



How sustainability data through Life Cycle Assessments is powering leading agrifood businesses

Revolutionizing animal protein production for a greener planet through strategic supply chain transformations

Context – Animal protein is both an important part of human nutrition as well as a contributor to global greenhouse gas emissions and climate change. Reducing the environmental footprint from animal protein production requires systemic transformation across the Agrifood industry.

Climate change, the defining global issue of our time, highlights the environmental impact of our food consumption patterns. The 2015 Paris Agreement resulted in a target to limit global warming to a rise of 1.5 degrees Celsius above pre-industrial levels, and to ensure a sustainable planet for future generations. To meet that target requires significant effort to drastically reduce humanity's environmental footprint across all dimensions.

Healthy, high-quality food is a fundamental human necessity and, within that mix, animal protein plays a central role in the diet of billions of people. Despite its nutritional

importance, the production of animal protein is a major contributor to global greenhouse gas emissions. This dichotomy brings to focus the need for a comprehensive reimagining and restructuring of our food system, with a particular focus on the animal protein sector.

Challenges – Achieving supply chain transparency in the animal protein sector is a daunting exercise. The industry comprises global and intricate supply chains subject to ever-changing regulatory and market requirements.

The journey to more sustainable animal protein begins with achieving supply chain transparency. However, this task presents complex challenges due to the global and intricate nature of supply chains, which often include small rural farms.

To illustrate that complexity, consider the Brazilian grass-fed beef you recently purchased at the local supermarket. It underwent numerous processing steps

and passed through several different hands – almost all of which are invisible – before finally arriving on your plate.

Value chain collaboration | Achieving adequate transparency requires collaboration from many stakeholders in the value chain. This is often problematic due to concerns about data confidentiality and potential reputational risks, as well as the sheer cost and management effort of data collection.

Data quality | High-quality primary data is typically hard to come by in these supply chains – particularly from rural farms. Achieving accurate, standardised, and consistent data capture and reporting can be excessively onerous for businesses with limited financial and human resources.

Changing requirements | Adding to this complex picture is the ever-shifting nature of transparency and disclosure requirements. As regulations change and markets undergo shifts to include green

demand, Agrifood businesses have to adapt to those changes and move with the times. For example, EU sustainability goals have led to a wave of regulatory changes including the Corporate Sustainability Reporting Directive (CSRD), the Corporate Sustainability Due Diligence Directive (CSDDD), and the Green Claims Directive (GCD). Alongside changing compliance requirements, there are also voluntary commitments (e.g., Science Based Targets initiative) from, for example, downstream retailers and financing banks, that require all kinds of (new) data from the supply chains. Likewise, consumers' buying preferences now include greater transparency, sustainable sourcing, and ethical production – even if this results in premium pricing.

Opportunities – Transparency can unlock new revenue and cost saving, through green innovations and carbon monetisation

It's not all a burden of additional reporting and compliance. While enhancing supply chain transparency may initially appear overwhelming, it can be an enabler of new revenue streams and cost-saving opportunities.

Transparency allows Agrifood businesses to innovate and market product lines that are differentiated by sustainability factors at premium prices. This unique selling proposition is built on credible 'green' claims and eco-labels that distinguish these products from their competition. Specifically, transparency in carbon emissions can form the foundation for initiatives aimed at carbon removal that in turn are monetised. Such business models serve a triple purpose – benefiting people, yielding profits, and contributing to the planet's wellbeing.

Furthermore, transparency could potentially simplify access to green loans and capital under favourable terms (e.g., sustainability-linked loans), thereby freeing up capital for value-adding investments.

Solution – The evolution of animal protein LCA (Life Cycle Assessment) is characterised by digitalisation and enhanced precision, underpinned by integration with continually improving LCI (Life Cycle Inventory) databases, and further orchestrated through ecosystem collaborations

LCA provides an exhaustive analysis of a product's environmental impact throughout its lifespan. Conducting LCA studies has typically been the domain of costly LCA consultants; experts who are in short supply and facing rising demand for their services. Thankfully, an alternative landscape is emerging – one that democratises LCA across complex value chains such as those involved in animal protein production. This new landscape enables footprint transparency and scalability at affordable rates. Behind it are several factors that combine to reshape the animal protein LCA approach:

- **Digitalisation.** The surge in digital tools used for LCAs offers the ability to store, analyse and decode large data sets at a fraction of the cost of that charged by a consultant. Beyond cost-effectiveness, digitalisation enables the scalability of the LCA process in terms of data volume and frequency.

