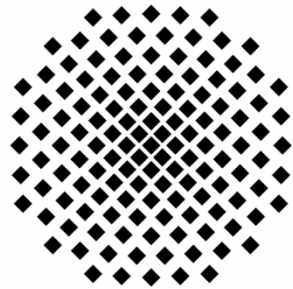

The Life Cycle Working Environment Method (LCWE) - integration of social aspects in Life Cycle Assessment



University of Stuttgart

Chair of Building Physics (LBP)

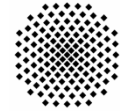
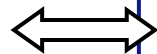


Life Cycle Engineering

The GaBi group

Prof. Dr.-Ing. Klaus Sedlbauer

Echterdingen



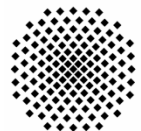
University of Stuttgart
Chair of Building Physics (LBP)
Life Cycle Engineering (GaBi)



PE INTERNATIONAL
EXPERTS IN SUSTAINABILITY



GaBi Software
PRODUCT SUSTAINABILITY



University of Stuttgart
Chair of Building Physics (LBP)

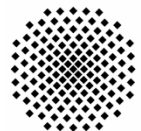
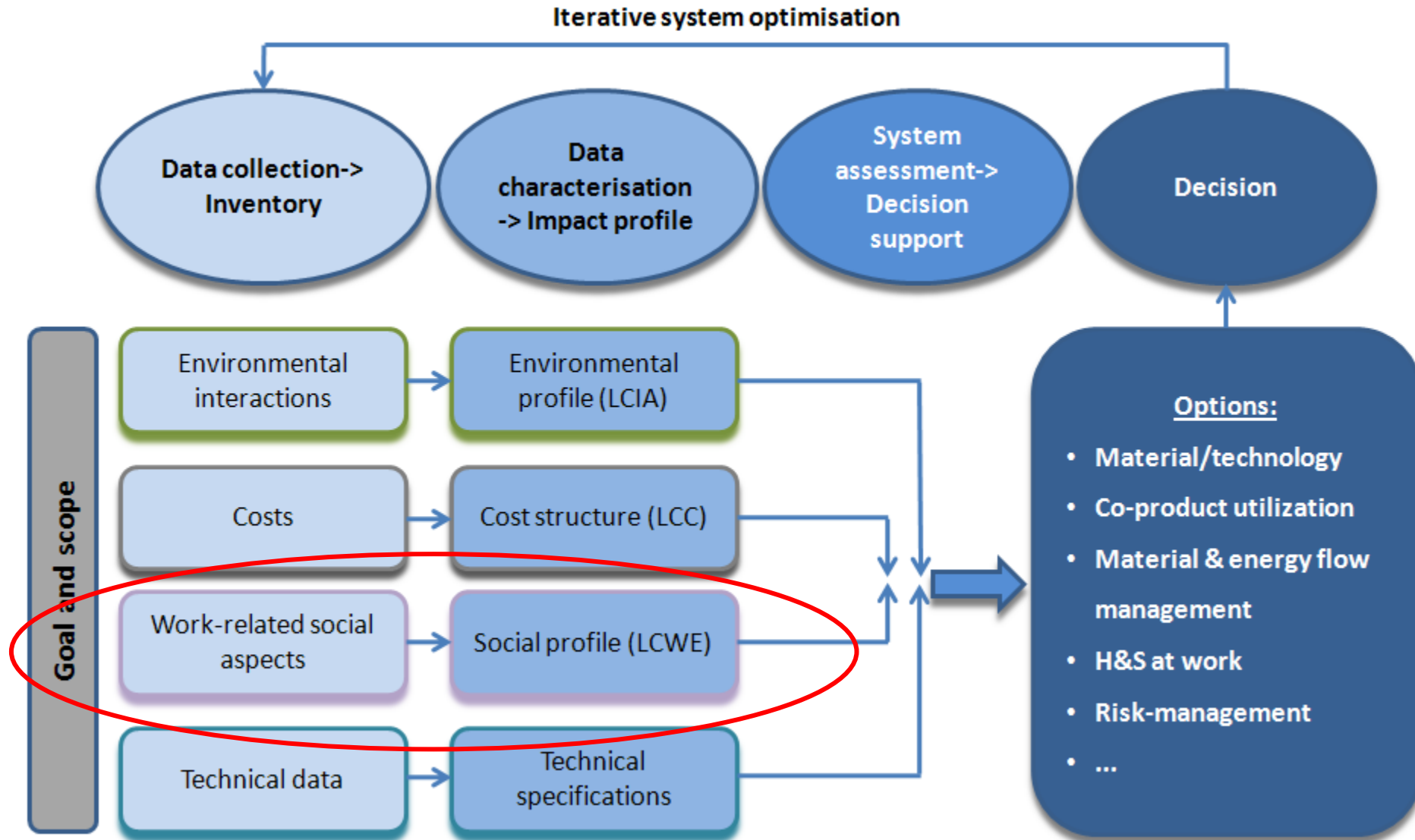


