

HOW TO
COMMUNICATE *LCA RESULTS*
EFFECTIVELY *TO*
DRIVE BUSINESS DECISIONS

Managing Expectations

- Set expectations early
- The study will:
 - Require resources
 - Require commitment
 - Be iterative
- LCA is not:
 - A panacea
 - A risk assessment
- The results may:
 - Reveal actionable insights
 - Reveal surprising or counterintuitive results
 - Show no real differences in impacts of interest

Frame the Results

- Clearly convey functional unit, reference flows, system boundary, and assumptions
- LCIA:
 - Which impact categories were included, and why?
 - Which impact categories were the most impactful or relevant, and why?
 - Explain trends & trade-offs
- Use appropriate graphics:
 - Avoid implicit comparisons
 - Explain any normalization
- Convey limitations
 - LCIA does not predict actual impacts
 - LCIA should never be used as a sole basis for comparative assertions

Communicate Significance

- Communicate uncertainty along LCIA results
- Address how inherent uncertainties may influence the study results, conclusions, or recommendations
- If possible, convey how impactful the LCA study results are relative to some metric the audience can relate to

Tell the Story

- Know your audience
- Make your story meaningful to them
- Clearly state conclusions
- Explain rationale behind key findings
- Explain the reasons for the differences
- Provide actionable recommendations
- Convey the relative magnitude of relative results
- Consider a multi-level messaging strategy

Source: *Environmental Life Cycle Assessment: Measuring the Environmental Performance of Products*

ORGANIZATIONAL INFLUENCERS



**Product Development
Teams/Engineering**



Business Leaders



Marketing Groups



General Sustainability Training



Sustainability Experts



External Customers/ Investors



PRODUCT DEVELOPMENT TEAMS/ENGINEERING

■ What has been successful:

- Customize the message to you audience! What types of media work best?
 - Webpage, poster, webinar, video, graphic, text/chart etc.
- Considerations (take away from each example as bullet)
 - Skilled in understanding complex topic.
 - Show the audience their opportunity
 - Solid evidence backed up by all the detail you have, Let them look over the evidence in their own time
 - Expects data, not just stories. Focus on the data more than the conclusions. Story telling based on sustainable attributes
 - Capture examples and convert to detailed stories with photos etc.
 - If results don't align with their expectations, may question validity of the study. Make limitations of the study clear without undermining credibility of the study. Show enough detail of the complexity to support conclusions.
 - Prefer something actionable as an outcome
 - Different functions are involved: sales, marketing, engineering and education
 - Leveraging content into existing channels and tools in sale department
 - Inspire, make results visual, meaningful and tangible. Emphasize the positives and awareness of trade-offs. Involve them to promote study results and support next steps.



■ What has NOT been successful:

- Sharing too much detail and exact numbers. LCA deals with ranges and approximations. Always share normalized data or percentages. Engineers take numbers very seriously to decimal point level.

HELP THEM APPRECIATE THE ANALYSIS

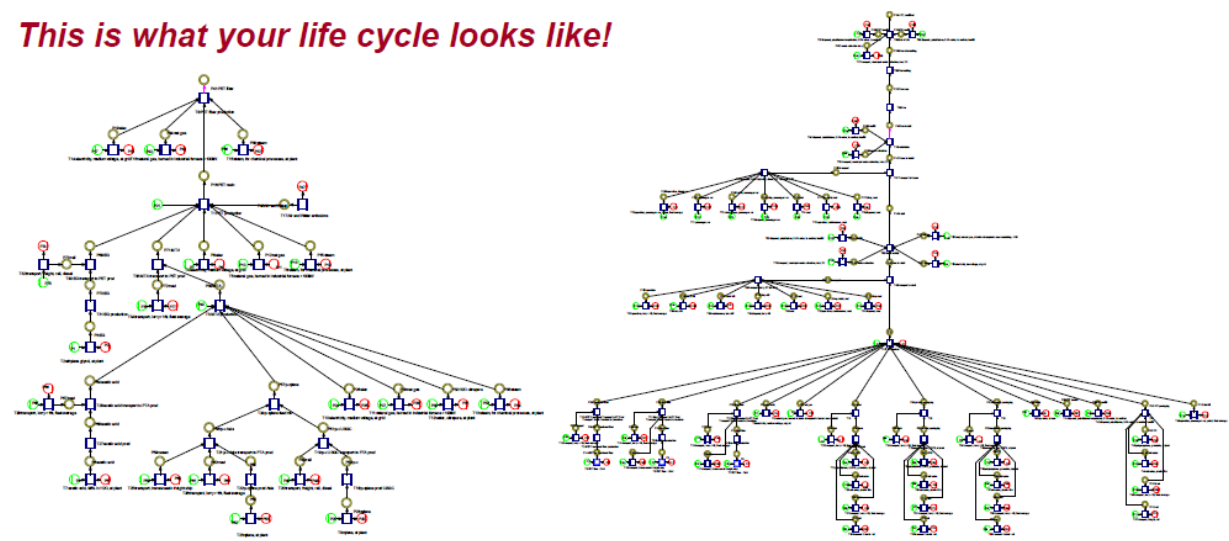


HELP THEM APPRECIATE THE ANALYSIS

Best Practice – Show them the mess!

Showing a screenshot of the life cycle model can illustrate the complexity of LCA without adding confusing detail regarding the specific processes modeled

This is what your life cycle looks like!



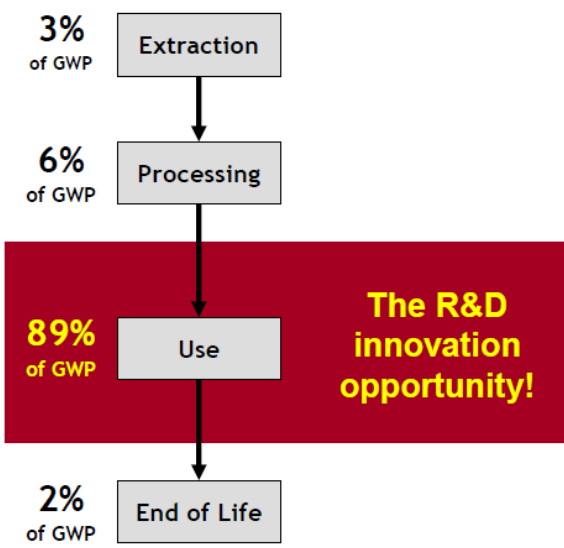
LCA X – Portland – 4 November 2010 27

MAKE IT MEANINGFUL FOR THEM

Best Practice – Put it in their terms

Showing how the results can be used can help the commissioner better understand the results of the study

For R&D – highlight the opportunity! For Marketing – illustrate a claim!



ECO-SCOPES*:
Now made with
25% fewer GHG
emissions!

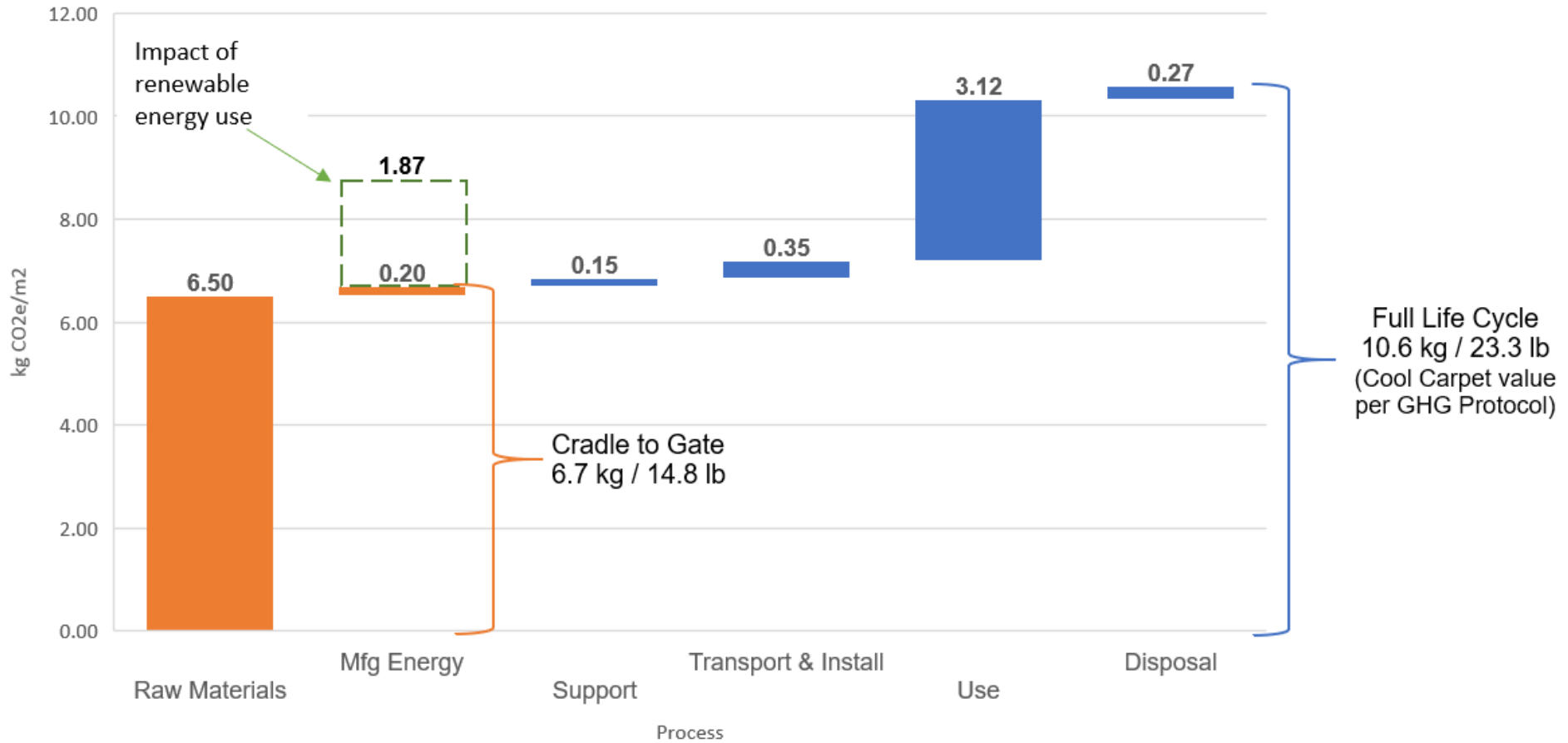
*a completely fictitious example for illustrative purposes only

