

THE USE OF LCA IN INDUSTRY AND BUSINESS

Adoption Patterns, Applications and Implications
in selected European Countries

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THE USE OF LCA IN BUSINESS DECISION-MAKING PROCESSES

- 2Y Research Project (1996-1998) funded by EU/DGXII
- Research Partners
 - **IOW** - Institut fuer Oekologische Wirtschaftsforschung, Heidelberg - Germany, Research Coordinator)
 - **Ambiente Italia** - Istituto di Ricerche, Milano, Italia
 - **GRI** - Gothenburg Research Institute, Gothenburg, Sweden
 - **Oekoscience** - Zuerich, Switzerland
 - **IPTS** - Institute for Prospective Technological Studies - JRC - Sevilla, Spain

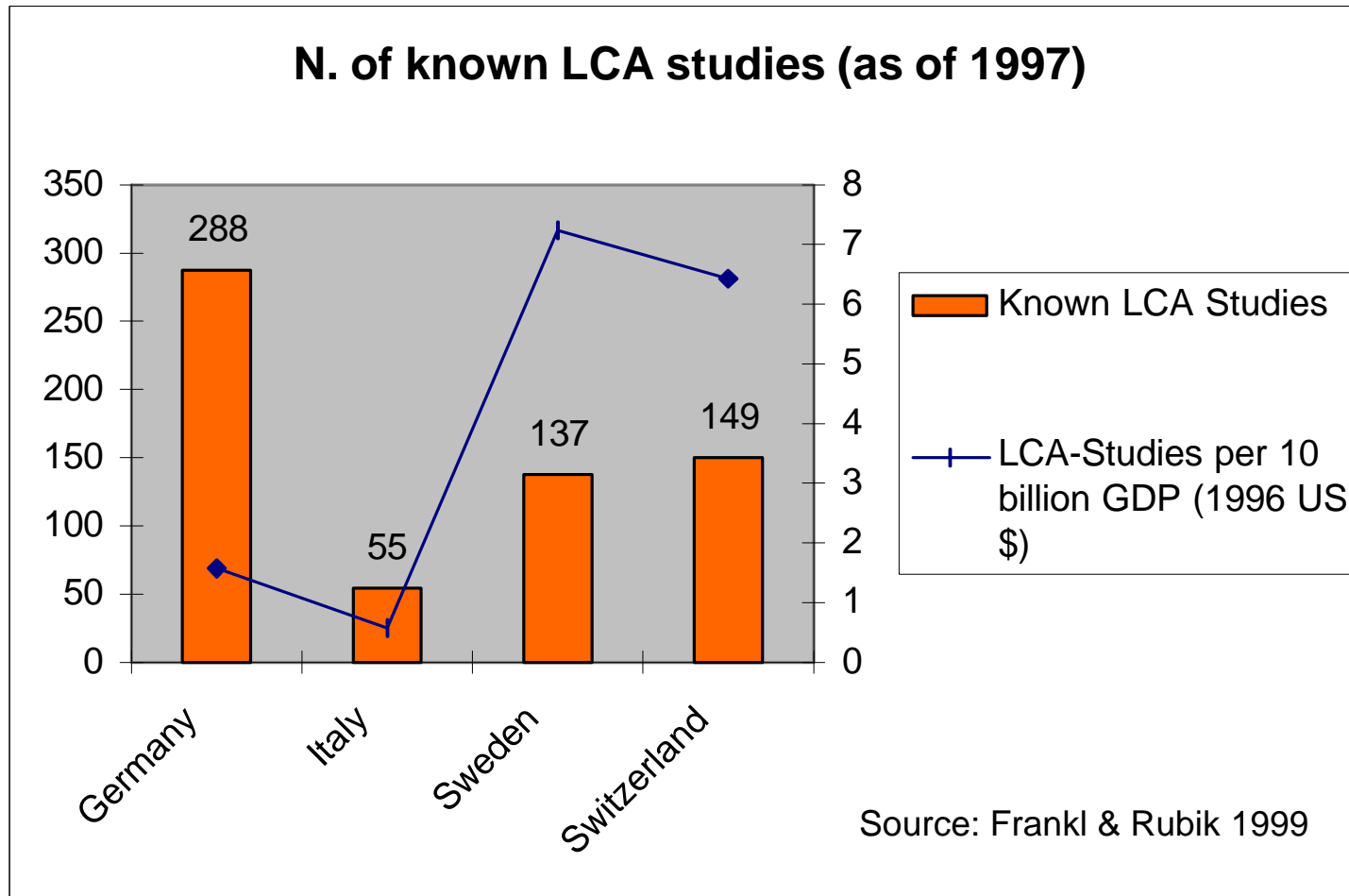
MAIN MESSAGES

- 1) Insight in the **empirical information available** (large survey and 20 case-studies)
- 2) Summary & Outlook of LCA diffusion, uses and **approaches in 4 selected European Countries** (D, I, S, CH)
- 3) **Dynamic aspects** of LCA adoption patterns in industry and business

RESEARCH PHASES

- **Inventory** of LCA Studies
- **Survey** (400 Questionnaires sent out per Country) -
382 respondents
- **5 Case-studies** per Country
- Analysis of the implications for **Environmental Policy**