Fraunhofer
IBP

Life Cycle Engineering



The concept of sustainability



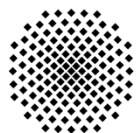
LCWE – Life Cycle Working Environment approach LBP-GaBi

- ▶ Consideration of social aspects in the working environment related to a product / functional unit
- ▶ **First background database available!**
- ▶ Database can be used to **identify hotspots**
- ▶ **Economic allocation of social data via seconds of labour per value added**

Assumptions:

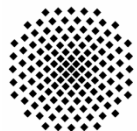
Within an industry sector (with similar types of processes):

- ▶ Social impacts are proportional to the amount of human labour carried out.
- ▶ The amount of human labour carried out is proportional to the value added.

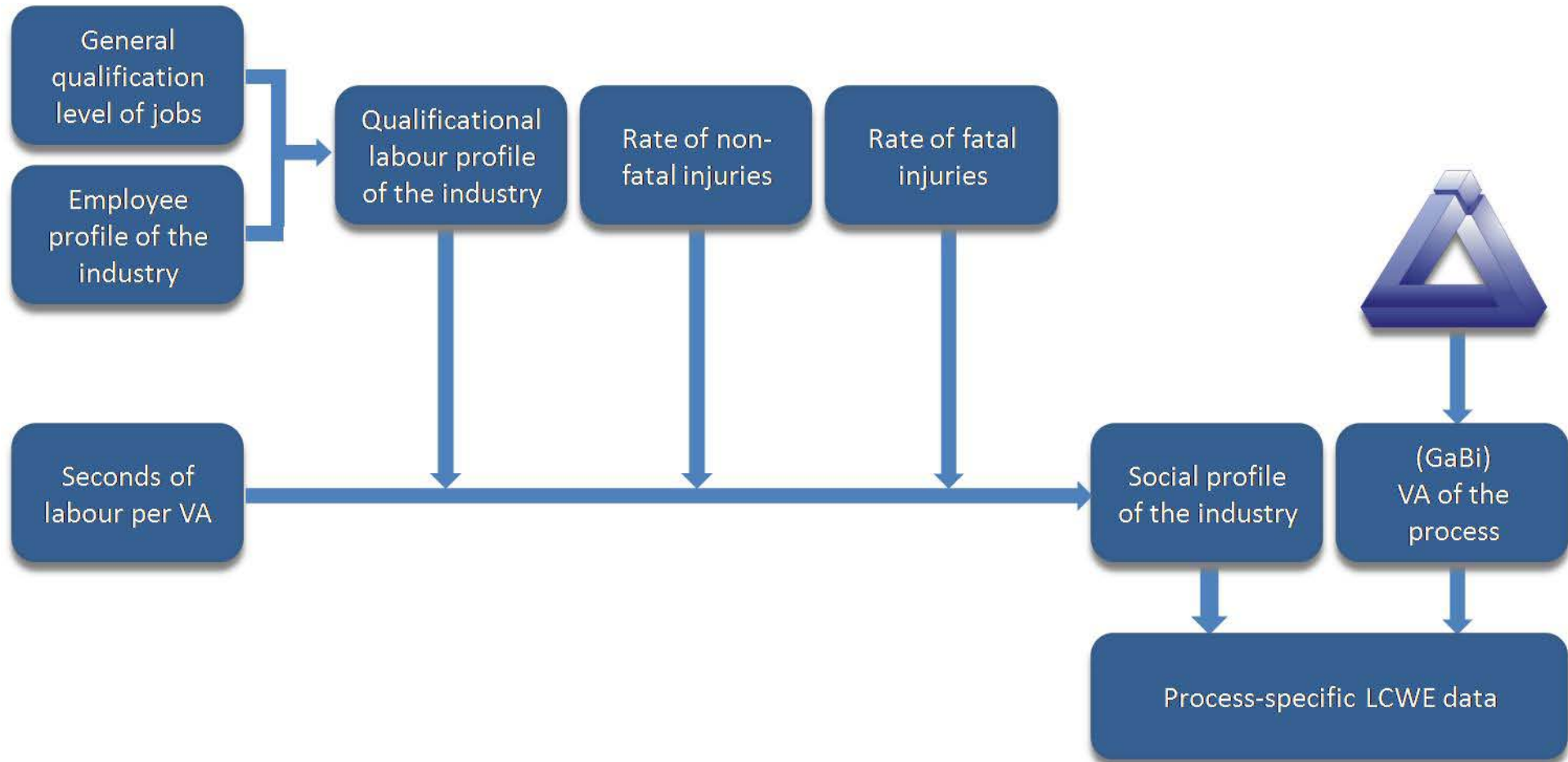


Indicators developed and integrated

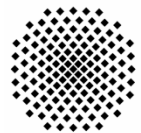
Group	Indicator	Unit
Qualified working time	General Qualification level A (GQL A)	[sec]
	General Qualification level B (GQL B)	[sec]
	General Qualification level C (GQL C)	[sec]
	General Qualification level D (GQL D)	[sec]
	General Qualification level E (GQL E)	[sec]
	Total working time	[sec]
Health and Safety	Lethal accidents	[cases]
	Non-lethal accidents	[cases]



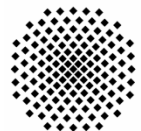
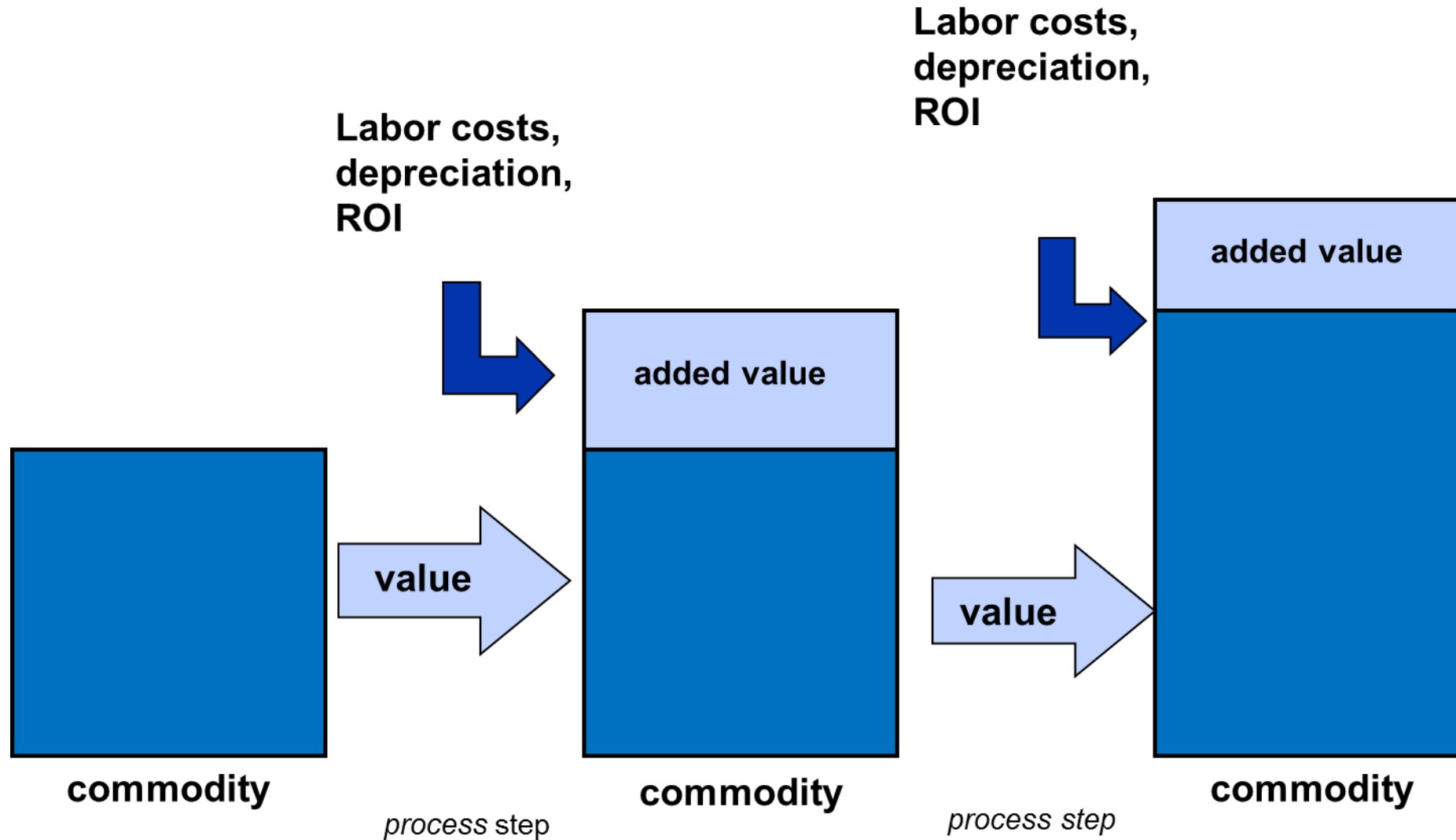
Data preparation



