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LCA consulting

Valentina Prado PhD

October 2 2025

Agenda

- Introduction
- Drivers
- Scoping: The process of an LCA consulting project and considerations to maximize the value of LCA
- Interpretation
- Communication: From “applying LCA” to “call for action”

Speaker

Valentina Prado, PhD

Principal Consultant

- 10yr + experience in the LCA field
- Research focus: LCA and decision analysis
- Taught LCA in the Netherlands and Colombia
- From a science to a management approach to LCA
- Based in Vancouver, Canada
- ACLCA Education commitee chair

Career Path

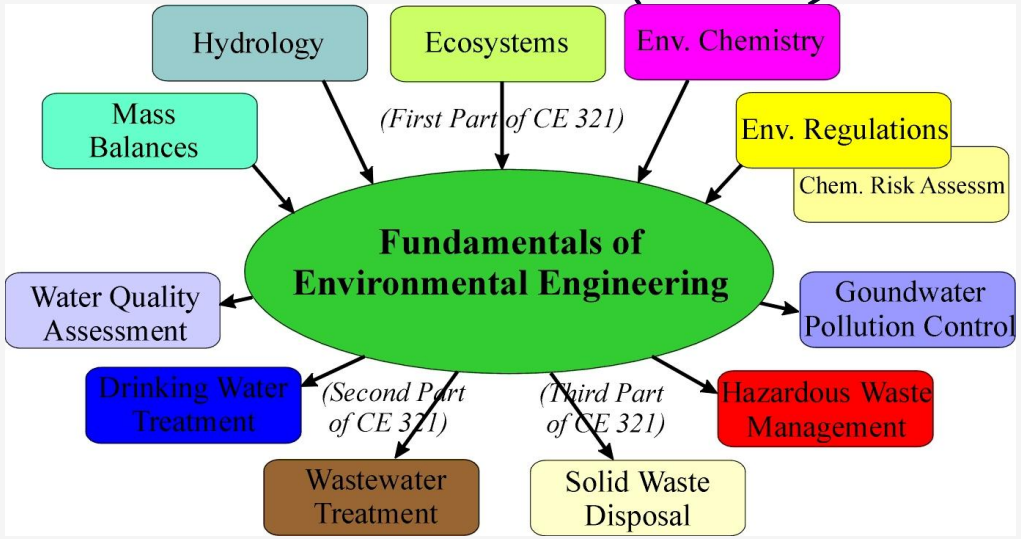
Civil Engineering Jackson State Mississippi

