



The Sentier Platform: Backbone of a Scalable and Flexible LCA Data Pipeline

■ Laurenz Bougan

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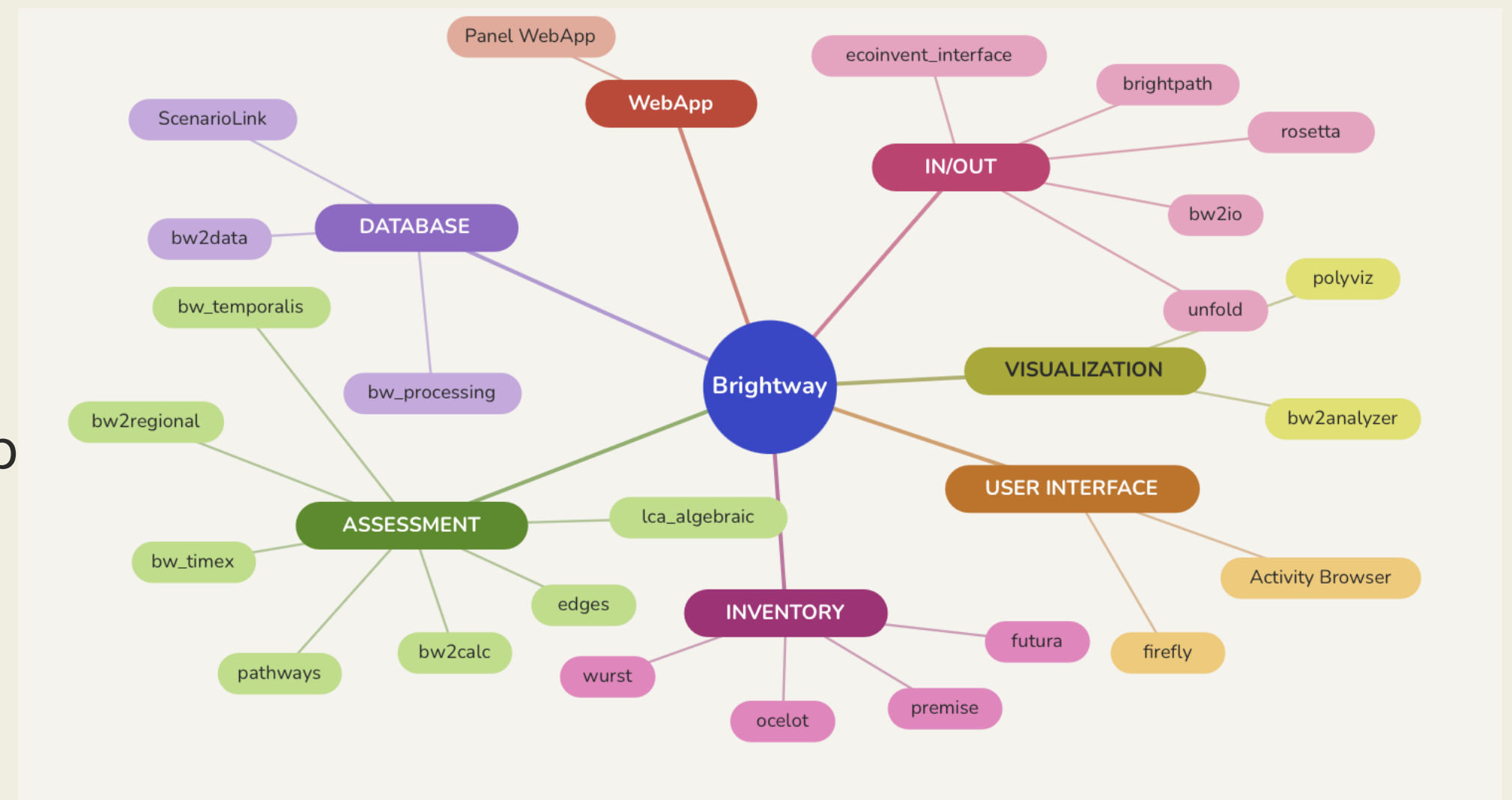
An interactive version of this presentation is available at https://www.d-d-s.ch/dds-93_lca_df-presentation/

