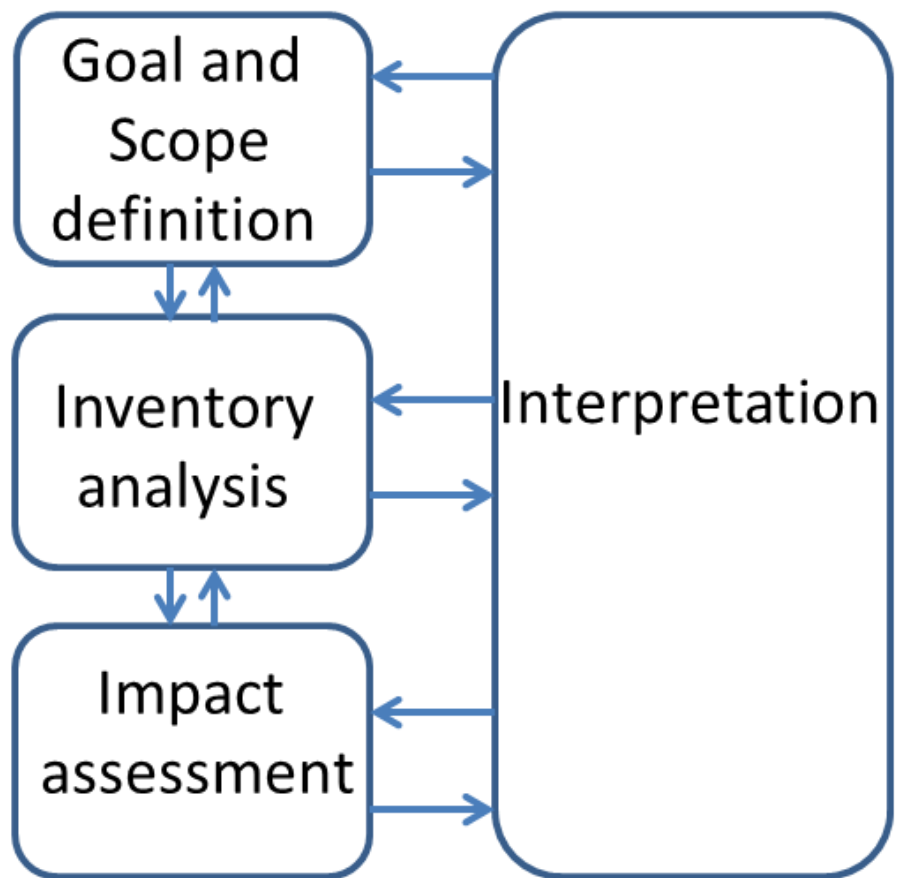
- Workflow of LCA
- Key aspects of Goal definition
- Goal definition in the guidelines
- Provisions for goal definition

LCA



Impact factors: Global warming,
Resource consumption, Toxicity, etc.

Phases of LCA



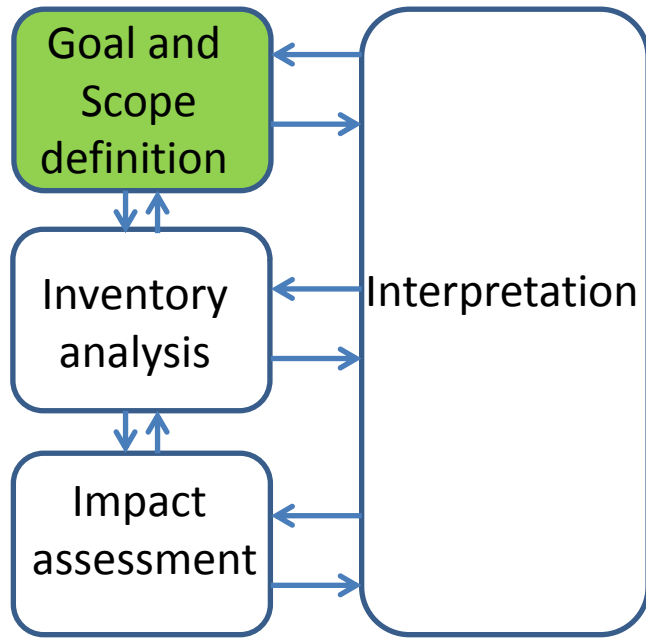
ISO
14040
14044

ILCD handbook
International Reference Life Cycle Data System



General guide for Life Cycle Assessment
- Detailed guidance

Goal and Scope



Application?

