

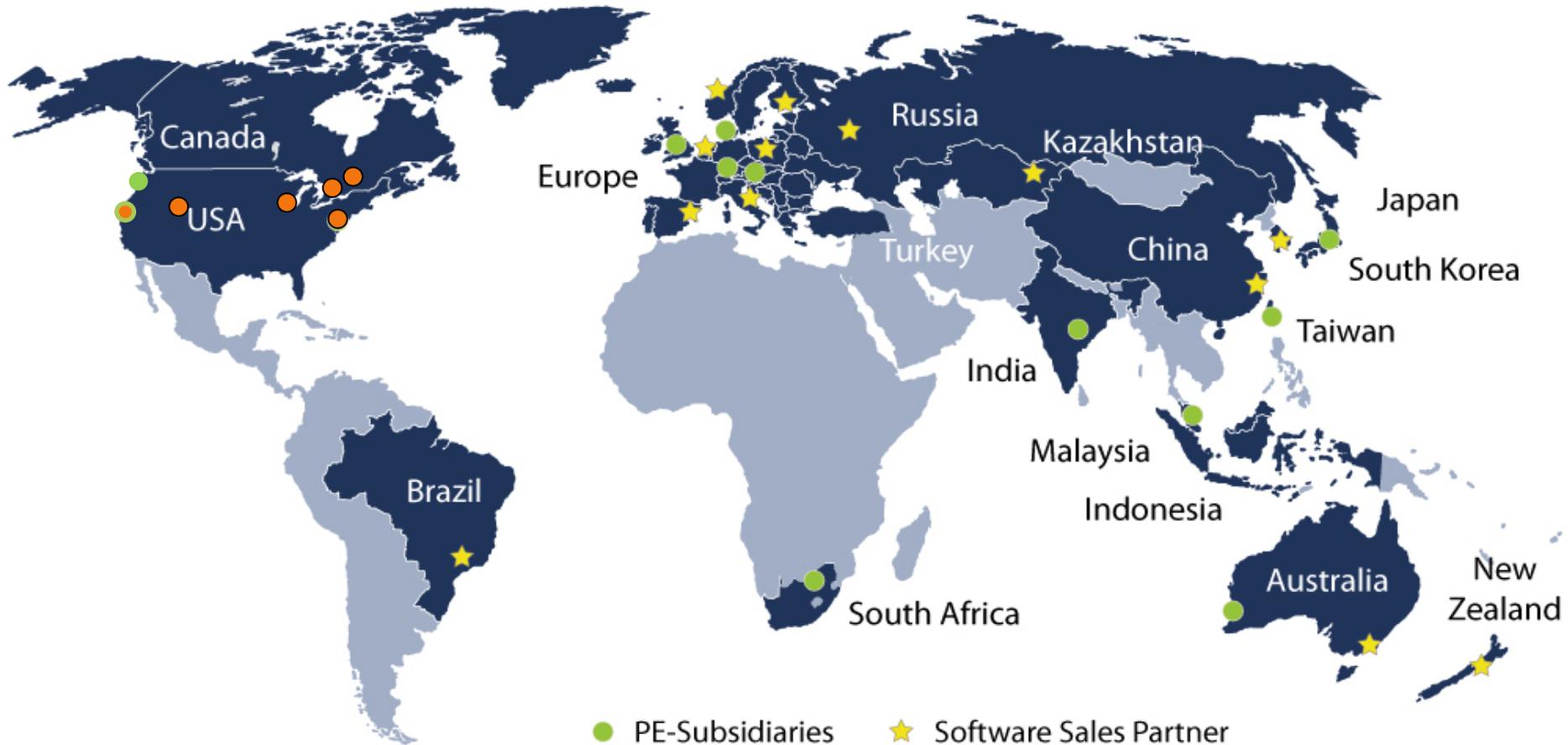


PE AMERICAS
A joint venture of Five Winds and PE



LCA in practice: Understand, Improve, Succeed

**PE Americas
DTSC LCA 101 Symposium
September 23, 2010**



- ★ Software Sales Partner
- PE Subsidiaries
- Five Winds International
- Presence of PE or partners

Over 150 sustainability experts

We help our clients to

- **Understand** the Impact of Sustainability on their Business



- **Improve** Product and Corporate Sustainability Performance



- **Succeed** in the Market Place with a more sustainable Business Model



...with a unique set of Services, Solutions, Content & Expertise!

Consulting

PE is the clear market leader in the field of LCA, EPDs and Product Carbon Footprints worldwide. The client base consisting mainly of leading multinationals and world sector organizations will allow for expansion of the market through their suppliers or membership companies.

Corporate Sustainability



PE INTERNATIONAL's SoFi software helps us track our global manufacturing environmental performance data so we know how we're doing, and SoFi's capabilities and flexibility have positioned us well to address our carbon footprinting needs."

Steve Yucknut, Vice President for Sustainability, Kraft Foods

Product Sustainability

With more than 3,000 licenses sold worldwide, GaBi software and databases are the leading solution for product sustainability.