WHO WE ARE

What we do

A nonprofit supporting open sustainability assessment

- Open-source tools and LCA data infrastructure
- Events and training
- Brightway ecosystem community support and engagement



Interactive version available at <https://www.d-d-s.ch/about/ecosystem>

WHO WE ARE

Our team



Xiaojin Zhang
Director



Laurenz Bougan
Senior Platform & Data Engineer



Chris Mutel
President, Board Member



Tomas Navarrete Gutierrez
Vice President, Board Member



Karin Treyer
Board Member



João Gonçalves
Board Member



Mélanie Douziech
Board Member



Manuel Klarmann
Board Member

THE PROBLEM

LCA data development is manual

Manual by default — datasets and models built and maintained manually, with no standard and open workflow

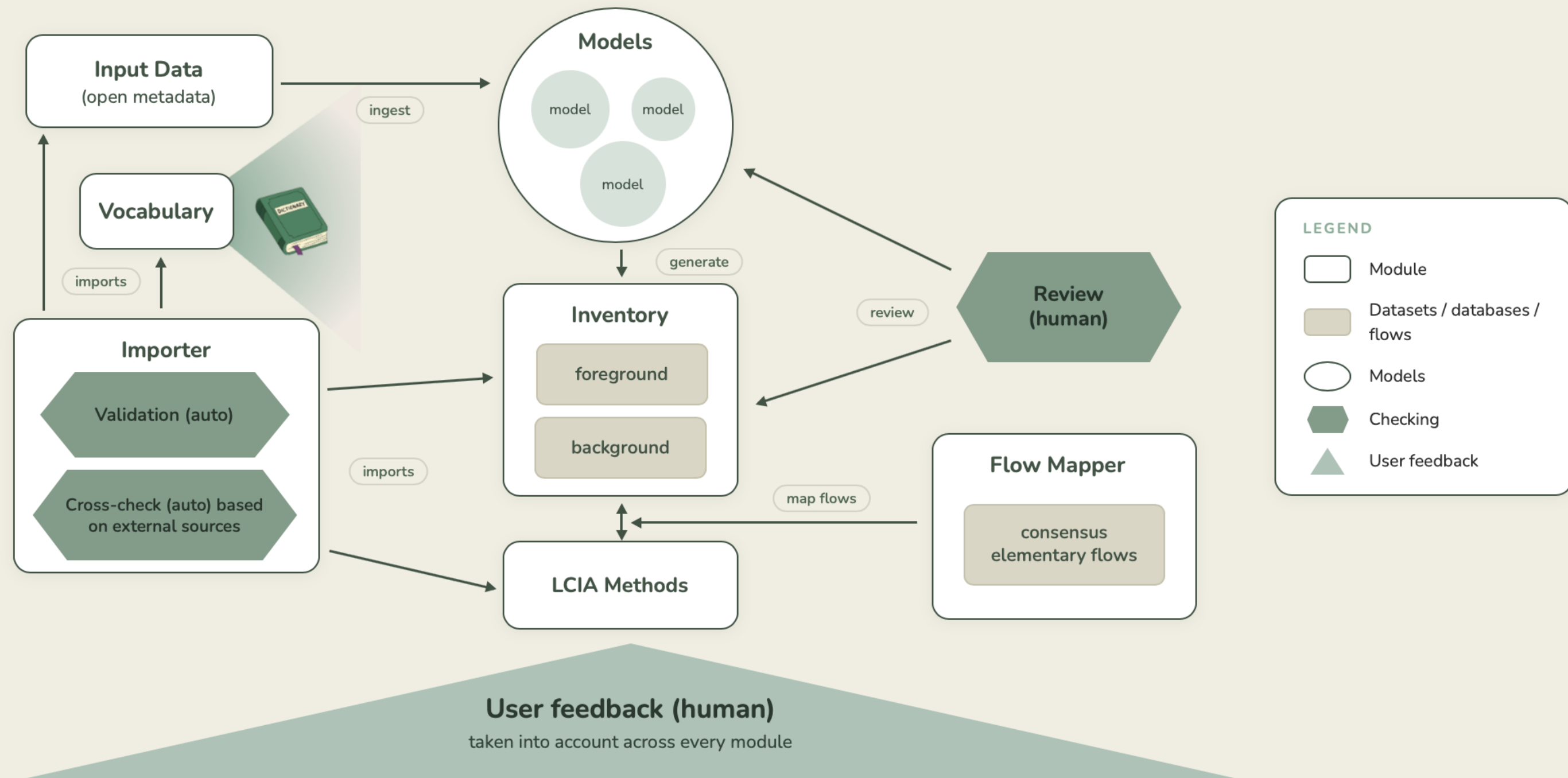
Siloed & duplicated — the same data rebuilt differently across databases and software, with no shared source of truth