Audience?

Which system?

Time horizon?

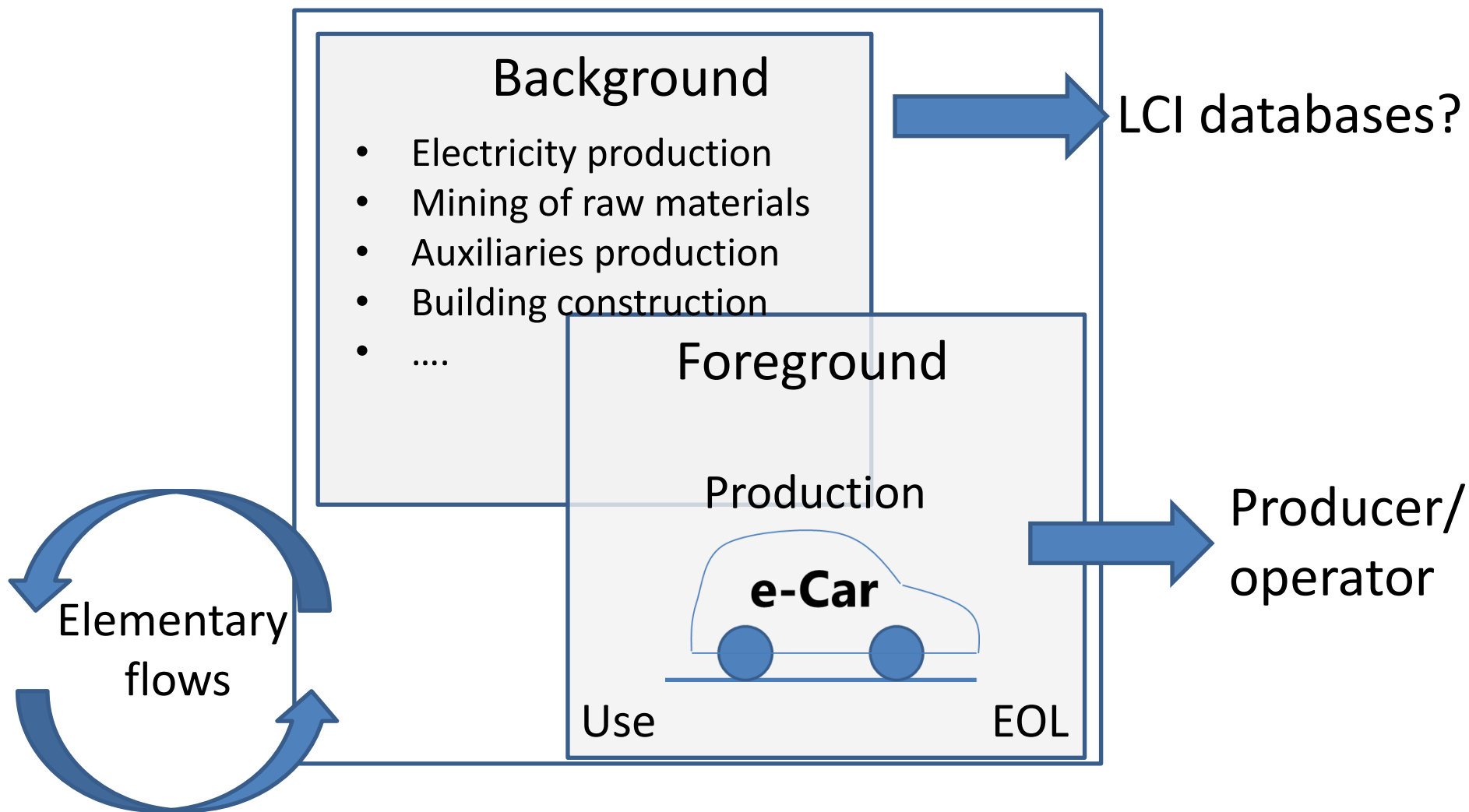
Modelling principles?