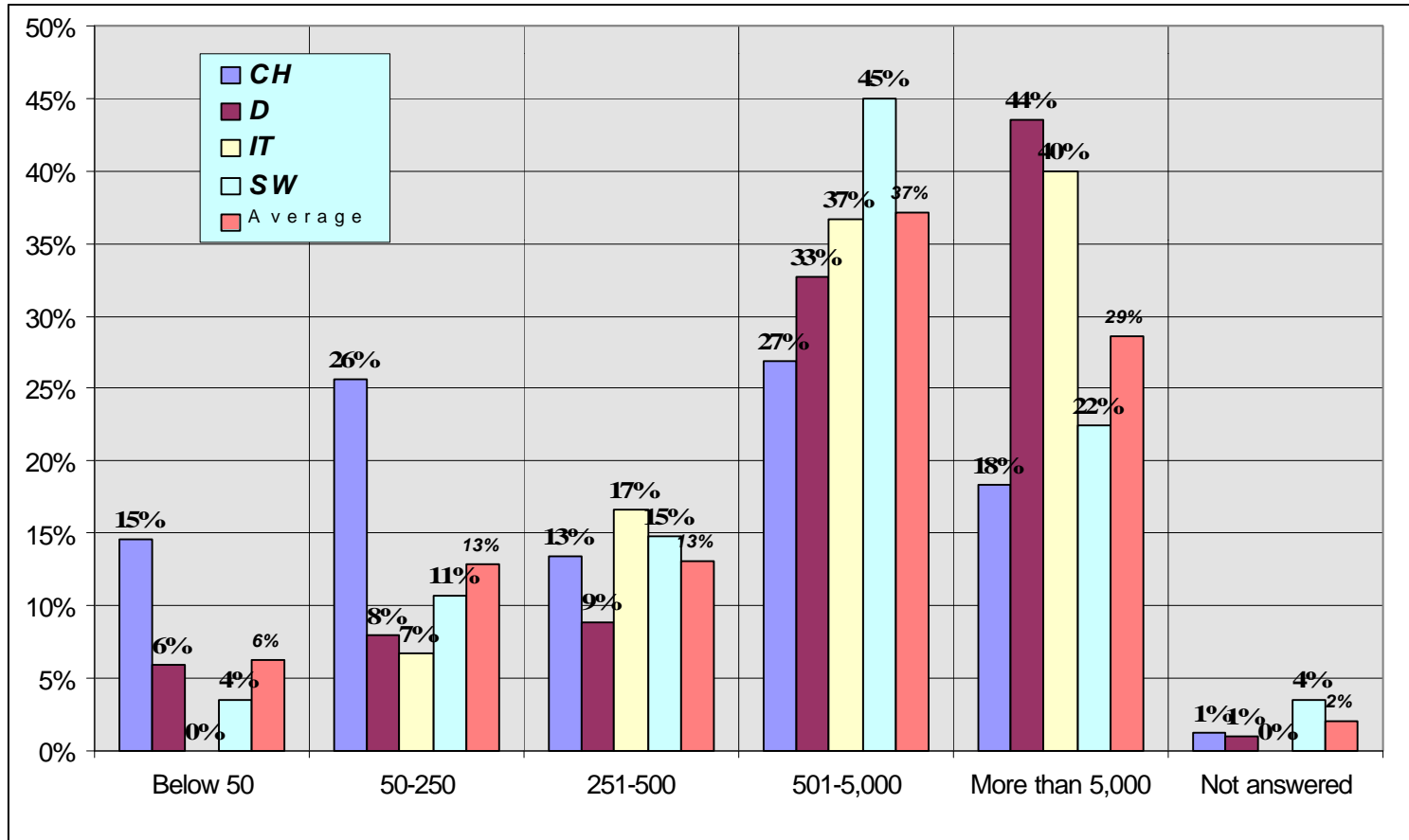
INVENTORY RESULTS



THE QUESTIONNAIRE

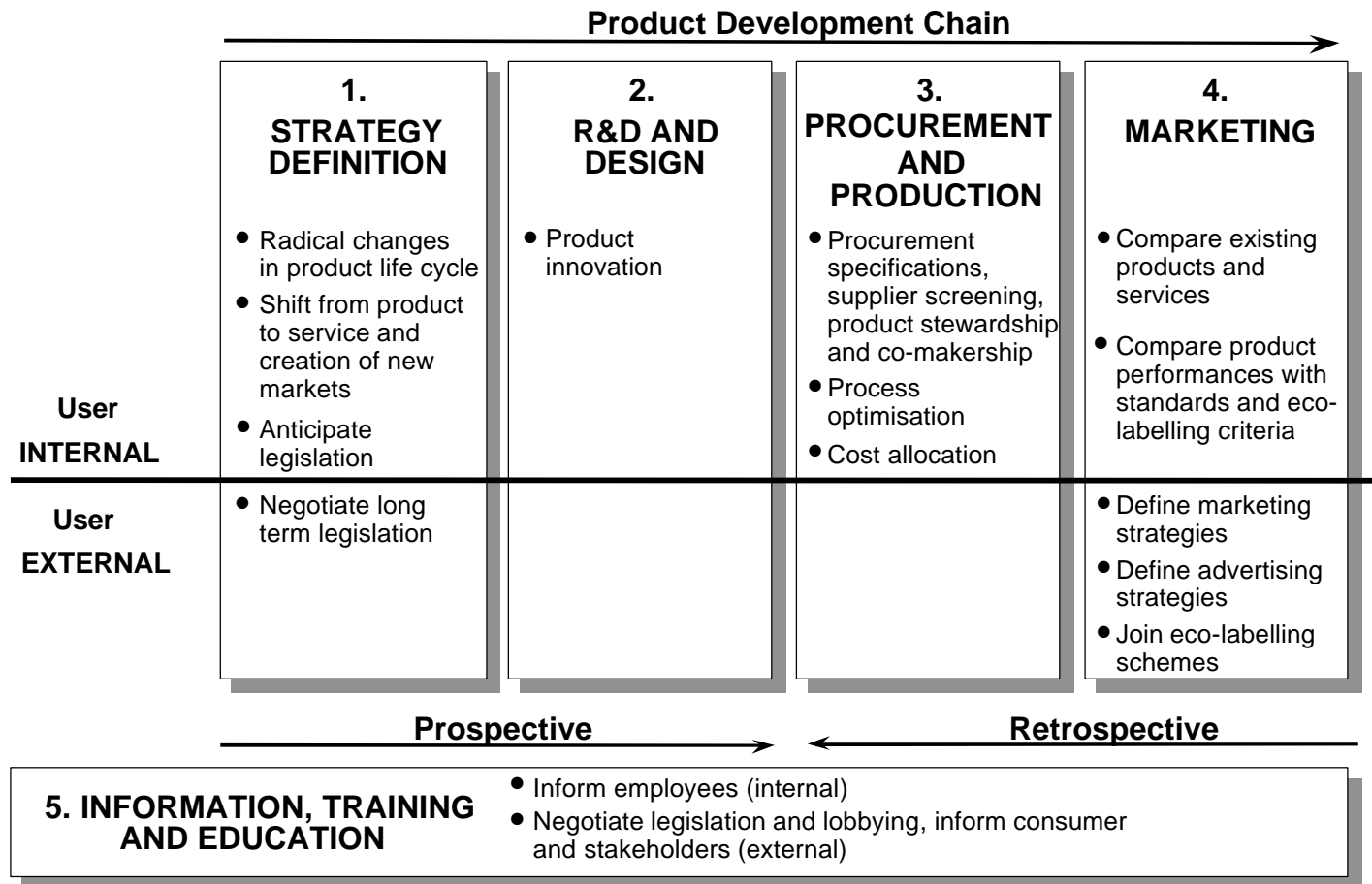
- 8 Pages, totally 35 questions, many rankings
- 5 Chapters:
 - General information about the company
 - The company and the environment (e.g. existence of EMS)
 - Product innovation and the environment
 - The Use of LCA within the company
 - Policy implications

