FOOD & BEVERAGE INDUSTRY · SUSTAINABILITY

From Data Chaos to Trusted Impact

Building the Sustainability Intelligence Foundation for Food & Beverage Companies

The Food & Beverage industry sits at the intersection of the world's most pressing sustainability challenges. This report sets out a structured, capability-led approach to building the data infrastructure, analytical models, and governance architecture that turn sustainability ambition into measurable, auditable, and commercially valuable outcomes.

37%	85%	50,000+	Dec 2026
of global GHG emissions from food	CDP: F&B not on track for sustainability goals	companies in scope for CSRD reporting	EUDR enforcement deadline

Ronald de Jong | Cerebra Prime Digital

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Executive Summary

THE SITUATION

The Food & Beverage industry is entering a period of regulatory and commercial reckoning on sustainability. The food system is responsible for up to 37% of global greenhouse gas emissions, consumes roughly 70% of the world's freshwater, and drives significant land use change. For decades, sustainability was a voluntary commitment. In 2026, it is becoming a legal obligation — with CSRD, EUDR, PPWR, and EPR schemes converging simultaneously on the same organisations, demanding the same thing: structured, traceable, auditable sustainability data at product level.

THE COMPLICATION

Despite the urgency, only 15% of F&B; companies reporting to CDP are on track to meet their sustainability goals, and 56% have no Scope 3 reduction targets at all. The barrier is not ambition — it is infrastructure. Sustainability data lives in spreadsheets, disconnected enterprise systems, and email threads. Calculations are manual and error-prone. Claims are ungoverned. And the cost of inaction is no longer theoretical: EPR non-compliance penalties reach €50,000 per day, EUDR enforcement begins in December 2026, and organisations without credible CSRD disclosures face investor, retailer, and regulatory consequences that compound quarter by quarter.

THE RESOLUTION

Organisations that build a structured sustainability capability foundation — a governed data hub, a science-based calculation engine, and a product-level intelligence layer — are already achieving faster reporting cycles, lower compliance costs, and commercially differentiating transparency positions. This report presents a 26-capability, 6-layer Business Capabilities Model, a Sustainability Data Hub architecture, and a Product Intelligence Cockpit concept that together constitute the digital backbone for end-to-end sustainability management in Food & Beverage.

→ The regulatory window is closing: EUDR (Dec 2026), PPWR (Aug 2026), and CSRD first disclosures are in effect now. Organisations still relying on manual processes will not meet these deadlines.

→ Sustainability data is a strategic asset: product-level carbon footprints, traceability records, and eco-scores are becoming commercial prerequisites in retail and B2B relationships — not just compliance artefacts.

→ A capability-led architecture breaks the cycle: organising investment around 26 clearly defined business capabilities — from external data ingestion through to audit-ready reporting — creates a scalable, auditable, future-proof foundation.

→ Business value is measurable: organisations with mature sustainability data infrastructure achieve up to 40% faster reporting cycles, significant EPR fee optimisation through eco-modulation, and measurable commercial premium from credible transparency.

01

THE SITUATION

A Defining Moment for Food & Beverage Sustainability

The food system is the world's largest industry and one of its most consequential contributors to environmental degradation. It is also the industry most exposed to the physical consequences of the environmental damage it causes.

37%
of global greenhouse gas emissions come from the food system — making it the single largest sectoral contributor (IPCC, 2024)

70%
of the world's freshwater resources are consumed by agriculture, making water stewardship an existential operational issue for F&B companies

For food companies, sustainability is no longer a choice between commercial priority and environmental responsibility — it is the same conversation. Three structural forces are reshaping the competitive landscape:

- **Regulatory convergence:** CSRD, EUDR, PPWR, EPR, the Green Claims Directive, and TCFD/TNFD are not separate compliance projects. They demand the same underlying data infrastructure: product-level environmental footprints, verified supply chain traceability, and audit-ready calculation methodologies.
- **Retailer and investor pressure:** Major European retailers — Tesco, Carrefour, Albert Heijn — now require sustainability data in supplier portals as a condition of shelf space. ESG ratings agencies and institutional investors are calibrating cost of capital on sustainability disclosure quality.
- **Consumer market differentiation:** More than half of consumers are willing to pay up to 10% more for products with credible sustainability credentials (YouGov, 2025), but only when those credentials are substantiated — greenwashing risk has made verification a commercial necessity, not just a regulatory one.