Partnerships, Memberships and Accreditations



World Business Council for Sustainable Development



PE INTERNATIONAL
SoFi Solution 4.0
includes GRI content



2010

CARBON DISCLOSURE PROJECT
ACCREDITED PROVIDER



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1. **PE Americas Overview**
2. **Understand**
3. **Improve**
4. **Succeed**
5. **Tools**



Project scope based on needs

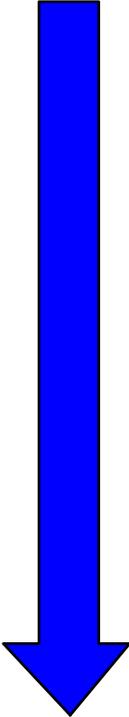
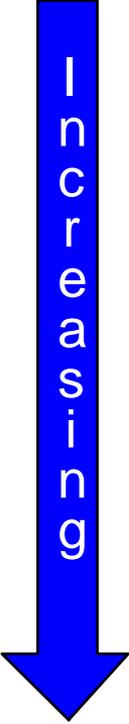
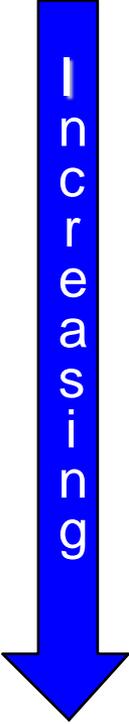
- Literature review
- Hotspot analysis/screening LCA
- Full LCA
- Critically reviewed LCA (for public use)
- Comparative LCA (for public claims)

Audience

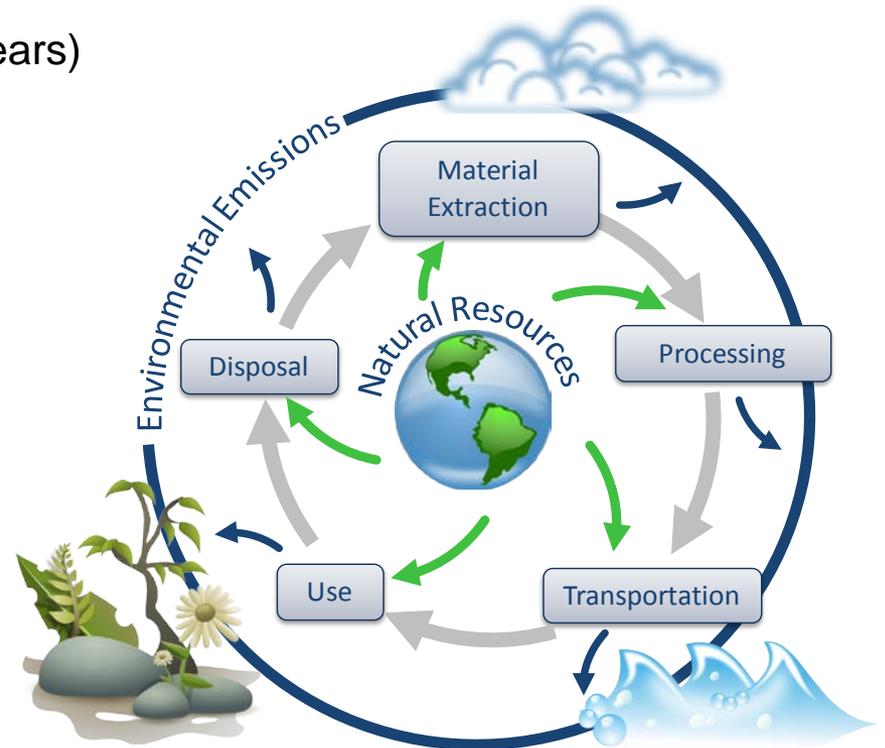
- Internal vs External



Steering on investment of resources, biggest bang for environmental buck

Application	Audience	Scope	Degree of Quantification
<p>Corporate Strategy/ Internal Communication</p> <p>Product Design/ Modification</p> <p>Public Information/ External Communication</p> <p>External Policy-making/ Governmental</p>	<p>Internal</p>  <p>External</p>		

- With the right tools:
 - Life cycle screens can take a few hours
 - Quick studies can be completed in days or weeks
- Large studies can take many months (or years)
 - Depending on collection of new data
 - Review process
- Study commissioner
 - Individual company
 - Industry group or association
- LCA practitioner
 - In-house
 - External