LCA X – Portland – 4 November 2010 28

KEY TAKEAWAY?



Average Carbon Footprint of Carpet Cradle to Gate vs. Full Life Cycle



Support - includes carbon emissions from energy used at leased facilities (showrooms, offices, etc.)

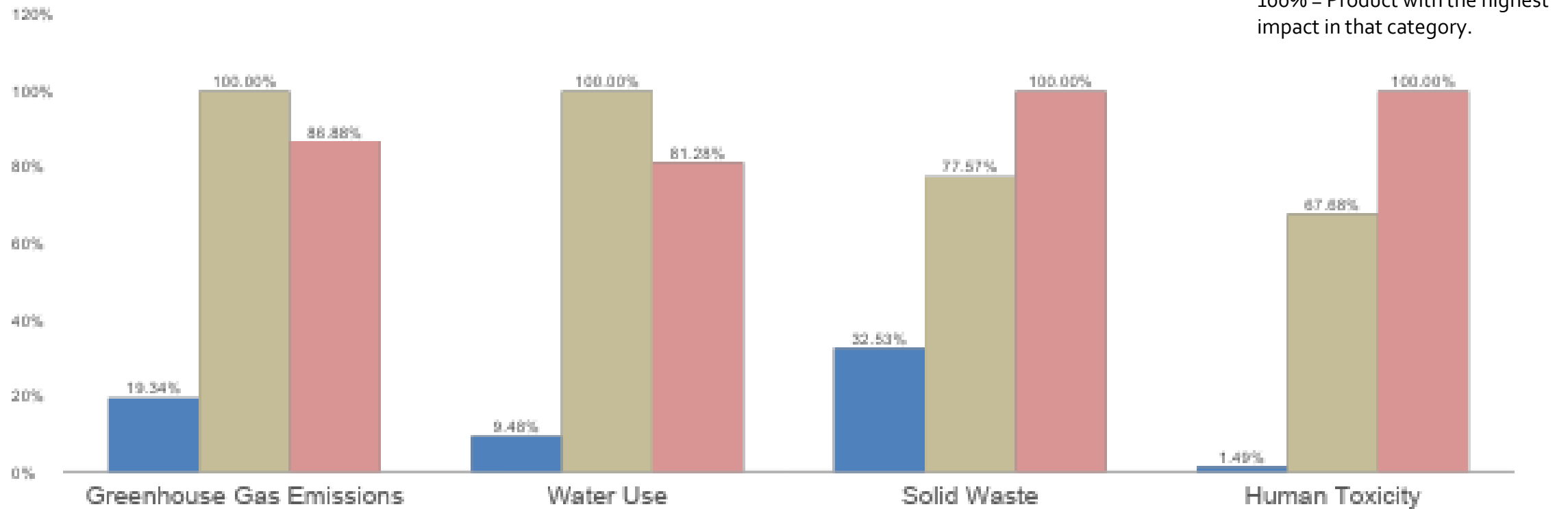
Use - includes carbon emissions from energy used for customer maintenance (7 years average life)



EXAMPLE product option is favorable across all impact categories.

We will use GHG emissions as a representative impact...

