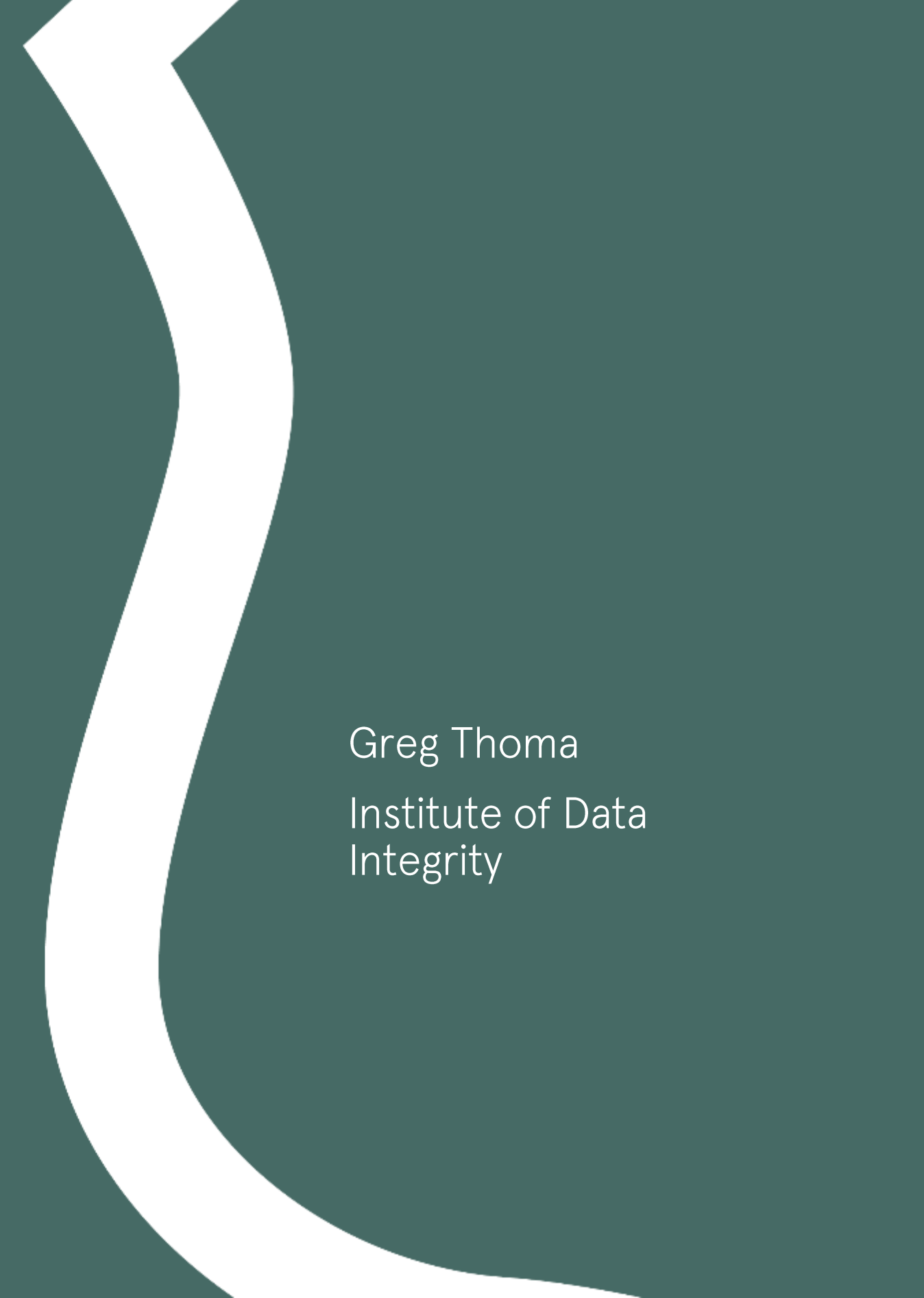


The background image is a scenic landscape featuring a winding asphalt road that curves through a hilly, grassy area. The hills are covered in dry, golden-brown grass and some green shrubs. In the distance, the road leads towards a coastline where the ocean meets the shore. The sky is a mix of orange and blue, suggesting a sunset or sunrise. The overall tone is warm and serene. A large, white, curved graphic element is positioned on the right side of the image, partially obscuring the ocean view.