What impacts?

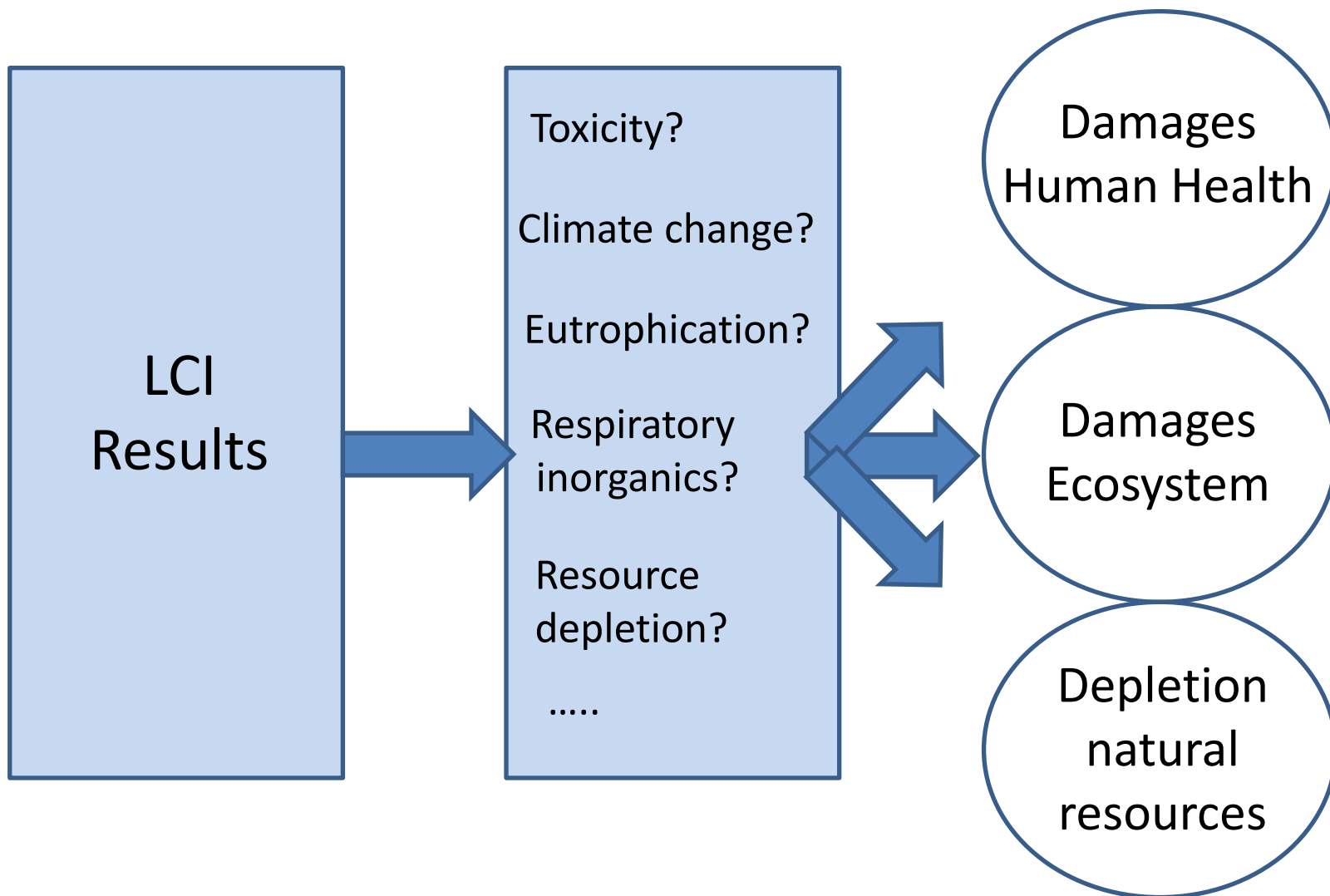
Special review and reporting needs?

