



Suhas Bhairav

AI Supply Chain Carbon Footprint Sustainability Guide

**Practical steps to extract fuel and electricity data
from manifests for clean reports**

Turn shipping manifests into auditable emissions data
with automated workflows.

Suhas Bhairav

suhasbhairav.com

Automation Scope

This page defines what to automate to convert shipping manifests into auditable emissions data. It distinguishes automated processes from manual review and outlines the data and tools required.

Key move Pilot with one carrier and one quarterly report.

PRACTICAL CHECKLIST

- 01** Automate extraction of fuel type, quantity, energy use, and distance from manifests.
- 02** Automate unit normalization and CO2e conversions to standardize emissions data.
- 03** Automate alignment to corporate emission factors and reporting standards.
- 04** Automate assembly of a draft sustainability report from structured data.
- 05** Human review: data quality checks, anomalies, and regulatory alignment.
- 06** Human review: final sign-off before external disclosure.
- 07** Data governance: lineage, versioning, access controls.

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Data, Models, and Tooling

This page lists required data sources, recommended AI tools, and the human-in-the-loop steps to maintain accuracy. It also covers data quality and security considerations.

Key move Define data ownership early; ensure sign-off from data stewards.

PRACTICAL CHECKLIST

- 01** Data sources: manifests (PDF/CSV/EDI), invoices, and energy bills for shipments.
- 02** Fields: fuel type, quantity, energy use (electricity), date, vessel, route, distance.
- 03** Tools: OCR for PDFs, NLP for extraction, agentic workflows, prompts, and ETL/data warehouse.
- 04** Code-free vs code-based options: RPA + LLM prompts for non-technical teams.
- 05** Data quality checks: normalization, deduplication, missing values, and unit consistency.
- 06** Security and access: role-based controls, audit trails, and data provenance.

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Adoption, Risk & Ownership

This page provides a realistic weekly adoption plan, governance anchors, and success metrics. It defines who owns the workflow and how progress is measured.

Key move Secure sign-off from data stewards before full rollout.

PRACTICAL CHECKLIST

- 01** Week 1: inventory manifests, identify data owners, and define required fields.
- 02** Week 2: build a minimal parser to extract fuel type and quantity.
- 03** Week 3: add energy data extraction from invoices and contracts.
- 04** Week 4: run pilot emissions calculations and generate a draft report.
- 05** Week 5: insert human review for anomalies and refine prompts.
- 06** Week 6: automate report generation and distribution to internal stakeholders.
- 07** Week 7: establish dashboards, SLAs, and governance rituals.

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ABOUT THE CREATOR

Suhas Bhairav

I build AI systems that combine distributed architecture, retrieval, knowledge graphs, security, and practical workflow design. My focus is AI that can be used repeatedly by real teams: understandable, reliable, and grounded in the work people already do.

EXPERTISE

- Principal systems architecture and applied AI engineering
- Production-grade AI systems, agentic workflows, RAG, and knowledge graphs
- Full-stack workflow applications across AWS, Google Cloud, Azure, on-premise, and hybrid environments
- Practical AI implementation patterns for automotive, manufacturing, finance, logistics, cybersecurity, sales, and customer operations
- Security, governance, observability, approvals, and failure-mode thinking for operational AI systems

WEBSITE

suhasbhairav.com

EMAIL

suhasbhairav@gmail.com