Overall Environmental Impact Comparison

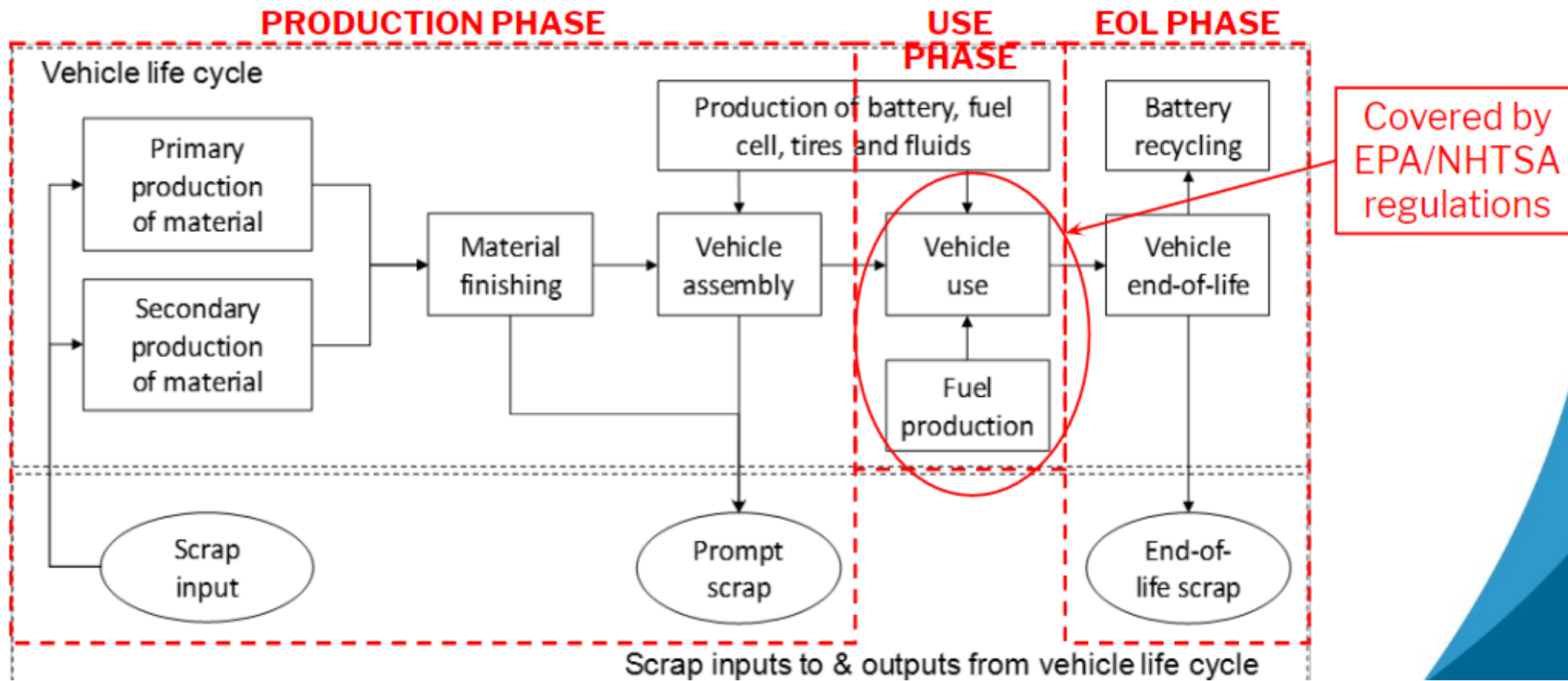


EXAMPLE - SYSTEM BOUNDARY IN TERMS OF LCA PHASES

Understand data gaps and where uncertainty exists

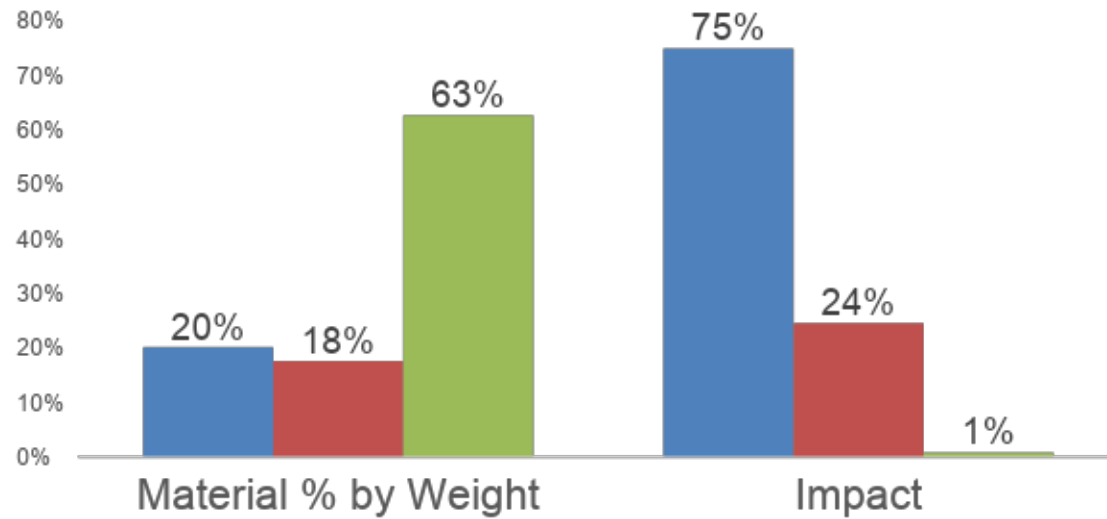


Vehicle Life Cycle & Fuel Economy Regulations



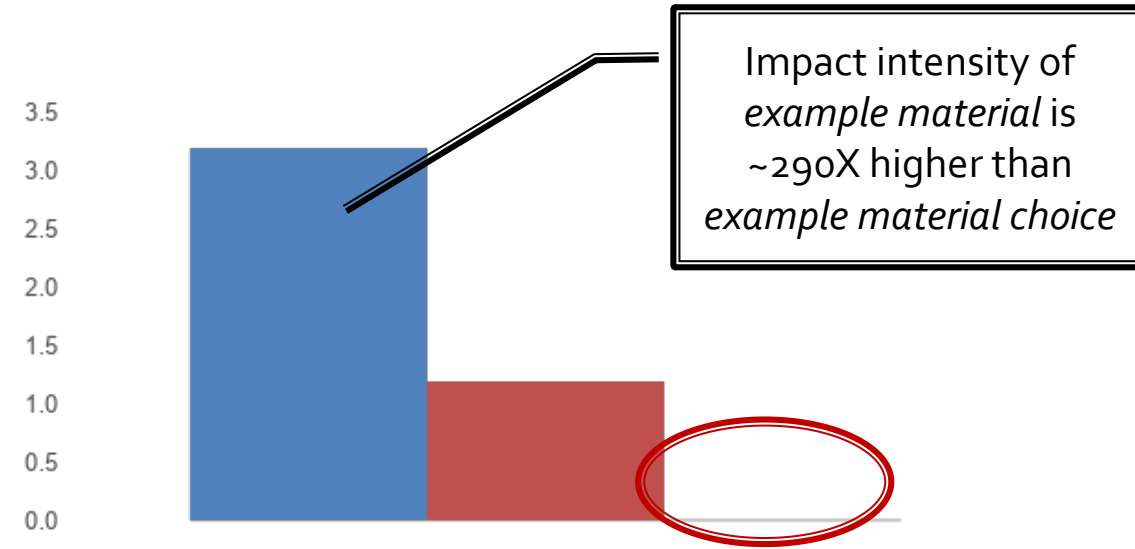


% weight vs. impact

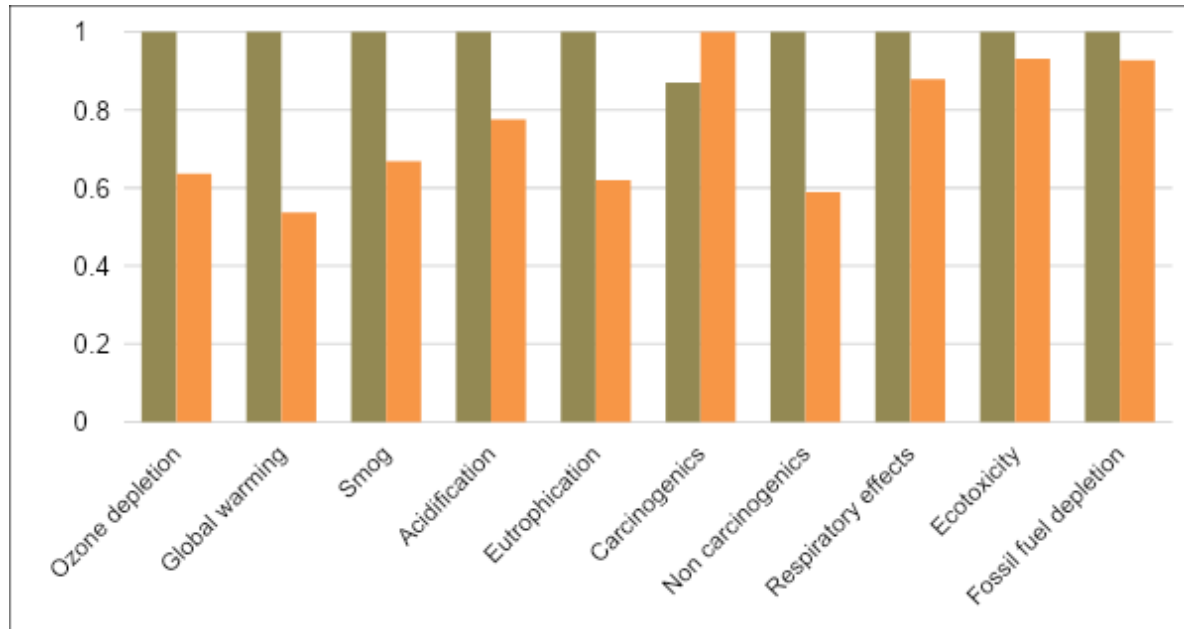


Explanation of chart and material options here

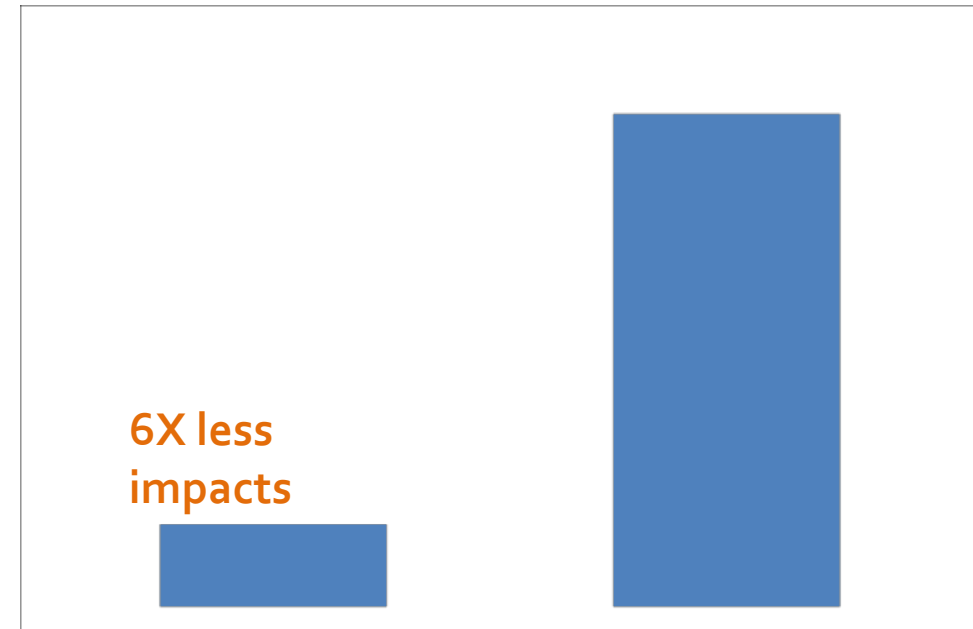
GHG emissions intensity kg CO₂eq per lb of material