LEATHER AND HIDE
COUNCIL OF AMERICA

**LCA & Circularity
in Leather**

October 16, 2025



Lifecycle Assessments and Data Integrity

Greg Thoma
Institute of Data
Integrity

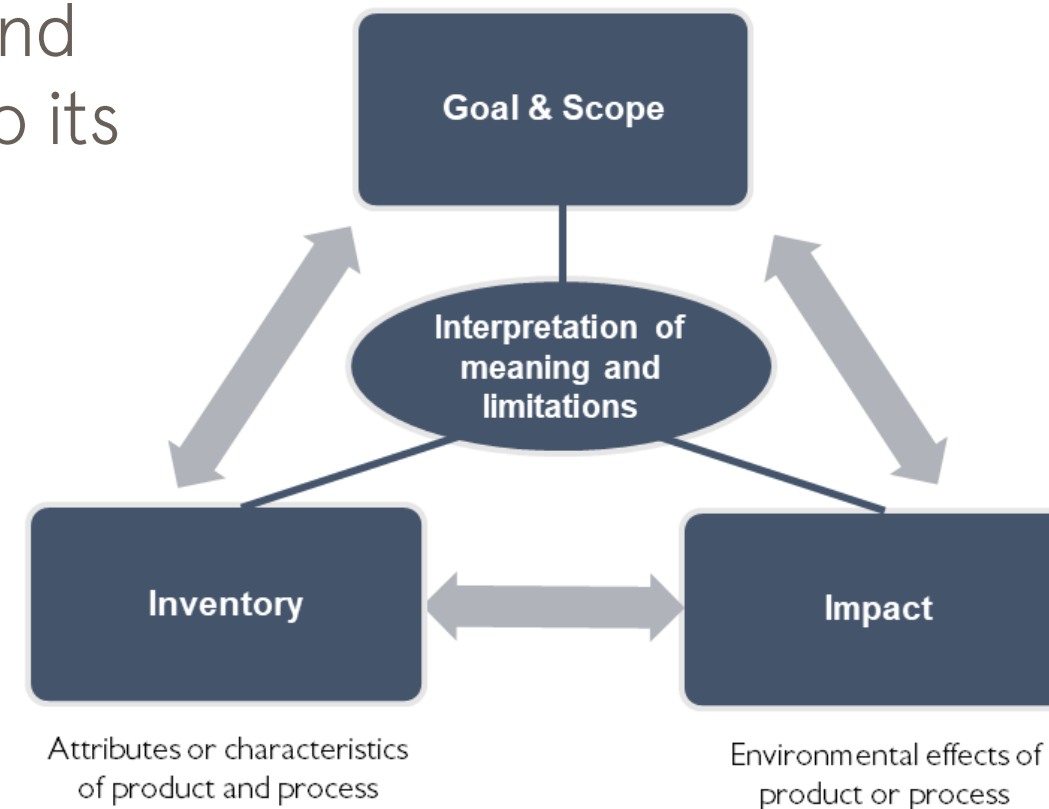
Lifecycle Assessment



Iterative process of the 4 phases

Systematic quantification of inputs and outputs for a system in normalized to its functional unit (FU).

- Identification of 'hotspots' for innovation
- Benchmarking (longitudinal studies)
- Product labels / marketing
- Strategic planning
- Inform public policy
- Product Development / Improvement
 - Selection of materials or



ISO 14040/44 (+ more)

LEAP (FAO)

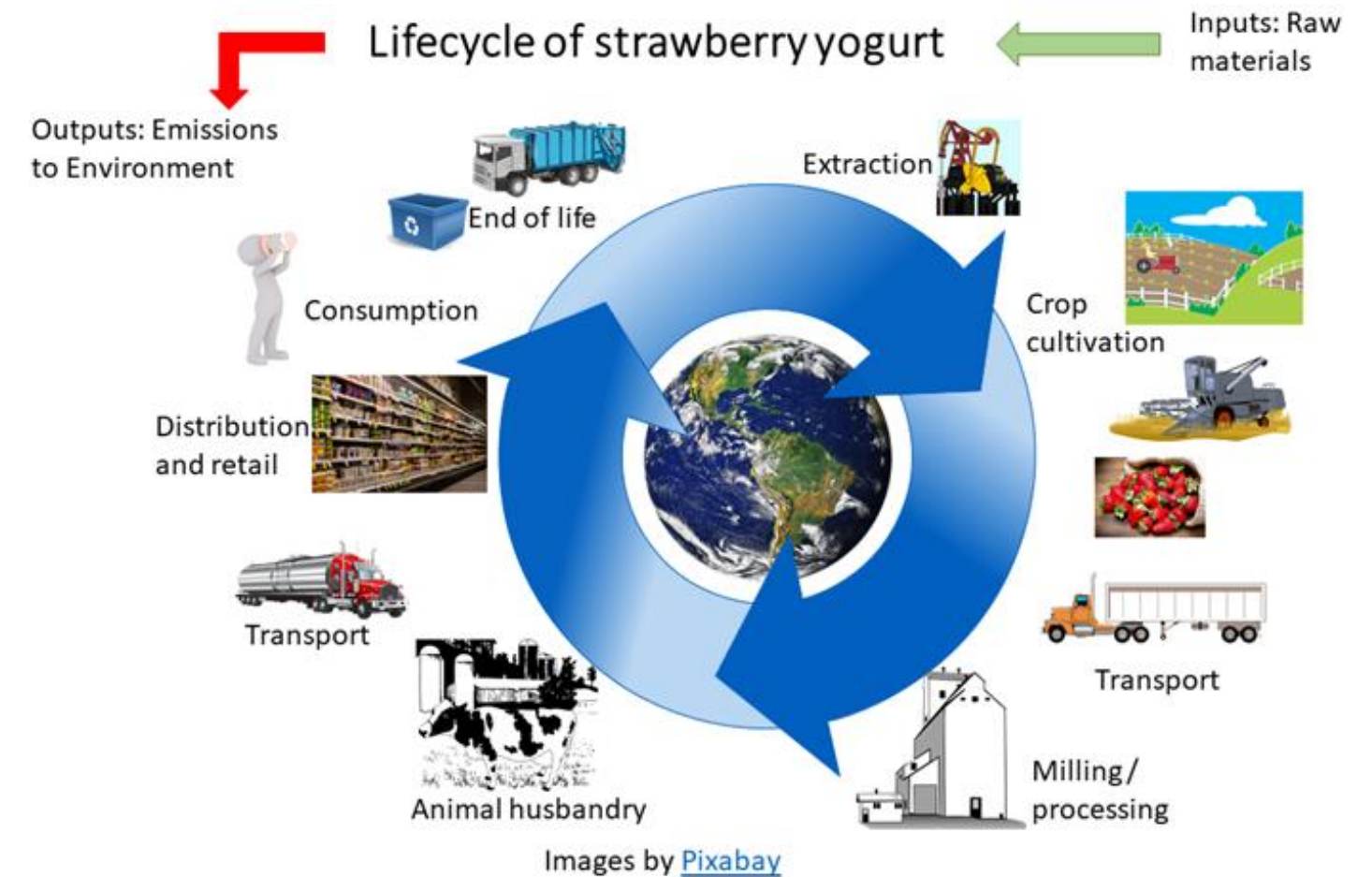
PEF, GHG protocol, SBTi, ...