LCA AND COMPANY SIZE



Source: Frankl & Rubik 1999

POSSIBLE APPLICATIONS OF LCA



Source: Frankl & Rubik 1999

MAIN APPLICATIONS OF LCA

Application	CH		D		I		S	
	today	future	today	future	today	future	today	future
Bottleneck identification	A	A	A	A	-	B	A	A
Information and education to consumers and stakeholders	A	A	A	B	B	A	A	A
Compare existing products with planned alternatives	A	B	B	B	B	B	A	A
Research development and design	B	B	B	B	A	B	B	B
Compare existing company products with products of competitors	B	B	B	B	B	B	B	B
Procurement specifications...	B	B	B	B	B	A	B	B
Internal information and training	B	B	B	B	B	B	B	B
Anticipate and negotiate legislation	B	B	B	B	B	B	B	C
Marketing, advertising policies & join eco-labelling criteria	B	C	B	B	B	B	B	B
Environmental cost allocation	B	B	B	C	B	B	C	C
Assess the gap from eco-label criteria	C	C	B	C	B	C	C	C
Radical changes in product life cycle	C	C	C	B	C	B	C	C
Shift from product to service	C	C	C	C	C	C	C	C
<i>Other</i>	4.5%	4.5%	6.5%	1.6%	0%	22.2%	0%	1.5%
<i>Not answered</i>	6.8%	29.5%	4.8%	37.1%	0%	16.7%	1.5%	9.1%

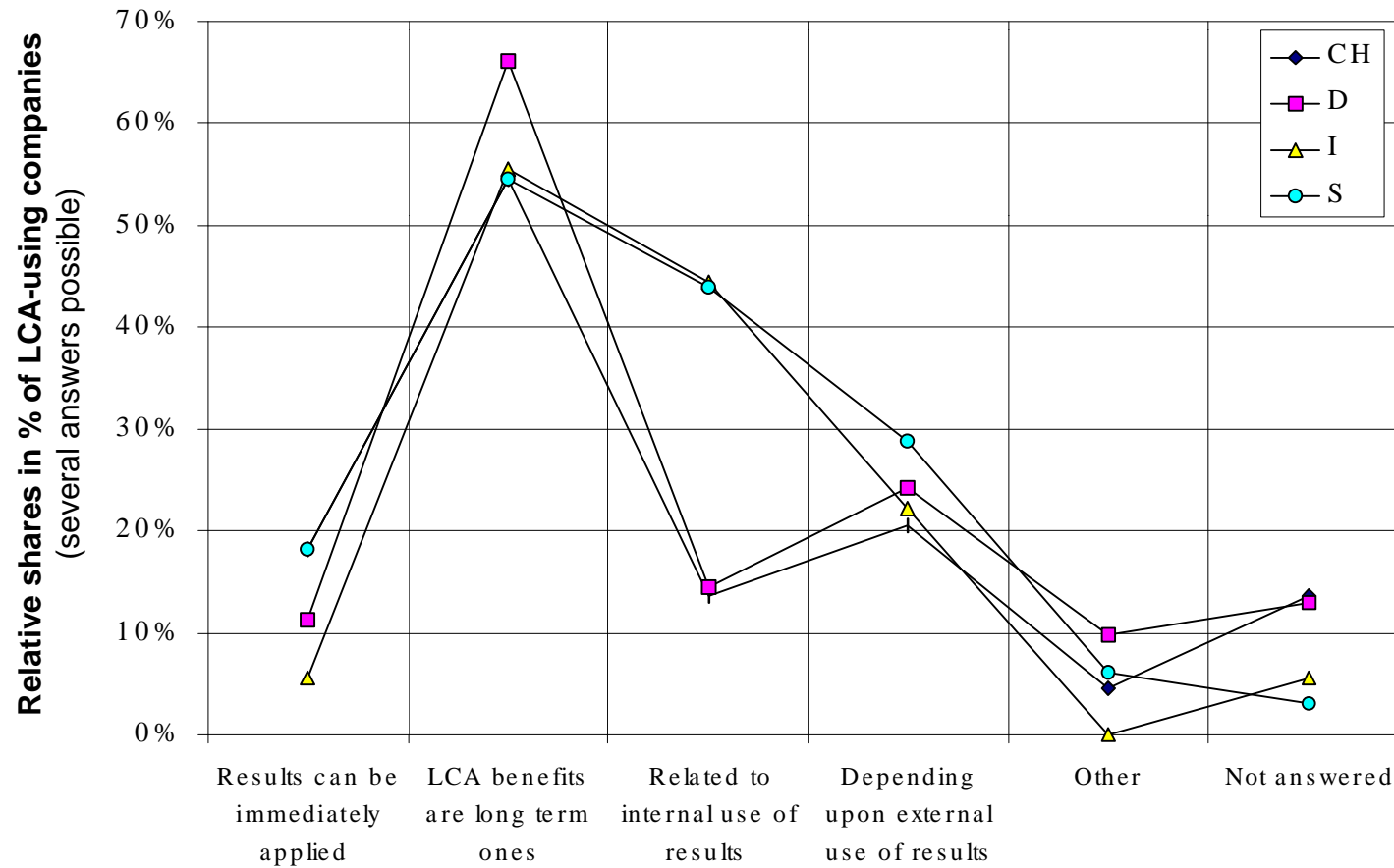
A = high importance (>40% of companies), B = medium importance, C = low importance (<10% of companies); n.a. = not available