Sustainable Engineering (Decision Analysis & LCA) - Arizona

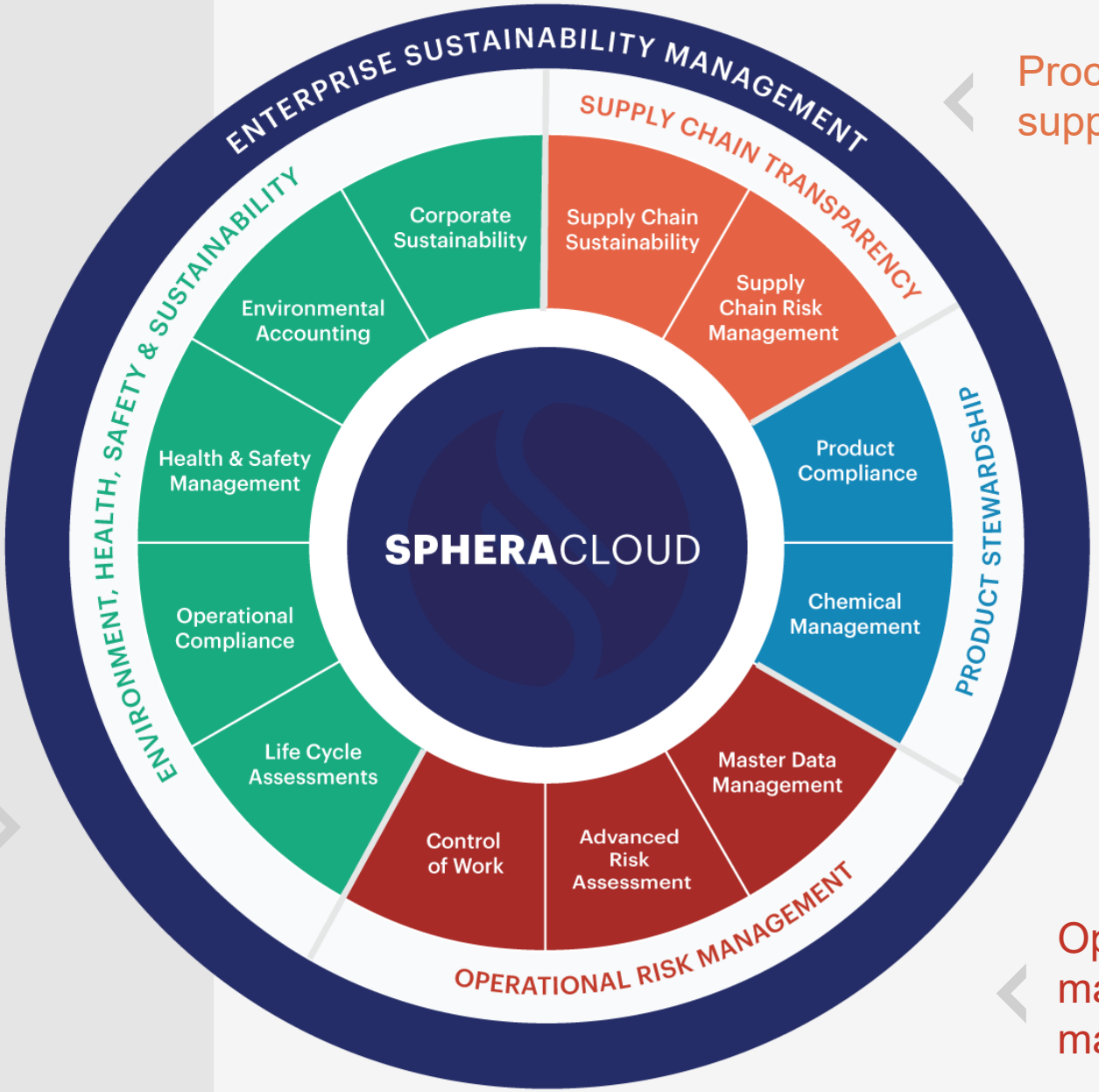
LCA (Faculty of Science) Netherlands

LCA & sustainability (Faculty of Management) Colombia

Consulting – until now



Enterprise Sustainability Management



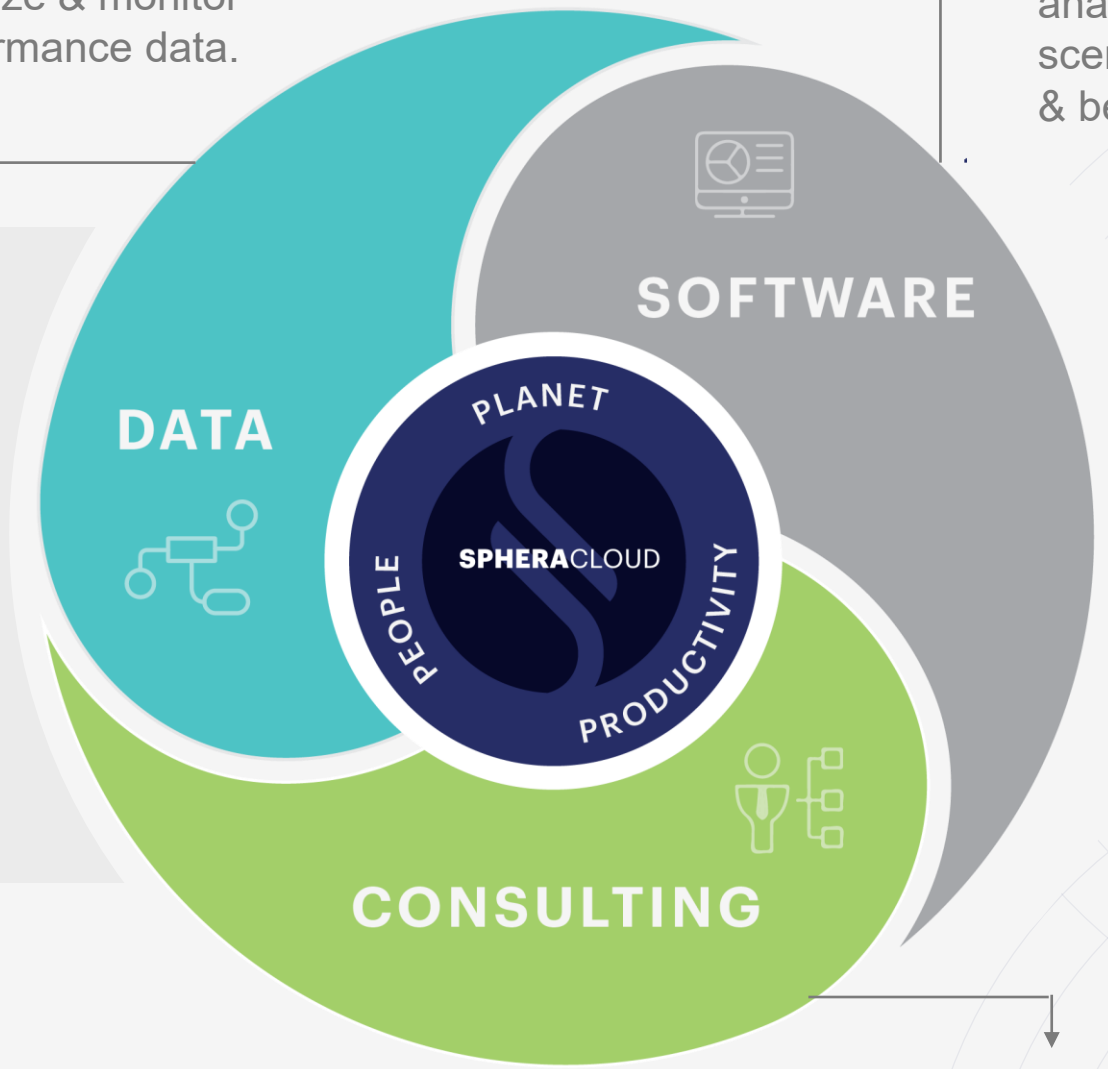
Procurement / supply chain / supply chain sustainability

Product stewards / compliance managers

Operations / process safety managers / reliability & maintenance

Chief sustainability officer / EHS leader

You can have the best software, but you need **data & consulting too for a total solution.**



Sphera customer base focused in verticals for which **sustainability** is of paramount importance

CHEMICALS & LIFE SCIENCES	CONSUMER, SERVICES & TECHNOLOGY	INDUSTRIALS & MANUFACTURING	OIL & GAS	GOVERNMENT	FINANCIAL SERVICES
Abbott	amazon	bhpbilliton	Chevron		Deka
AkzoNobel		DTE Energy	bp		ZURICH
BASF We create chemistry	Google	Honeywell	ExxonMobil		Blackstone
Baxter	hp		Shell		FARMERS INSURANCE
DOW	KraftHeinz	DUKE ENERGY	PETRONAS		temenos
DUPONT	Microsoft	Mosaic	TOTAL		IDB Inter-American Development Bank
Johnson & Johnson	Nestlé	RioTinto	أرامكو السعودية saudi aramco		
Pfizer	P&G	Xcel Energy			
PPG		TOYOTA			

KEY HIGHLIGHTS

Top 10 chemical companies

Top 10 oil & gas companies

Top 10 industrial companies

Top 10 CPG companies

(1) ARR mix as of Q1 '21

We have a global footprint with local impact.