Includes all the resource flows to the full system under investigation with respect to the functional unit

Environmental effects of the studied product or process

LCA Modelling

- **Life cycle assessment (LCA)** is a multi-step procedure for calculating the lifetime environmental impact of a product or service
- **Functional unit (FU)**: defines the quantification of the *identified functions and is* consistent with the goal and scope of the study
- **System boundaries**: define the unit processes to be included in the system to be modelled.
- – *ideally, the product system should be modelled in such a manner that inputs and outputs at its boundary are elementary flows*



4
Lifecycle view of environmental impacts from raw materials → end-of-life
Covers energy, water, emissions, waste across all stages
Outputs: multi-impact profile (e.g., climate, water, land) to find hotspots

Strengths of LCA

Climate / GHG (GWP100)

- Robust methods & data
- Granular stage-level attribution

Water Use

- Volumes & scarcity footprints
- Hotspot identification

Energy / Resource Use

- Cumulative energy demand
- Material & chemical tracking

Land Use

- Area × time metrics
- Occupation and LUC

Weakness of LCA

OK: Acidification / Eutrophication

- Model-based, less site-specific
- Useful for directional comparisons

Emerging: Biodiversity / Soil Health

- Methods evolving
- Not common in standard LCIA

Emerging: Nutrition / Function

- Functional-unit debates
- Durability not fully accounted by default (biogenic carbon and temporary storage)

Often Missing

- Ocean plastics / wider ecosystem serv
- Detailed tox/ecotox, social impacts

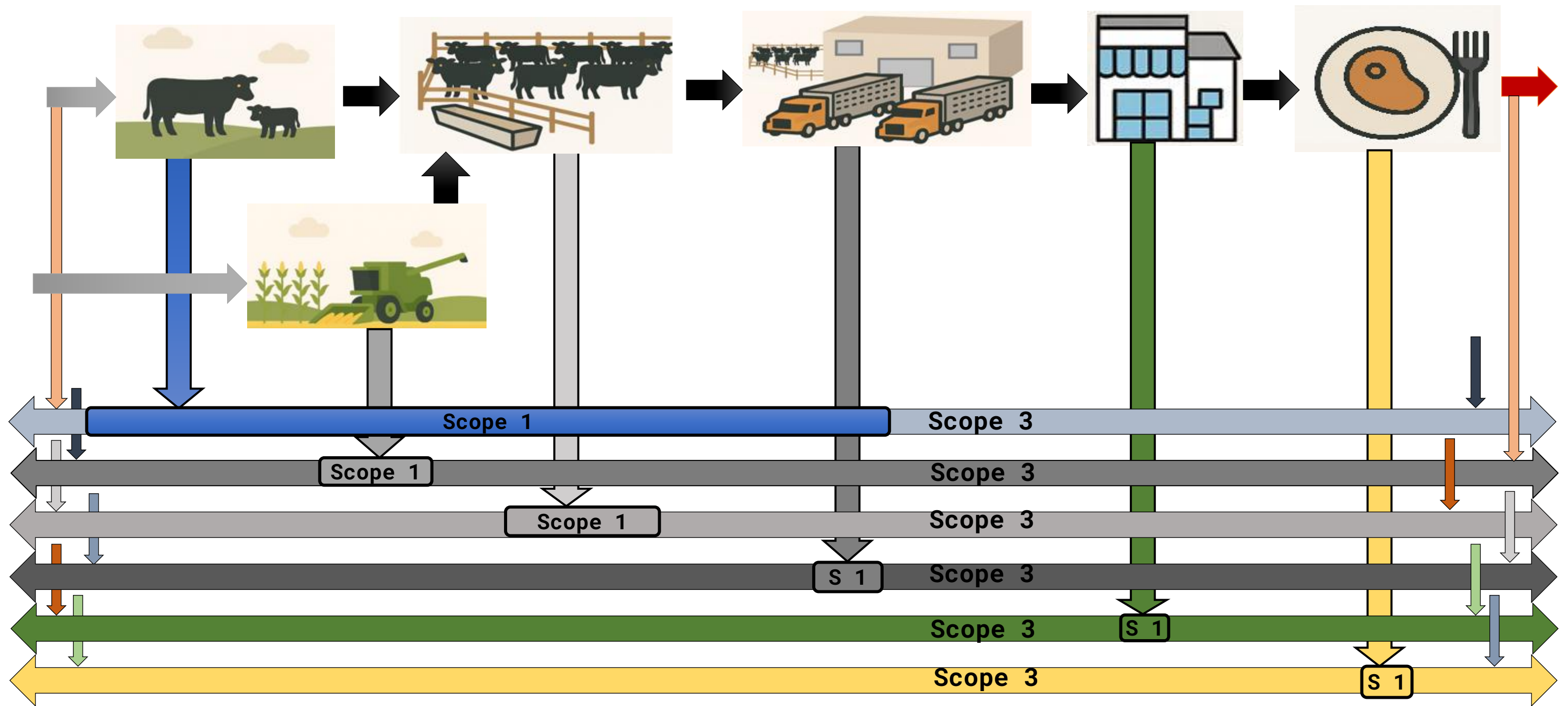
Challenges in LCA of Ag systems

- Data Availability – proxy & substitution can introduce error/ uncertainty
 - Incompatibility of sources, not all in public domain, extant data not always specific to food
 - LCI in agriculture often modeled (multiple models, variable predictions)
- Spatially Extensive – but LCA integrates the supply chain
 - Geospatially explicit LCI and LCIA in nascent stages
- Systems are dynamic– LCA is (generally) a static model
 - Is a static model still useful – yes, many situations.
- Impacts modeled – not benefits (evolving this direction: regen ag)