> *"The food system is not just part of the sustainability problem — it is simultaneously among the most exposed to its consequences. Physical climate risk to agricultural sourcing is the same risk as supply chain continuity risk."*

02

THE COMPLICATION

Why the Status Quo Will Not Hold

Despite the clarity of the challenge and the scale of the regulatory mandate, most food and beverage organisations are not ready. The gap is not in strategic ambition — it is in operational infrastructure.

85%
of F&B companies reporting to CDP are NOT on track to meet their sustainability goals — ENGIE Impact analysis, 2025

56%
of F&B companies have NO Scope 3 emission reduction targets, despite Scope 3 typically representing 80–90% of a food company's total footprint — CDP, 2025

The three root causes of this readiness gap are structural, not motivational:

1. DATA FRAGMENTATION Agricultural Scope 3 typically represents 70–85% of a food product's total carbon footprint — yet this data lives across dozens of suppliers, using different methodologies, in incompatible formats. Without a governed data ingestion and standardisation capability, every calculation is a manual reconciliation exercise.

2. PROCESS OPACITY Critical sustainability decisions — which claims can be made on-pack, how an EPR fee is calculated, what evidence supports a CSRD disclosure — are embedded in email threads, spreadsheets, and tacit expertise. When regulations change or auditors ask for evidence, the answer is 'we need to rebuild this from scratch'.

3. THE REGULATORY CONVERGENCE DEADLINE EUDR enforcement for large operators is 30 December 2026 — requiring GPS-level traceability for seven regulated commodities. PPWR applies from August 2026. CSRD first disclosures are due now for the largest companies. These deadlines are simultaneous and legally fixed. The organisations still assembling compliance spreadsheets in Q4 2026 will not make them.

The cost of inaction compounds. Each missed EPR eco-modulation opportunity is a real fee over-payment. Each unsupported retailer claim risks delisting. Each unmanaged data gap widens the assurance qualification risk. And each quarter of delay on the data foundation extends the timeline to the returns that only a mature, integrated capability can generate.

03

THE RESOLUTION

A Capability-Led Path to Trusted Sustainability Intelligence

The organisations pulling ahead are not those with the largest sustainability teams or the most ambitious targets. They are the ones that have made a structural investment in capability: a clear, layered architecture that takes raw data from the external world and transforms it — systematically — into trusted, auditable sustainability intelligence.

1

STORE & INGEST

Build the operational data foundation. Collect energy, water, waste, ingredient footprints, logistics emissions, and supplier data as structured, traceable records. This is not exciting work — it is the most important work. Every calculation, every claim, every disclosure built on top of it is only as credible as this layer.

2

MODEL & INTERPRET

Apply scientifically accepted models to transform raw operational data into meaningful environmental metrics — product carbon footprints, water scarcity impacts, biodiversity scores. Then apply expert interpretation: what do the numbers mean in regulatory terms, what claims are substantiated, what is material?

3

CALCULATE & COMMUNICATE

Calculate the numbers that drive business decisions and legal obligations: EPR fees, carbon costs, SBTi trajectory progress, eco-scores, ROI on sustainability investment. Then communicate them — to regulators, retailers, investors, consumers, and internal management — accurately, efficiently, from a single trusted source.

This three-phase logic underpins the 26-capability Business Capabilities Model described in the next section — a structured reference architecture that provides a common language for investment planning, system design, and programme governance across the entire sustainability domain.

26

business capabilities across 6 layers — from external data ingestion to audit-ready regulatory reporting

6

architectural layers — Store, Model, Interpret, Calculate, Report, plus External Intelligence — each with clear interfaces and separation of concerns

04

THE BUSINESS CAPABILITIES MODEL

26 Capabilities · 6 Layers · One Integrated Architecture

The Business Capabilities Model for Sustainability provides a layered, end-to-end reference architecture covering everything an F&B; organisation needs to manage sustainability as a governed business domain — from the external world to the boardroom. Each capability has a defined scope, clear interfaces with adjacent capabilities, and a capability class indicating its strategic significance.