GaBi 4



GaBi databases

PE databases

GaBi web questionnaire

Third party and public databases

GaBi eXchange

GaBi i-report solutions

GaBi publisher

GaBi DfX

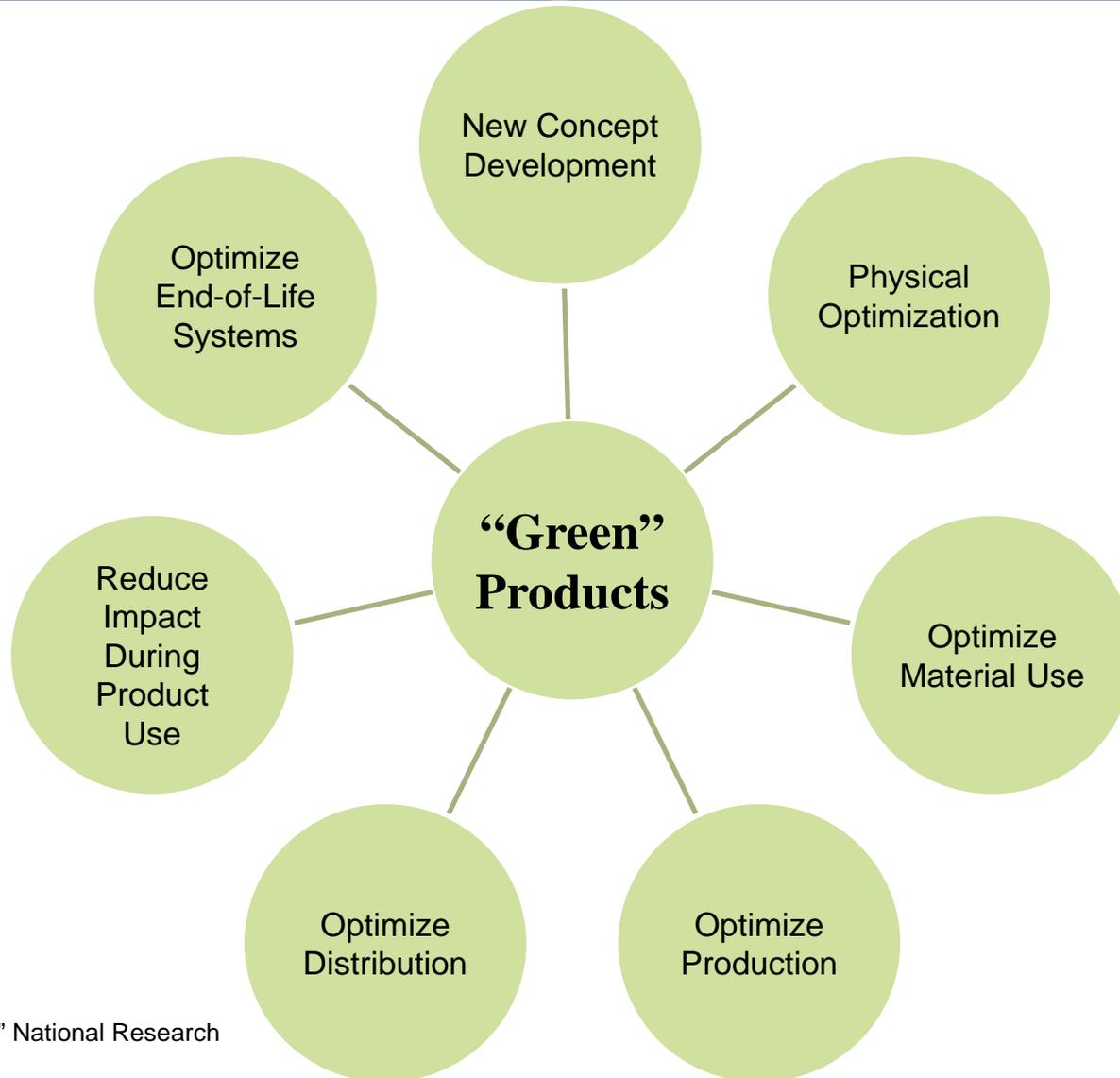
GaBi reader



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Levi Strauss and Co.'s LCA and Care Tag

Timberland's EcoLabel uses LCA numbers

BECAUSE WE'RE AN OUTDOOR BRAND, WE HAVE A STRONG COMMITMENT TO ENVIRONMENTAL STEWARDSHIP. OUR EFFORTS ARE FOCUSED ON ENERGY, CHEMICALS, AND RESOURCES - AREAS THAT MOST AFFECT OUR COMPANY'S FOOTPRINT.

THROUGH OUR CODE OF CONDUCT, WE WORK WITH SUPPLIERS TO ENSURE THAT OUR PRODUCTS ARE MADE IN WORKPLACES THAT ARE FAIR, SAFE, AND NON-DISCRIMINATORY.

