

## AREA: SUSTAINABILITY &amp; PROCUREMENT

# Scope 3 Carbon Footprint

## Raw Materials & Suppliers

How Kemchain enables chemical, cosmetic, and fragrance companies to measure, predict, and reduce their upstream carbon emissions — at ingredient, supplier, and formula level.

### Predict

**Supplier Carbon Risk**  
by process & transport

### Reduce

**Upstream Emissions**  
with data-driven decisions

### Calculate

**Formula Carbon Values**  
ingredient by ingredient

## The Challenge

Scope 3 Category 1 emissions — purchased goods and services — represent the largest and least visible portion of the carbon footprint for companies in the chemical, cosmetic, and fragrance sectors. Most teams either omit this reporting entirely or rely on generic emission factors disconnected from actual supplier processes and transport routes. The result: carbon data that cannot drive real reduction decisions or support credible ESG disclosures under CSRD or ESPR.

## How It Works

### Process-Based Emission Estimation

Kemchain estimates the production inventories required to manufacture each substance by matching it — through process similarity — with records in the Ecoinvent v3.11 Cut-off database. This generates a traceable, science-based emission factor even when primary supplier data is unavailable.

### Transport Impact Calculation

The tool calculates the carbon contribution of logistics by combining actual transport distances with the Ecoinvent emission factors for each transport mode (road, sea, rail, air). This lets companies compare suppliers not only by price, but by their true logistics footprint.

### Supplier Carbon Benchmarking

By structuring process and transport data per supplier, Kemchain enables side-by-side carbon comparison of equivalent ingredients from different origins. Purchasing teams can identify which suppliers and routes drive the highest emissions and prioritise reduction actions accordingly.

### Formula-Level Carbon Values

Emission factors at ingredient level are aggregated directly into product formulas. R&D and sustainability teams can calculate the carbon footprint of any formulation, model reformulation scenarios, and report at product level — all within the same platform.

### Methodology & Data Source

Kemchain's carbon module is powered by the Ecoinvent v3.11 Cut-off database — the industry-standard Life Cycle Inventory (LCI) reference used in scientific and industrial LCA worldwide. The tool estimates production inventories for each substance through process similarity matching with Ecoinvent records, applies the corresponding emission factors, and adds transport impact calculated from actual distances per transport mode (road, sea, rail, air).

## Business Value

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1

### Credible Scope 3 reporting

Emission factors from Ecoinvent v3.11 Cut-off provide an auditable, science-based foundation for CSRD and ESR disclosures — replacing generic averages with process-specific data.

2

### Supplier selection based on carbon impact

Procurement teams gain a new decision axis: for the same ingredient quality, Kemchain reveals which supplier and transport route carries the lowest carbon cost — with no quality trade-off.

3

### Targeted reduction roadmap

By pinpointing which raw materials and logistics stages contribute most to the upstream footprint, companies can focus reduction efforts where they have the greatest impact before committing to supplier changes.

4

### Carbon embedded in product development

Formulators access carbon values alongside technical and regulatory data. Sustainability is evaluated from the first prototype — not as a post-launch exercise.

Ready to make your upstream carbon footprint visible and actionable?

**Discover Kemchain's carbon module → [kemchain.com](https://kemchain.com)**