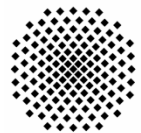
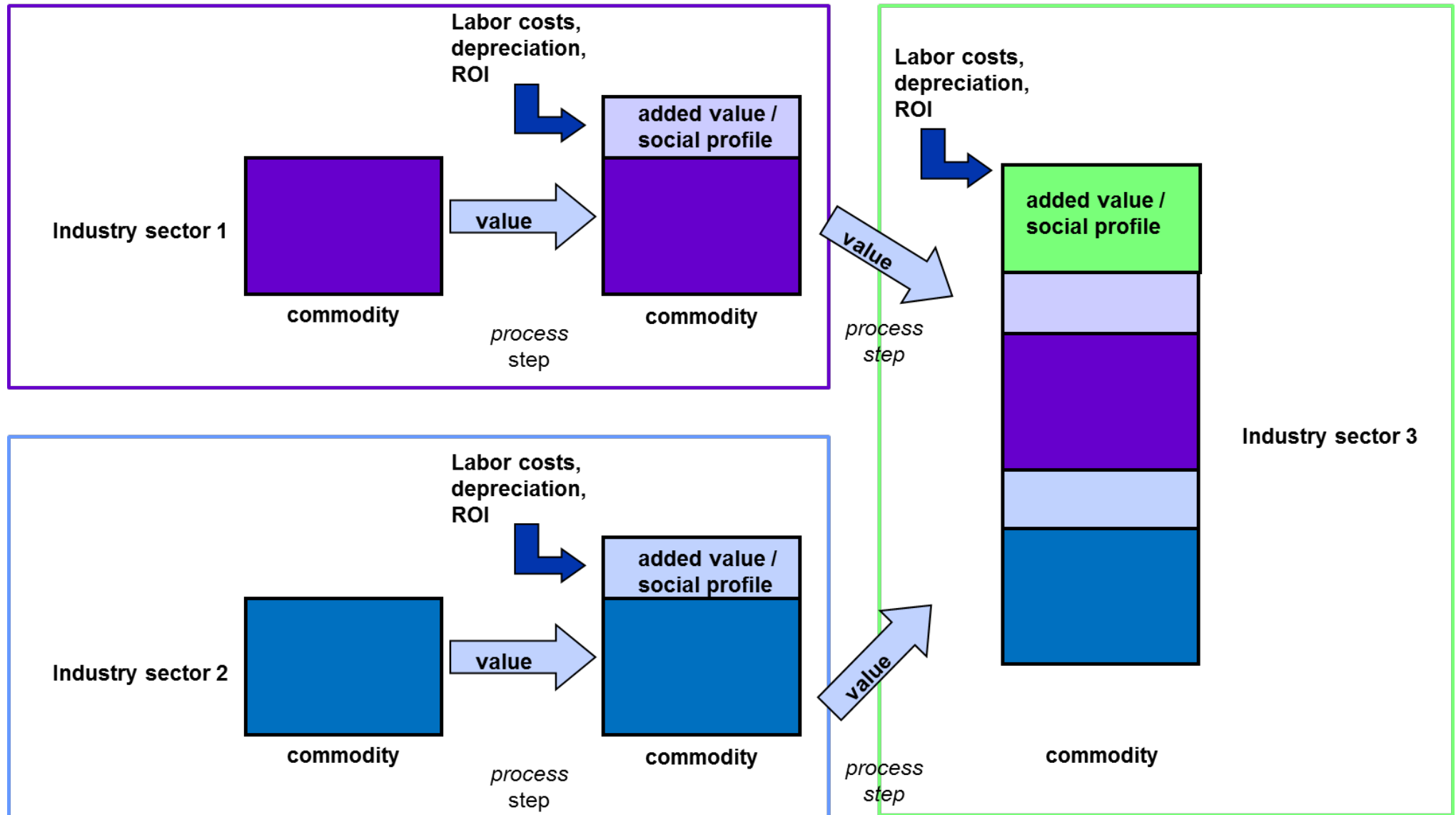
→ De-facto economic allocation of social data via seconds of labour per value added