Explanation of chart and material options here



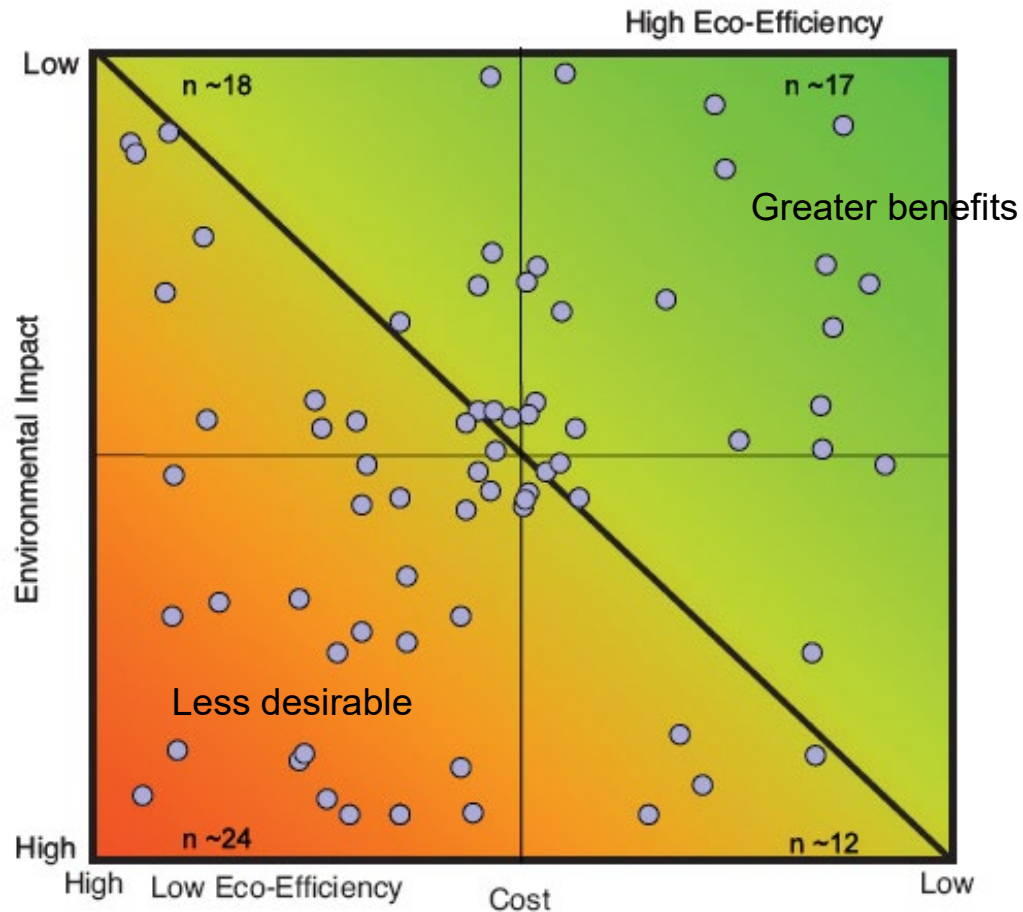
Single attributes such as “bio-based” doesn’t always mean it’s more sustainable. We can’t just rely on marketing info.



Specific explanation here

Perception vs. Reality (bio-based vs. fossil)

Eco-efficiency supports sound decision making



Eco-efficiency portfolio comparing a wide range of applications utilizing bio-based materials

Bio-based materials
may not be
“Green”.

Analysis beats
Greenwashing !

Analysis supports
informed decision
making !

Sustainability Communications - Avoid the Sins of Greenwashing



Sin of the Hidden Trade Off



Sin of Vagueness



Sin of No Proof



New sin found

Sin of Worshiping False Labels



Sin of Lesser of Two Evils



Sin of Fibbing



Sin of Irrelevance



BUSINESS LEADERS

SUMMARY?

■ What has been successful:

- Customize the message to you audience! What types of media work best?
 - Webpage, poster, webinar, video, graphic, text/chart etc.
 - Be Concise. What does it tell them. Why is it relevant. How can they use it.

■ What has NOT been successful:

- Sharing every LCA results from the report
- Highly technical discussions

■ Examples on following slides:



PUT IN CONTEXT

Did you know?

Using SOKALAN may prevent, per year, the emission of...



<ADD TAKEAWAY>

Effect of SOKALAN HP 56, in a house with 4 people



-20%

Environmental
Impact

Reduces the amount of water used

Reduces the amount of wastewater treated

Most Relevant Environmental Impact Categories



Climate Change



Freshwater Eutrophication



Water Depletion



Acid Rain

80% of the total
environmental
impact

Impact through the value chain

10%



Manufacturing of
detergent and
softener

46%



Use Phase
Water and
Electricity

44%



Wastewater
treatment



MARKETING GROUPS

Communication of LCA results to organizational influencers

Marketing Groups

- What has been successful:
 - Customize the message to you audience! What types of media work best?
 - Sharing information that can help tell a compelling story
 - Webpage, poster, webinar, video, graphic, text/chart etc.
 - Be Concise. What does it tell them. Why is it relevant. How can they use it.
- What has NOT been successful:
 - Sharing too much detail needed for decision making
- Examples on following slides:



Radio Flyer

Additional Sustainability Info



LEED PLATINUM HQ

We were awarded the title in 2014 for features like geo-thermal heating.

GREAT PLACE TO WORK

We are constantly recognized for our great culture and benefits

BUILDING PLAYGROUNDS

We have built 8 Playgrounds in partnership with Kaboom!

PLANTING TREES

We work with the Arbor Day Foundation to plant a tree for each radioflyer.com purchase.

DONATIONS

Over the past 10 years we have donated over 40,000 toys to children in need.

BIG FLYER SPORT

A new trike is PVC-free, made with low-impact materials and made in the USA!

BUILT TO LAST

From 2015-16 we shipped over 123,000 replacement parts to extend the life of our toys.

SAFE MATERIALS

Our Sustainable Chemistry program restricts hazardous substances from our products.

SOCIAL COMPLIANCE

Over 99% of overseas products ship from factories with ICP Seals of Compliance.

LANDFILL FREE HQ

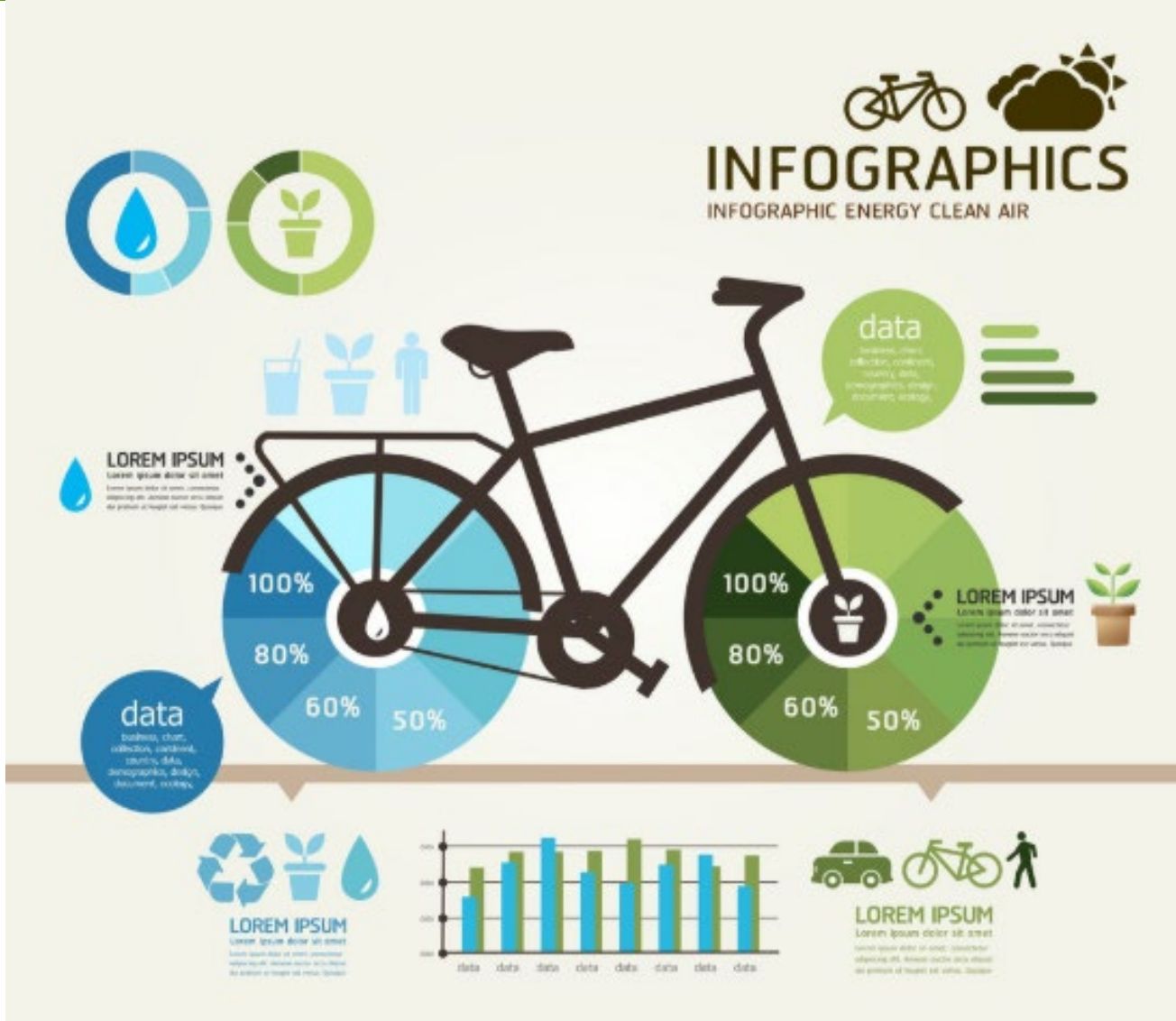
We are striving to be a zero-landfill HQ; today 96% of waste at HQ is recycled.

VMV

Our Vision, Mission and Values guide everything we do at Radio Flyer.