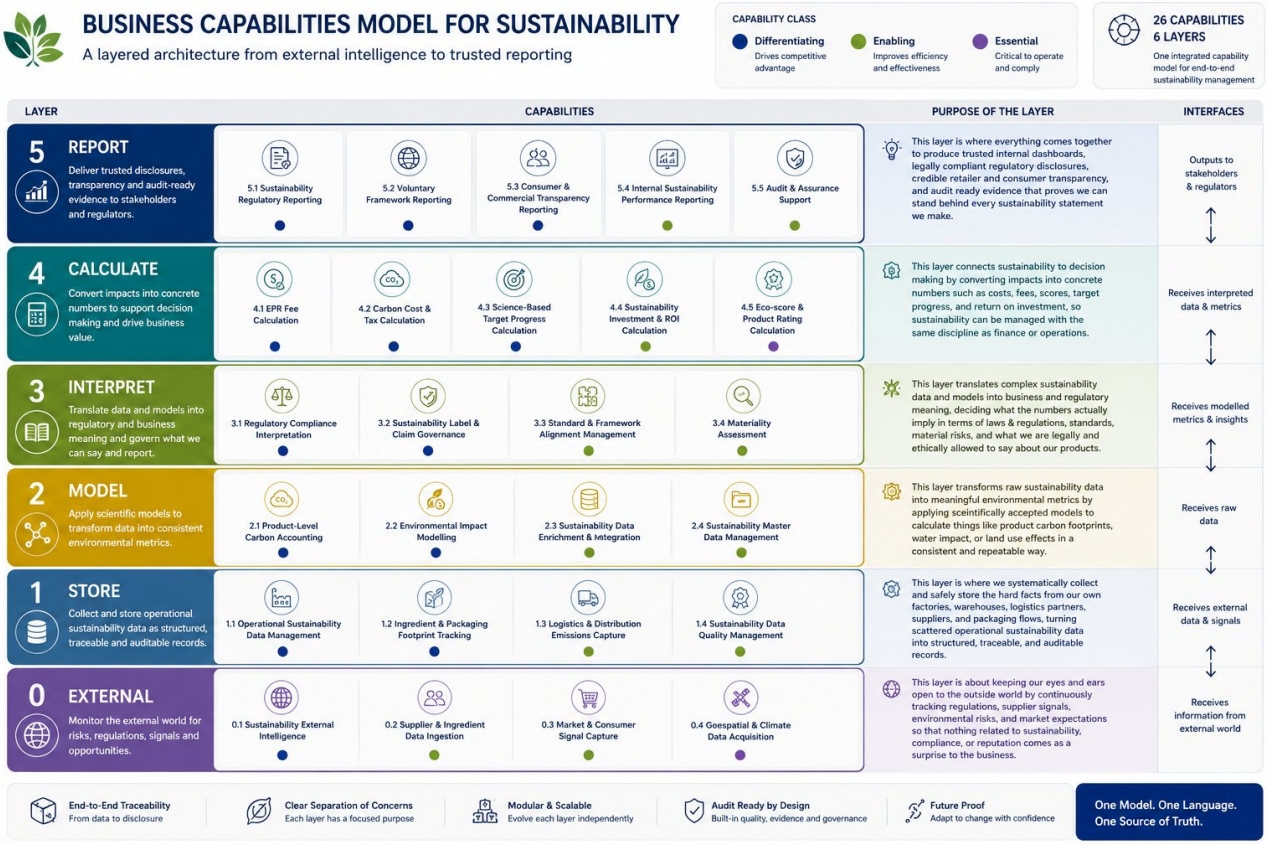

Figure 1. Business Capabilities Model for Sustainability in Food & Beverage — 26 capabilities across 6 layers, from external intelligence to trusted reporting.

Each of the six layers serves a distinct and non-overlapping purpose:

Layer 0 — External

Monitor and ingest external signals: regulatory intelligence, supplier and ingredient sustainability data, consumer market signals, and geospatial and climate datasets. Nothing inside the organisation can be managed without first knowing what is happening outside it.

Layer 1 — Store

Collect and maintain operational sustainability data as structured, traceable, quality-controlled records: site energy and water, ingredient and packaging footprints, logistics emissions. This layer is the foundation on which every calculation depends.

Layer 2 — Model

Apply scientifically accepted life cycle assessment models to transform raw data into consistent environmental metrics — product carbon footprints, water scarcity impact scores, biodiversity assessments, packaging circularity ratings.