Determination of added value

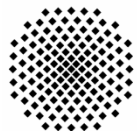


Determination of the added value: Data aggregation

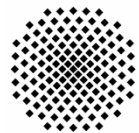
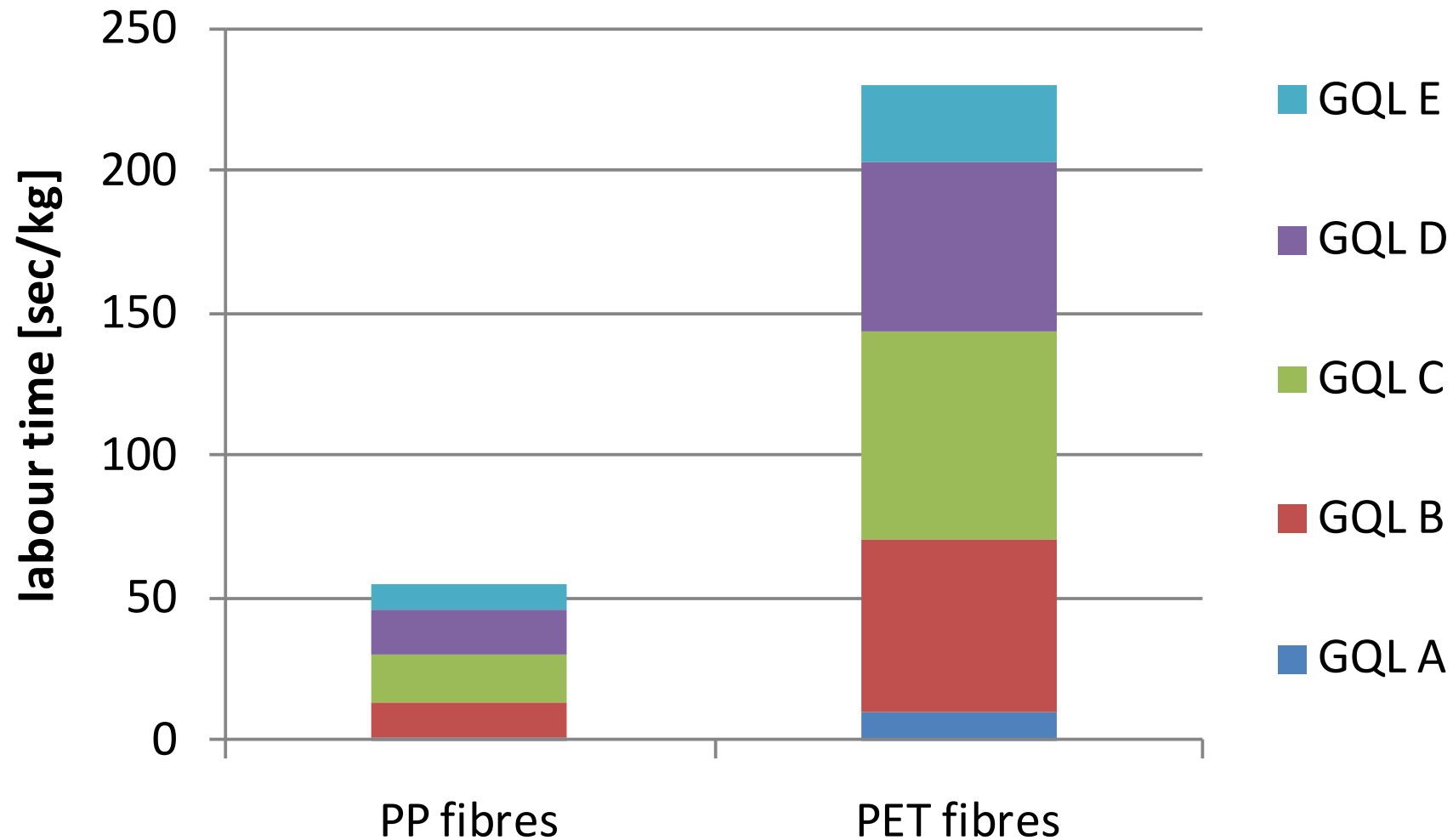