Source: Frankl & Rubik 1999

The Use of LCA in Industry & Business - Main Results

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PERCEIVED BENEFITS OF LCA

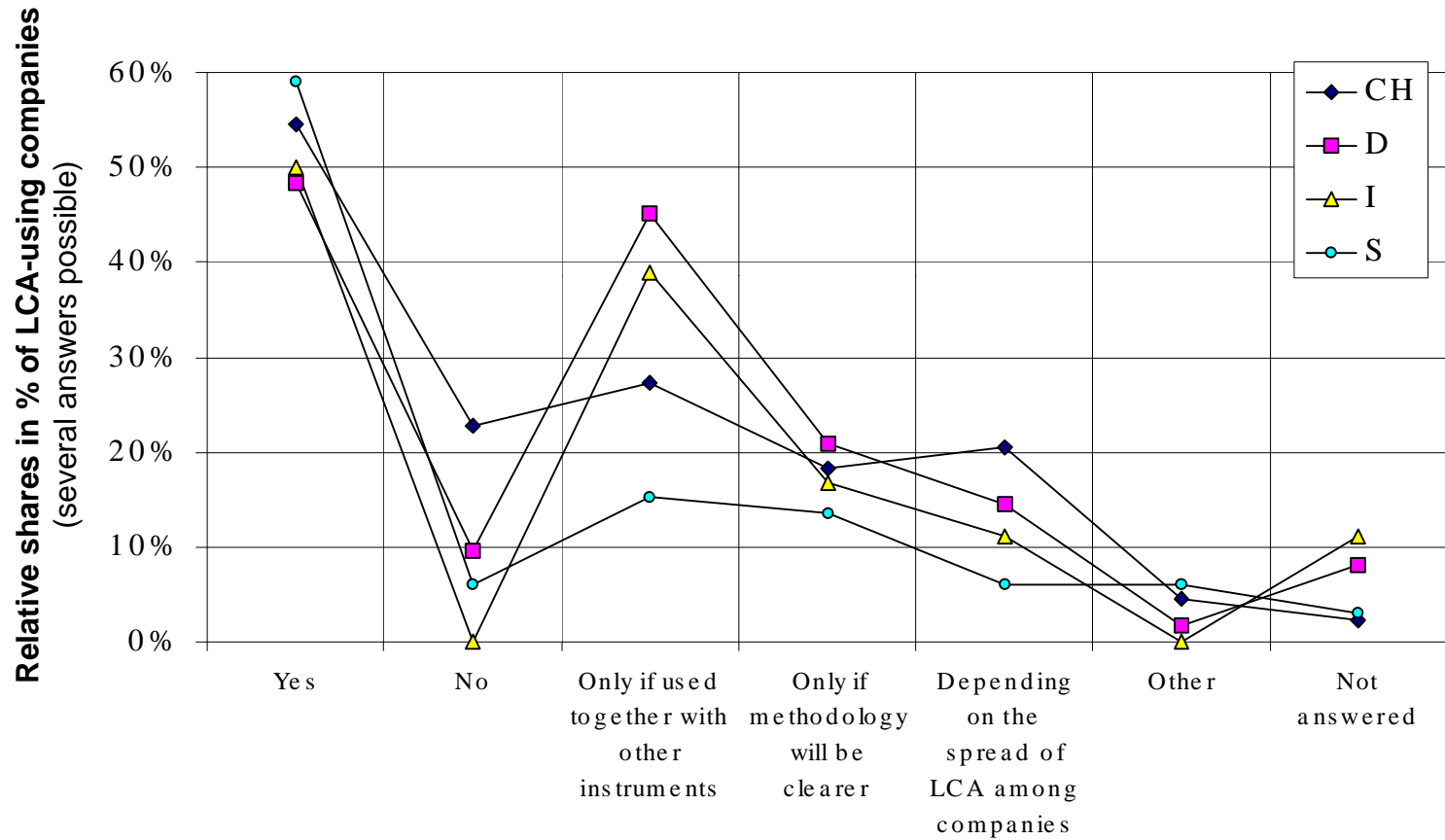


Source: Frankl & Rubik 1999

The Use of LCA in Industry & Business - Main Results

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FUTURE USE OF LCA WILL INCREASE?