Insufficient documentation, no provenance — sources and methodological rational often insufficient for reproducing and maintenance

Costly & inconsistent — duplicated manual effort drives up costs while producing divergent results across tools

THE SOLUTION

Sentier platform architecture



Construction, publication, sharing and continuous improving of life cycle inventory data
— from import through shared vocabulary to models, inventories, and LCIA methods

SHOWCASE

Opening up Agribalyse



Funded by ADEME (Agence de la transition écologique)

What we set out to do

- Make Agribalyse v3.2 available in Brightway
- Establish a pipeline that can be reused beyond a single version
- Build on the published EF v3.1 flows — not implementations specific to a software or database
- Comparison of LCIA results: Brightway vs. Simapro, explain deviations

Mapping of elementary flows

SOURCE INVENTORY

Agribalyse v3.2

SimaPro CSV of LCI processes. We map each elementary-flow exchange — in SimaPro naming — onto an ecoinvent or EF v3.1 flow, so it can be characterized with a CF.

normalise names & units · pre-link



PRIORITY-TIER MATCHER

Curated & manual matches	override
Harmonised flows · CAS / water	override
Automated name / unit fallbacks	fill-only
LLM-reviewed & synonyms	fill-only
Unmatchable	no link

*walks tiers ascending —
first valid link wins · routes each flow to one target list*



CHARACTERIZED FLOW TABLES

ecoinvent-3.9.1-biosphere flows with a clean ecoinvent equivalent CFs from bw2io	
ELEMENTARY FLOW	EF V3.1 CF
Carbon dioxide, fossil	1.0
Methane, fossil	29.8
...	...

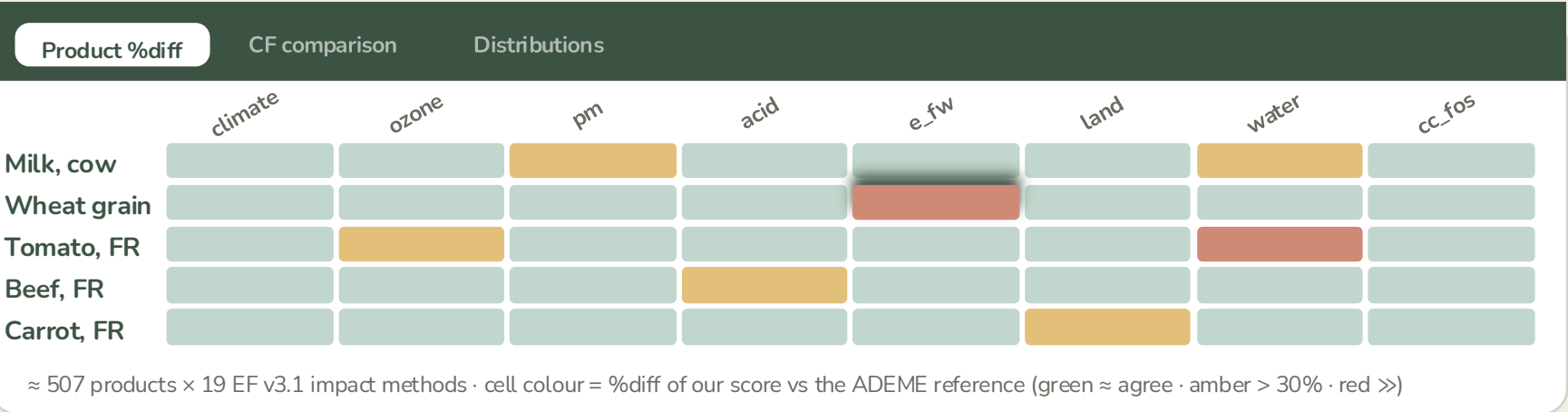
ef EF v3.1 flows with no ecoinvent equivalent CFs from JRC EF v3.1	
ELEMENTARY FLOW	EF V3.1 CF
Dinitrogen monoxide	273
Methane, biogenic	27.0
...	...