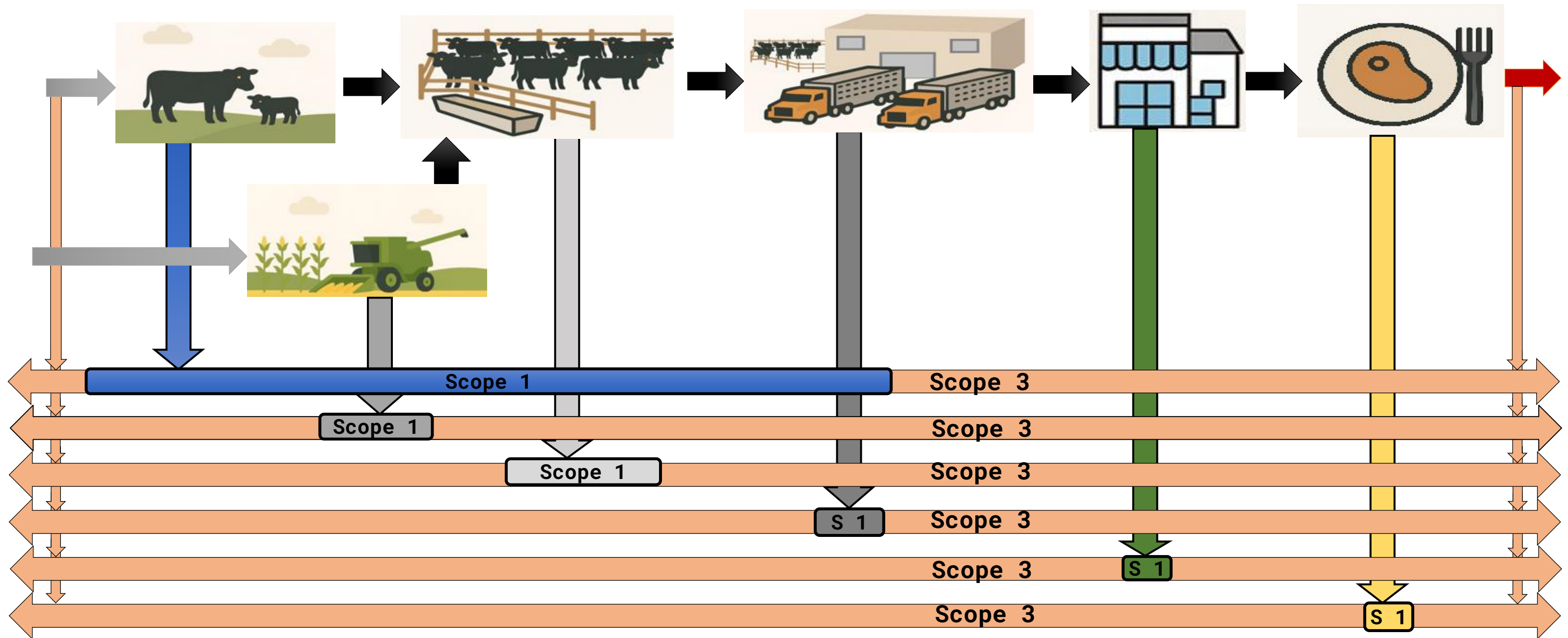


Reporting Challenges (Fragmentation)

- Duplicative data requests (carbon, water, chemicals) in different formats
- Scope 3 vs. product LCA misalignment → inconsistent numbers
- Multiplying requirements (regulatory + customer) strain suppliers



Fragmented reporting landscape: LCA was designed for flexibility, but the unintended outcome is federated studies that may not be consistent being combined which can create confusion or lower trust in the reporting.



Under improved harmonization of methods and data (both foreground and background), based on full LCA of the system (cradle-to-grave), each actor's Scope 3 emissions are easily estimated as the total (same for all in this supply chain) minus Scope 1 + Scope 2 emissions.

Institute for Data Integrity (IDI): Purpose & Structure

- Purpose: harmonize leather LCA data & methods; enable trusted reporting
- Non-profit with Board (strategic), Delivery Team (ops), Advisory Council (technical)
- Focus: shared datasets, consistent and transparent data and methodology (allocation, biogenic accounting), practical tools