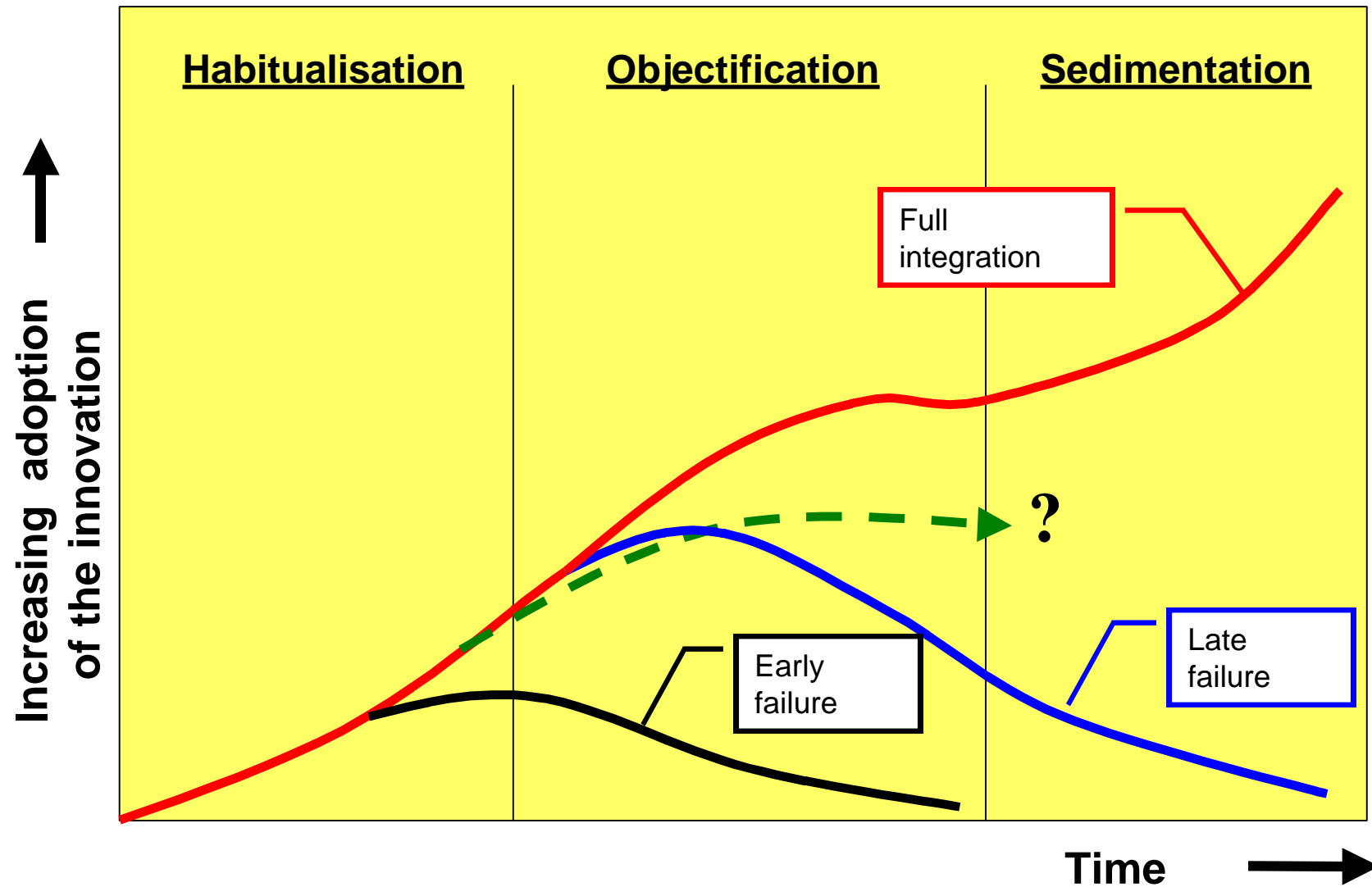


Source: Frankl & Rubik 1999

THE CASE-STUDIES

- Germany:
 - AEG-Hausgeräte
 - Bosch and Siemens Hausgeräte (BSH)
 - Henkel
 - Weleda
 - Ytong
- Italy:
 - ABB-Sace
 - Cartiera Favini
 - Fiat Auto
 - Glaxo Wellcome
 - Italtel
- Sweden:
 - Akzo Nobel
 - Ericsson
 - Norsk Hydro
 - Perstorp Flooring AB
 - Volvo
- Switzerland:
 - Ciba Spezialitäten
 - Ernst Schweizer
 - Holderbank Zement and Beton (HCB)
 - Landis & Gyr
 - Kraft Jakobs Suchard

