PE INTERNATIONAL
SUSTAINABILITY PERFORMANCE

How to use LCA in business

GreenCo Summit 2014 - Chennai

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PE Sustainability Solutions Pvt Ltd, India
A subsidiary of PE International AG, Germany

Agenda

- **Introduction to PE International**
- Life Cycle Thinking
- Drivers for LCA
- Case Study
  - PUMA – clever little bag
  - Automotive industry – Volkswagen/ Daimler
  - Integration/ automated EPD – Zumtobel/ Assa Abloy


PE INTERNATIONAL
EXPERTS IN SUSTAINABILITY
2000+ man years experience of..
250+ experts from….
30+ nations with…
20+ Industrial Sectors…
23 offices with…
1 DNA !
PASSION
HONESTY
CONTINUOUS DEVELOPMENT
SUSTAINABILITY
ACCOUNTABILITY
OPEN COMMUNICATION
DIVERSITY
RESPECT
INTEGRITY
EMPOWERMENT
CREATIVITY & INNOVATION
TRANSPARENCY
TEAMWORK
FAIRNESS

PE International Introduction

What we offer

Integrated solutions for product and corporate sustainability management

Sustainability Consulting

- Sustainability Roadmap and Strategy
- Stakeholder Engagement and CSR
- Carbon & Water Footprints
- Life Cycle Assessment
- Energy efficiency studies

Corporate Sustainability

- Sustainability Management Solution
- GRI, CDP, UN Global Compact Reporting
- Management Systems: ISO 14001, OHSAS 18001, ISO 50001 etc.

Product Sustainability

- Product Life Cycle Assessment solution
- Design for Environment
- Product Footprint (Carbon and Water)
- Scenario analysis / decision support

Databases & Content

GaBi Software Suite

For:
Integration GaBi with PLM/ERP

Design for ***x*** [compliance, recycling, etc.]

GaBi DfX

For:
LCA practitioners

Professional LCA modeling software

GaBi 6

For:
Non-LCA experts who need expert answers

For:
Instant scenario analysis

Intuitive, interactive decision-guidance tool powered by GaBi Software and Databases

GaBi Envision

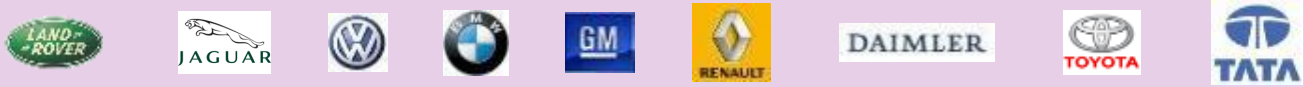
Comparable, robust and up to date industry LCI Data underlies expert LCAs

GaBi Databases 2013

Chemicals, Energy, Precious and Non-Precious Metals, Plastics, End of Life, Manufacturing, Electronics, Renewables, …, and external databases like USLCI, ecoinvent

Clients in all key verticals

40% of the Fortune Global 500 companies are customers of PE

Industry	Sample customers	PE's USP
Automotive		*20 years experience & leadership with dedicated vertical offering*
Apparel		*Front runner, high-quality proprietary data, vertical offering*
Building & Construction		*EPDs and network to GBCs, 17 years in the market*
Chemicals		*Association work, high-quality proprietary data, deep industry expertise*
Consumer Goods		*Ability to cover the entire value chain, incl. retail, dedicated vertical offering*
Electronics		*High-quality proprietary data & models, 15 years in the market*
Financial Services		*Association work, thought leadership & robust, flexible software*
Food & Beverage		*Ability to cover the entire value chain, incl retail, dedicated vertical offering*
Industry Associations		*Understanding of the industry needs, dedicated vertical offering & content*
Metals and Mining		*Ability to cover all aspects of sustainability, benchmarking capability*