1 million+
Individual users

7,000+
Customers

80+
Countries

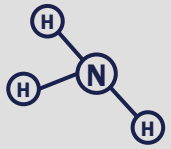
1,300+
Colleagues

Drivers

Drivers for building internal LCA capabilities

Regulations

Innovation



Industry frameworks

Customer requests

Market trends

Corporate strategy

Industry sectors

Construction

Healthcare

Food and agriculture

Electronics

Chemical

Paper/packaging

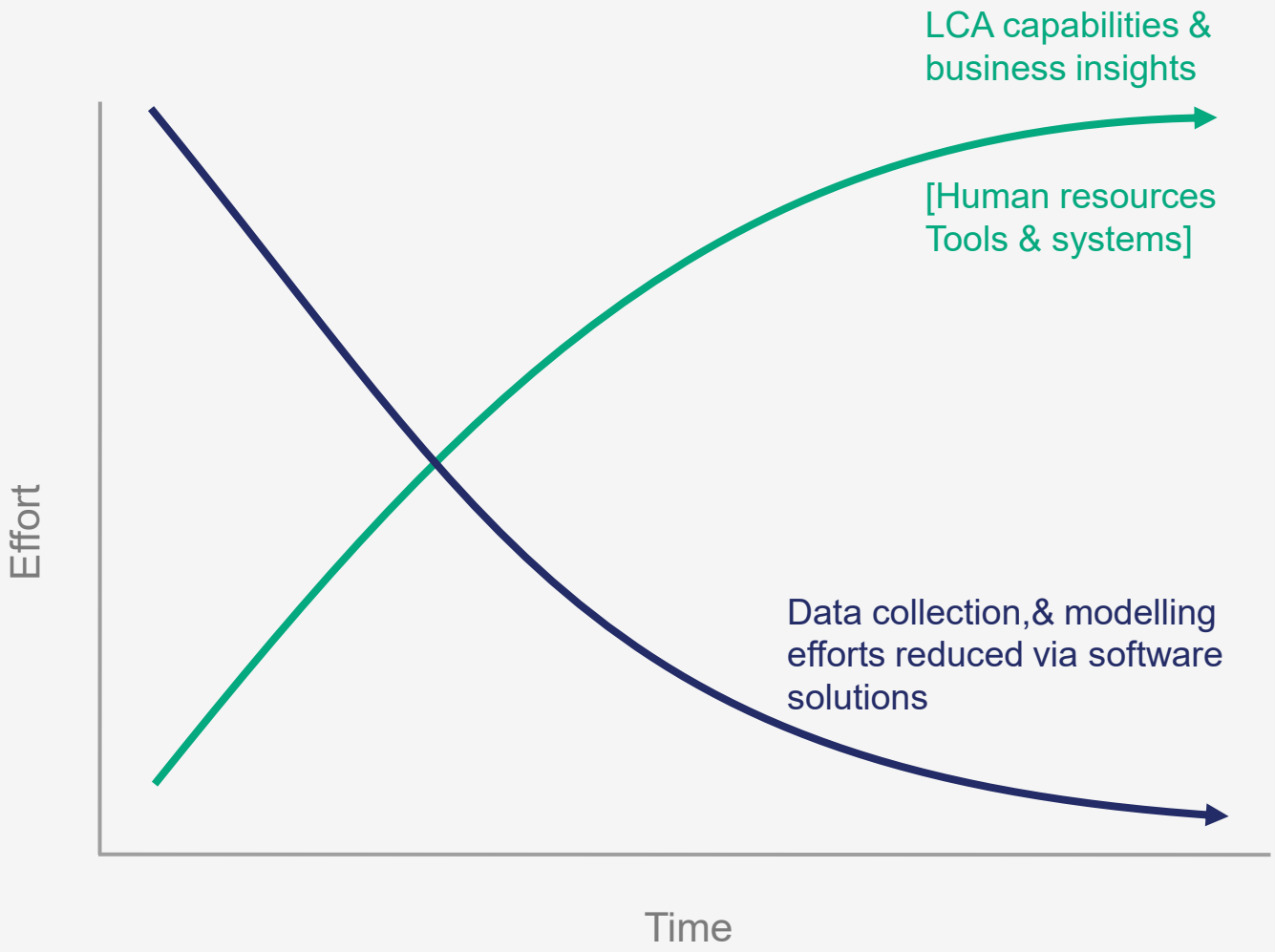
Mining and metals

Energy & Mobility

Waste management

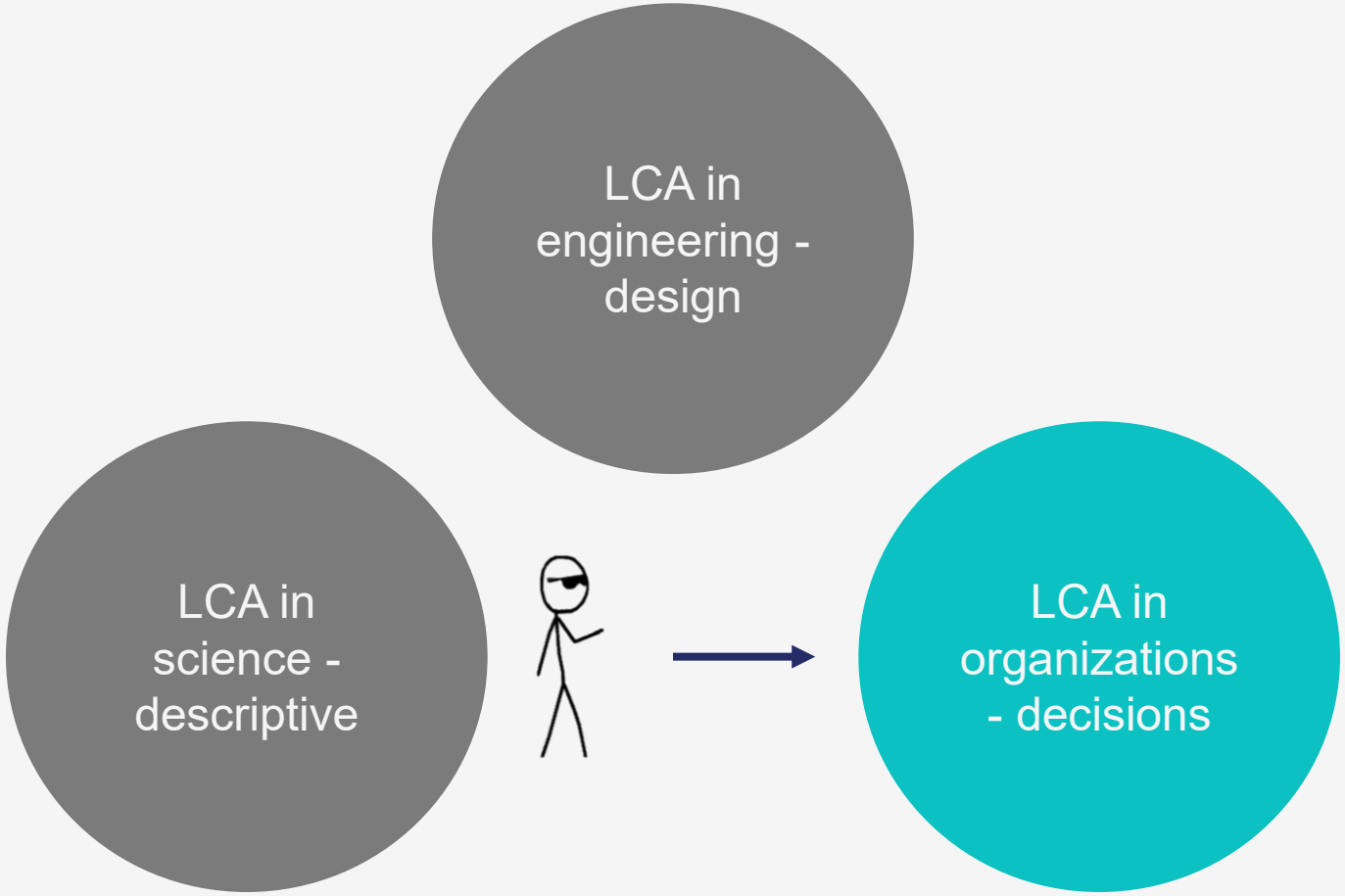
LCA capability development

- Increased number of customer requests
- Need for *complete* portfolio coverage
- Divergent guidance's
- Automating data collection efforts



Scoping

LCA in academia to LCA in industry – what changes?



Value creation of LCA in organizations

An organization's sustainability journey

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Two fundamental thoughts

- The goal is effective environmental management, not LCA

- LCA is not perfect, work in progress

Goal & Scope

- Often defined by client – not the case in biz dev
- Identify the business case – ideas?
  - Decisions that this study will inform and how this is important to the organization
- Scope for purpose, not perfection
  - Determine: product systems, system boundaries, functional unit, sensitivity
  - Standard & depth to follow:
    - EPD, PCF, LCA, comparative LCA, screening

Data collection

After G&S is defined and linked to business objectives, comes…

Munch, 1893

Data collection

Challenges

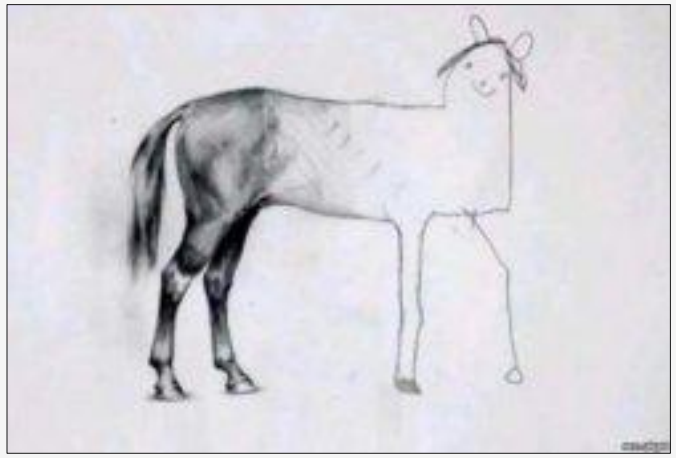
- Global operations
- Data spread across teams
- LCA requests can mean extra work