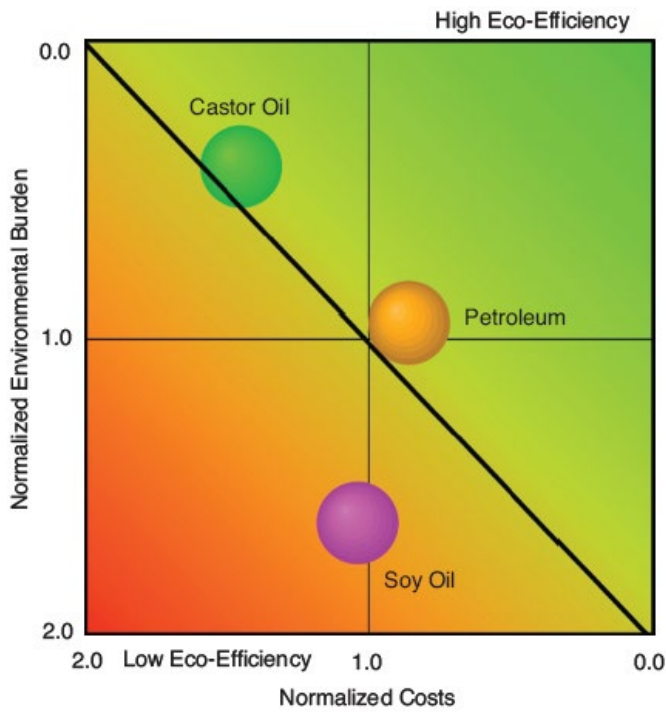
PRODUCT SCORECARD

A tool to help reach our Sustainability Criteria goal.




Pluracol® Balance (PM) – polyols for flexible foams

Renewable feedstock vs. fossil based feedstock



Saves energy

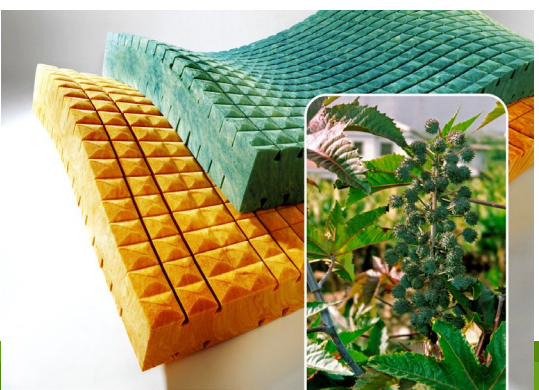
Annualized energy savings through the production of BALANCE 50 polyol compared to petroleum-based polyol could translate into a year's worth of electricity for more than **98,000 U.S. homes.***



Saves 20,000 barrels of oil per year



Same CO₂ uptake as 748,000 acres of 25-year old forest

Pluracol®
BALANCE™



High Performance. Naturally.

Effective results communication using environmental equivalencies



SUSTAINABILITY TRAINING

■ What has been successful:

- Customize the message to you audience! What types of media work best?
 - Webpage, poster, webinar, lunch & learn, video, graphic, text/chart etc.
 - Show examples of EPDs and try to include how that specific EPD helped your company
- Define LCA, EPD, and PCR and expand on... How they are linked? What is their value?
- What is the expected timeline to complete?
 - Life Cycle Assessment: the process/methodology
 - Environmental Product Declaration: output or outcome of LCA
 - Product Category Rule: starting point, framework & rules (typically developed by industry)
- Briefly reviews the various types of impacts that can be studied



■ What has NOT been successful:

- Technical jargon & acronyms

■ Examples on following slides:

Guidelines for Providing Product Sustainability Information – Link to PDF



Guidelines for Providing Product Sustainability Information

Global guidance on making effective environmental, social and economic claims, to empower and enable consumer choice



Sustainability Communications Guidelines for Providing Product Sustainability Information

FUNDAMENTAL PRINCIPLES



RELIABILITY

Build your claims on a reliable basis

- Accurate and scientifically true
- Robust and consistent
- Substantiated data and assumptions



CLARITY

Make the information useful for the consumer

- Exclusive and direct link between claim and product
- Explicit and easy to understand
- Limits of claim clearly stated



RELEVANCE

Talk about major improvements, in areas that matter

- Significant aspects ('hotspots') covered
- Not masking poor product performance, no burden shifting
- Genuine benefit which goes beyond legal compliance

FUNDAMENTAL PRINCIPLES



TRANSPARENCY

Satisfy the consumer's appetite for information, and do not hide

- Developer of the claim and provider of evidence published
- Traceability and generation of claim (methods, sources, etc.) published
- Confidential information open to competent bodies



ACCESSIBILITY

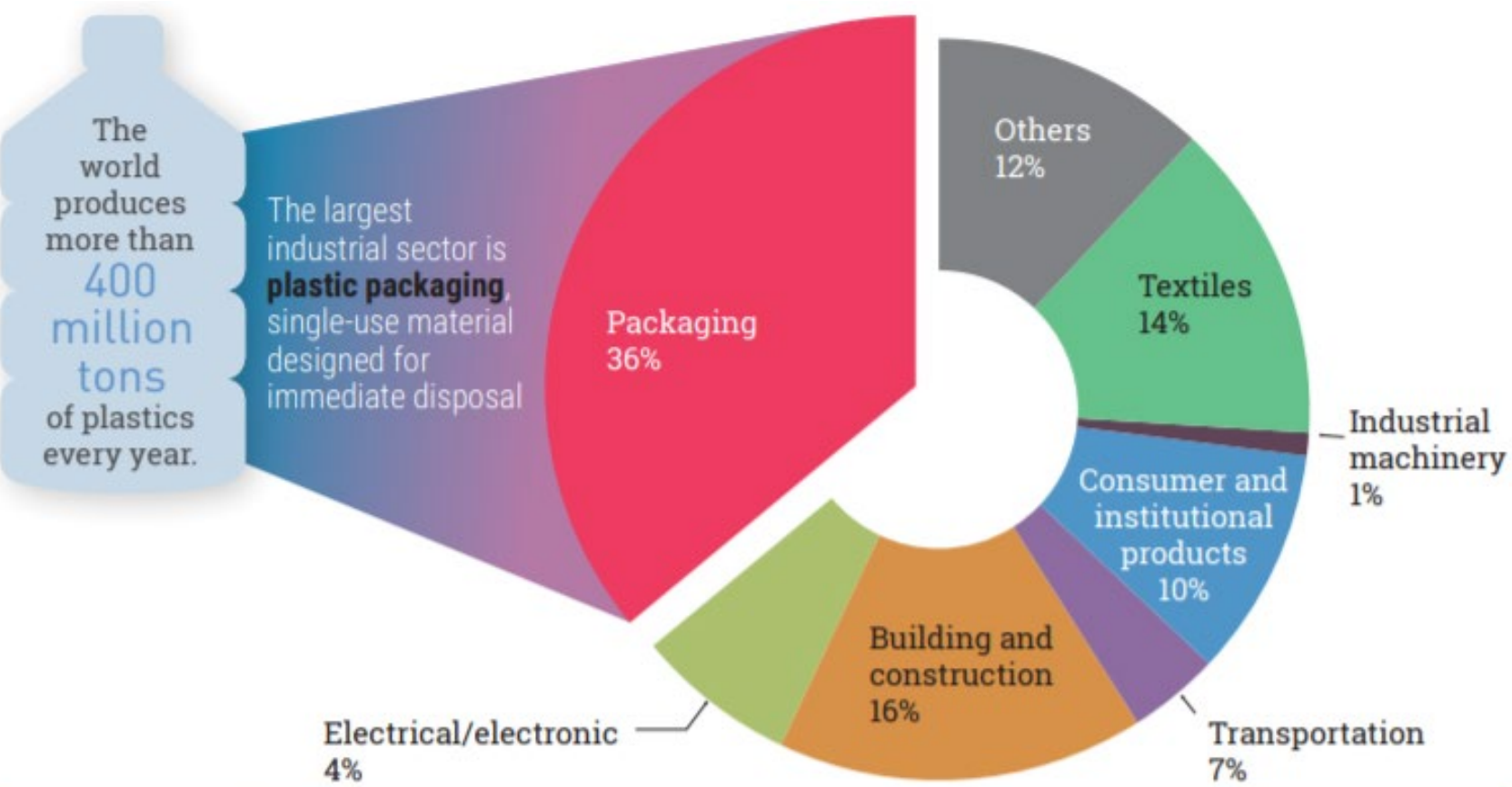
Let the information get to the consumer, not the other way around

- Clearly visible: claim easily found
- Readily accessible: claim close to the product, and at required time and location

LCA OVERVIEW



<MAIN TAKEAWAY/PRO-TIP>



Source: Adapted from Geyer, Jambeck, and Law, 2017

7 SINGLE-USE SWAPS AND THE TRASH YOU CAN SAVE IN ONE YEAR

"THE PEOPLE WHO MAKE THE BIGGEST DIFFERENCE ARE THE ONES WHO DO THE LITTLE THINGS CONSISTENTLY."

- 1 bamboo tooth brush = 4 plastic tooth brushes
- 1 glass floss container = 7 plastic floss containers
- 1 reusable water bottle = 167 plastic water bottles
- 1 reusable bag = 170 plastic bags
- 1 reusable cup = 500 coffee cups
- 1 metal straw = 540 plastic straws
- 1 cloth towel = 7,300 paper towels

WHAT IS NEEDED FOR AN EPD?



PCR
Product Category Rules



LCA
Life Cycle Assessment



EPD Environmental
Product Declaration

IS LCA VALUABLE, HOW CAN IT HELP MY BUSINESS?