Layer 3 — Interpret

Translate models into meaning: what do the regulations require, what claims are legally substantiated, which frameworks apply, and what is materially significant for this business? This is where legal, regulatory, and commercial judgement is applied.

Layer 4 — Calculate

Produce the numbers that matter to the business: EPR fees owed (in 50+ jurisdictions), carbon cost and tax liabilities, Science-Based Target progress, ROI on sustainability investments, and product eco-scores and retailer ratings.

Layer 5 — Report

Communicate trusted sustainability information to every audience: CSRD/ESRS regulatory filings, CDP and voluntary framework reports, consumer and commercial transparency, internal management dashboards, and audit and assurance evidence packages.

Key Capability Highlights

Three capabilities deserve particular attention given the regulatory urgency and commercial value they represent in 2026:

Supplier & Ingredient Data Ingestion (Layer 0) Agricultural Scope 3 is typically 70–85% of a food product's total carbon footprint, yet it is the hardest data to collect. This capability manages primary farm-level data for strategic ingredients, certified supplier data, and database averages for commodity inputs — along with GPS-level provenance data for EUDR compliance, certification status for commercial claims, and farming practice data for regenerative agriculture commitments. Without it, product carbon footprints and EUDR due diligence statements are impossible to produce credibly.

EPR Fee Calculation (Layer 4) EPR is now a P&L item, not a compliance function. Across 50+ jurisdictions, EPR fee structures differ by material, recyclability, recycled content, and eco-modulation bonus/malus. This capability maintains a versioned fee rate library, calculates market-placement volumes by legal entity, applies eco-modulation scoring, and produces quarterly accruals for the management accounts. Organisations that manage this well can reduce their EPR fee exposure by optimising packaging design decisions before they go to market — not after the fee is invoiced.

Sustainability Label & Claim Governance (Layer 3) Under the EU Green Claims Directive (entering force in 2026), every environmental claim — on-pack, in advertising, in retailer portals — must meet a defined substantiation standard and be independently verified. This capability manages the approval pathway for every claim, the substantiation standard for each claim type, the market compliance matrix across jurisdictions, and the monitoring programme that ensures approved claims remain valid as products and regulations change. The commercial and reputational risk of an unsupported green claim now significantly exceeds the cost of governing them properly.

05

THE SUSTAINABILITY DATA HUB

One Trusted Foundation for All Sustainability Intelligence

The Sustainability Data Hub is the central architectural component that transforms the Business Capabilities Model from a conceptual framework into an operational reality. It connects every enterprise source system — SAP/ERP, PLM/PIM, supply chain platforms, LCA tools, and external data sources — and creates the single source of truth that every downstream capability depends on.