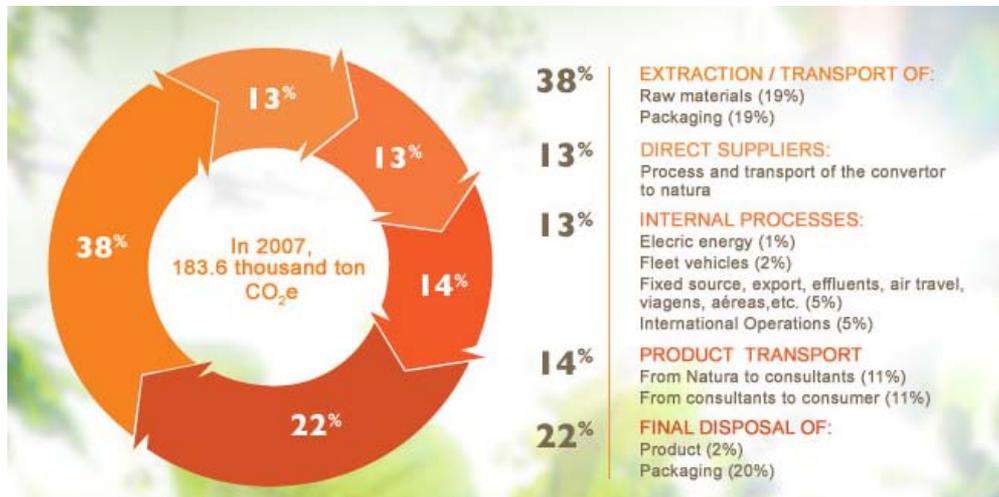
WHERE IN THE WORLD THE SHOES WERE MADE.

Our Footprint	Notre Empreinte
Environmental Impact	Impact sur l'environnement
Energy to Produce: (per pair)*	3.1 kWh
Énergie utilisée (par paire)*	3.1 kWh
Renewable energy (Timberland-owned facilities):	5%
L'énergie renouvelable (sites appartenant à Timberland):	5%
Community Impact	Impact sur la communauté
Hours served in our communities:	119,776
Nombre total d'heures données:	119,776
% of factories assessed against code of conduct:*	100%
% d'usines évaluées pour leur conformité au code de conduite:*	100%
Child labor:*	0%
Main-d'oeuvre enfantine:*	0%
Manufactured	Fabriqué à
OSI Vietnam, Vietnam	OSI Vietnam, Vietnam

AN AVERAGE 16 CUBIC FOOT REFRIGERATOR USES 17.4 KWH PER DAY.

THIS REPRESENTS THE TOTAL NUMBER OF HOURS OUR 5,288 EMPLOYEES SERVED IN 2005. WE OFFER OUR EMPLOYEES 40 PAID HOURS A YEAR TO SERVE IN THEIR COMMUNITIES, IN LINE WITH OUR MISSION TO EQUIP PEOPLE TO MAKE THEIR DIFFERENCE IN THE WORLD.

ALWAYS THE SAME - ZERO.



A Brazilian based beauty care company

ENVIRONMENTAL TABLE ▶

PRODUCT	
Renewable Vegetal Origin	75,76%
Natural Vegetal Origin	19,05%
With Certificate of Origin	0%
PACKAGE	
Recyclable Material	0%
Recycled Material	74,35%
Recommended number of refills	10
Description	

Lifecycle Impact of Levi's® 501® Jean



32.3 kg of CO₂

- 78 miles driven by the average auto in the US
- Is equivalent to the carbon sequestered by 6 trees per year (based on EPA representative sequestration rates of tons of carbon per acre per year)

3480.5 liters of water

- Running a garden hose for 106 minutes
- 53 showers (based on 7 minute showers)
- 575 flushes of a 3.78 liter/flush low flow toilet

100.1 MJ of Energy

- Watching TV on a plasma screen for 318 hours
- Powering a computer for 556 hours. Which is equivalent to 70 work days (based on 8 hours of computer use per day)

Data from LS&CO.'s Life Cycle Assessment on Levi's® 501® Jean for U.S. Market, 2006 production year

NATURAL

SUSTAINABLE

TRUE

RECYCLABLE

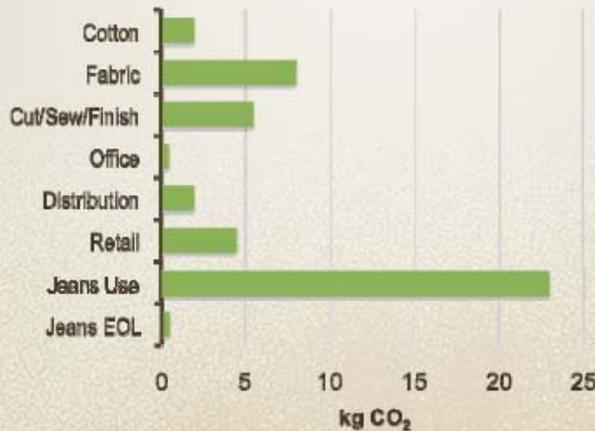
RENEWABLE

Lifecycle Insight

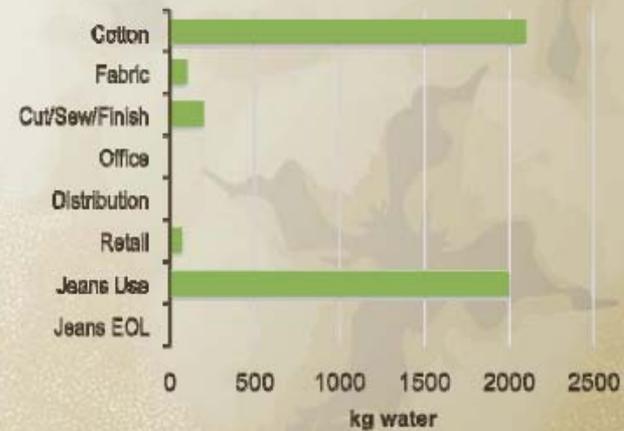


Key Takeaway:
Impacts out of our control are greater than within our control: must address cotton and consumers