Our Clients in India

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- **Life cycle Thinking?**
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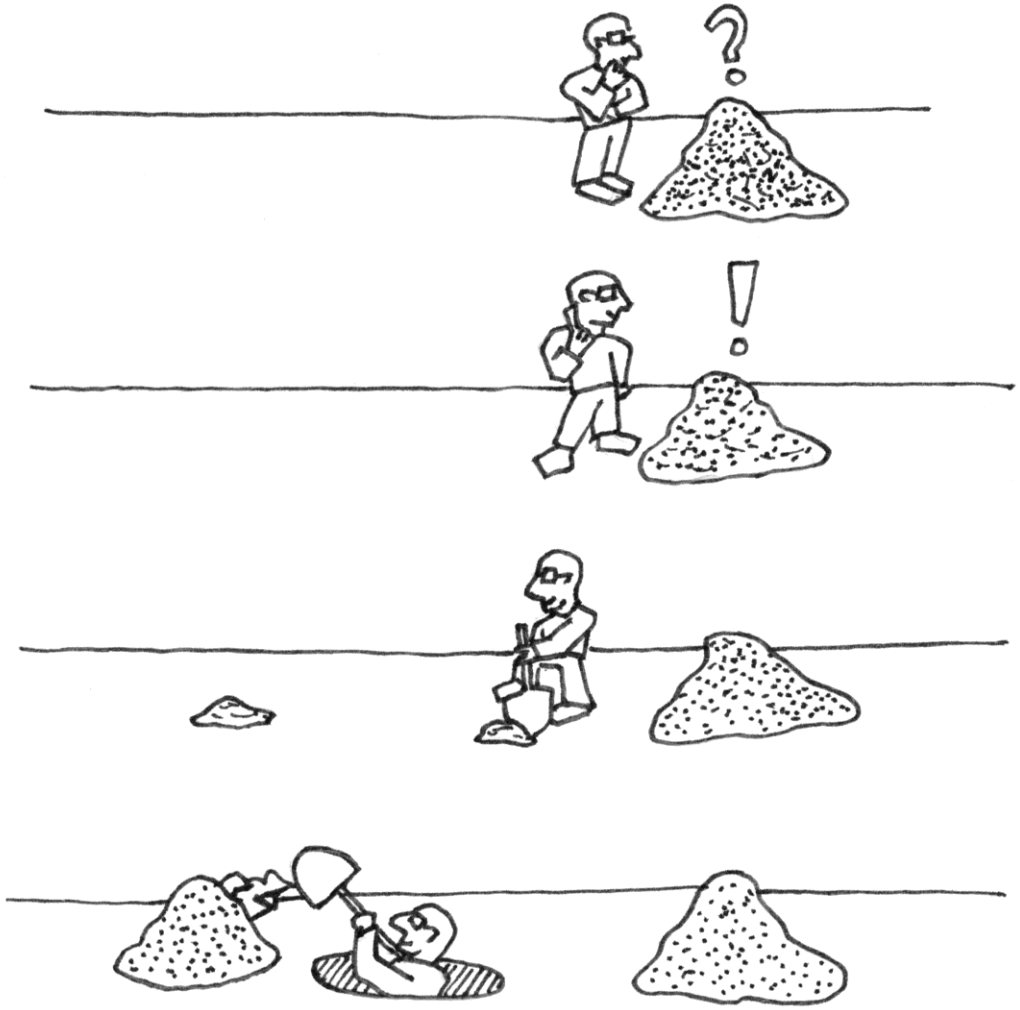
Why Life Cycle?