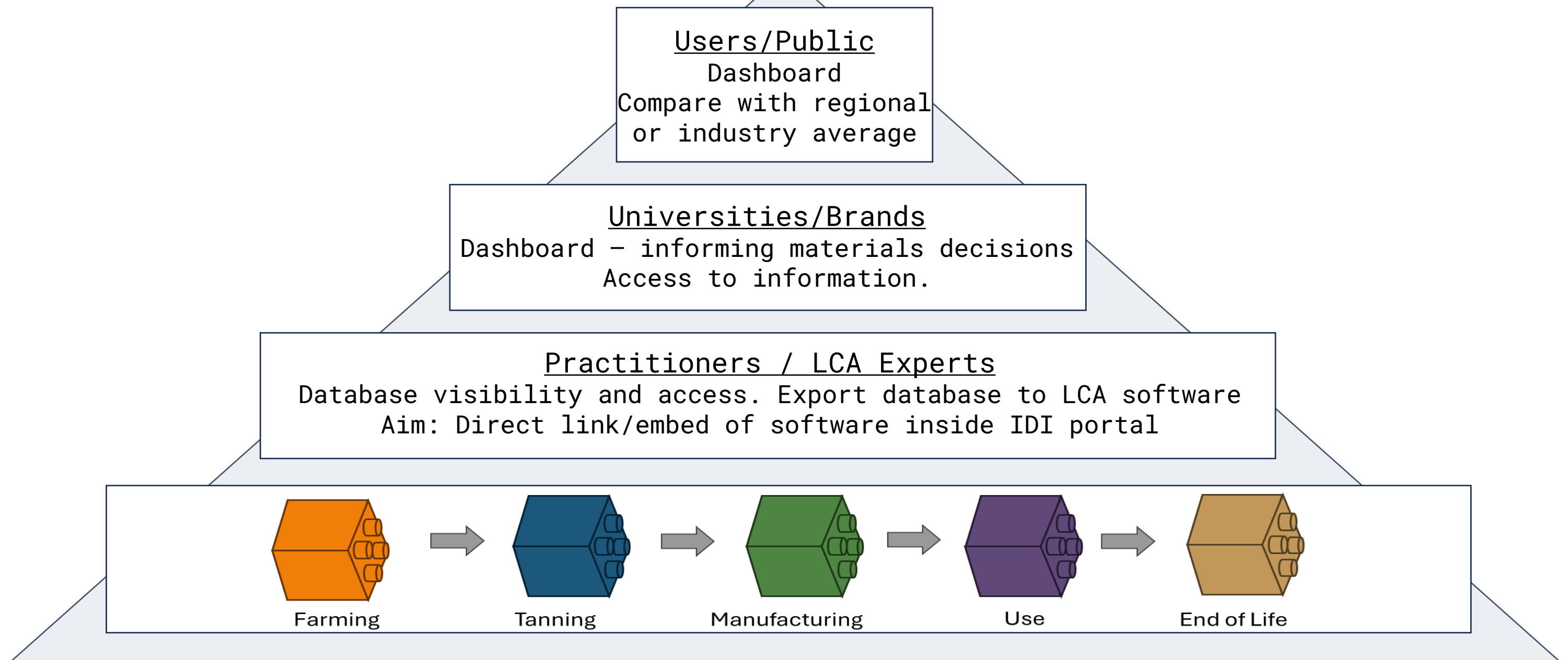
Assessment needs:

Data, metrics, integrated modeling

- Data should be transparent (to maximum extent feasible), validated, widely available, inexpensive. (e.g., NAL digital commons)
- Need for comparable metrics
 - Sustainability metrics should be science-based: life cycle assessment as system model supported by production, nutrition, economic and social components
- The same data and models should be used by producers, retailers, policymakers, NGOs and consumers.
- IDI will help define characteristics and define a modeling framework, then determine what data will be needed for goal and target setting

Data	Production, processing, consumption, waste, disposal. Economics (cost, value added) of production and consumption chains
Metrics	Environmental footprints/index Carbon, water, energy and land to start; Ecosystem services to follow
Integrated Modeling	Production (process/big data/ statistical); Environment/health (LCA); Economic (GEM, PEM, LCC);

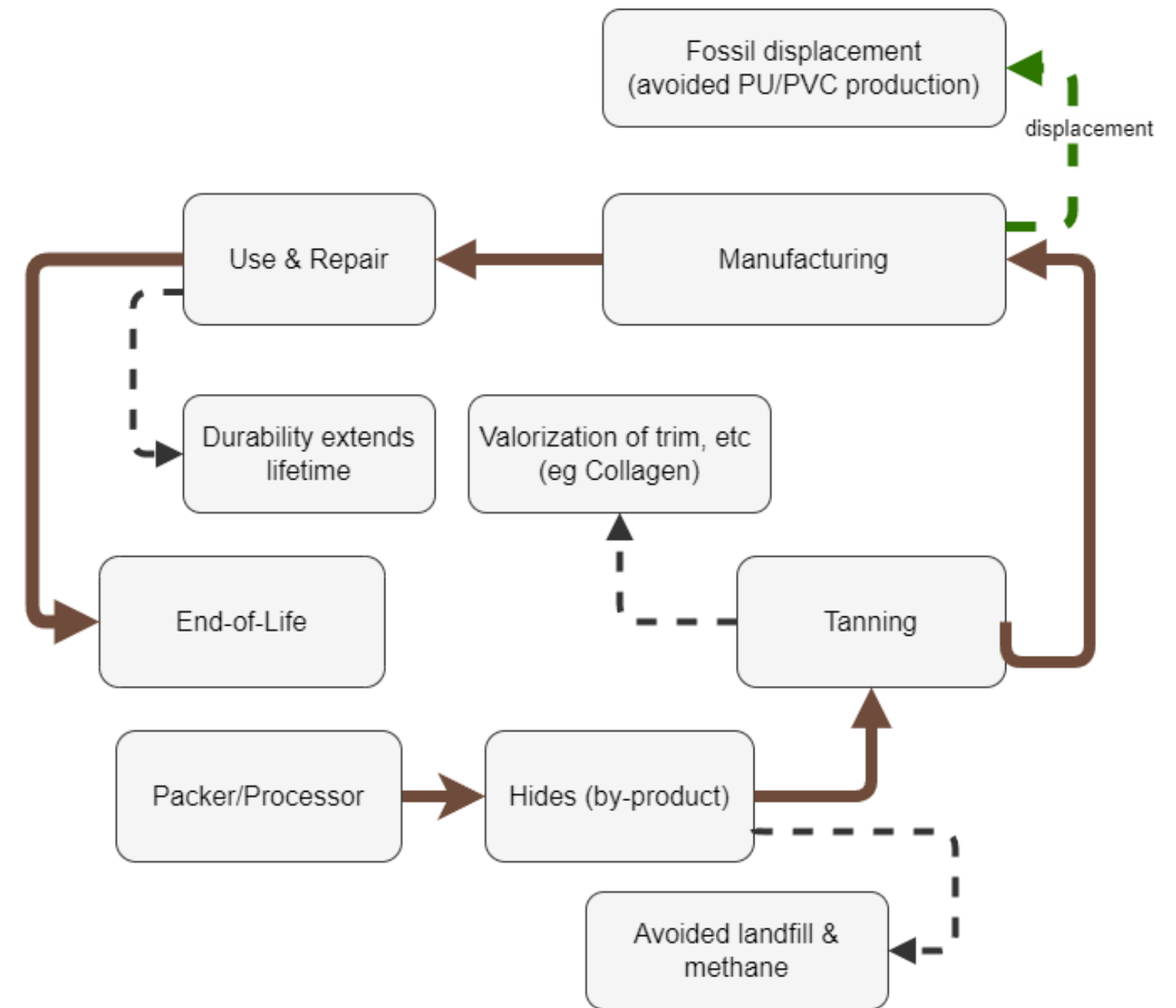
Institute for Data Integrity: Proposed toolkit