- Important to dedicate sufficient resources
- Prioritize data collection, best in phases
- Units, units, units

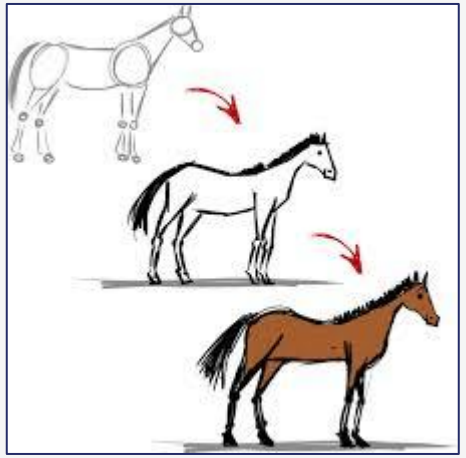
Munch, 1893

Data collection & modelling in phases

- From this:



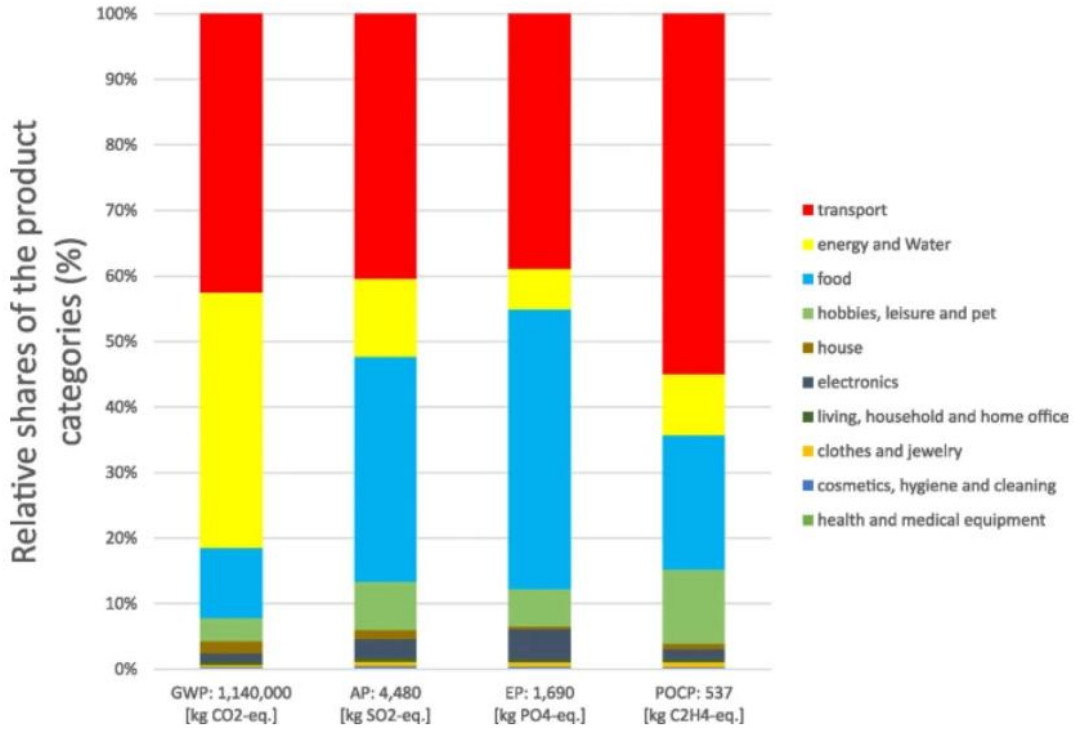
- To this:



Prioritize, Prioritize

~57/210 datasets (~30%)
Represent ~90% of impacts

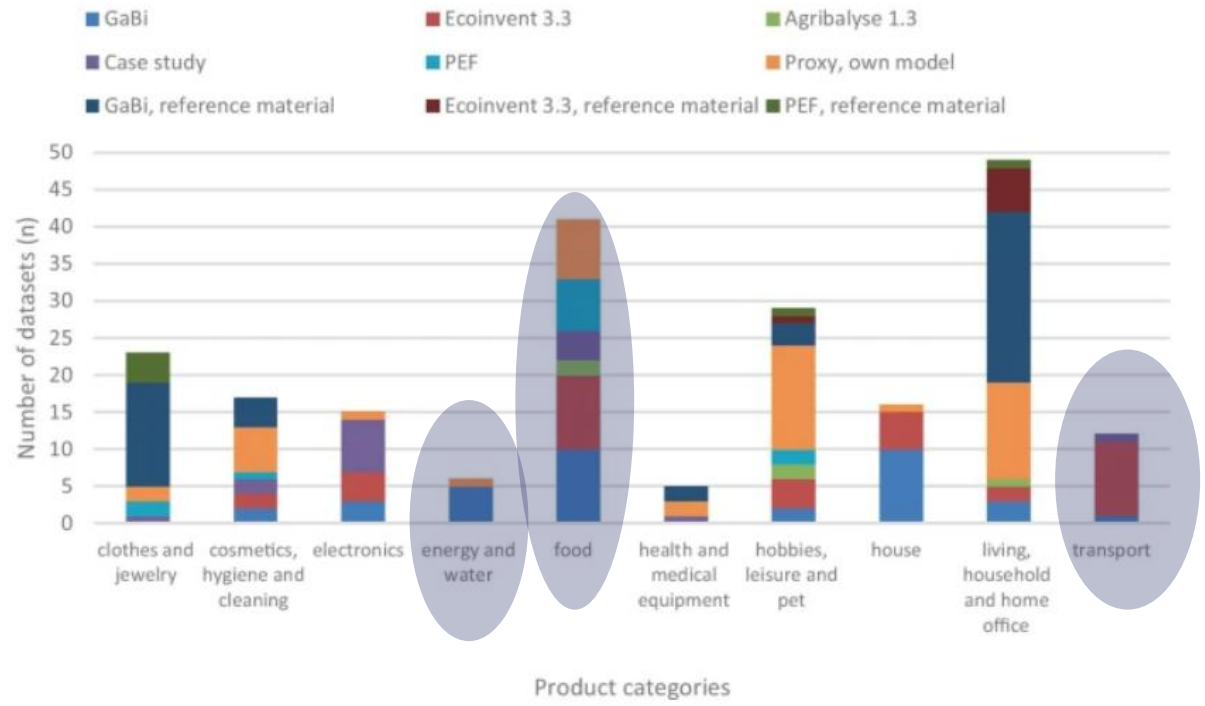
Fig. 3



Life-LCA results and relative shares of product categories

Fig. 2

210 datasets



Relative share of data sources used for modelling the different product categories

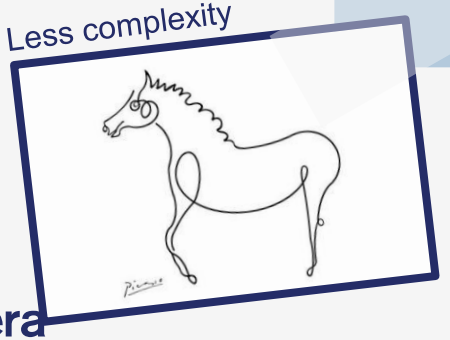
Bossek et al 2021 "**Life-LCA: the first case study of the life cycle impacts of a human being**"