Why? I

Avoid solving a

problem …

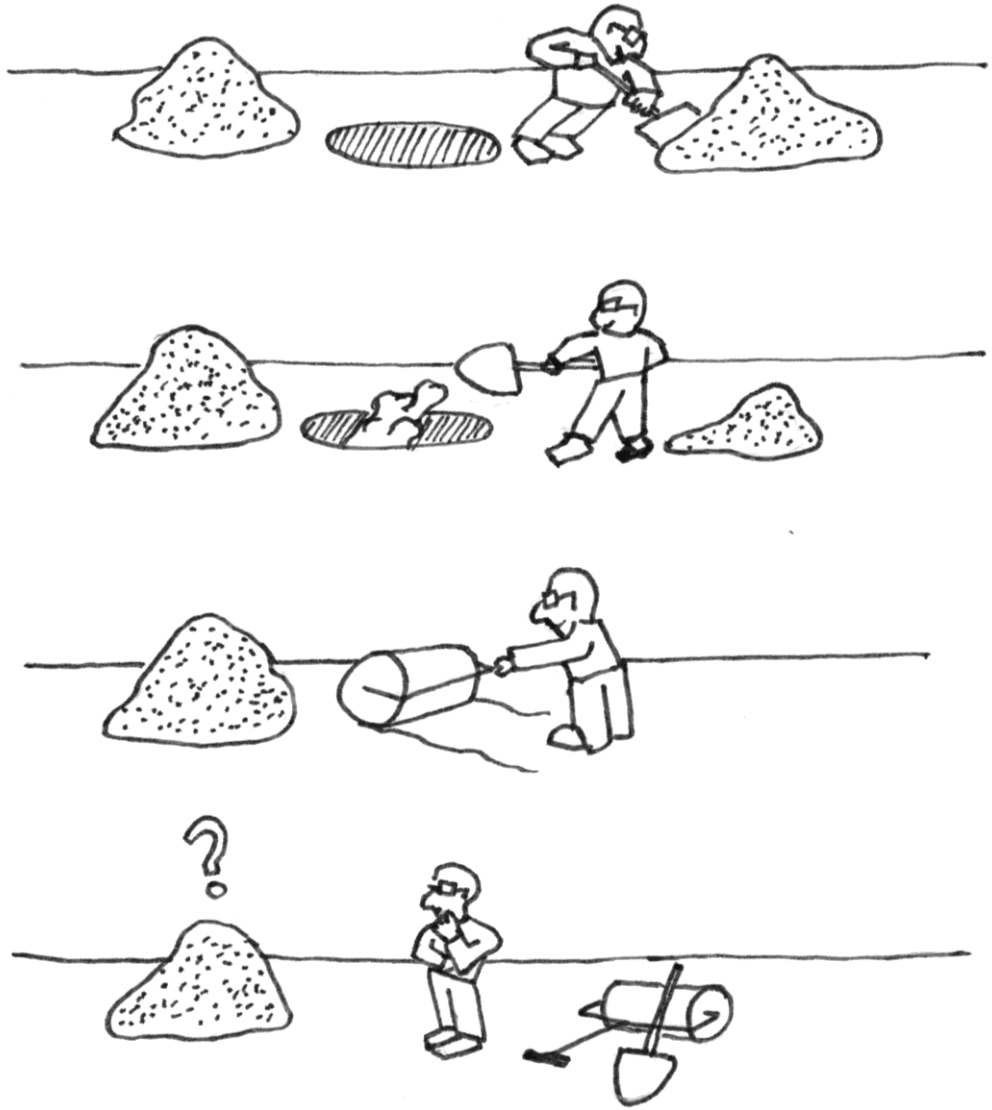


Life Cycle Thinking…

Why? II

Avoid solving a

problem …



… by creating a problem.

Life Cycle Thinking…

A lens to assess your business & supply chain sustainability

Life Cycle Thinking…

…Supply chain is important

GHG

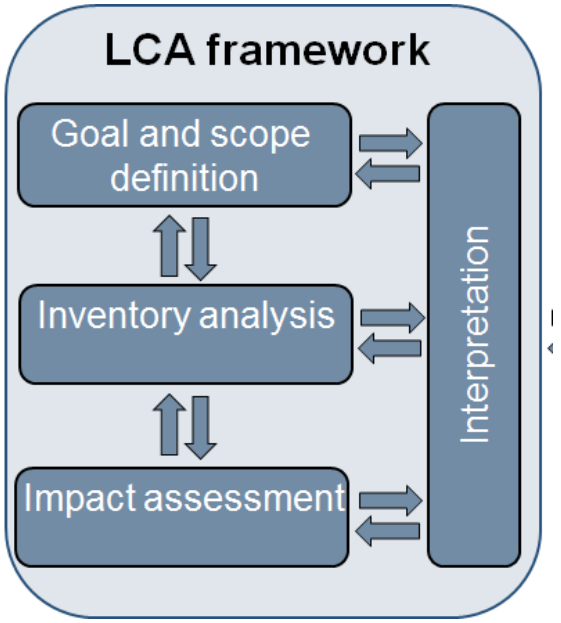
Water

Waste

Source: http://avnir.org/documentation/congres_avnir/diapos/placvmoteur/Unilever_Taylor.pdf

Life Cycle Thinking…

How to quantify → LCA



Life Cycle Assessments is based on ISO 14040/14044

LCA is the **compiling** and **evaluation** of the **input and outputs** and the **potential environmental impacts** of a product system during its lifetime

Primary Energy, Raw material,

Global warming, Summer smog, Acidification, Over fertilisation, Environmental toxins, Waste etc.

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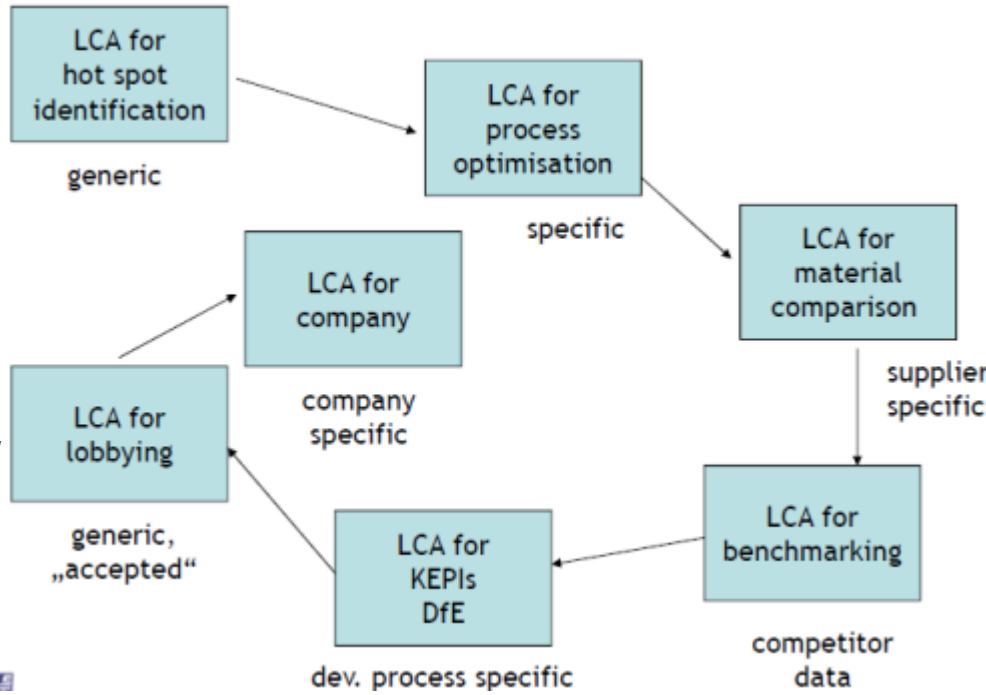
Drivers for LCA -
Creates value across entire organization