Global Warming per kg Garment



Water Use per kg Garment

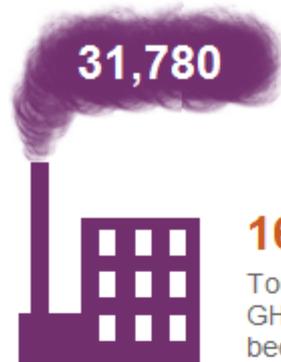


Data from LS&CO.'s Facilities Environmental Impact Assessment (FEIA) and 2007 Life Cycle Assessment of Levi's® 501® Jean.

NATURAL SUSTAINABLE TRUE RECYCLABLE RENEWABLE

- » Cool Carpet
- » Cool Carpet Calculator
- > News and Events
- > Online Mill Visit
- > Tour Our Showroom
- > Media Room

Your carpet purchase results in the following offsets:



Pounds of greenhouse gases (GHGs) have been offset

16
Tons of GHGs have been offset

14
Metric tonnes of GHGs have been offset

These offsets result in the same impact as:



3
Passenger cars not driven for one year



1,636
Gallons of gasoline not consumed



2
Households worth of electricity use avoided for one year

[Where's the Math?](#)

To better visualize how much gas this is, this volume of GHG would fill up:



18
Boeing 767 cabins



7
International Space Stations



0
Empire State Buildings



0.0
Pentagons

[Where's the Math?](#)

In this particular case, the entire life cycle of 1,000 sq. yds of carpet generates about 16 tons of GHG emissions. InterfaceFLOR will offset these GHG emissions by investing in a variety of carbon offset projects.

✕



MacBook Pro
13-inch: 2.4GHz

\$1,199.00

Save this Mac **Select**

✕



MacBook Pro
15-inch: 2.66GHz

\$2,199.00

Save this Mac **Select**

✕



MacBook Pro
17-inch: 2.53GHz

\$2,299.00

Save this Mac **Select**

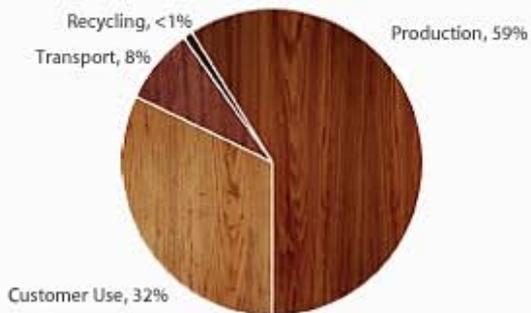
▶ Hardware

▶ Software

▶ Technical Specifications

▼ Environmental Status Report*

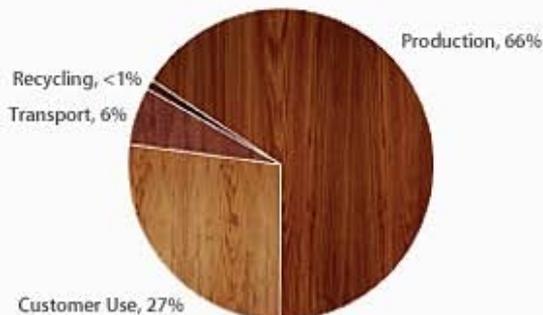
Total greenhouse gas emissions: 440kg CO₂e



Energy Efficiency

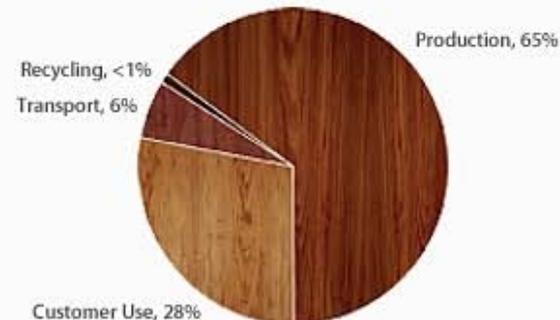
Mode	100V	115V	230V
Min. Power	0.10W	0.10W	0.14W