Types of LCA to commission

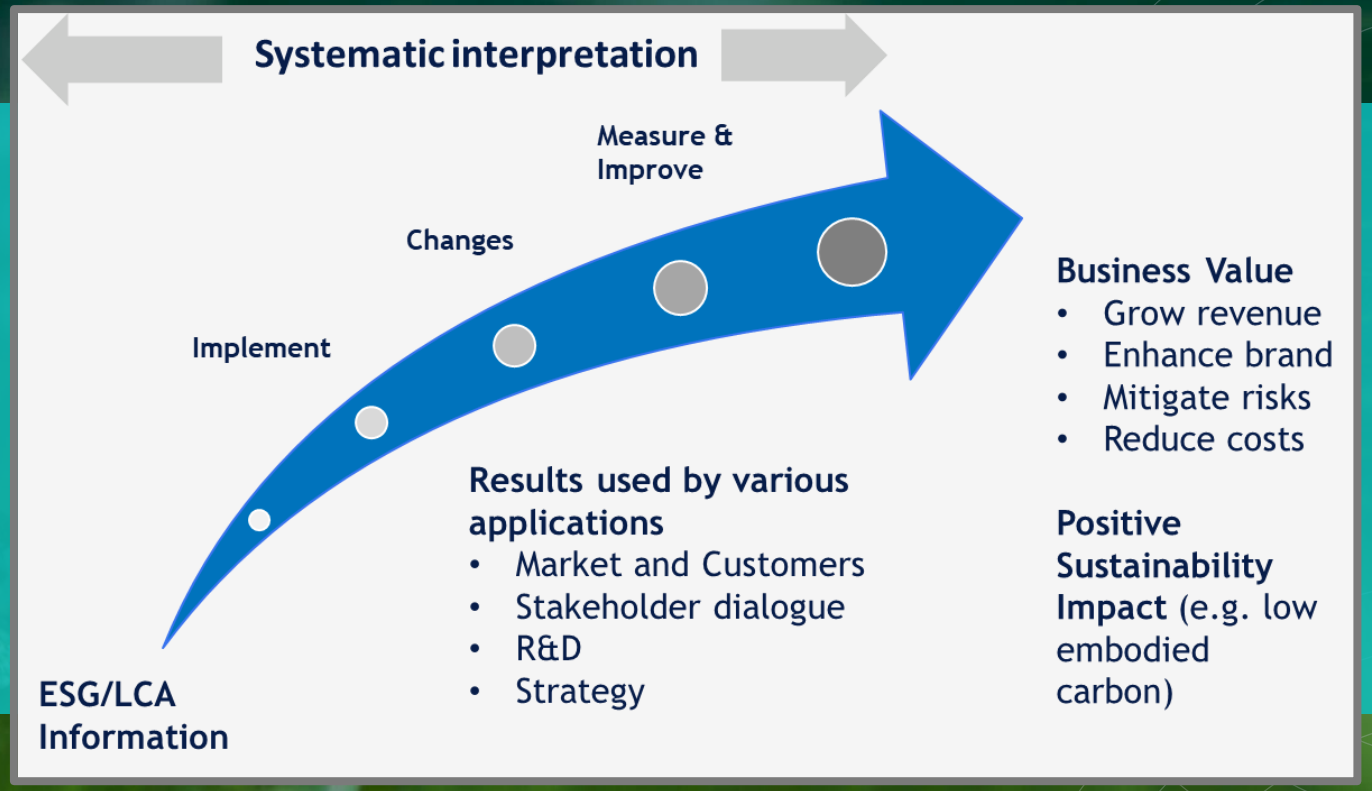
Higher complexity

Internal Communications	Single Product	Comparative
	Critically review • ISO Single-Product/organizational • EPD • PCF ISO 14067	**Critically reviewed (Panel)** • ISO Comparative LCA • PCF ISO 14067* • Both incl. extensive sensitivity and uncertainty
	Screening LCAs/PCF • Hotspot identification • Slide deck deliverable at min • High-level assessment with literature review • Assess scope for public facing study	**Screening Comparative LCAs/PCF** • Evaluate the case for competitive advantage • Identify most promising applications/conditions • Assess scope for public facing study

Less complexity



Communication



Fava 2019

Lead with implications, not data

ENVIRONMENTAL Science & Technology

pubs.acs.org/est Editorial

Apolitical Science

Cite This: *Environ. Sci. Technol.* 2025, 59, 6355−6356

ACCESS | Metrics & More

There is an old saying that "facts do not need you to believe them to be true". This has never been more relevant. In an era where scientific research, particularly in environmental, health, and climate science, faces mounting political challenges, we must reaffirm that our work is not contingent on ideology but on the immutable laws of nature.

A molecule of carbon dioxide does not recognize political debates over international climate agreements. It will, however,

and insisting that scientific facts underpin policy decisions. More than ever, it is crucial to share our findings effectively, engaging with a wide variety of audiences. The future of our air, water, land, climate, ecosystems, and humanity itself relies on our science and our ability to inform the path forward. This requires researchers to communicate differently than how we are traditionally trained, demanding time and attention to learning to lead with the results and implications rather than the methods and data.[a]

Zimmerman et al 2025

(30+ scholars)

Share knowledge, not data

Data	Knowledge
X type components represent 5% of the carbon footprint, while Y type components represent 70% of impacts….	All about material choice of Y--- look into light weighting and/or material sourcing alternatives?, Material substitution would require additional analysis
When assuming wind energy instead of the national grid, product B's impact is reduced by 5%	A switch to renewable energy shows little effectiveness in reducing the environmental impact
Total transport amounts to less than 10% of impacts, while feedstocks amount to 80% across all categories	Specific supplier practices and material type is more important than optimizing transport distances for the aim of reducing impact

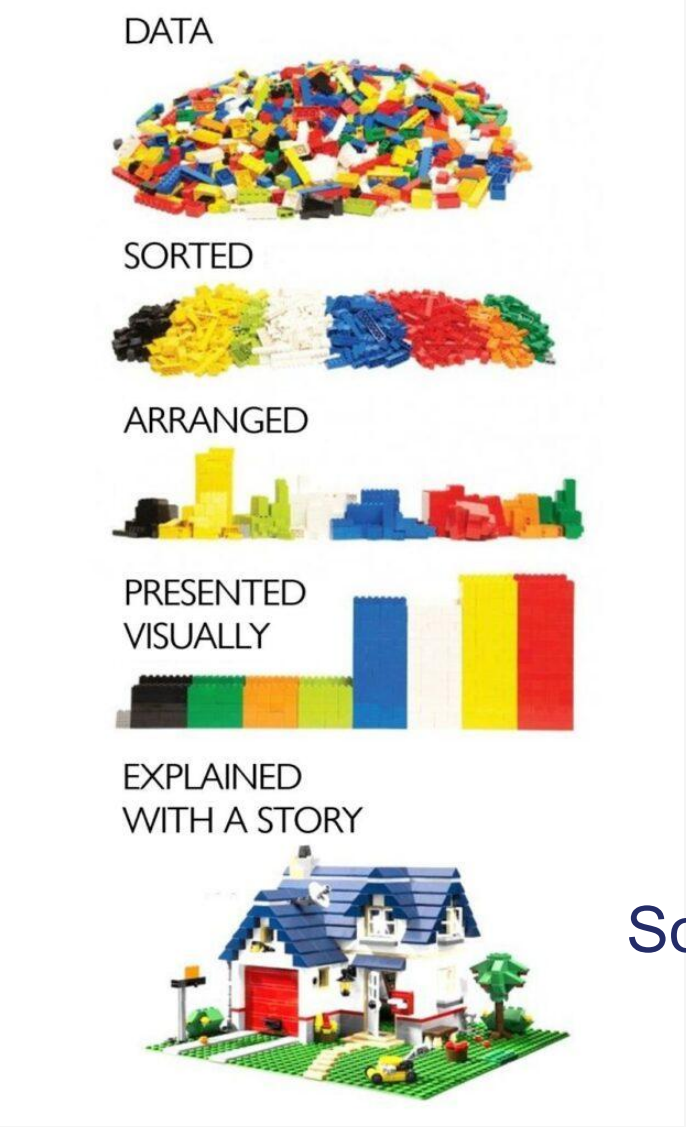
Main challenges

1. Information overload
2. Fragmented findings
3. Recommendations that focus on study refinement

Main challenges

1. Information overload --- Whats the story?
2. Fragmented findings --- maintain big picture
3. Recommendations that focus on study refinement – include business case