Drivers for LCA -
Business value

- **Environment impacts** during the **various phases of product life cycle** (raw material acquisition, transport, manufacturing, packaging, end-of-life)
- Hot-spots and gaps for **significant environmental impacts** (emission to air, effluent discharge quality, hazardous waste etc.) – company & product view
- Insights in **supply chain –** environment, social & costs → create **win-win situation** with supplier
- Design for Environment: m**ultiple scenario analysis** on **various options** (e.g. material/ fuel/ technological configurations)
- **sustainable product portfolio management**
- LCA based interactive tool for designer, **Sustainable product design**
- **Support communication/ marketing: Environment Product Declaration (EPD)** document for branding and marketing communication.
- **Benchmarking** with competitors and adopt best practices



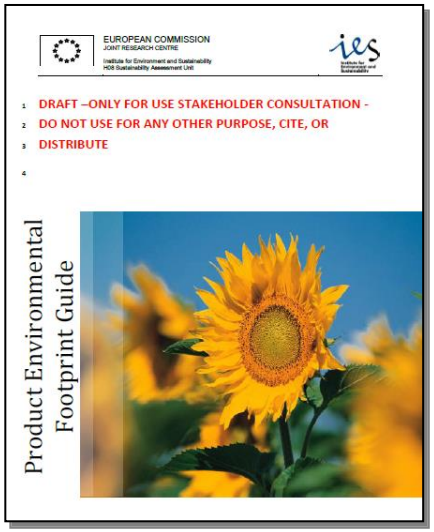
Dr. Matthias Finkbeiner – TU Berlin

„LCAs provide the best framework for assessing the potential environmental impacts of products currently available.“

EU-Commission - Integrated Product Policy - COM/2003/0302 final

Drivers for LCA

International - Environmental Footprinting Initiative by EU & LEED v4



On 9th of April 2013, the European Commission (EC) officially announced the “Single Market for Green Products Initiative”. This initiative is the framework for the two guides to measure environmental performance throughout the lifecycle,

- Product Environmental Footprint (PEF) and
- Organisation Environmental Footprint (OEF), which are now officially published. They are ..
- Based on life cycle approach
- Multi-criteria measure of the environmental performance (following ISO 14044)
- Comparability shall be given priority over flexibility

LEEDv4: New Credit for conducting building Life Cycle Assessment and development of Environment Product Declaration for building products

Source: http://ec.europa.eu/environment/eussd/smgp/index.htm

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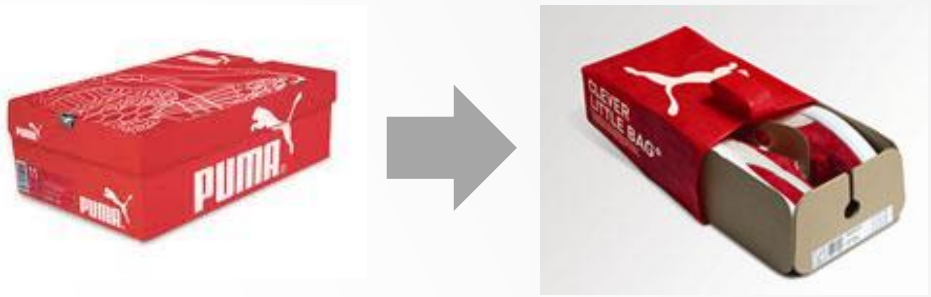
Case study

PUMA – packaging innovation

Images: Puma



Challenge

- Analyze the environmental performance of the various footwear-packaging options

Solution

- Puma's "Clever Little Bag" replaces the cardboard shoebox with a re-usable shoe bag. (Video)
- Innovation through Eco-Design

Business value

- Brand enhancement
- Significant reduction of waste and CO_2 emissions. Annual Savings:
  - ✓ 8,500 tons of paper
  - ✓ 1 million liters of water
  - ✓ 10,000 tons of CO_2
  - ✓ 20 million MJ electricity

Case study

PUMA – packaging innovation

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Case study

Automotive Industry – Volkswagen principles

VOLKSWAGEN

Volkswagen Group
Environmental Principles Products

The Volkswagen Group's Environmental Principles serve as a guideline for all the Group's marques and regions, taking into account the regional possibilities. To live up to our responsibility towards customers, society and the environment, we have made the continuous improvement of the Group's products in respect of their environmental compatibility and resource conservation an integral part of our corporate policy. Our activities and processes are shaped by a prudent approach to ecological challenges.