- **Precision.** Precision starts with a credible LCA methodology – e.g., one that's ISO-certified by independent assessors. Alongside methodology, data quality and accuracy are equally important. The traditional approach of working with averages and proxy data has made way for greater use of primary (i.e., producer-specific) data directly sourced from the supply chain, which, as mentioned, is increasingly demanded by governments, banks, consumers, and others. The greater use of primary data also unlocks the value opportunity of sustainability for animal protein.

- **LCI data.** LCI databases, which house qualified and quantified input and output environmental impact data, are continuously improving in terms of data quality. The accuracy, coverage and

transparency of this next-generation data management approach also meets the demands of evolving LCA methodological developments. The mission to achieve greater data precision is particularly relevant for animal protein value chains, given the highly significant influence of feed ingredients and animal feed on the overall footprint. Direct integration of LCI databases with digital LCA solutions drives a more credible, scalable and accurate animal protein LCA. Some of the more commonly accepted LCI databases are The Global Feed LCA Institute (GFLI) and Agri-footprint (AFP).

- **Impact scope & methodology.** Animal protein LCA has traditionally focused on carbon emissions, but is now shifting towards a comprehensive LCA that encompasses 16 dimensions of sustainable operations including land and water use, and air and water pollution. These broadening criteria align with The European Commission's Product Environmental Footprint (PEF) initiative, but there remain considerable geographic differences in the degree of focus on carbon emissions.

- **Value chain collaboration.** There's a growing need for platforms that facilitate secure and standardised sharing of environmental impact data, such as feed or farm footprint, with downstream value chain stakeholders. This democratisation of data collection, management and sharing has led to the emergence of cross-value-chain initiatives and collaborations, aiming to establish a comprehensive LCA solution for the entire value chain, from row crop farmers to consumer packaged goods (CPG) players.

- **Acceleration.** Given the rising scrutiny of the animal protein sector's environmental impacts, the animal protein LCA landscape is having to evolve more rapidly than many other sectors, to meet transparency and sustainability imperatives.

How to navigate – Animal protein business leaders can build or partner on LCA initiatives, in pursuit of a solution that’s accurate and scalable, and that focuses on improving sustainability and unlocking opportunities

For Agrifood businesses, the capability to report and improve sustainability metrics is no longer a luxury, but a necessity for operating in a sector facing ever-tightening regulation and growing demand for supply chain transparency.

One of the pivotal questions for business leaders in the sector is how to develop this capability. Should the business build in-house, or co-develop in a partnership?

In today’s climate – acknowledging the accelerating demand for footprint data, as well as the changes in reporting compliance – it’s simply not viable for most Agrifood businesses to build home-grown solutions. Although you get greater control and reduced reliance on third-party vendors, the downsides tend to outweigh the benefits. Such downsides include significant investment of financial and other resources, in developing in-house digital development capability, and in management effort. There’s also the question of speed and patience. Crafting internal digital solutions connected to an evolving data ecosystem is likely to be a complex, drawn-out process, spanning several years, requiring continual development and improvement, while keeping on top of evolving regulatory and compliance advancements. And even with that effort and investment, success is not guaranteed – the end solution always risks deviating from LCA methodologies developed by others in the industry, and/or falling short. Another risk is value chain adoption. This is uncertain, and may require significant incentivisation and stakeholder management.

Partnership offers an alternative with shorter time to market and significantly lower investment costs. Such

partnerships usually involve joining an existing, proven platform that may already include part of your value chain. In this scenario, acceptance and engagement along the full value chain is more likely, and will require less stakeholder management effort for adoption. Partnership also supports industry harmonisation – the eventual development of an industry-wide standard that will evolve to meet changing regulatory and market requirements. On the other hand, partnership often means boarding a moving train, which can lead to diminished control and increased reliance on third-party vendors. This is simply not an option for some business leaders.

Irrespective of whether the decision is to build in-house or co-develop in a partnership, the LCA solution should always aim for:

- Capturing an accurate and **credible footprint** based on **primary data** and in alignment with recognised methodologies.
- **Scalability** to keep pace with evolving regulations and methodologies.
- **An ecosystem approach** aimed at harmonising and democratising footprints along the value chain.
- **Support for your sustainability journey**, offering assistance with improvements and in reaching your sustainability goals.
- **A focus on unlocking the value**, through partnerships and integration with wider stakeholder groups – e.g., banks or carbon-trading platforms.

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