Aim for a story



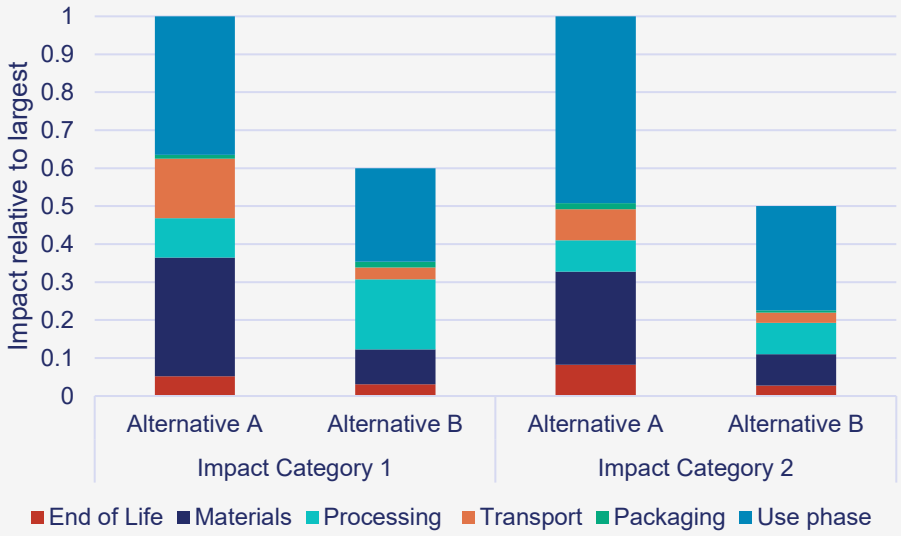
Software output

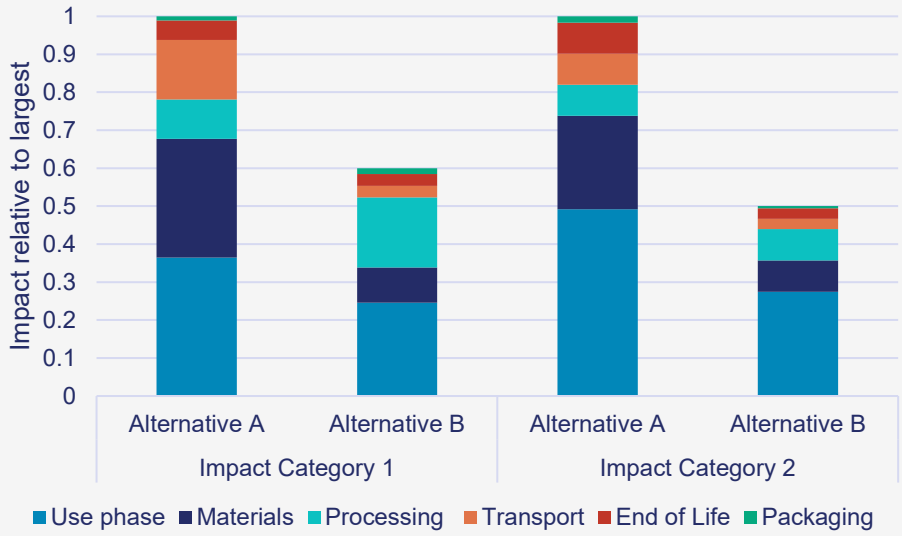
Data analysis

Graphs

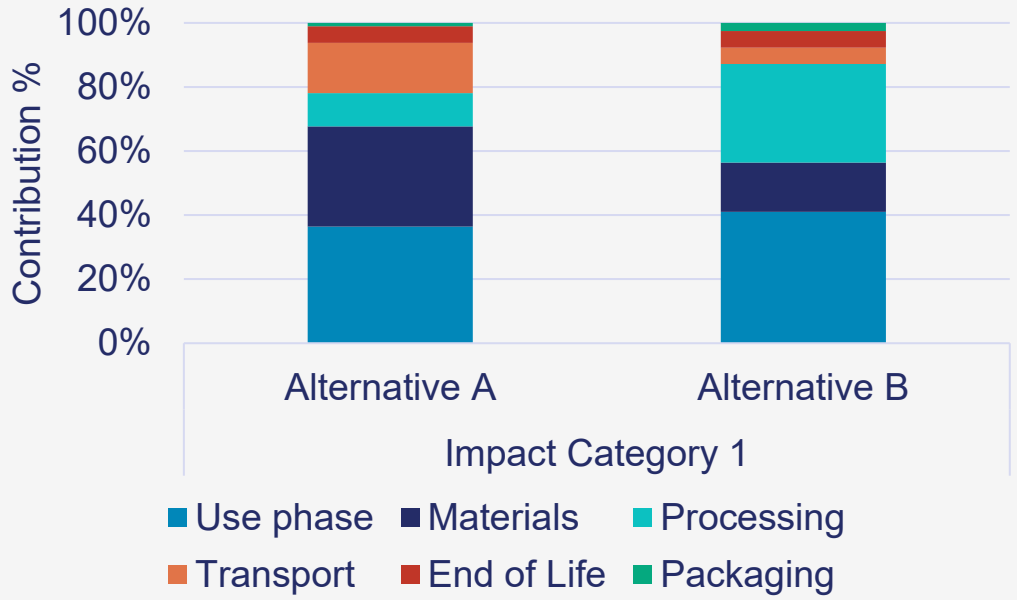
Conclusions & Recommendations
So what/Implications/Actionable insight
Next steps