STAGES OF INSTITUTIONALISATION

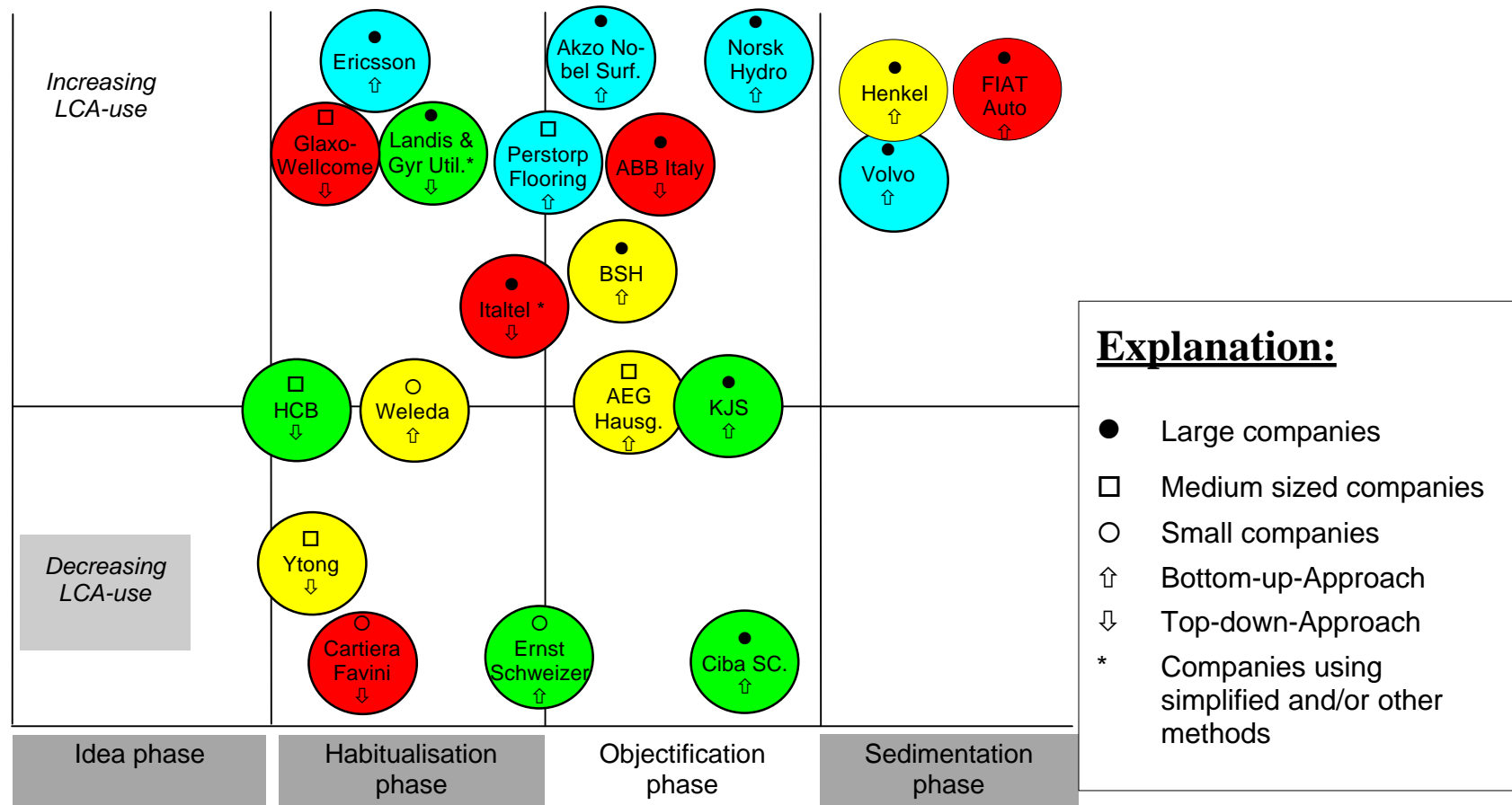


GROUPING OF COMPANIES

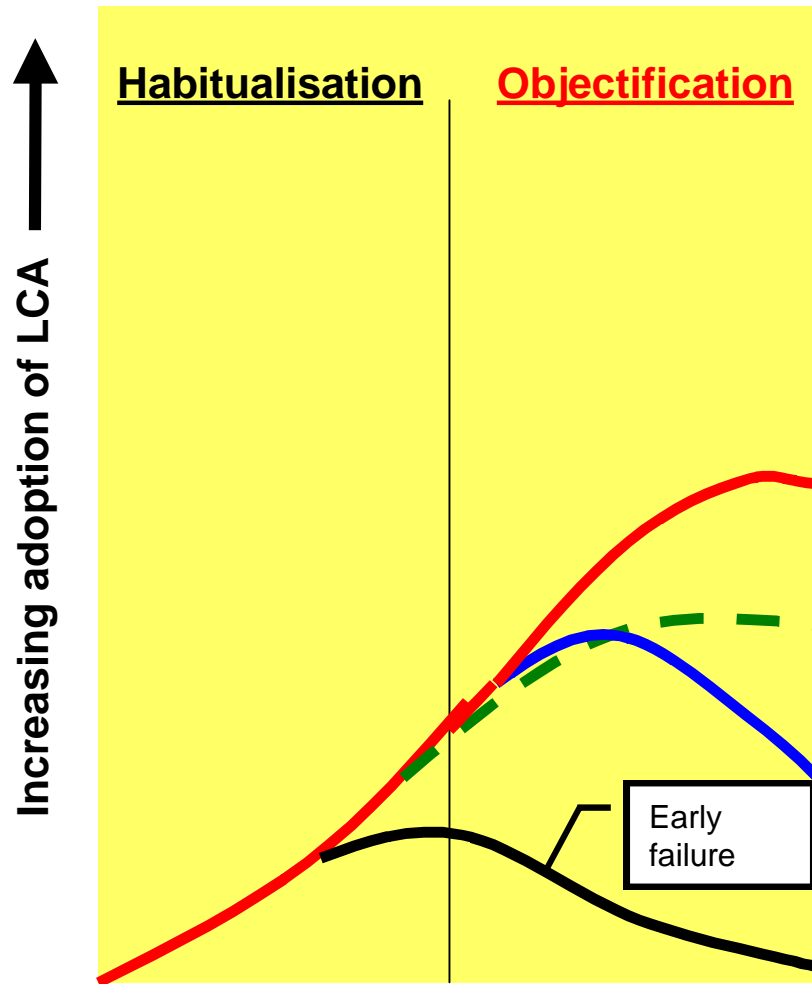
- Companies in which LCA will be applied **increasingly** in the future;
- Companies which are developing/using **other** instruments;
- Companies in which the future development of LCA is **open/uncertain**;
- Companies in which in the future LCA will be used **less** or even **not** any more.