In line with this approach, we have defined the following objectives:

1. Climate protection
- reduce greenhouse gas emissions
- reduce fuel consumption in the driving cycle and over the vehicle's service life with the customer
- support fuel-efficient styles of driving

2. Resource conservation
- improve resource efficiency
- attain optimum recyclability by taking account of innovative recycling technologies
- use renewable and secondary raw materials
- develop and make available alternative powertrain technologies
- enable the use of alternative fuels and other energy storage systems, taking account of regional circumstances

3. Healthcare
- reduce regulated and non-regulated emissions
- avoid the use of hazardous and harmful materials – wherever possible in line with the world's strictest materials legislation
- minimise interior emissions including odours
- attain best possible exterior and interior noise levels

In future, we will develop each model in such a way that, in its entirety, it presents better environmental properties than its predecessor. As we do so, we will make sure that improvements are attained over the entire product life cycle.

In this process, the Volkswagen Group will take particular account of the changes in mobility and environmental aspects resulting from growing levels of urbanisation.

The environmental objectives set out above also serve to differentiate us from the competition to the benefit of our customers. The Volkswagen Group aims to rank among the leaders in respect of environmental matters.

Prof. Dr. Martin Winterkorn
Chairman of the Board of Management of Volkswagen AG

01.12.2008

Volkswagen is the high-volume brand that stands for innovation and engineering excellence.

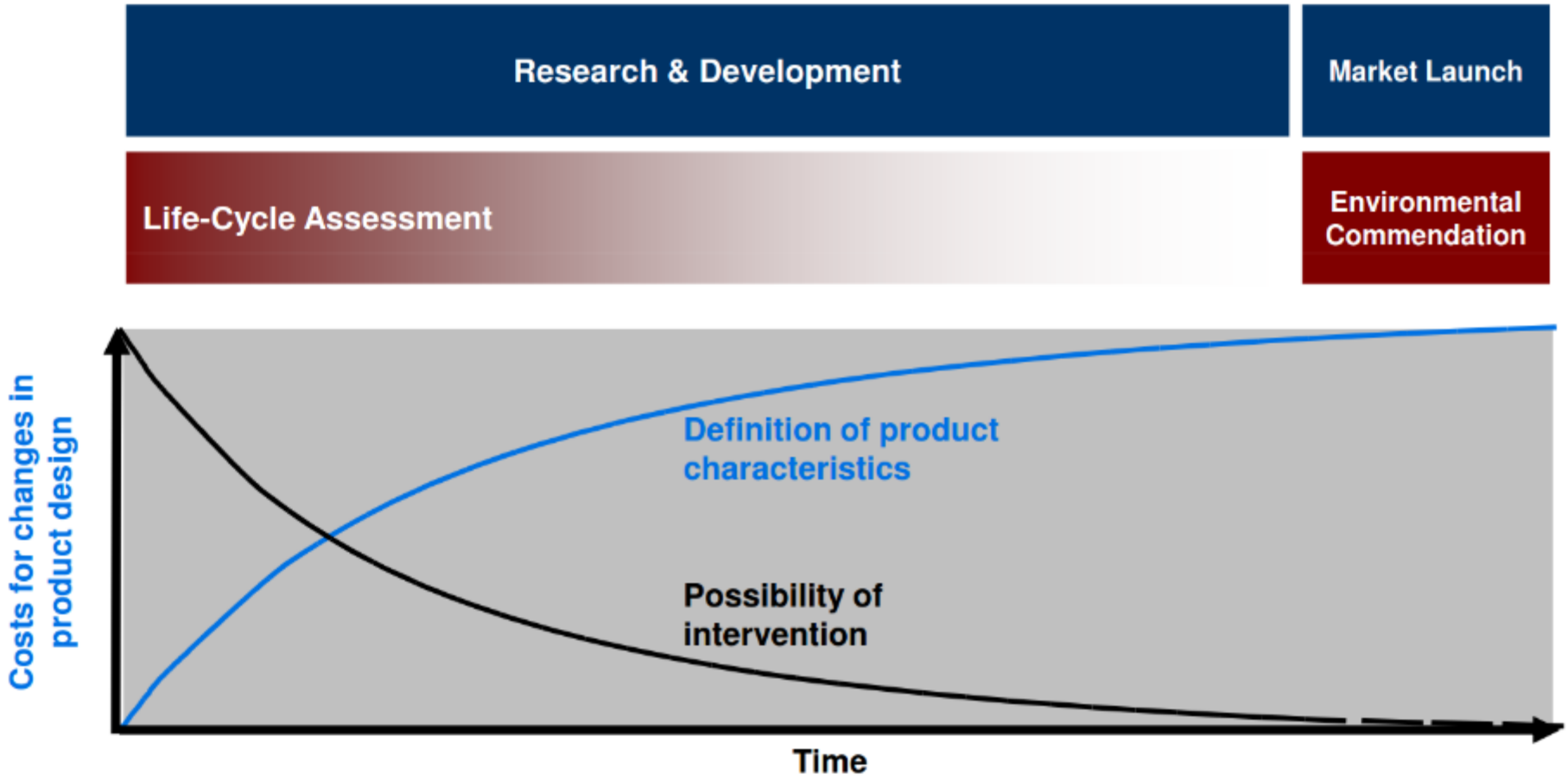
Dr. Martin Winterkorn, Chairman of the Board of Management of Volkswagen AG