Case study: Comparison of the plastic materials PP and PET

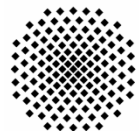
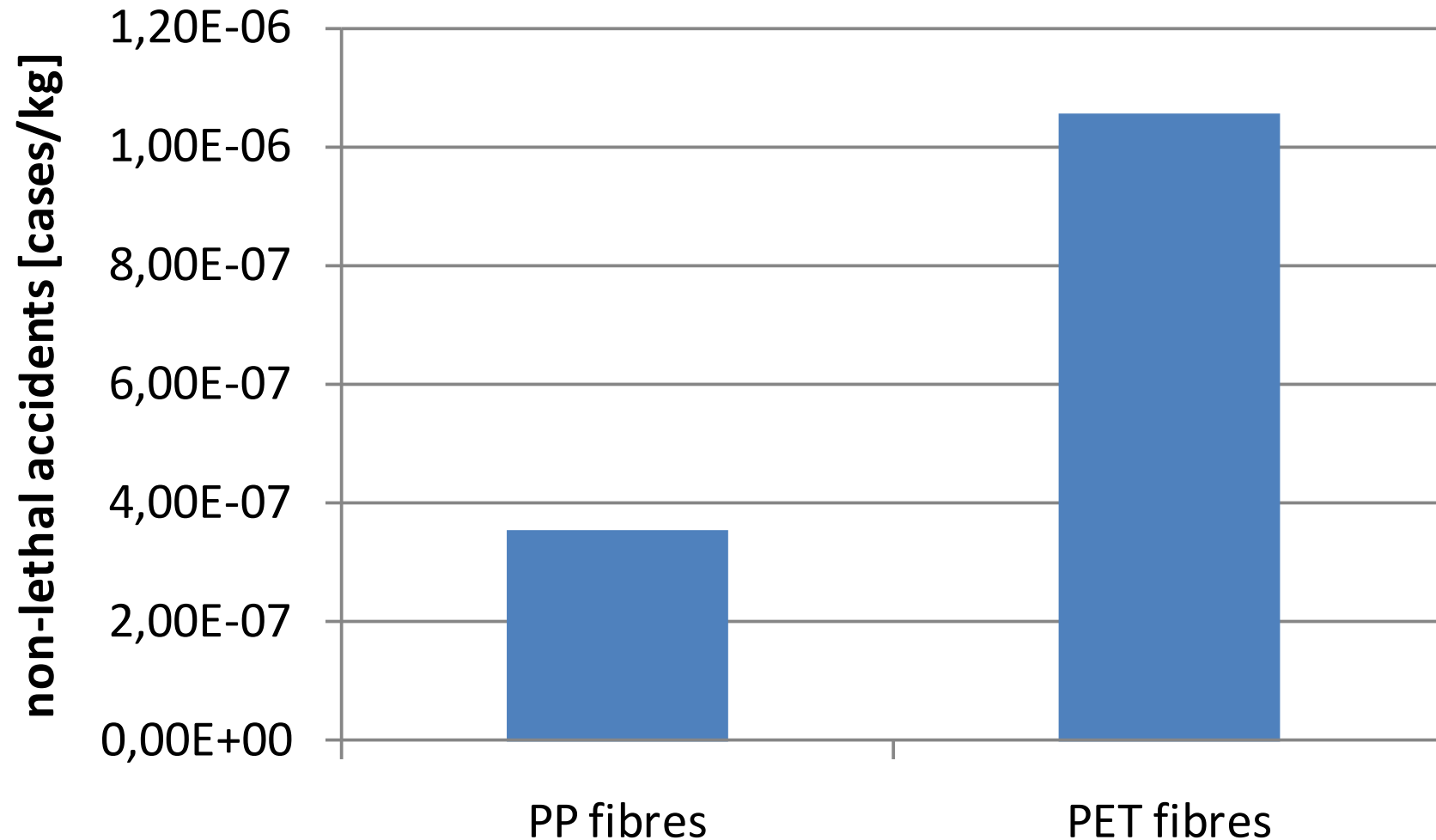
- ▶ There are principally two possibilities to use the LCWE method:
 1. Use of the comprehensive and consistent background database in GaBi. The data is calculated using statistics as explained above.
 2. Gathering of own, project and process specific data. The data can be inserted directly in the LCWE tab, when creating a new process.
- ▶ For the example, data from the background database is used.
- ▶ The results for the assessment of two routes are shown:
 - production of Polypropylene (PP) fibres
 - production of Polyethylene terephthalate (PET) fibres.