NORTH AMERICAN DELEGATION

Why Invest in LCA?

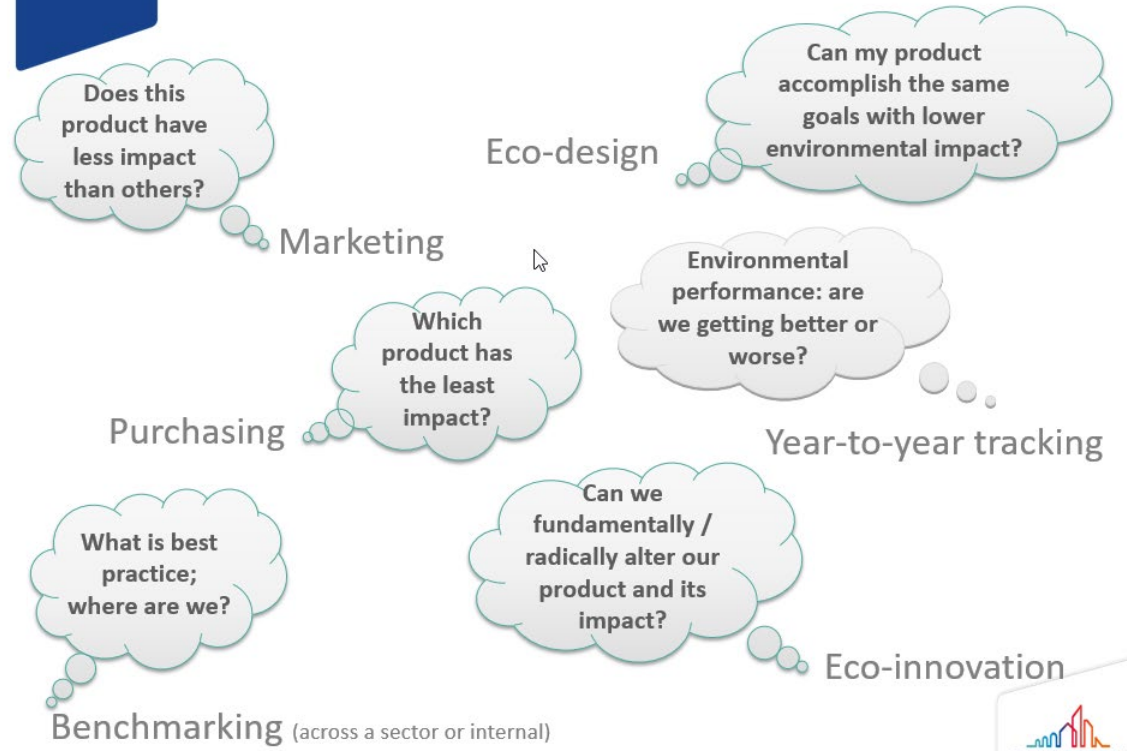
- **To respond to our customers demands**
 - Construction projects under building schemes (LEED, BREEAM, Green Globes...)
- **To market SG Products**
 - Support company sustainability philosophy
- **Push transparency**
 - Assess producer responsibility
- **To assess and reduce our environmental impacts**
 - Including unfamiliar impacts we don't normally see or consider
- **Set impacts in context**
 - Relative to each other and relative to each life cycle state
- **Be the "pioneer" on the market**
- **Compare with industry or competitors**
 - Strict rules apply for external comparisons

Building environmental labels	LCA requirements
Green Globes	Performance approach evaluation
LEED	As a bonus in LEED 2009 criteria "Innovation and design" and as a criteria in LEED v4 version.
BREEAM	In criteria 01, 02, 03 and 04 of "Materials".



NORTH AMERICAN DELEGATION

Questions that can be answered by LCA?





SUSTAINABILITY EXPERTS

■ What has been successful:

- Provide high -level overview of LCA, if not familiar, emphasizing the following:
 - LCA is not a new method (first LCA conducted in the late '60s!)
 - It is governed by ISO standards that address data quality requirements, critical review, etc.
 - It allows for holistic assessment of impacts and evaluation of trade-offs/burden shifting between life cycle stages impacts
- Discuss results in clear and concise manner
 - Use charts/graphs when possible
 - Provide simple description of LCIA impact categories
- Explain important sensitivity and scenario analyses
- Address inherent limitations of LCA and any significant study limitations or data gaps

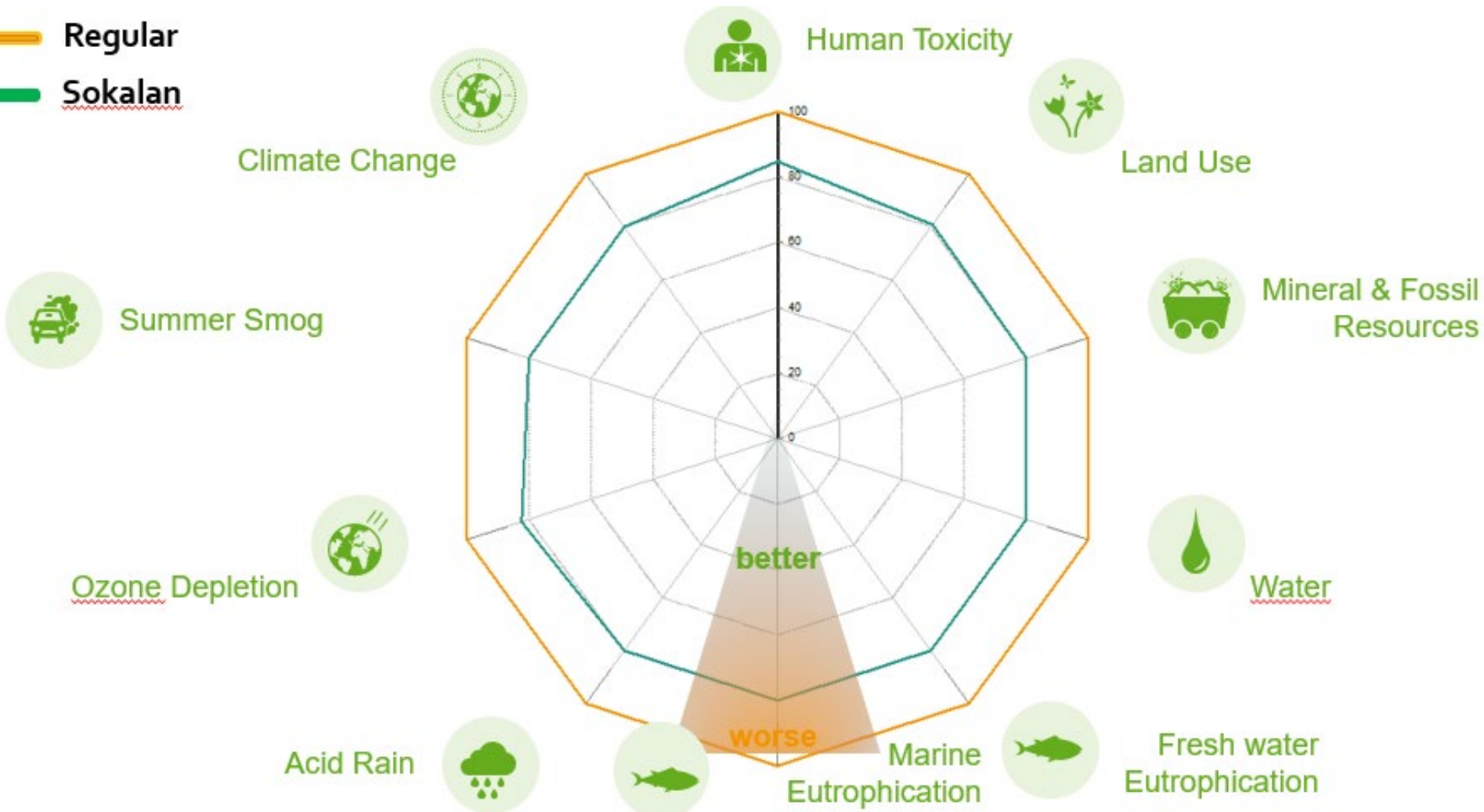


■ What has NOT been successful:

- Overstate the precision or accuracy of the results
- Provide more detail than necessary, even though the audience may be familiar with technical sustainability topics
- Tout LCA as the only method for sustainability assessments, but instead note that it compliments other approaches sustainability experts may already be familiar with

<MAIN TAKEAWAY/PRO-TIP>

Regular
Sokalan





EXTERNAL CUSTOMERS/INVESTORS

SUMMARY

■ What has been successful:

- Customize the message to you audience! What types of media work best?
 - Webpage, poster, webinar, video, graphic, text/chart etc.
- Keep it simple. Apply to a real world situation. Leave with an easy takeaway
- Comparative LCA results are the strongest
- Relate to customers point of view
- Consider what the customer values beyond sustainability?