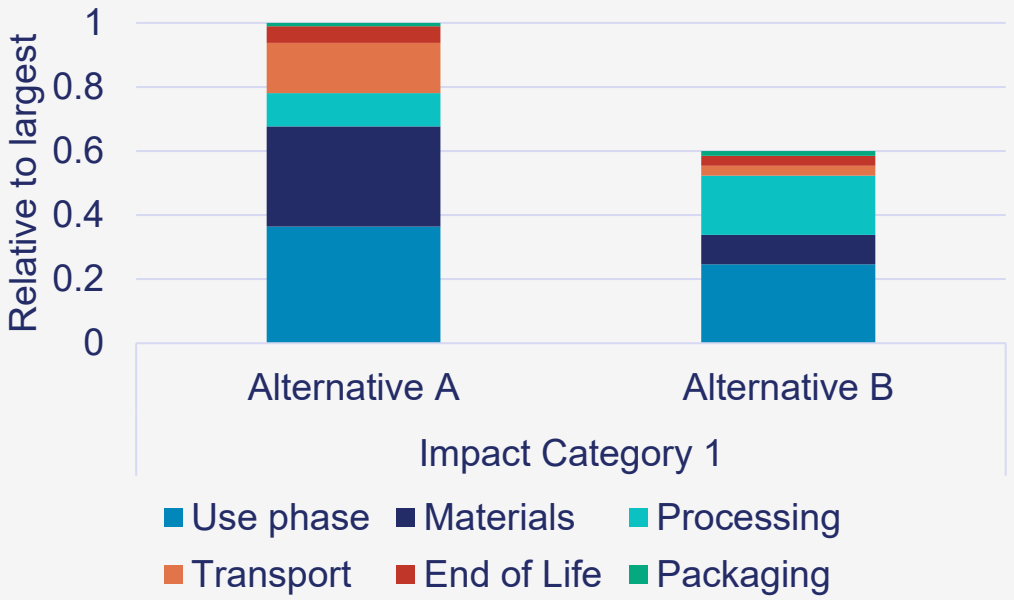
Which one is easier to read?





Guiding improvements in a comparative LCA





LCA results have many layers

Simplify to keep big picture

When showing multiple layers, we lose context -→ flatten to show results that align with action. What's more clear "raw materials" of X ingredient represents 70% of total impacts?

Messaging

The International Journal of Life Cycle Assessment (2025) 30:803–810
https://doi.org/10.1007/s11367-025-02460-9

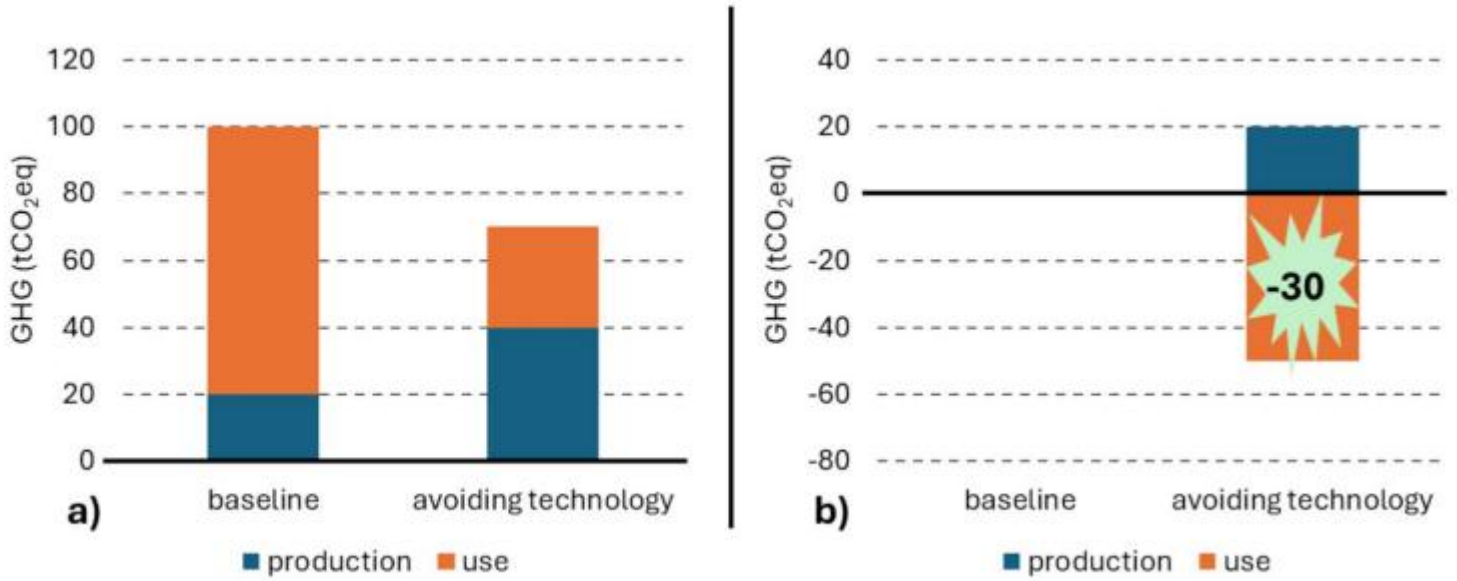
EDITORIAL

From analysis-LCA to message-LCA: a lost cause?

Matthias Finkbeiner[1] · Lindsey Roche[1] · Peter Holzapfel[1]

Received: 6 March 2025 / Accepted: 12 March 2025 / Published online: 10 April 2025

Fig. 1 Examples for result presentation: **a** conventional, **b** avoided emissions



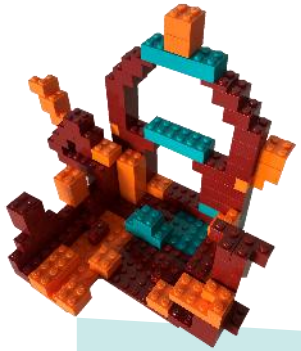
Now what? Engagement

- Manager to **translate results into insight within the organization**
- **Pursue improvement opportunities** – LCA diagnoses, but it does not make the changes
- Do you think this process can be helpful to **other areas of the business?**
- How can these lessons **contribute to company-wide goals?**

- Re asses resource/training needs for future LCA projects

Aligning product and corporate efforts in support of decarbonization

Two Complimentary Perspectives Across the Business



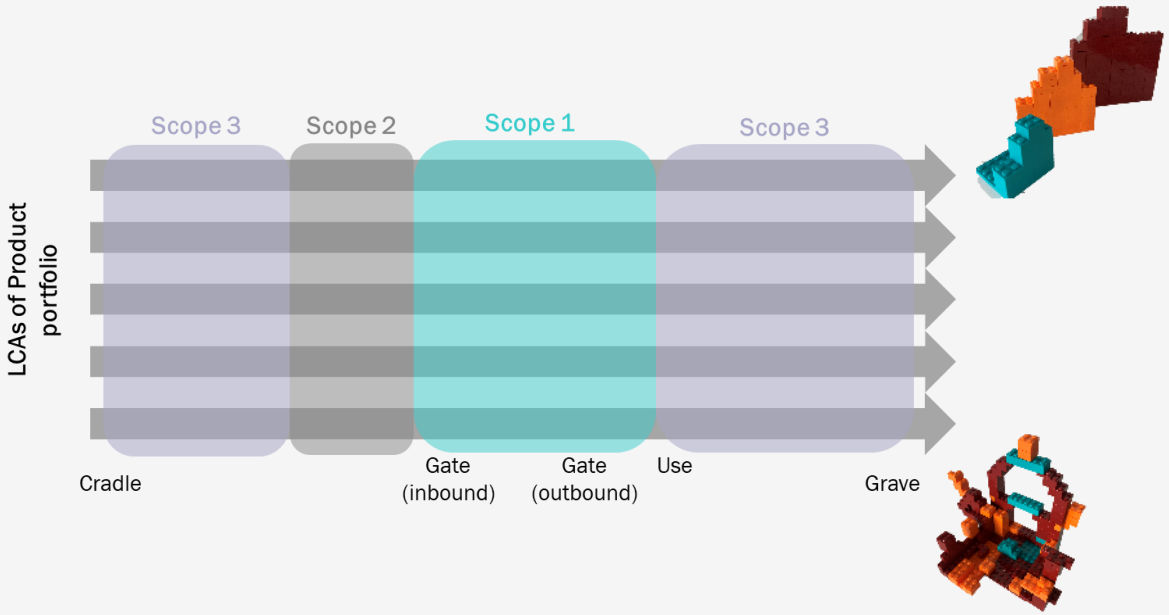
Product LCA

Corporate Strategy

R&D and Eco-design	Procurement	Product Marketing	Branding & Stakeholder Relations	Business Strategy