Total greenhouse gas emissions: 630kg CO₂e



Mode	100V	115V	230V
Min. Power	0.11W	0.11W	0.15W

Total greenhouse gas emissions: 700kg CO₂e



Mode	100V	115V	230V
Min. Power	0.11W	0.11W	0.15W



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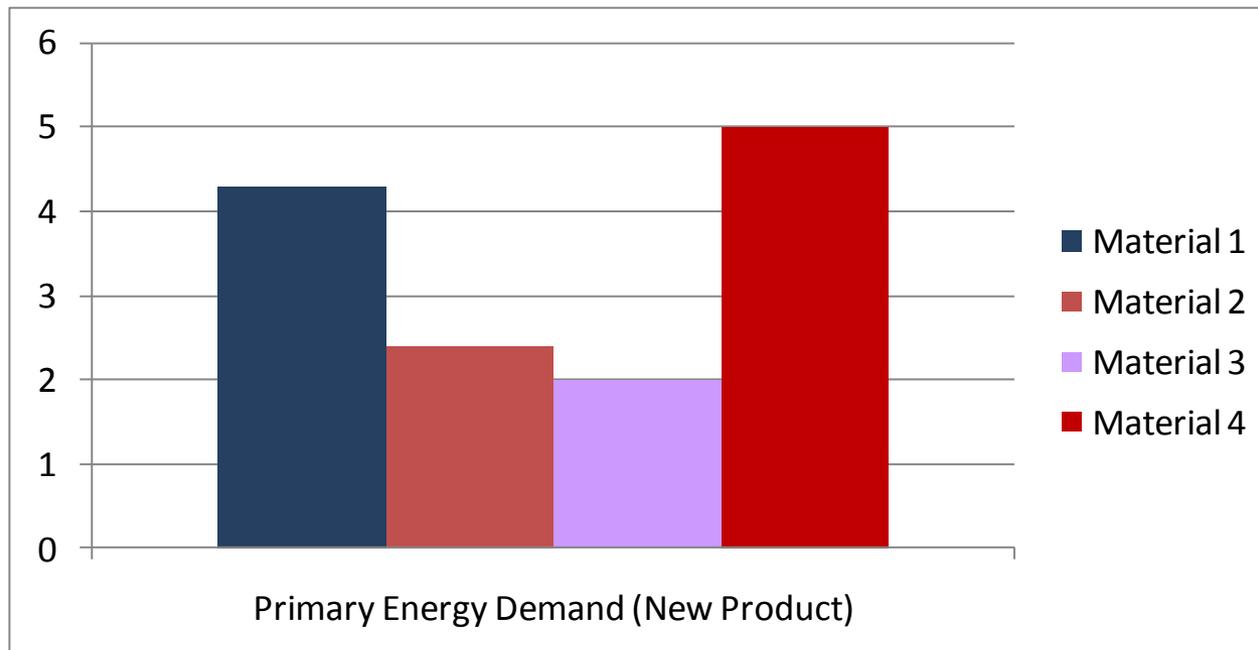


Problem:

Lack of budget or resources to conduct LCA on every product

Solution:

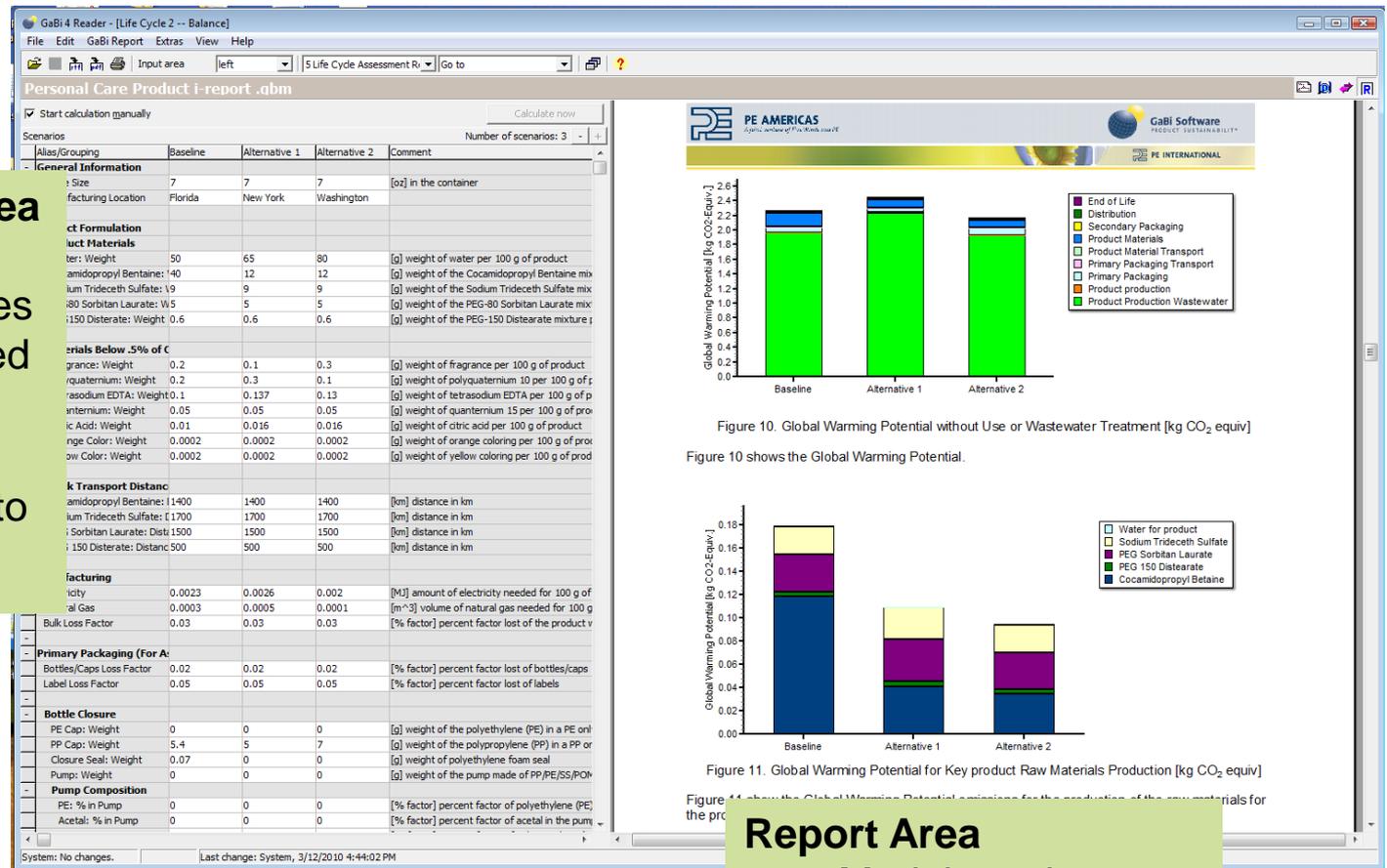
An interactive report that provides decision-makers with a tool to evaluate environmental performance of new product alternatives. Cost effective for conducting multiple LCAs by businesses or industry group. Customized to a product or product category.