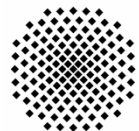
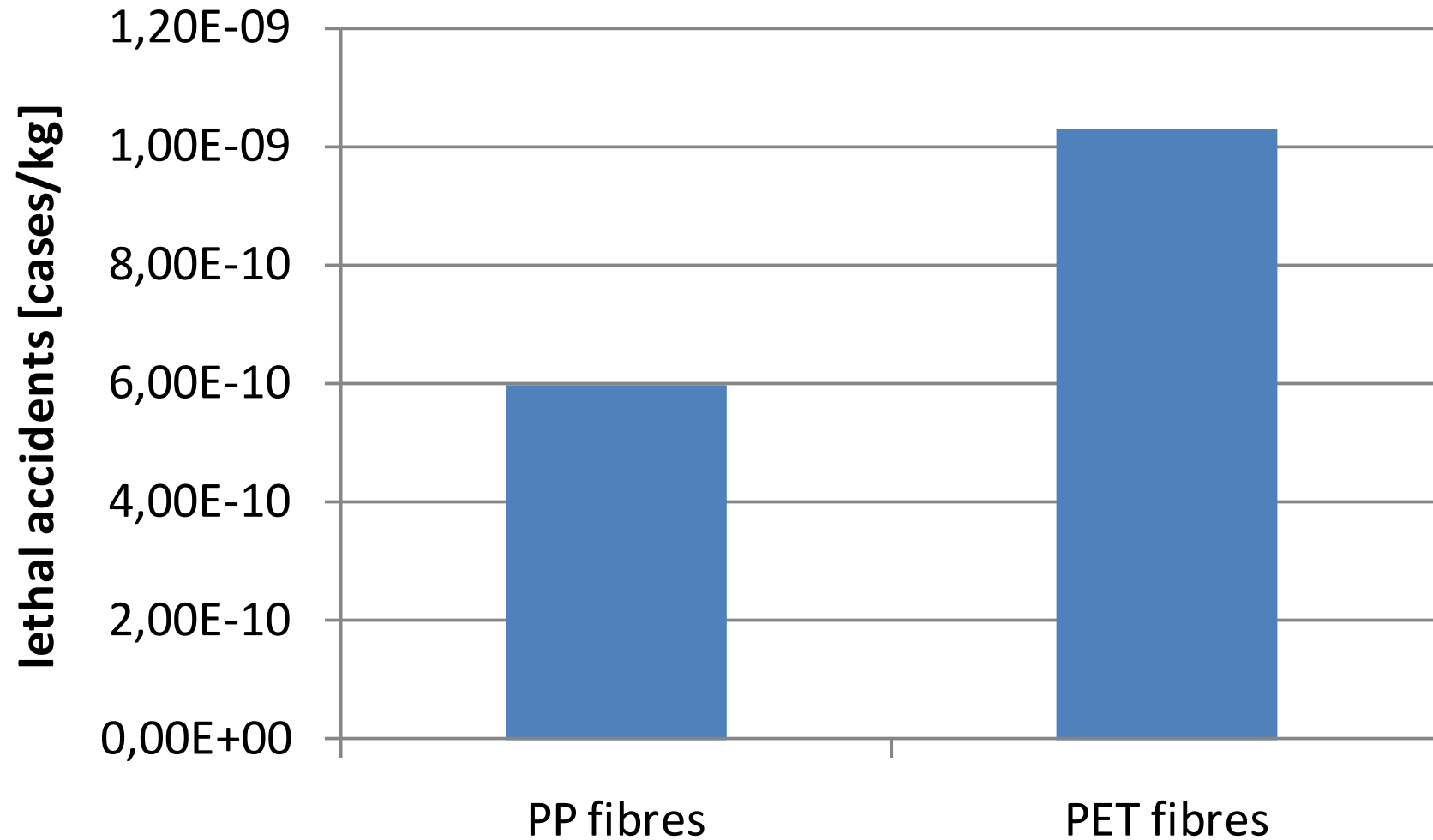
Qualified working time attributed to the production of 1 kg PP and PET fibres