Infrastructure with Tiered Data and Access

Circularity: Leather's Lever

- Leather upcycles → avoids landfill & emissions
- Durability & repairability → fewer replacements over product life
- End-of-life: recycling, composability, valorization of scraps



Key Takeaways & Q&A

- LCA is robust for climate, energy, water, land; complement where it's weaker
- Use LCA to defragment reporting (especially Scope 3)
- IDI will harmonize data/methods; 2026 platform & datasets
- Circularity narrative: leather avoids waste and extends product life



Tools for Communicating with your Customers





Trust. Built on Science

Manufacturing a more sustainable future.
Reducing business risk.

A presentation by [member] of ESG data
from the Leather & Hide Council of America

INSERT DATE

Insert logo to master slide 

How accurate is your data on the impacts of the materials you use on the planet? How do you report that? And what brand and financial risks is your material choice creating?

We are part of one of the most sustainable leather industries in the world.
Together we have funded the first independent, open-source,
Life Cycle Assessment for US leather production.

We think you will find the results of real value when choosing materials
and their sources, and when reporting ESG performance.

Insert logo 



What is a Life Cycle Assessment?

A Life Cycle Assessment [LCA] is a process for calculating the lifetime environmental impact of a product or service in terms of a standard unit of measure, for example, a square metre of leather.

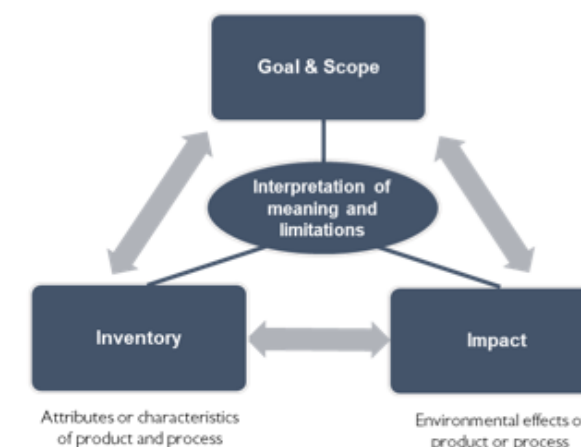
It enables Environmental, Social and Governance improvements through the selection of best materials, identification and addressing of impact hotspots, benchmarking, labelling and marketing.

From Worldly to Spin360 there is general data available, US leather has set out to give definitive data for industry customers to use in materials sourcing and communication.

The LCA is set out in ISO 14040, 14044 and 14046 Standards.

It forms part of the US-led Industry Sustainability Program.

Insert logo 



What is the value to you?

The motivations for ESG analysis and reporting vary. For some it is to deliver the most eco-friendly product, for others it is a driver for consumer engagement and sales.

- Product development & enhancement**
-eg election of best materials or process options
- Identification of ESG 'hotspots'**
eg carbon intensive inputs
- Benchmarking and reporting**
eg annual report, customer requirements
- Product labels and marketing**
eg consumer engagement
- Strategic planning**
eg investment planning
- Lobbying and stakeholder engagement**
eg protecting and growing markets

Insert logo 

Enhanced ESG data can build your brand & improve business reporting

Insert logo

L: HCA



Delivering credible data

When selecting materials, from wool and cotton to leather or plastic, there are few sources for credible ESG data.

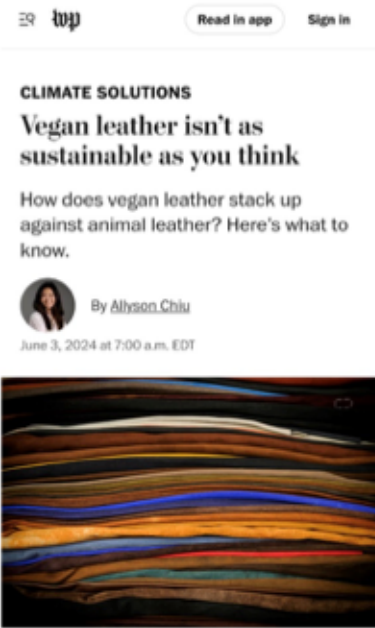
Fashion's Higg Index has, after users were taken to court for greenwashing, rebranded as Worldly. It offers limited information on data sources, timeliness and modelling.