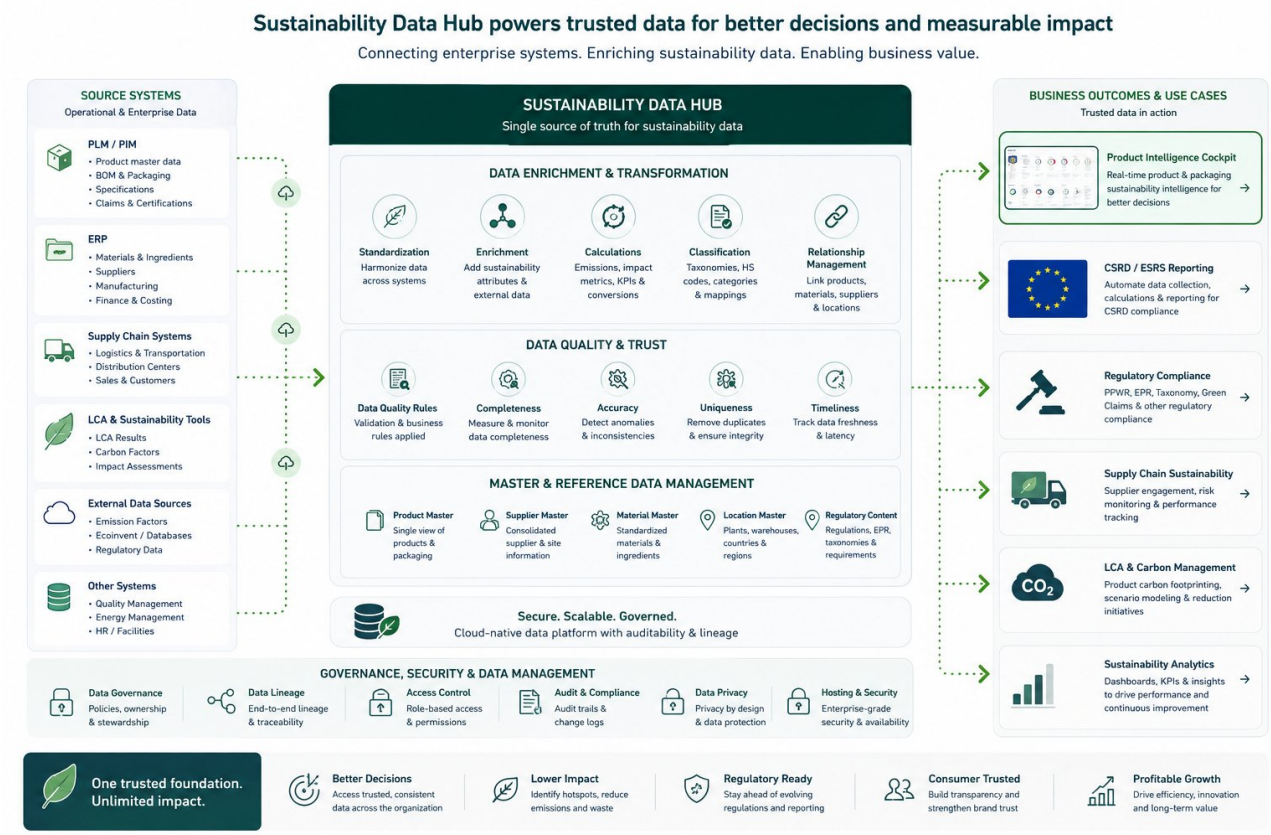

Figure 2. The Sustainability Data Hub — connecting enterprise systems, enriching sustainability data, and enabling measurable business outcomes.

The Hub operates across three functional layers:

→

DATA ENRICHMENT & TRANSFORMATION

Standardisation across source systems, enrichment with sustainability attributes and emission factors, emissions and impact calculations, taxonomy-based classification, and relationship management linking products, materials, suppliers, and locations. Raw data becomes analytically useful data.

DATA QUALITY & TRUST

Automated quality rules, completeness monitoring, accuracy anomaly detection, duplicate removal, and timeliness tracking. The Hub does not just aggregate data — it governs it. Every disclosure is only as credible as the data quality processes that underpin it.

MASTER & REFERENCE DATA MANAGEMENT

A single Product Master, Supplier Master, Material Master, Location Master, and Regulatory Content repository. When a recipe changes, a supplier is updated, or a regulation is amended, the change propagates consistently across the entire sustainability model — not through manual updates to parallel spreadsheets.

06

THE PRODUCT INTELLIGENCE COCKPIT

One Product. One Truth. Measurable Impact.

The Product Intelligence Cockpit brings the full power of the Sustainability Data Hub to the point of decision. It provides a single, real-time view of every product's commercial performance, environmental impact, regulatory compliance status, and sustainability investment ROI — in one interface, from one authoritative source.