Sets the framework of the study

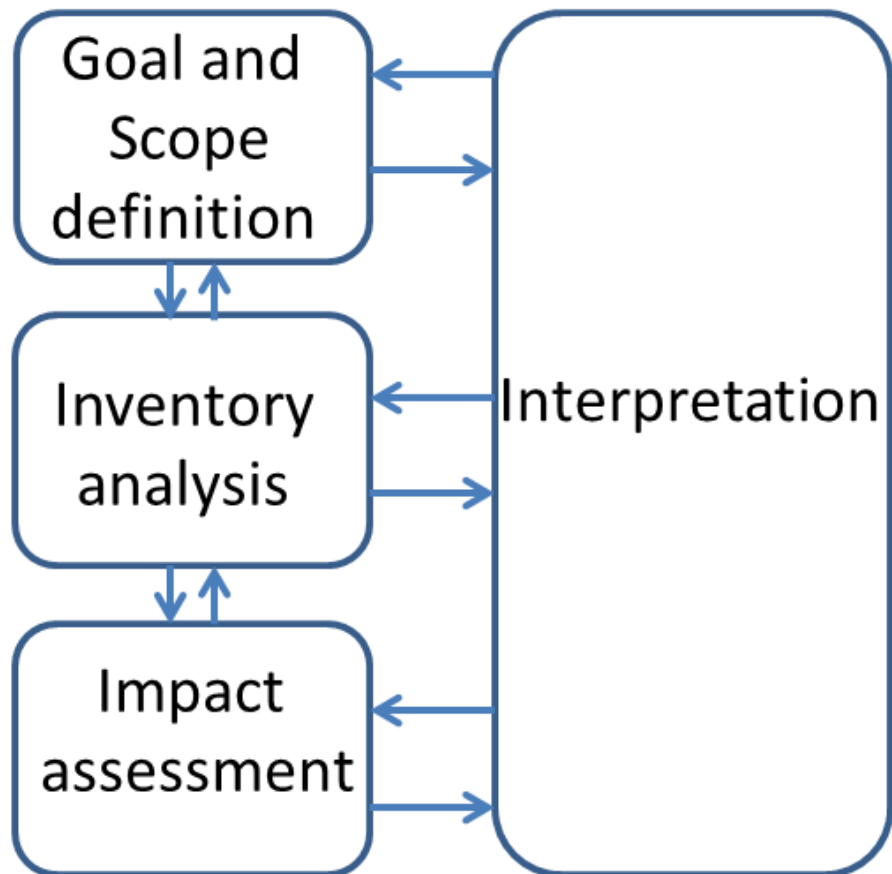
Inventory analysis



Impact assessment



Interpretation



Comparative: one system superior to the other?

Hot spots?

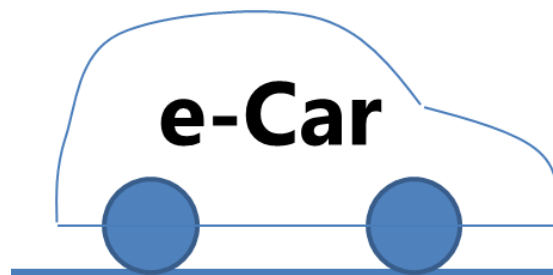
Analysis finished?