*one EF v3.1 method carries both CF sets —
bw2io + JRC · values illustrative*

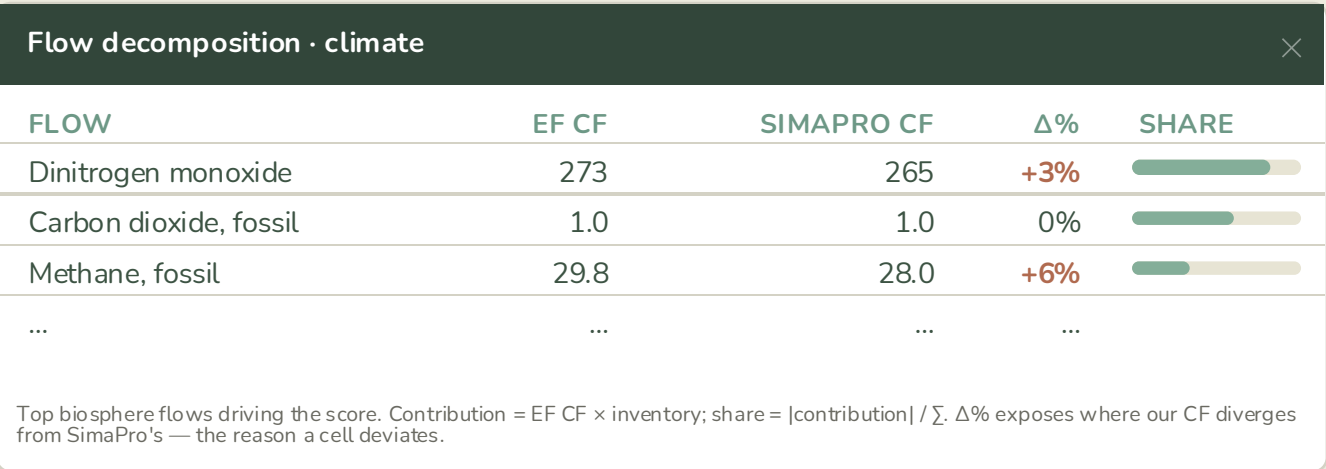
Each Agribalyse elementary flow is matched into one of two characterized flow tables — ecoinvent 3.9.1 or the published EF v3.1 — both scored by the EF v3.1 LCIA methods.

Comparing results and explaining deviations

DASHBOARD



CLICK A PRODUCT × METHOD



Product %diff

backtest grid: computed score vs ADEME reference, per product × impact

CF comparison

our EF v3.1 CF vs SimaPro's CF, per flow — agree / differ / ours only

Distributions

histogram of %diff across products, one per impact category

Backtest every mapped product against ADEME's reference scores, then drill into any deviation to see which flows — and which CF differences — explain it.

Next steps

- Apply the pipeline to the upcoming v4.0
- Link with BAFU 2026 database
- Hand the workflow to the community for feedback and improvements

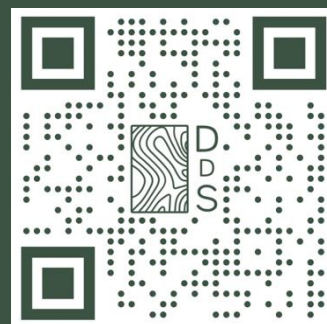
WHY IT MATTERS

A version-independent pipeline keeps public data more transparent, with far less manual effort and faster release.



Thank you

We look forward to your collaboration.



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