In future, we will develop each model in such a way that, in its entirety, it presents better environmental properties than its predecessor. As we do so, **we will make sure that improvements are attained over the entire product life cycle.**

Dr. Stephan Krinke, Environmental friendly vehicle design throughout the life cycle

Case study

Automotive Industry - Volkswagen



Dr. Stephan Krinke, Environmental friendly vehicle design throughout the life cycle

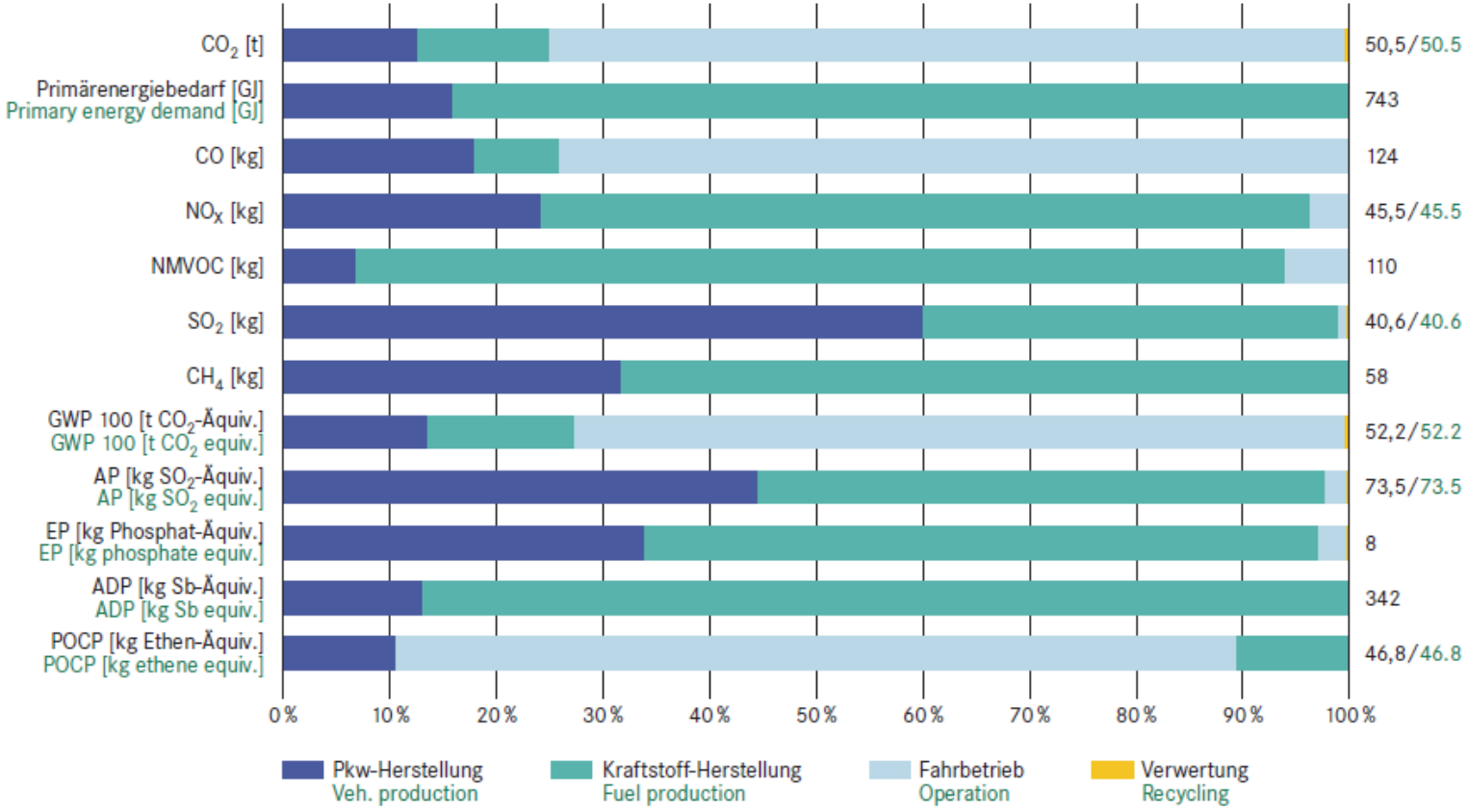
Case study

Automotive Industry – Daimler AG DfE approach

All graphs and information taken from the Environmental Certificate Mercedes-Benz C-Class