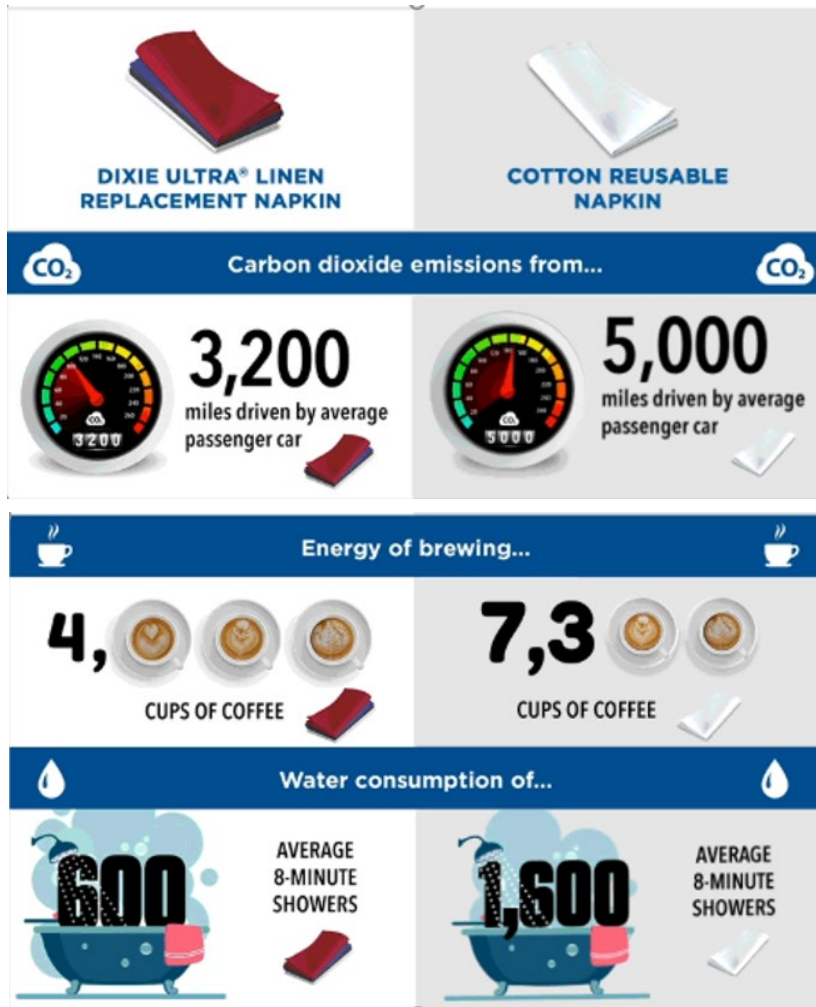
■ What has NOT been successful:

- Highly technical results that aren't in placed in a customer context.
- Displaying every LCA result from the LCA report

■ Examples on following slides:



Graphics to display the results



Cloth vs. Paper Napkins

Study by Georgia Pacific

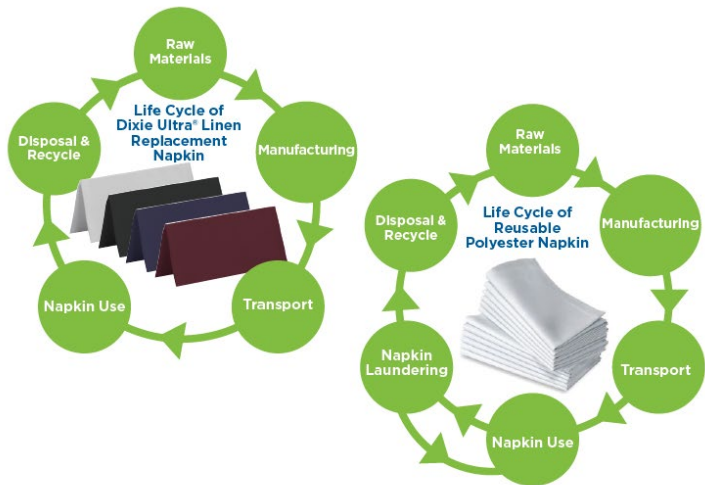
Provide context and lead your reader to the main takeaways



How do Full Service Restaurant napkins impact the environment? **The results may surprise you.**

Dixie Ultra® Linen Replacement Napkins have certain environmental advantages over Polyester Reusable restaurant napkins, according to a recent study.*

The ISO 14040/14044 compliant study completed by GP PRO considered disposable and reusable napkins over the entire useful life of the napkins. The study findings were critiqued and validated by the Athena Institute, a global expert in sustainability.



Environmental impacts categories assessed:

- Global Warming Potential
- Ozone Depletion Potential
- Photochemical Ozone Creation Potential
- Eutrophication Potential
- Acidification Potential
- Primary Energy Demand
- Net Freshwater Consumption

The environmental impact of these napkins is annually equivalent¹ to:

	Dixie Ultra® Linen Replacement Napkin	Polyester Reusable Napkin
Carbon dioxide emissions from...	3,200 ✓ miles driven by average passenger car	5,300 miles driven by average passenger car
Energy of brewing...	4,000 ✓ Cups of coffee	8,600 Cups of coffee

Full study findings available upon request. To learn more about GP PRO's full line of napkins, visit www.gppro.com/products/napkins. And for more information on GP PRO's commitment to sustainability, visit www.gppro.com/sustainability.

gppro.com
1-866-HELLO GP (435-5647)

©2017 Georgia-Pacific Professional. All rights reserved. The GP PRO logo and all trademarks are owned by or licensed to Georgia-Pacific Consumer Products LP. 160904_02c_R7
* ISO 14040/14044 compliant study conducted by Georgia-Pacific LLC
1. Assuming 125 meal occasions per day and open 312 days per year for average restaurant. Based on information from <https://www.quora.com/How-many-daily-customers-can-an-average-well-located-80-seater-restaurant-realistically-serve-in-a-large-city-such-as-New-York-Hong-Kong-or-London>.

PERFORMANCE
AT WORK™



<MAIN TAKEAWAY/PRO-TIP>

Dos & Don'ts

Table 4: Example for explicit and easy to understand information

Product: Box of Chocolates	Do (company A)	Don't (company B)
Claim		
Discussion	<p>Concise visual information, complemented by simple text, helps the consumer to understand not only if the product packaging is recyclable but also whether it can be recycled based on the availability of recycling infrastructure. Guidance is further provided for individual packaging components, in this case also different types of plastics used for the inner tray and film. It is also clear to the consumer what his/her role is, i.e. to recycle.</p> <p>Further information on the label: www.OPRL.org.uk</p>	<p>While the Mobius loop is an internationally recognised symbol for recycling, its use without text assumes that all consumers understand its meaning; and/or that <i>all</i> of the product's material can be recycled. It also only shows that the packaging is recyclable but not that this recycling is actually available via local infrastructure. If wanting to comply with the international standard ISO 14021 (ISO 2016a) a qualified claim must adequately convey the limited availability of collection facilities.</p>

Table 1: Example of accuracy and robustness


Product: T-Shirt	Do (company A)	Don't (company B)
Claim and applied method	<p>"Our T-Shirts are organic"</p>  <p>Method: GOTS Version 5.0</p>	<p>"Our T-Shirts are organic"</p>  <p>Method: [Hypothetical] RTS Standard</p>
Discussion	<p>Company A has participated in the GOTS certification scheme. The GOTS standard is an accepted methodology to guarantee a minimum content of organic fibre (+95%), the exclusion of hazardous substances in garments sold as organic, plus social requirements. Compliance is based on annual independent inspections at production sites.</p> <p>Revision processes of the standard are based on a collaborative approach and include participation of relevant stakeholders (e.g. Ecological and Toxicological Association of Dyes and Organic Pigments, Social Accountability International, International or Clean Clothes Campaign). GOTS criteria cover the entire supply chain from fibre to end product.</p>	<p>Company B bases its claim on its own (hypothetical) labelling standard. It would need independent assurance or endorsement by a scientific institution or government that the methodology is robust, e.g. to ensure that the T-Shirt is made from organic cotton and that there is sufficient evidence to back up this claim. Without sufficient transparency/documentation on the supply chain and production processes the claim cannot prove to be accurate.</p>

<MAIN TAKEAWAY/PRO-TIP>

Save up to 20% of water and energy when doing the laundry!




SECAGEM DAS MÃOS



Toalhas de papel
Dispenser de plástico

X



Secador elétrico
com ar quente

Maior custo - Equipamento + Toalha + Destinação final

Centro universitário

Shopping

Durabilidade
5 anos

57% das pessoas usam 2 folhas

Resíduo não reciclável que vai para o aterro
Cada folha de papel, 0,15g e cada com 12 resmas

Maior custo - Equipamento + Energia

Centro universitário

Shopping

Durabilidade
7 anos

A maioria das pessoas usa o secador durante **5 segundos**.
A diferença entre secar as mãos com 15" ou 5" é mínima

MELHOR ALTERNATIVA
No Centro Universitário, onde a circulação é menor, se forem utilizadas somente 2 toalhas de papel, esta opção é tão ecoeficiente quanto usar o secador elétrico


SHOPPING

Secador elétrico: 19,24g
Toalhas de papel: 2,30g


CENTRO UNIVERSITÁRIO

Secador elétrico: 2,30g
Toalhas de papel: 2,30g

EM AMBIENTES DE ALTA CIRCULAÇÃO, O SECADOR ELÉTRICO É A OPÇÃO MAIS ECOEFICIENTE



Facebook.com/fundacaoespaeco | www.espaeco.org.br



QUAL O IMPACTO AMBIENTAL DE CADA CHUVEIRO?