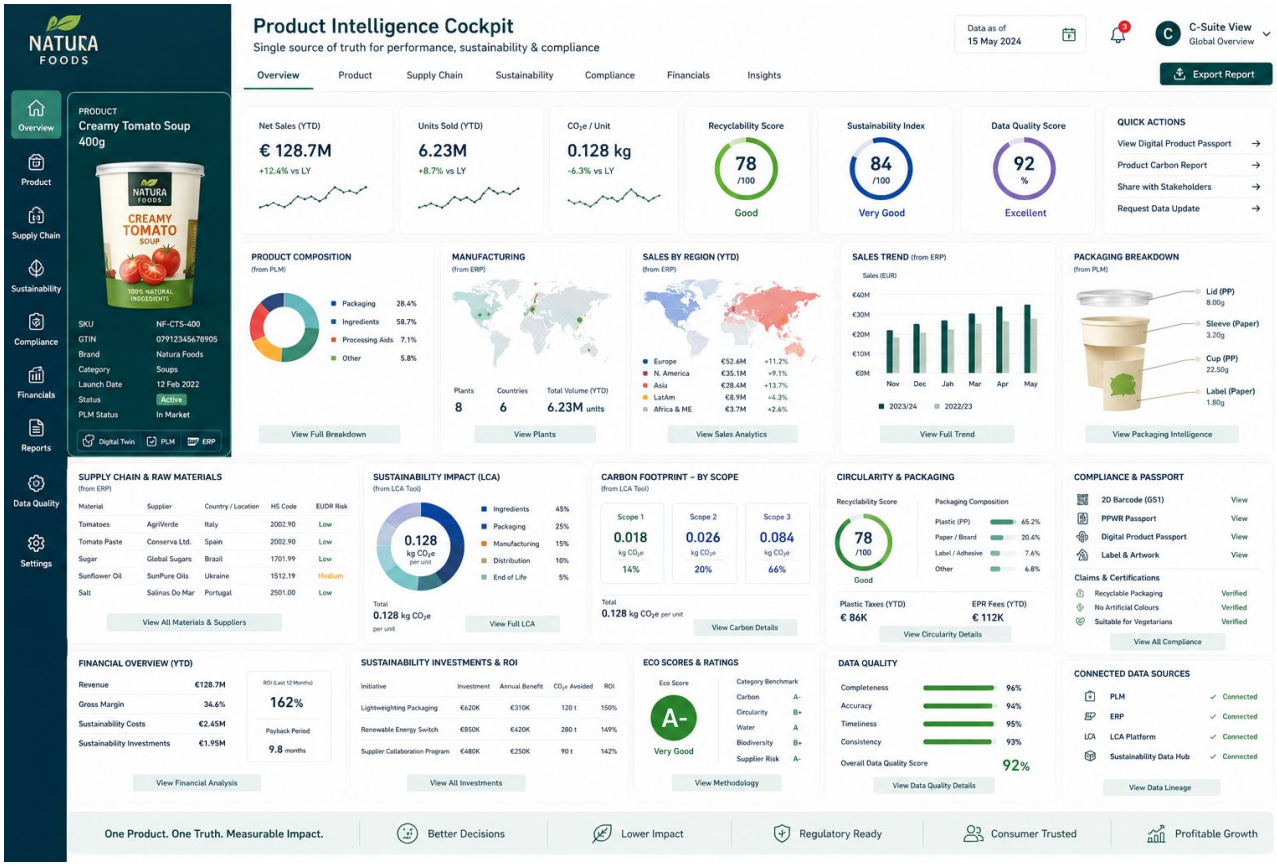

Figure 3. The Product Intelligence Cockpit — integrating commercial, sustainability, compliance, and financial data for product-level decision-making.

Single product view: Every commercial, sustainability, and compliance metric for a product — from net sales and gross margin to CO■e per unit, recyclability score, sustainability index, and data quality score — in a single, C-Suite-ready dashboard.

Lifecycle carbon detail: Scope 1, 2, and 3 breakdown at the product level, with ingredient, packaging, manufacturing, and distribution contributions visible — showing exactly where reduction investment will have the most impact.

Regulatory compliance status: PPWR passport, Digital Product Passport, label and artwork compliance, verified claims and certifications — all accessible from the product view, with direct link to the supporting evidence.

Connected data sources: PLM, ERP, LCA Platform, and Sustainability Data Hub all shown as connected data sources with data quality scores — making data lineage transparent and assurance-ready by design.

Sustainability investment ROI: For each sustainability initiative linked to the product, the Cockpit shows investment, annual benefit, CO■ avoided, and calculated ROI and payback period — turning sustainability decisions into business cases.

07

BUSINESS VALUE & IMPACT

The Commercial Case for a Capability-Led Approach

The investment in a structured sustainability capability foundation is not a cost of compliance. It is the enabler of a material and growing set of business returns across four value dimensions.

REGULATORY COST AVOIDANCE EPR eco-modulation scoring can reduce fees by 10–30% for packaging formats that meet recyclability and recycled content criteria. EUDR non-compliance for large operators creates market access risk for entire product categories. CSRD qualification failures attract regulatory scrutiny and investor concerns. Organisations that build the capability to get this right spend less managing the consequences of getting it wrong.