Non-lethal accidents attributed to the production of 1 kg PP and PET fibres

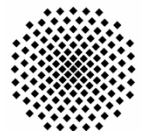


Lethal accidents attributed to the production of 1 kg PP and PET fibres



Conclusions

- ▶ Special balance view tab for LCWE in GaBi; generic data implemented.
- ▶ Social aspects have to be integrated into sustainability assessment of products → GaBi group not the only group working on this issue and worked with it since a couple of years.
- ▶ LCWE method allows quantitative tracking of social aspects along a product's life cycle on the basis of seconds of labour per value added.
- ▶ Primary data integration possible; data gaps can be filled from statistical sources.
- ▶ LCWE method is open for the integration of new indicators as long as they refer to (or can be linked to) working time or value added.
- ▶ More information in the documentation:
<http://www.gabi-software.com/fileadmin/Documents/lcwe.pdf>



Contact and more information

Dipl.-Geoökol. Ulrike Bos

University of Stuttgart
Chair of Building Physics (LBP)
Dept. Life Cycle Engineering (GaBi)

Hauptstrasse 113
70771 Leinfelden-Echterdingen
Germany

E-Mail: ulrike.bos@LBP.uni-stuttgart.de

Tel.: +49 711 489999-20
Fax: +49 711 489999-11

<http://www.LBPGaBi.uni-stuttgart.de>

<http://www.gabi-software.com>

Dipl.-Geoökol. Tabea Beck

University of Stuttgart
Chair of Building Physics (LBP)
Dept. Life Cycle Engineering (GaBi)

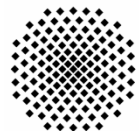
Hauptstrasse 113
70771 Leinfelden-Echterdingen
Germany

E-Mail: tabea.beck@LBP.uni-stuttgart.de

Tel.: +49 711 489999-24
Fax: +49 711 489999-11

<http://www.LBPGaBi.uni-stuttgart.de>

<http://www.gabi-software.com>



University of Stuttgart
Chair of Building Physics (LBP)



Life Cycle Engineering