Case study

Automotive Industry – Exemplary results



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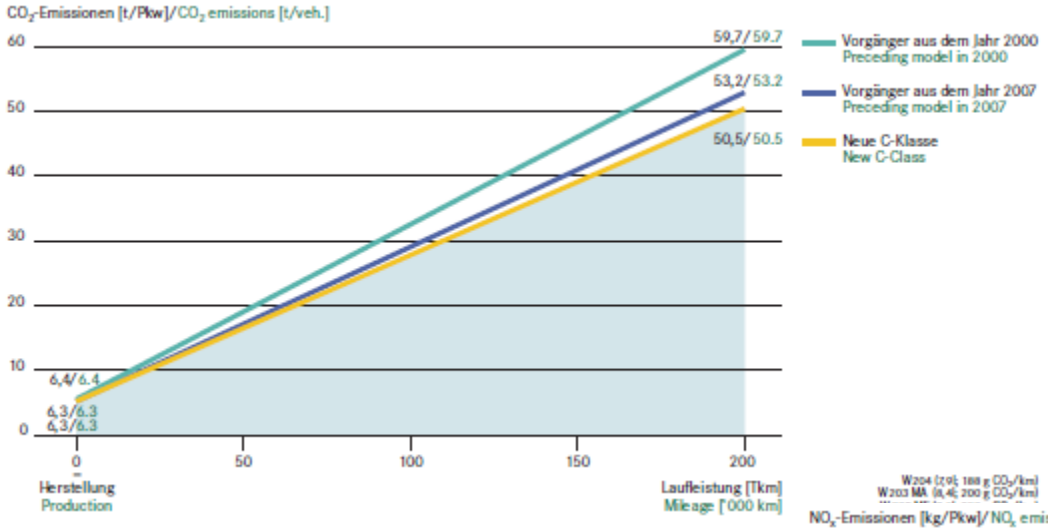
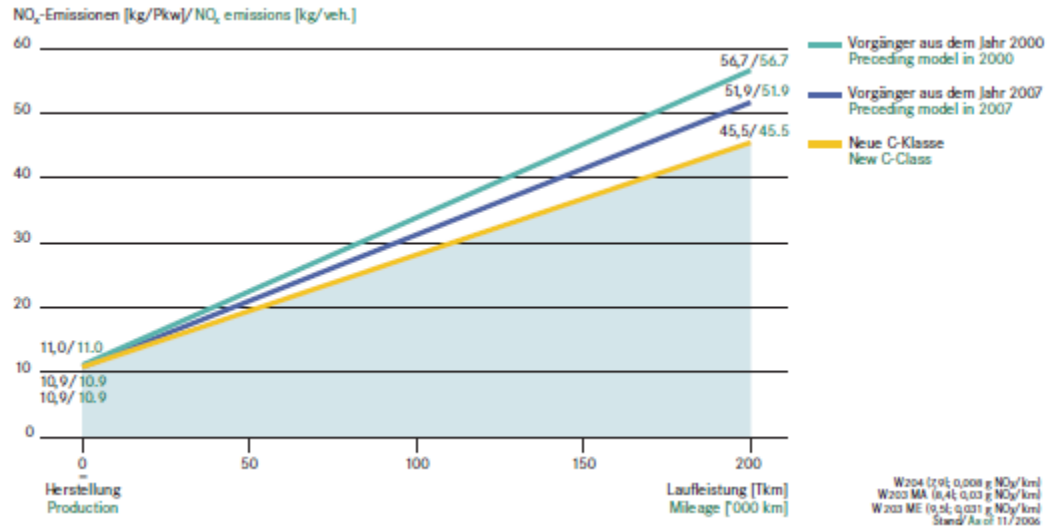
Case study

Automotive Industry – Exemplary results

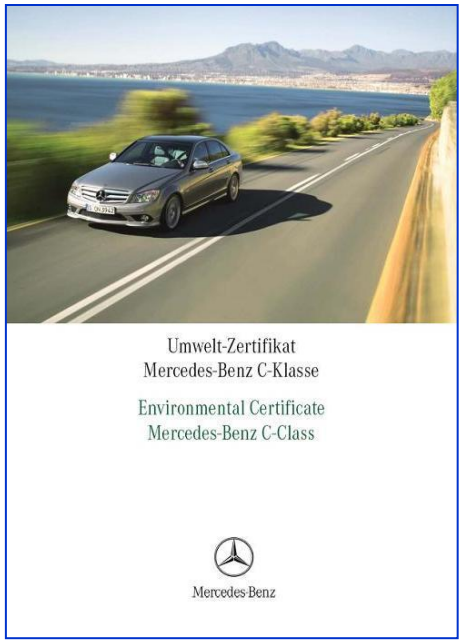


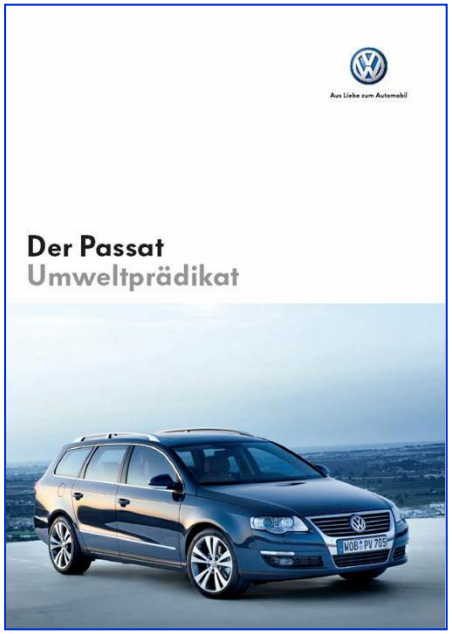


Case study
Automotive Industry – communication to customer

B to C communication based on customer request

Automobile: All major automobile producers apply LCA as a standardized approach to analyze the environmental performance of the car within the product development process