COMMERCIAL PREMIUM AND MARKET ACCESS Over 50% of European consumers will pay a premium for verified sustainability credentials. Major retailers now score suppliers on sustainability data quality and disclosure completeness as a condition of preferred supplier status. Product-level carbon transparency is already a B2B commercial prerequisite in European markets where CSRD-in-scope buyers need Scope 3 data from their supply chain.

OPERATIONAL EFFICIENCY Organisations with mature sustainability data infrastructure achieve up to 40% reduction in reporting cycle time. Eliminating manual data reconciliation, spreadsheet-based calculations, and parallel compliance processes releases significant capacity in sustainability, finance, and operations teams. The data foundation that drives CSRD also drives EPR, EUDR, and retailer reporting — one investment serving multiple obligations.

GREEN FINANCE AND INVESTOR RELATIONS Access to EU Taxonomy-aligned financing, green bonds, and sustainability-linked loans requires credible, independently assured sustainability data. ESG rating improvements driven by better disclosure quality directly reduce the cost of capital for organisations with investment-grade ambitions. The data infrastructure that supports assurance is the same infrastructure that supports rating improvement.

40%
faster regulatory reporting cycles for organisations with mature sustainability data infrastructure

10–30%
EPR fee reduction potential through systematic eco-modulation scoring and packaging design optimisation

08

HOW CEREBRA PRIME DIGITAL CAN HELP

Pioneering Digital Architecture for Sustainability

Cerebra Prime Digital brings together enterprise architecture, SAP transformation expertise, and AI-driven solutions to help Food & Beverage organisations build the sustainability capability foundation described in this report. We are architects first — we design systems that are scalable, auditable, and built to absorb regulatory change without being rebuilt each time.

Sustainability Architecture & Capability Design

We design the business capability model and technical architecture for your sustainability domain — defining the 26 capability scopes, the data flows between layers, the integration points with your SAP/ERP, PLM, and LCA platforms, and the governance model that makes the architecture sustainable. The output is a blueprint that your technology and programme teams can execute against with clarity.

Sustainability Data Hub Implementation

We design and implement the Sustainability Data Hub — the central platform that connects your enterprise systems, enriches sustainability data, enforces data quality, and provides the single source of truth for every calculation and disclosure. We specialise in SAP S/4HANA integration, ensuring your sustainability data foundation is connected to — not separate from — your core business systems.

SAP S/4HANA Sustainability Integration

For organisations running SAP S/4HANA, we integrate sustainability data flows directly into the core ERP — connecting product master data, ingredient consumption, packaging specifications, and financial data to the sustainability calculation layer. SAP is the authoritative source for the operational data that sustainability calculations depend on; connecting them properly is foundational.

Product Intelligence & Digital Product Passport Readiness

We help organisations build the product-level sustainability intelligence capability — the Product Intelligence Cockpit and the underlying data architecture that powers it — and position them for Digital Product Passport compliance under ESPR. This capability serves multiple audiences simultaneously: C-Suite decision support, retailer transparency submissions, CSRD product-level disclosures, and consumer-facing digital information.

Regulatory Compliance Programme Support

We provide programme management and architecture support for EUDR, CSRD, PPWR, and EPR compliance initiatives — translating regulatory requirements into data specifications, designing the capability investments needed to meet deadlines, and ensuring that compliance investments are also strategic capability investments rather than single-use compliance exercises.

Ready to build your sustainability capability foundation? Connect with Cerebra Prime Digital to explore how we can help you design the architecture, implement the data hub, and turn regulatory obligation into competitive advantage.

ABOUT THE AUTHOR

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Ronald de Jong is the founder of Cerebra Prime Digital, a boutique digital architecture and strategy consultancy specialising in enterprise transformation, SAP S/4HANA, and AI-driven solutions. With deep expertise at the intersection of enterprise data architecture and sustainability intelligence, Ronald works with Food & Beverage and consumer goods organisations to design the capability foundations that translate sustainability ambition into operational reality.

The Business Capabilities Model for Sustainability, the Sustainability Data Hub, and the Product Intelligence Cockpit presented in this report represent an integrated architectural vision developed through strategic consulting engagements across the food and beverage industry — combining regulatory expertise, enterprise architecture discipline, and practical implementation experience.

Ronald is a recognised voice on the intersection of digital architecture and sustainability transformation, and a regular contributor to the discourse on AI, ERP reinvention, and enterprise data governance.

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