INSTITUTIONALISATION OF LCA

Case-studies (as of begin 1998)



OBJECTIFICATION - Case-studies



Factor of success - **Entrepreneur**

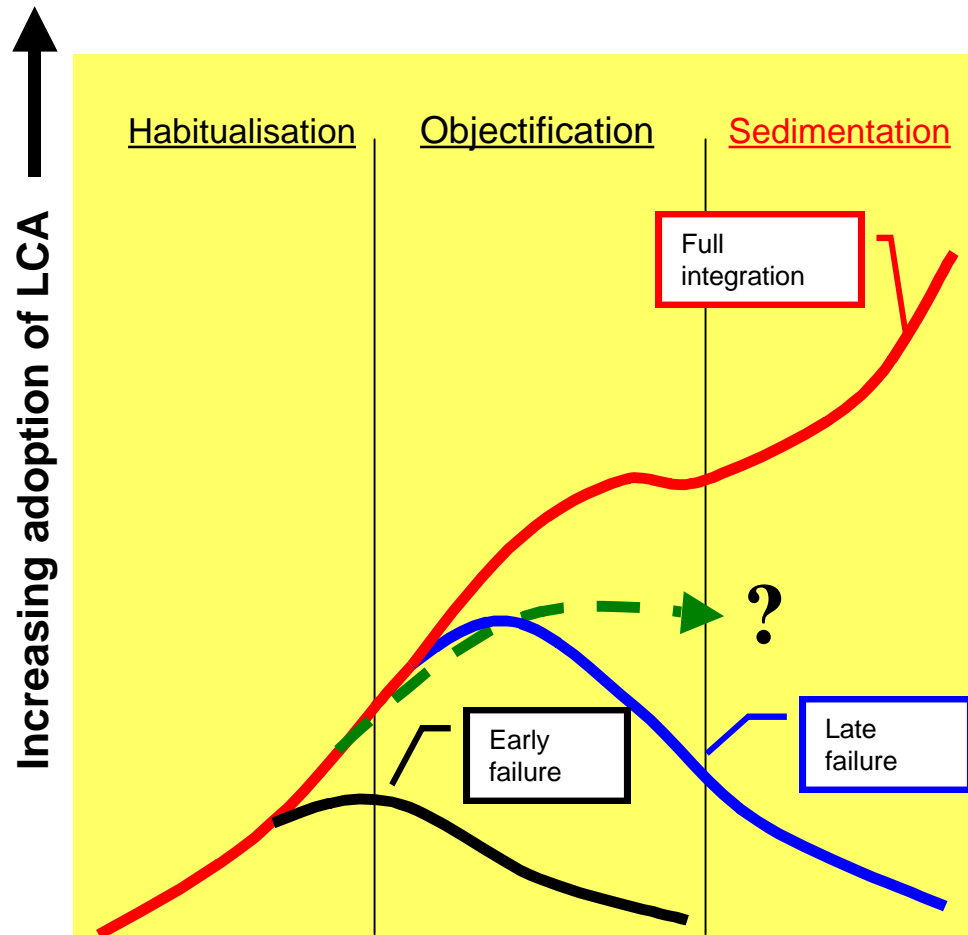
- ✓ Existence and **influence** of an entrepreneur
- ✓ **Commitment** ("Mission") of the entrepreneur
- ✓ **Strategy** of the entrepreneur
 - ☺ Good **justification** for LCA
 - ☺ Identification and naming of an **organisational problem**
 - ☺ **Monitoring** of competitors
 - ☺ Obtain **mandate** of the top-management

➤ Factor of success - **justification**

- ✓ Good justification for LCA
- ✓ Openness with respect to „surprises“ of LCA
- ✓ Demonstrable results of LCA

FULL INSTITUTIONALISATION - C.st.

Our research shows:



Main factors of success:

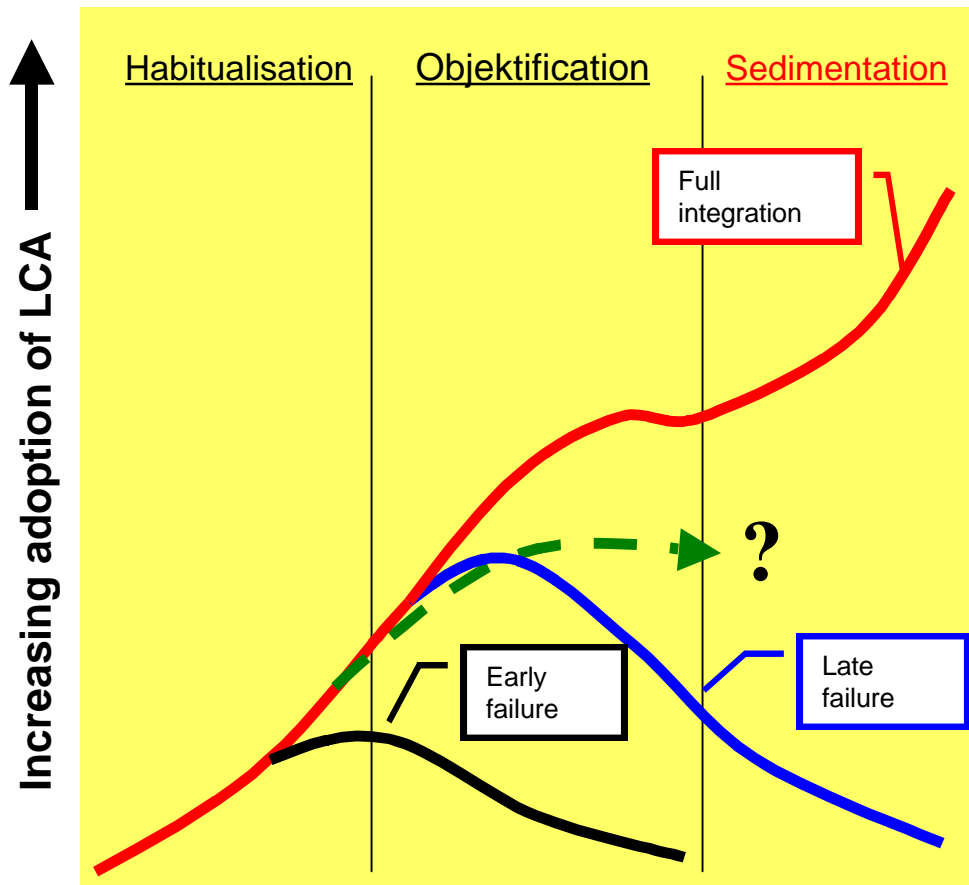
- ✓ Central role /influence of the **entrepreneur**
 - ☺ Circulation/Diffusion of the LCA
 - ☺ achieving of an ultimate mandate
- ✓ Appropriate **communication structure** within the company (evtl. routine procedures)
- ✓ Large **set of champions** particularly R&D and product devel.
- ✓ Developing of a **formal structure**,
- ✓ Organisational fixation in company **internal competence** (know-how, data-bases, software)
- ✓ Decrease of costs
- ✓ collaborative attitude in research (mainly in **S** and partly in **CH**)