ILCD and goal definition

- Intended application(s) of the deliverables/results
- Limitations due to the method, assumptions, and impact coverage
- Reasons for carrying out the study and decision-context
- Target audience of the deliverables/results
- Comparative studies to be disclosed to the public
- Commissioner of the study and other influential factors.

Intended application

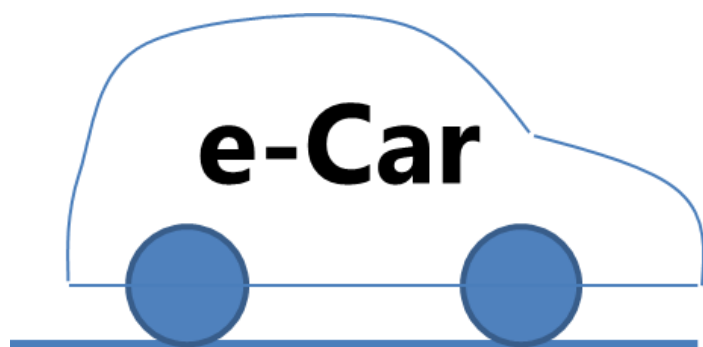
“The goal definition shall firstly state the intended application(s) of the LCA results in a precise and unambiguous way”¹.



“Comparative assertion of the overall life cycle environmental impacts associated with driving 1km in an electric vehicle with 120km range having (a) a lithium-ion battery Type A with 100 Wh/kg and (b) a lithium-ion battery Type B with 120Wh/kg energy density”

Method, assumption and impact limitations

- “If the goal definition implies specific limitations of the usability of the LCA results due to the applied methodology, assumptions made or limited impact-coverage, such shall equally be clearly identified and later prominently reported.”¹



- Climate change only
- Specific use pattern
-

Reasons for carrying out the study and decision context

- “The goal definition shall explain the reasons for carrying out the LCA study, name the drivers and motivations, and especially identify the decision context.”¹

Preliminary
eco-design study

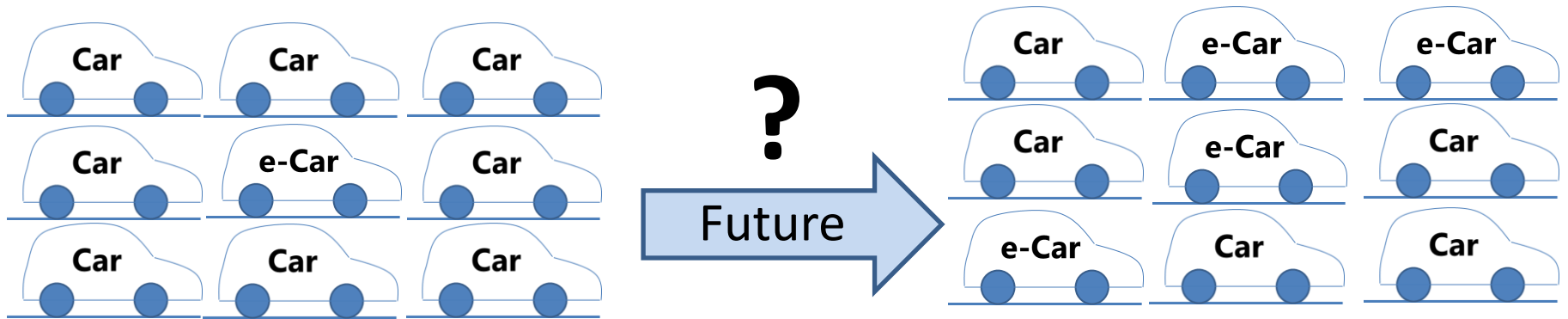
≠

Governmental
study for
policy making

ILCD decision contexts

		Kind of process-changes in background system / other systems	
		None or small-scale	Large-scale
Decision support?	Yes	Situation A "Micro-level decision support"	Situation B "Meso/macro-level decision support"
	No	Situation C "Accounting" (with C1: including interactions with other systems, C2: excluding interactions with other systems)	

ILCD decision contexts: A vs. B



A

- Comparison of today's brands
- Short term Technology
- New model in today's market
-

R&D:
potential
technological
breakthroughs!