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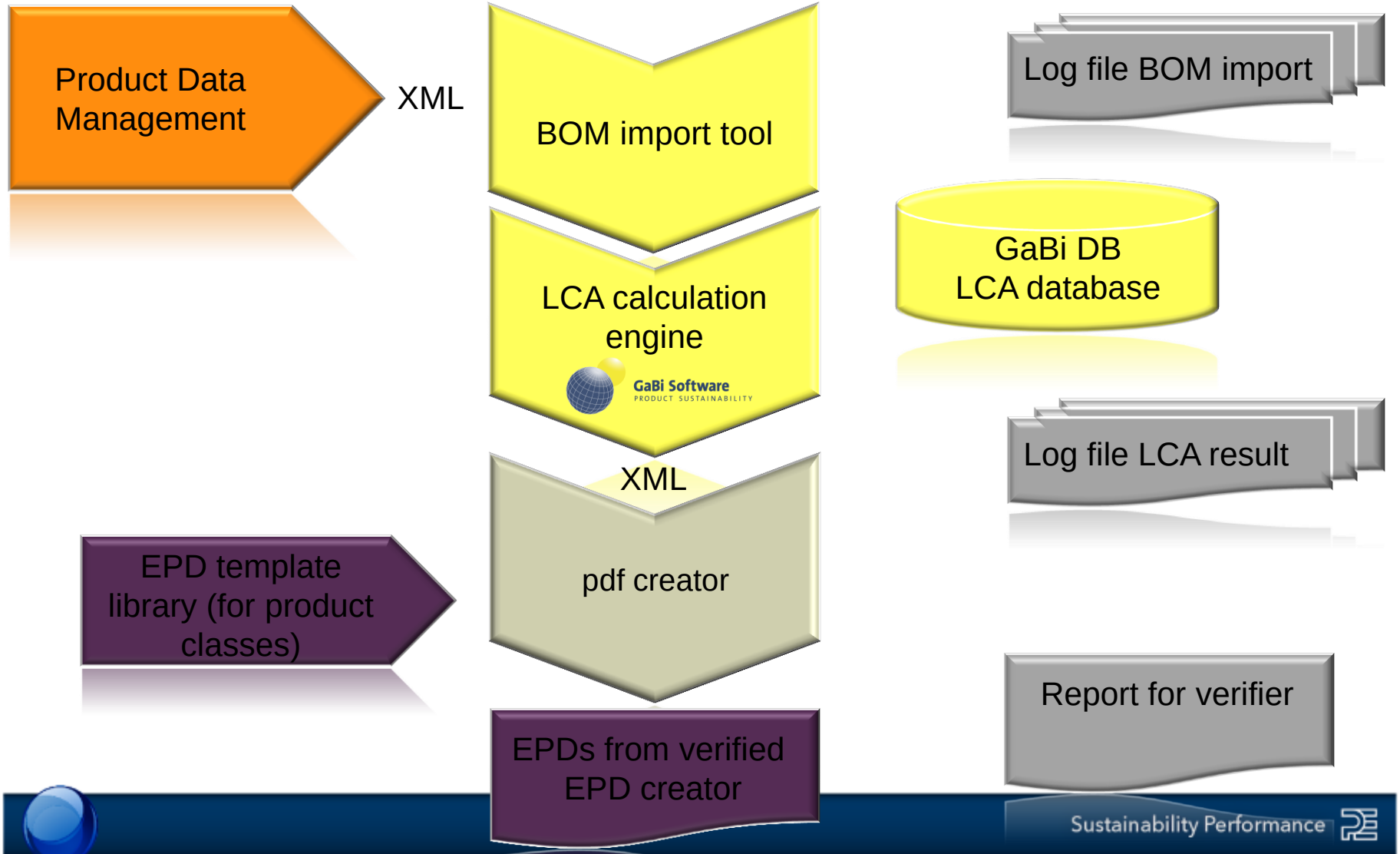
ZUMTOBEL
Driver – customer request
Zumtobel is first in its industry with verified* EPDs for all of its 10,000 products.
Bill of Materials from ERP
GaBi DfX
GaBi Databases
Customized datasets
Other databases
Product LCA
Automatic verified ISO 14025 EPD
Image: Zumtobel
*according to ECO scheme

Case study

Zumtobel – automated EPD generation



Case study

Assa Abloy– automated EPD generation

In long- and short-term interest to ensure running a sustainable business and offer the customers sustainable solutions

Focus on improving sustainability profile

Monitoring performance at plants

Implemented improvement targets

Increased focus on sustainability in new product innovation

Maximising sustainability of products

Considering whole life cycle of the product

Focus on area where greatest impact can be achieved

Placing each product in larger context than its own

Keeping up with sustainability development throughout value chain

Thank you for your attention!