FULL INSTITUTIONALISATION - C.st

Our research shows :

⇒ **Role of LCA**

- ✓ Precise field of use
- ✓ **No marketing** (at present), but supply-chain management
- ✓ **Mostly internal purposes** (R&D, bottleneck identification)
- ✓ **Prospective use**
- ✓ Translation of LCA results into **actions** (determined by **economic factors**)



LCA APPLICATION TRENDS - 1

GERMANY - A long tradition

- At least 16 studies per year since 1990
- Considerable interest for LCA **both** in business and policy
- Misunderstandings and **disagreement** about the role of LCA for Public Policy
- Mostly **large companies** very engaged
- Focus still rather **retrospective**
- Expected increasing use **in combination** with other tools

ITALY - A good beginning

- Interest for LCA began recently, but **fast evolving** situation
- International corporate companies as major **triggering** factor until now
- Most companies developing **internal LCA teams** and know-how
- Still major **problems with SME's**
- The **Italian Association for LCA** - a new form of multi-stakeholder collaboration

LCA APPLICATION TRENDS - 2

SWEDEN - The most advanced

- By far the **highest number** of LCA per capita or **per GDP**
- High level of environmental awareness in society
- **Proactive** behavior of companies
- Very good collaboration betw. **business and research** (i.e. several projects, Centre for Environmental Assessment of Product and Material Systems (CPM))
- Very good collaboration climate **with policy makers**
- LCA use is expected to **increase** anyway

SWITZERLAND - Some saturation signs?

- Second highest number of LCA per GDP unit
- Long-standing **experience**
- Commitment of the **public sector**
- **Generally proactive** behavior of companies
- However **some saturation effects** can be observed (23% of responding companies think that the use of LCA will decrease)

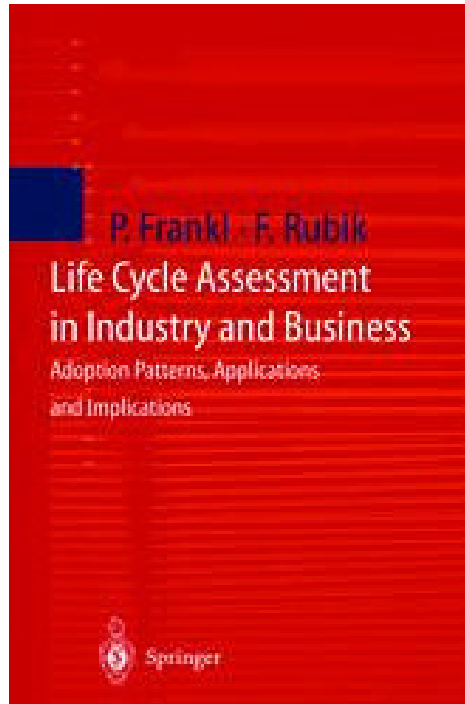
SUMMARY OF MAIN RESULTS -1

- The **application** trends in the **four countries** considered are **different**.
- *However*, the **process of institutionalisation** of LCA follows **similar patterns** in all case-studies. The institutionalisation theory is **able to explain successes and/or failures** in the introduction of the LCA tool in business
- Main **factors for successful adoption**:
 - Key **importance of actors** and subjective factors (in particular, the presence and influence of a **champion** – or **entrepreneur**)
 - **Importance of the organisational** context (in particular, of good internal communication channels)
 - A **top-down** or a **bottom-up** introduction are **not relevant** for the later successful institutionalisation of LCA
 - Strict condition for a successful institutionalisation is a **good justification** in the objectification phase
 - An **internal know-how** on LCA has to be developed (external consultants may be a triggering factor, but they may become unnecessary)

SUMMARY OF MAIN RESULTS -2

- At present, expectations for the application of **LCA in marketing** can **not** be fulfilled; *however*, LCAs are partly used for **communication** in the supply-chain
- The **use and adoption of LCA is a dynamic process**:
 - The **role of LCA is changing with time** During the institutionalisation process (from learning to doing)
 - The present highest value of LCA is for **learning**.
- The **implementation** of LCA results are generally accepted for the **long-term**; in the **short term** economic aspects always prevail.
- **SME's** have great **difficulties** for using and adopting LCA.
- There is the need for multi-stakeholder **collaboration** for the further development of LCA.

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