Parameter Entry Area

Access the parameter values that were defined in your GaBi 4 model

Make changes to these values



The screenshot shows the GaBi4 Reader interface for a 'Personal Care Product i-report .abm'. The left pane displays a table of parameters for three scenarios: Baseline, Alternative 1, and Alternative 2. The right pane shows two bar charts comparing the Global Warming Potential (GWP) across these scenarios.

Parameter	Baseline	Alternative 1	Alternative 2	Comment
Size	7	7	7	[oz] in the container
Manufacturing Location	Florida	New York	Washington	
Product Formulation				
Water: Weight	50	65	80	[g] weight of water per 100 g of product
amidopropyl Bentine: Weight	140	12	12	[g] weight of the Cocamidopropyl Bentine mixture
Sodium Trideceth Sulfate: Weight	19	9	9	[g] weight of the Sodium Trideceth Sulfate mixture
PEG-80 Sorbitan Laurate: Weight	5	5	5	[g] weight of the PEG-80 Sorbitan Laurate mixture
PEG-150 Distearate: Weight	0.6	0.6	0.6	[g] weight of the PEG-150 Distearate mixture
Fragrance: Weight	0.2	0.1	0.3	[g] weight of fragrance per 100 g of product
Polyquaternium: Weight	0.2	0.3	0.1	[g] weight of polyquaternium 10 per 100 g of product
Tetrasodium EDTA: Weight	0.1	0.137	0.13	[g] weight of tetrasodium EDTA per 100 g of product
Quaternium: Weight	0.05	0.05	0.05	[g] weight of quaternium 15 per 100 g of product
Citric Acid: Weight	0.01	0.016	0.016	[g] weight of citric acid per 100 g of product
Orange Coloring: Weight	0.0002	0.0002	0.0002	[g] weight of orange coloring per 100 g of product
Yellow Coloring: Weight	0.0002	0.0002	0.0002	[g] weight of yellow coloring per 100 g of product
Transport Distance				
amidopropyl Bentine: Distance	1400	1400	1400	[km] distance in km
Sodium Trideceth Sulfate: Distance	1700	1700	1700	[km] distance in km
PEG-80 Sorbitan Laurate: Distance	1500	1500	1500	[km] distance in km
PEG-150 Distearate: Distance	500	500	500	[km] distance in km
Manufacturing				
Electricity	0.0023	0.0026	0.002	[MWh] amount of electricity needed for 100 g of product
Natural Gas	0.0003	0.0005	0.0001	[m ³] volume of natural gas needed for 100 g of product
Bulk Loss Factor	0.03	0.03	0.03	[% factor] percent factor lost of the product
Primary Packaging (For Alternative 1)				
Bottles/Caps Loss Factor	0.02	0.02	0.02	[% factor] percent factor lost of bottles/caps
Label Loss Factor	0.05	0.05	0.05	[% factor] percent factor lost of labels
Bottle Closure				
PE Cap: Weight	0	0	0	[g] weight of the polyethylene (PE) in a PE cap
PP Cap: Weight	5.4	5	7	[g] weight of the polypropylene (PP) in a PP cap
Closure Seal: Weight	0.07	0	0	[g] weight of polyethylene foam seal
Pump: Weight	0	0	0	[g] weight of the pump made of PP, PE, SS, POM
Pump Composition				
PE: % in Pump	0	0	0	[% factor] percent factor of polyethylene (PE) in the pump
Acetal: % in Pump	0	0	0	[% factor] percent factor of acetal in the pump