The US LCA delivers a comprehensive and evolving data set – with the first in-depth evaluation of US animal husbandry impacts – coupled with transparent methodologies and reporting. There is ongoing investment in data enhancements

It is a source that can be trusted and sets a new LCA reporting standard.

Insert logo

L: HCA



Reduce your carbon footprint

The promotion of synthetics and plastic based compounds as low cost, environmentally friendly solution, creates risk for users.

It understates environmental impacts due to poor modelling and a limited review of the supply chain.

Whether engaged in ESG reporting, providing carbon related export data or targeting a zero-carbon future poor data skews material choices and invalidates ESG reporting. And this costs the planet.

The LCA enables you to choose our products, avoid greenwashing, improve sustainability in your supply chain and report to customers and shareholders alike.

Insert logo

L: HCA



Photo by [Chris LeBoutillier](#)

Prioritize investment, reduce commercial risk

Taking a full Life Cycle approach, US leather has been assessed from the field to distribution from the tannery gate.

Tracking back to the field recognises a key criticism, in particular of synthetics, that their assessments do not include the impact of oil exploration, extraction and production.

This creates significant forward-looking risk, from retooling production lines to accommodate environmentally damaging materials to delivering full ESG accounting.

We will, in the next phase, look at whole of life. How long does leather last for compared to alternatives – and how much further this reduces its impact profile.

Insert logo

L: HCA



Building confidence through best practice

Led by former Wolverine Worldwide Vice President, Kerry Broznya, the LHCA commissioned Resilience Services to evaluate US leather with international tannery data supplied by Spin360.

The LCA is ISP 4040/4044YY conformant, covers from field to tannery gate and the impact of different animal husbandry practices using data sourced from US Meat Export Federation.

Recognizing geographic differences in data and industry requirement it covers both economic value and mass-based calculation with presentation by Kg of hide and by Sqm of leather.



Comprehensive and credible

In its first phase, the LCA looks from grass field to tannery gate.

It covers Global Warming Potential, fossil fuel usage, water and other impacts from biodiversity to soil health, marginal land use, fire management, nutrition and socio-economic factors.

This allows a comprehensive review of both sourcing and production, and comprehensive integration of related ESG data.

It comes free of charge with open-source data, a transparent methodology by a respected third party, with peer review and ISO application underway.

Insert logo LHCA

Integrating into ESG reporting

Peer reviewed and ISO compliant data can feed into your ESG management, reducing long term risk and delivering immediate empirical benefit to your evaluations.

This enables factual reporting, quantification and reduction of carbon emissions profile, and for users to go further - demonstrating best practice by reducing, typically, the impact of plastic use on the environment and fossil fuels on the climate.

So, what do the findings mean for you?

Insert logo LHCA

Insert logo LHCA

US hide and leather performs exceptionally in ESG terms. It is significantly more sustainable than previously understood.

Insert logo LHCA

Husbandry Impacts: Average US hide

Sourcing can half the CO2e figure for hides. A US average has been used for headline presentation.

Climate change impact: brined hides using IPCC AR6 characterization factors (GWP100)		
Allocation	Hide Source	kg CO2er kg brined hide
PEF Economic	Dairy	5.45
	Beef	12
	US Average	10.6
	Grass	15.6
US Economic	Dairy	1.56
	Beef	3.42
	US Average	3.04
	Grass	4.47
US Mass	Dairy	7.47
	Beef	16.4
	US Average	14.6
	Grass	21.4

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Hide Impacts: Average US hide figures and Units

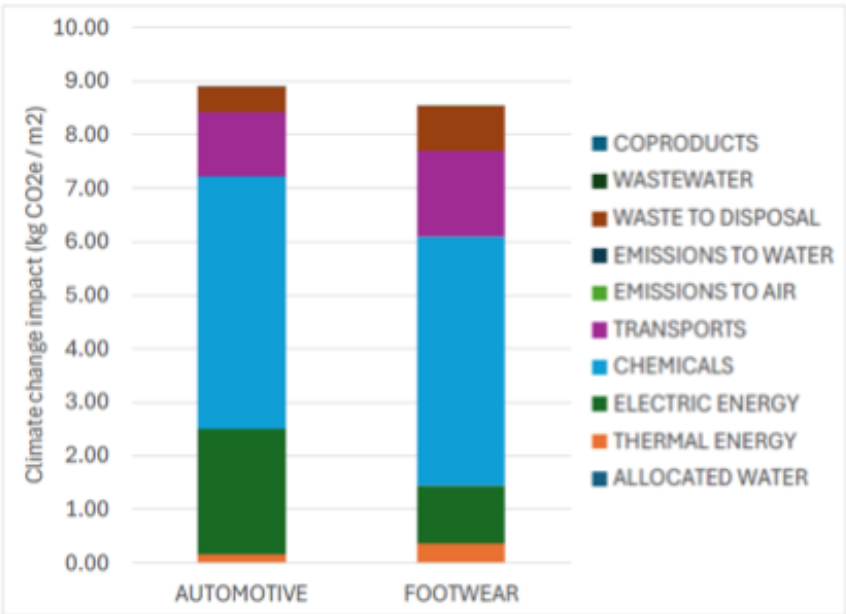
Comprehensive impact data available for sophisticated reporting.

