Contract-Produced Brands LCA Guide

For the Replit Development Agent

Version: 1.0
Date: 2025-07-21
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Status: Draft

1. Objective & Scope

This document provides a detailed technical guide for the Replit Agent to build the LCA data collection and processing engine for **brands that use third-party contract producers** (e.g., contract distillers, wineries, or brewers). This is a distinct workflow from the self-produced brands guide and builds upon the existing **Supplier Network** infrastructure.

The core challenge is to accurately capture the environmental impact of the liquid production phase when the client does not have direct operational control.

2. Part 1: User Onboarding Flow (Contract-Produced)

This workflow is triggered when a user selects **"We contract out production"** during the initial onboarding (as defined in the prd-drinks-sustainability-tool.md).

1. **Confirmation:** The user confirms they use a contract producer.
2. **Liquid Production Data:** The user is presented with a new interface specifically for capturing the liquid's footprint. The subsequent tabs for **Packaging** will remain identical to the self-produced flow.
3. **The Core Choice:** The user is asked: **"How would you like to provide data for your liquid production?"** They will be presented with three clear options:
    - **Option A: Select from our Verified Supplier Network.**
    - **Option B: Upload an LCA/EPD from your producer.**
    - **Option C: Invite your producer to provide data.**

3. Part 2: Detailed Plan for Data Collection Paths

This section provides the technical implementation details for each of the three options.

Path A: Select from our Verified Supplier Network

- **User Interface:**
    - The user is shown a search bar to find their contract producer in the verified_suppliers table (filtered by a category like 'Contract Distillery').
    - Once the producer is selected, a second dropdown appears, populated with the

    relevant products from the supplier_products table (e.g., "Neutral Grain Spirit - Wheat," "New Make Malt Spirit").
  - The user selects the liquid that is the base for their product.
- **Backend Logic:**
  - When the user selects the supplier's liquid product, the system links this choice in the lca_questionnaires.lca_data JSONB field.
  - The LCA calculation engine will then use the pre-vetted data from the selected supplier_products entry (either the pre-calculated lca_data_json or the raw product_attributes) for the entire "Agriculture," "Inbound Transport," and "Processing" stages of the final LCA.

Path B: Upload an LCA/EPD from your producer

- **User Interface:**
  - The user is presented with a file upload component.
  - **Prompt:** "Please upload the Life Cycle Assessment (LCA) or Environmental Product Declaration (EPD) for your liquid, provided by your contract producer. (PDF format preferred)."
  - The user uploads the document.
- **Database Schema Addition:** We need a new table to manage these uploaded documents.
  - New Table: uploaded_supplier_lcas

Column Name	Data Type	Constraints	Description
id	UUID	PRIMARY KEY	Unique ID for the upload.
questionnaire_id	UUID	FOREIGN KEY (lca_questionnaires.id)	Links to the client's specific LCA questionnaire.
file_url	VARCHAR(255)	NOT NULL	Secure URL to the stored PDF file.
verification_status	VARCHAR(50)	NOT NULL, DEFAULT 'pending_review'	Status: 'pending_review', 'approved', 'rejected'.
extracted_data_json	JSONB	NULLABLE	Stores the key data points extracted by the admin team.
- **Backend Logic & Workflow:**
  1. The uploaded file is stored securely, and a new entry is created in the uploaded_supplier_lcas table.
  2. The client's LCA status is marked as **"Pending Supplier Data Verification."**
  3. A notification is sent to the internal Avallen Solutions admin queue.
  4. **Human-in-the-Loop:** An Avallen expert manually reviews the uploaded LCA document. They extract the key impact figures (e.g., kg CO2e per litre of spirit) and input them into the extracted_data_json field.

5. The admin updates the verification_status to 'approved'.
6. The main LCA calculation engine is then triggered, using the verified extracted_data_json for the liquid production part of the assessment.

Path C: Invite your producer to provide data

- **User Interface:**
  - This path directly integrates with the **Client-Initiated Supplier Invitation Flow** defined in the supplier-network-guide.md.
  - The user is prompted to enter the name and email of their contract producer.
- **Backend Logic:**
  1. The system triggers the existing supplier invitation workflow.
  2. The client's LCA calculation is put on hold, and its status is marked as **"Awaiting Data from [Supplier Name]."**
  3. The client's dashboard will clearly show this pending status.
  4. When the invited supplier completes their onboarding journey (as per the supplier-network-guide.md), their data is verified by an admin, and they become part of the official network.
  5. Once the supplier is verified, the system automatically links their data to the client's pending LCA, and the final calculation is triggered. The client is notified that the process is complete.

4. Part 4: Final LCA Assembly for Contract-Produced Brands

The backend modeling logic for the Celery worker must be updated to handle these new data sources.

- **Updated Logic:** When calculating an LCA for a contract-produced brand, the worker will assemble the final product system as follows:
  1. **Liquid Production (Agriculture, Transport, Processing):** The data for these stages will be sourced from one of the three paths above (Verified Supplier Network, Uploaded & Verified LCA, or Invited & Verified Supplier).
  2. **Packaging (Bottle, Label, Stopper, etc.):** The data for these stages will be sourced from the client's own inputs in the subsequent tabs of the questionnaire, as this is data they control directly.
  3. The system then connects these two sets of data into a single, complete product system and runs the final calculation in OpenLCA.