3 ways in which LCA supports decarbonization

1. Scope 3 estimates
2. Estimate reductions from product level innovations – thru improved alignment
3. Go beyond carbon



Two complimentary perspectives across the business

	Corporate GHG Accounting and Strategy	Product LCA
Origin	Investment community	Industry/academic/public policy
Guideline	GHG protocol, SBTi, ISO 14064	ISO 14044
Unit of analysis	Reporting year	Functional unit
System boundaries	Organizational boundary, operational boundary (Scopes 1,2,3)	Life cycle stages (incl. allocation/system expansion)
Impact Category	CO2 equivalents	Multiple indicators
Data source	Aggregated emission factors	Unit process
Perspective/ Boundary	Unclear, Scope 3 often optional	Full life cycle, intrinsic part of the process
Objective/Aim	Disclosure	Eco-design

GHG scopes in the LCA context

Scope	LCA coverage*
Scope 1 – Direct emissions	✓
Scope 2 – Purchased electricity	✓
Scope 3.1– Goods & Services	✓
Scope 3.2– Capital Goods	X
Scope 3.3– Fuel & Energy (excl S1 + S2)	✓
Scope 3.4– Upstream Transport & distribution	✓
Scope 3.5 – Waste Generated	✓
Scope 3.6 – Business Travel	X
Scope 3.7 – Employee Commuting	X
Scope 3.8 – Upstream Leased Assets	X

Scope	LCA coverage*
Scope 3.9– Downstream transport and distribution	✓X
Scope 3.10 - Processing of sold products	Not applicable for intermediary products (polymers)
Scope 3.11 – Use of sold products	✓ (cradle to grave)
Scope 3.12 – End of life of sold products	✓ (cradle to grave)
Scope 3.13 – Downstream leased assets	X
Scope 3.14 – Franchises	X
Scope 3.15 - Investments	X

* Coverage limited to product manufacturing. Emissions related to other products are not included

A new paradigm for corporate strategy

From **disclosure…**	…to **proactive action**
From **annual updates…**	…to **continued monitoring**
From **limited scope 3 coverage…**	…to a **clear understanding of supply chain impacts**
From **separate LCA and strategy teams…**	…to **high integration and collaboration**
From **spreadsheets…**	…to a **dedicated software solution** that enables a company to switch views
From **carbon exclusive management…**	…to an **integral climate strategy considering planetary boundaries**

For most impact: Scope & Engagement

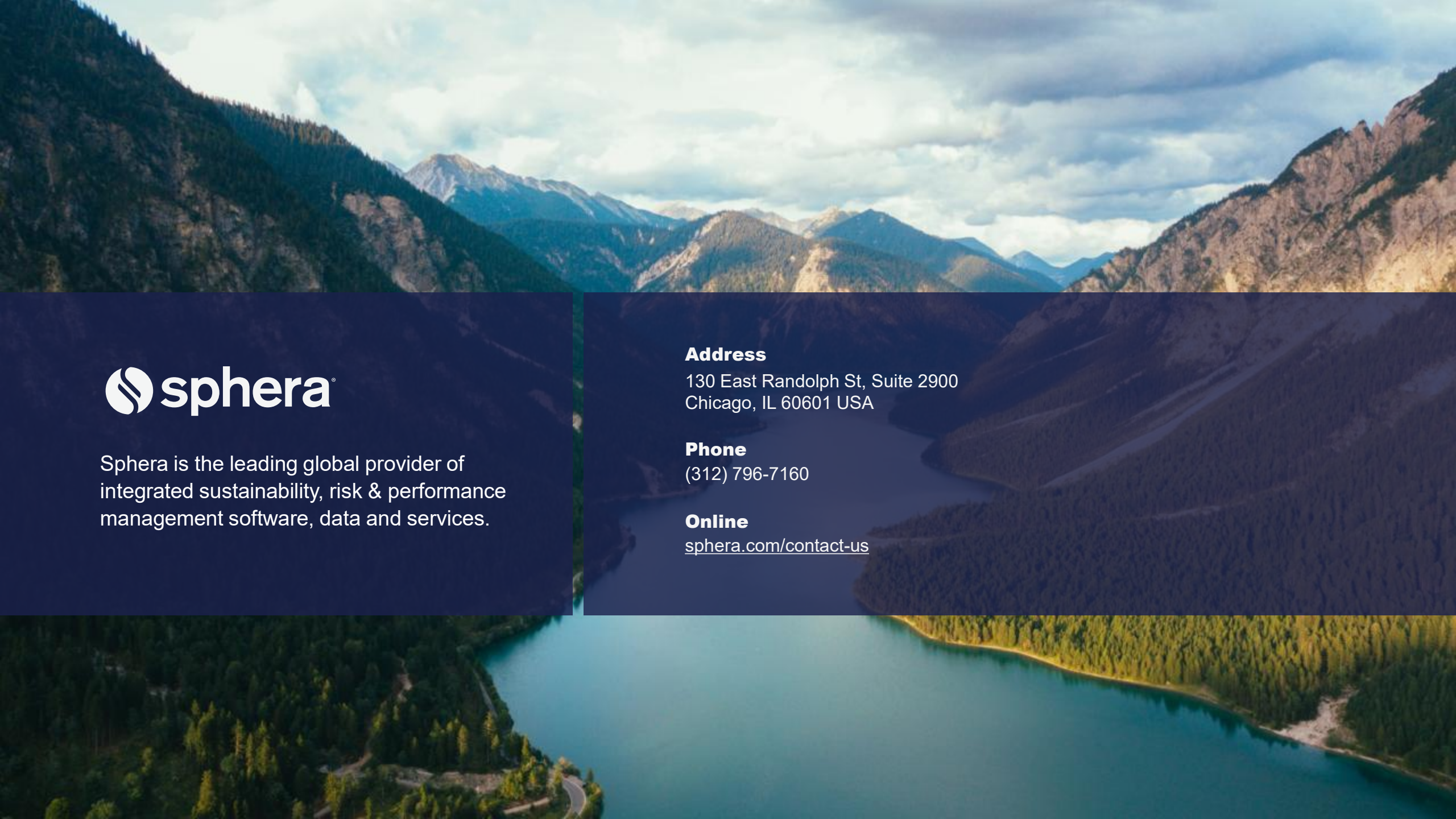
- Know the decisions you wish to inform - prioritize
- Leverage study for other business units
- Align with corporate strategy
- Disseminate insights
- Ongoing efforts

- Magnify efforts

Final remarks & call to action

- We need significant change and soon
- Need to scale efforts – from one at time, to calculators and automation
- Move to align with corporate
- Moving beyond LCA into story telling
- Remember the “WHY”

Questions?



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Address
130 East Randolph St, Suite 2900
Chicago, IL 60601 USA

Phone
(312) 796-7160

Online
sphera.com/contact-us