Impact category	Reference unit	PEF Economic	US Economic	US Mass
Global warming	kg CO ₂ eq	12.2	3.49	16.7
Water consumption	m ³	0.656	0.188	0.9
Land use	m ² a crop eq	52.6	15	72.2
Freshwater eutrophication	kg P eq	0.00157	0.000449	0.00215
Marine eutrophication	kg N eq	0.00591	0.00169	0.00811
Fossil resource scarcity	kg oil eq	0.427	0.122	0.586
Mineral resource scarcity	kg Cu eq	0.0123	0.0035	0.0168
Fine particulate matter formation	kg PM2.5 eq	0.0125	0.00358	0.0172
Ozone formation, Human health	kg NO _x eq	0.00794	0.00227	0.0109
Human carcinogenic toxicity	kg 1,4-DCB	0.0001	0.0229	0.11
Human non-carcinogenic toxicity	kg 1,4-DCB	1.44	0.411	1.97
Ionizing radiation	kBq Co-60 eq	0.0061	0.0246	0.118
Freshwater ecotoxicity	kg 1,4-DCB	0.053	0.0151	0.0727
Marine ecotoxicity	kg 1,4-DCB	0.0701	0.02	0.0962
Terrestrial ecotoxicity	kg 1,4-DCB	5.71	1.63	7.84
Ozone formation, Terrestrial ecosystems	kg NO _x eq	0.00864	0.00247	0.0119
Terrestrial acidification	kg SO ₂ eq	0.0067	0.0248	0.119
Stratospheric ozone depletion	kg CFC11 eq	0.000155	0.0000443	0.000213

Insert logo L:HCA

Tanning Impacts: Average process global

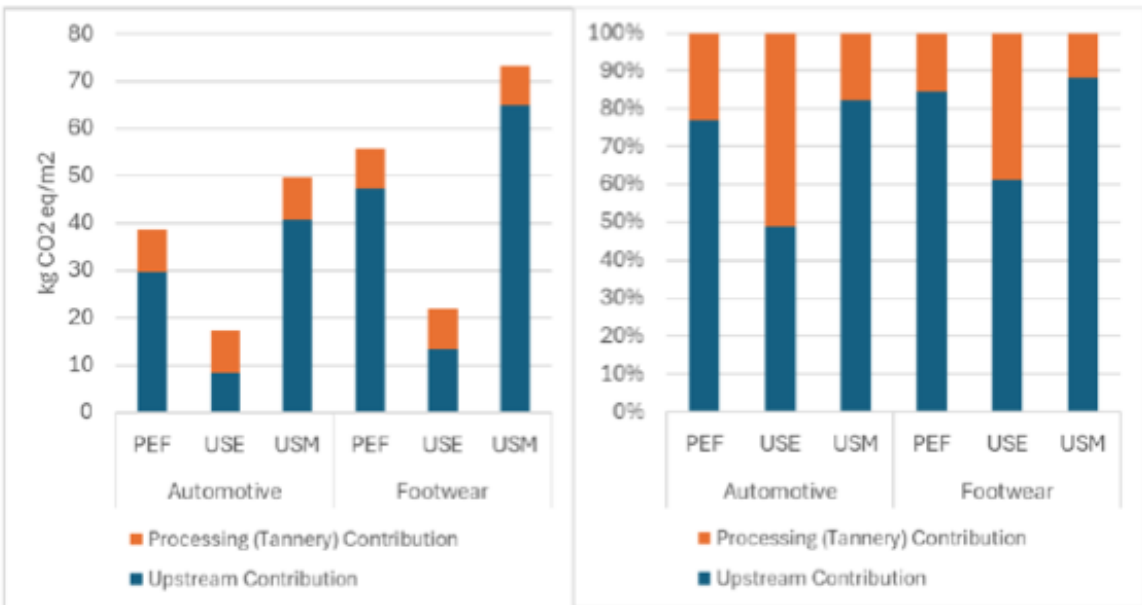
Leather types, weights and process create divergence in figures by sector.
Data for US sourced hides processed through overseas tanneries.



Insert logo L:HCA

Integrated impacts: US Hide to Leather

While tanning is important its contribution to carbon emissions ranges from just 13% to 50%.
Data for US sourced hides processed through overseas tanneries.



Insert logo L:HCA

What it means for [client name]

Insert logo L:HCA

Insert client logo here

Current Leather Usage 2023:
XXXXX sqm

Higg Index Carbon Estimate:
XXXX tonnes CO₂e

LCA Data Application:
XXXX tonnes CO₂e

Total Estimated Change:
XXXX tonnes CO₂e / XX%

Better insight, targeted investment and a reduced carbon footprint

Using the new LCA data, we can provide an initial estimate based on 2023 sales of key CO₂e emissions metrics. Supplementary data is available on all key metrics based on a US average or aligned by husbandry type.

With the evaluation we can also identify further gains driven by animal husbandry sourcing where significant variance is identified.

We would be pleased to work with your teams to update ESG reporting and to prepare materials for presentation to your customers.

Insert logo L:HCA



Photo by Clay Banks on Unsplash

Setting the global standard

Establishing best practice is key as the Leather and Hide Council encourages transparency in process, data and calculation for all sources. The LCA:

- includes animal husbandry which is typically excluded or simplified, using detailed processing models and accounts for geographic and husbandry variability.
- uses latest tannery data built from global survey rather than generic data, captures essential processes: beamhouse, tanning, post-tanning and finishing.
- covers impacts beyond greenhouse gases including GHG including CH₄, fossil energy use, land use, water use, eutrophication, human toxicity.

In the next phase we will investigate allocation over product lifecycles and continue to build depth and breadth into the data.

Insert logo L:HCA

Thank You

For further information please contact:
Cell/email

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