B

- Future scenarios of mass distribution
- New transportation concepts
- ...

Target audience

- “The goal definition shall identify the target audience of the study, i.e. to whom the results are intended to be communicated.”¹
 - internal
 - external
 - technical
 - non-technical

Comparative studies to be disclosed to the public

- “The goal definition shall furthermore explicitly state whether the LCA includes a comparative assertion to be disclosed to the public. ”¹
- Comparative assertions to be disclosed to the public: additional mandatory requirements! (ISO, ILCD)
- Holds also for comparative non-assertive studies.

Commissioner of the study and influential factors

“Finally, the goal definition shall identify who commissioned the LCA study. Also, all (co-) financing or other organisations that have any relevant influence on the study shall be named; this includes especially the LCA experts that perform the LCI/LCA study (respectively, their organisation(s)).”¹

Goal definition: Provisions

Provisions 1: Goal definition

- I. **SHALL:** Unambiguously identify the intended application of the deliverable of the LCA study.
- II. **SHALL:** When the foreground system focuses on a specific component of electric vehicles and this component causes “part-system” interactions which influence the performance of the vehicle, then the LCA shall address the life cycle of the entire vehicle-component system. This shall already reflect in the definition of the intended application.
- III. **SHALL:** Unambiguously identify and state initially set limitations for the use of the LCA study. These can be caused by the following:
 - Impact coverage limitations such as in Carbon footprint calculations
 - Methodological limitations of LCA in general or of specific method approaches applied
 - Assumption limitations: Specific or uncommon assumptions / scenarios for the analysed systems.
- IV. **SHALL:** Unambiguously identify the internal or external reason(s) for carrying out the study and the specific decisions to be supported by its outcome.
- V. **SHALL:** Unambiguously identify the audience(s) to whom the results of the study are foreseen to be communicated. Further, the type of audience (e.g. internal, external, technical, non-technical, public, etc.) shall also be stated.
- VI. **SHALL:** Unambiguously state whether the study involves comparisons or comparative assertions and whether these are foreseen to be disclosed to the public.
- VII. **SHALL:** Identify the commissioner of the study and all other influential actors such as co-financiers, LCA experts involved, etc.

Conclusions

- The goal definition is key for the planning of the study and, after its completion, for the understanding.
- It defines the first pillars which are expanded in the scope definition.
- Vehicle vs. component perspective: early decision
- R&D today can lead to mass production in the future (A vs. B Situation?)

The logo for eLCAr features the text 'eLCAr' in a dark blue, sans-serif font. The letter 'C' is replaced by a green circular icon containing a white silhouette of a car. The background of the top of the slide shows a blue sky with light clouds and a green field with a road curving into the distance.

eLCAr

Questions?

Example discussion 1

- Standard product: Li-Ion battery 100Wh/kg
- New product: Li-Ion battery 120Wh/kg
- Main Customer: specific vehicle type, 120km range
- Internal scoping LCA, GHG, for assessing the first potentials of the new product.

Example discussion 2

- Intended application: “Comparative assertion of the impacts associated with driving 1km in an electric vehicle of Customer X having (a) a lithium-Ion battery Type A with 100 Wh/kg or (b) a lithium-Ion battery Type B with 120Wh/kg battery energy density and a total driving range of 120km.”
- Limitations: The analysis is intended as preliminary study and focuses therefore only on the carbon footprint.
- Reasons for carrying out the study and decision context: Scoping. If GHG analysis is successful, a detailed LCA will be performed

Example discussion 3

- Target audience: The results are intended for an internal and technical audience.
- Comparative assertion: The study will perform a comparative assertion, but the results will not be disclosed to the public.
- Commissioner of the study: The study has been commissioned by the research and development unit of the company and will be performed by Mr. of the internal sustainability assessment group.

Images