Figure 10: Global Warming Potential without Use or Wastewater Treatment [kg CO₂ equiv]

Scenario	End of Life	Distribution	Secondary Packaging	Product Materials	Product Material Transport	Primary Packaging Transport	Primary Packaging	Product production	Product Production Wastewater
Baseline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0
Alternative 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0
Alternative 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0

Figure 11: Global Warming Potential for Key product Raw Materials Production [kg CO₂ equiv]

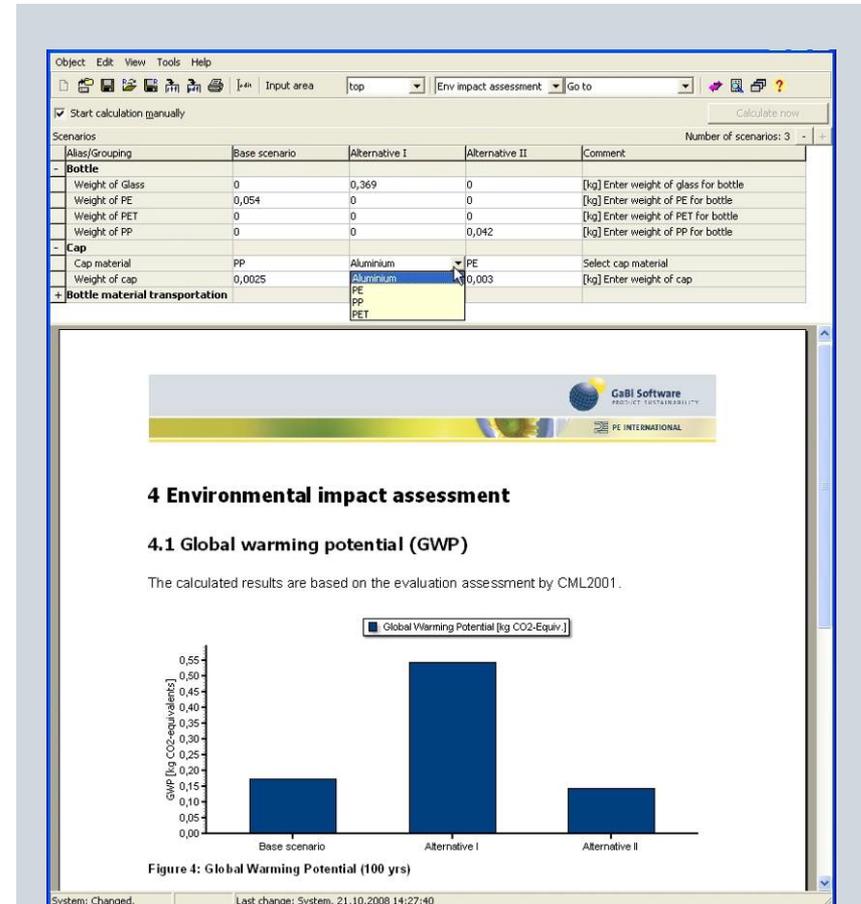
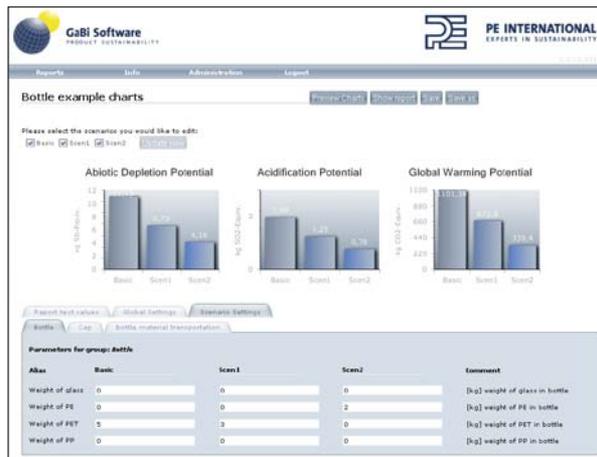
Scenario	Water for product	Sodium Trideceth Sulfate	PEG Sorbitan Laurate	PEG 150 Distearate	Cocamidopropyl Betaine
Baseline	0.0	0.0	0.0	0.0	0.12
Alternative 1	0.0	0.0	0.0	0.0	0.08
Alternative 2	0.0	0.0	0.0	0.0	0.04

Report Area

Model results are re-calculated and displayed here

- **GaBi i-report** for efficient and reliable internal and external communication of LCA results based on GaBi 4
- Tool answering “what if” scenarios for product designers and decision-makers
- No need for LCA experience
- User modifies parameters via drop down menus or direct entry and can see the environmental impacts immediately

Web based



Desktop

LCAs are feasible and there are tools to help!



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Thank you