CONSUMO DE RECURSOS NATURAIS

CARACTERÍSTICAS DE UM BANHO

Tecnologias	Energias Geração e Distribuição	Equipamento Produção da Tecnologia	Água Tratamento e Distribuição	Aprox. 25 mil itens analisados
Elétrico	3	1	1	
Solar	3	1	1	
Gás	1	1	1	

O MELHOR CHUVEIRO


EM UM BANHO DE 8 min NA Região Metropolitana de São Paulo NO MESMO APARELHO




QUANTIDADE DE BANHOS

TEMPERATURA DA ÁGUA


40° +




Solar



Elétrico



www.espaeco.org.br | fundacaoespaeco



<MAIN TAKEAWAY/PRO-TIP>

5 TRILLION BAGS ARE PRODUCED EACH YEAR.
HERE'S A QUICK LOOK AT THE LIFE OF ONE OF THOSE BAGS.

1 BIRTH

Plastic bags begin their lives as crude oil. The crude oil is heated until it produces ethylene gas, and then converted to polyethylene that is forced through holes to make string. The string is cut, stretched and dyed, becoming a plastic bag. The bag is then imprinted with a company's logo and off it goes to your favorite store!



2 LIFE SPAN

Whether used to carry groceries or office supplies, most plastic bags are used only one time for an average of 20 minutes before being recycled or thrown away.



4 THE NEXT 1,000 YEARS

Plastic bags that aren't recycled end up in landfills or the ocean. Scientists estimate it can take up to 1,000 years for a plastic bag to disintegrate completely, releasing toxins and damaging the environment as they decay. In addition, each year more than a million sea birds and 100,000 animals including whales, dolphins and seals are killed because of plastic bags.

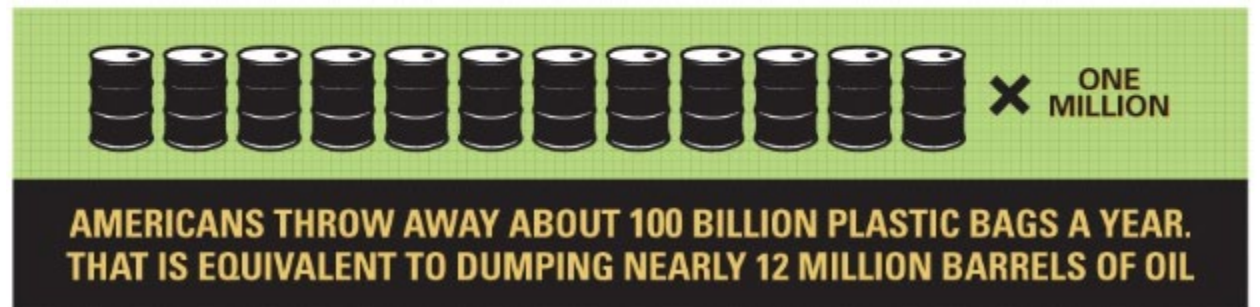


3 INTERMISSION

Because consumers receive so many plastic bags and recycling it takes 85 times more energy than creating it, more than 98% of plastic bags are discarded instead of recycled.



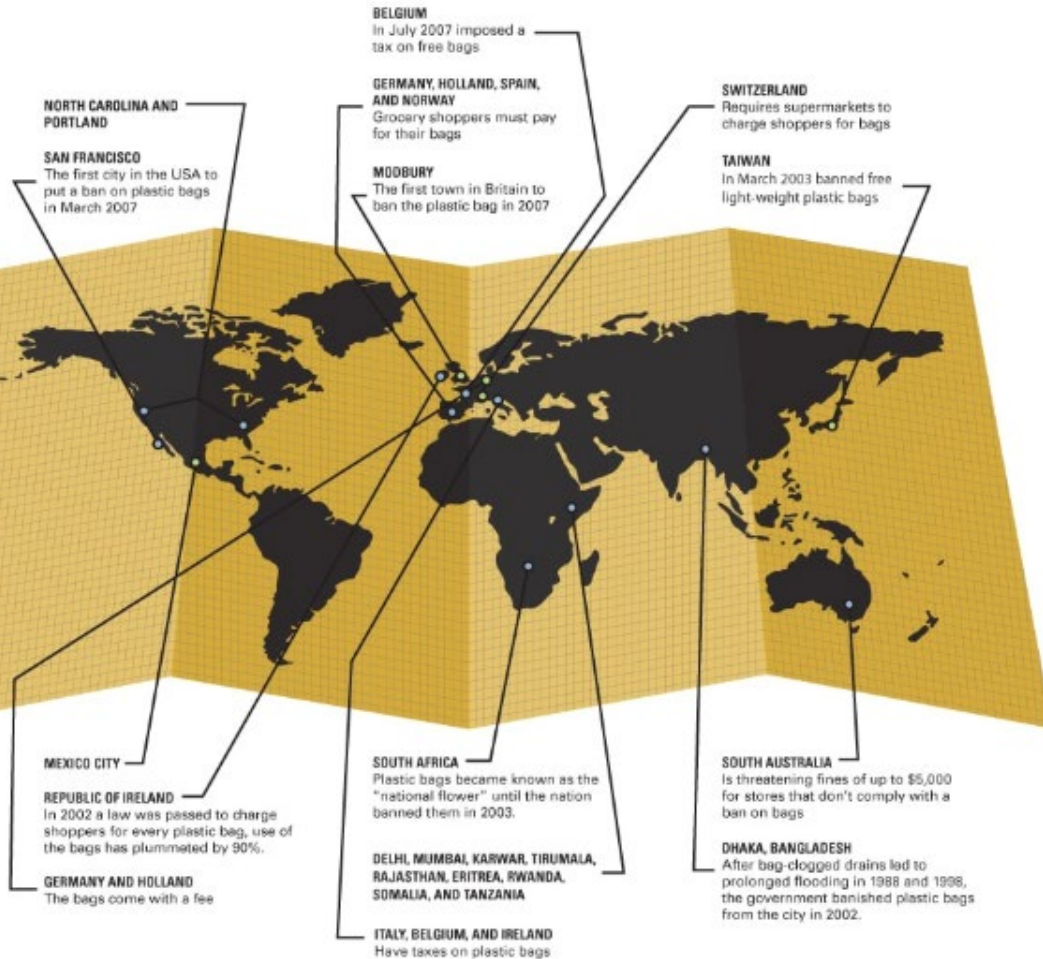
The Life Cycle of a Plastic Bag [Infographic]



<MAIN TAKEAWAY/PRO-TIP>

WHAT ARE WE DOING ABOUT IT?

HERE'S A QUICK LOOK AT A FEW PLACES AROUND THE WORLD THAT HAVE BANNED PLASTIC BAGS, OR PLACED A TAX ON THEIR USE.



Although you may only use a plastic bag for about 20 minutes, its lifespan is much longer than that.

In fact, it could sit in a landfill for 1,000 years – that is, if, by then, it hasn't been picked up by animals, potentially eaten and posing a more significant threat to their health.

BASF – Concrete EPD

[Infographic video](#)



Communication of LCA results to organizational influencers

External Customers/Investors - EXAMPLE



Science.
Applied to Life.™

Take the 3M™ Petrifilm™ Plate Sustainability Challenge

Are you still using agar dishes for microbial indicator testing? If so, you're missing a big opportunity to not only boost your lab's productivity and accuracy, but also help meet your company's sustainability goals. 3M™ Petrifilm™ Plates can reduce your environmental impact over using agar plates in four key areas:




 79% ↓ Water	 66% ↓ Waste
 75% ↓ GHG emissions	 76% ↓ Energy




Saving **54,600.0** liters of water



Reducing solid waste by **1,560.0** kg



Eliminating the CO₂ emissions from one typical passenger vehicle driving **42,120.0** kilometers



Conserving enough energy to power **807,040.0** 60W light bulbs for one hour

CircuitBac Green

Carpet backing based on bio-plastics

Interface Carpet
[Sustainability Info](#)

A mix of natural materials

Natural oils and resins are used as a carbon-negative alternative to current backing materials.

A more sustainable alternative

CircuitBac Green is a high-performing backing with increased biobased and recycled content, which decreases the carbon footprint of the finished carpet tile.

Mineral filler

Recycled limestone is used as an inert filler.



■ Participants

- Jana Fogarty- Kohler (co-leader)
- Keith Lindemulder –Nucor (co-leader)
- Carrie Pearson- 3M
- Brandie Sebastian- AISI
- Nagapooja Seeba - Whirlpool
- Beth Ann Cano- Saint-Gobain
- Mandy Montazeri- Kohler
- Connie Hensler- Interface
- Russ Balzer- Phoenix Group
- Alison Conroy- Georgia-Pacific
- Bruce Uhlman - BASF