Sustainability Assessment Visualisation contest

DÉPART DE SENTIER

https://github.com/Depart-de-Sentier/visualization-contest-2022

Prizes sponsored by ecoinvent – Thank you!

Bar charts again? Trying to grasp the essence?

What do we want to show in order to support decision making:

- Multiple environmental impacts of a product or service

  It's not only about climate change

- Contribution/Hotspots: life cycle phases, materials/processes

  Where should we act first

- Robustness of results (uncertainties, sensitivities)

  Can we believe in the results?

- Different cases/designs
- Different temporal scopes (e.g. results for 2020, 2035, 2050)
- Following supply chains (regionalized LCA)
- Benchmarking (e.g. to current technology)

The goal of the contest

- Reach out to graphical designers («out of the bubble»)
- High-quality LCA results visualisations and codes which can be integrated in BW2 for broad use in the community
  - Seeking better ways of displaying information so that it is easy to see the message (effective visualisation)
  - Code readily available for use, or close to it

The procedure

- Launching of the visualisation contest
- Submission of entries: Code & explanations in a short video
- Evaluation by the jury
- Notification of winners
- Turning the winner entries into a library – ongoing...

The jury

NAME	AFFILIATION	BACKGROUND
CHRIS MUTEL	DdS / ecoinvent/ PSI	LCA, coding
TOMÁS NAVARRETE	DdS / LIST	Coding, LCA
KARIN TREYER	DdS / PSI	LCA
JANINE BEREITER	https://bereiter-visual.ch	Graphical Designer
DARIA DELLENBACH	Ecoinvent	LCA
DANIELA BAUMANN	Ecoinvent	LCA

The evaluation criteria

0. (Formal)
1. **Design, graphical aspects**
2. LCA:
    - Representation of LCIA indicators
    - Contribution analysis
    - Identification of hotspots/burden-shifting/trade-offs
    - Robustness/uncertainties
3. Code:
    - Documentation
    - Testing
    - Easy to apply/adapt
    - Functioning installation instructions
    - Code linters applied

Evaluation challenges

- Very diverse visualisations – from general, broad picture (global supply chain of a sector) to a detailed specific aspect (e.g. uncertainty)
- Very diverse codes
- Target groups (users/those who look at the figure)

Design evaluation criteria

EXPERIENCE when looking at the figure:

- How ***meaningful*** is the figure?
- How ***appealing*** is the figure? Does it ***intrigue*** me?
- Can I ***discover more*** after getting a first overview - Am I curious to discovering more?
- ***What do I get*** from looking at this figure?
- Does the figure address the ***target audience***?

ORIENTATION: How quickly can I capture the figure? Where do I need to start to look at?

INNOVATION

RESOURCE USE - Clever use of space:
Does the figure use a lot of space for little information gain? (compact figure)

Easy **ADAPTABILITY,** e.g. to implement other data or make it barrier free?

INTERACTIVITY

NEUTRALITY - Can the figure potentially lead to ***misinterpretation***?
Is the visualisation neutral (bold, underline, font size, hierarchy)?
Does the figure…
…give ***all necessary information***, or ***simplify*** too much (in an eye-catching way)?
… show the ***complexity and relationships*** in the LCA world?
…leave deliberately out important information?
… try to manipulate/confuse?

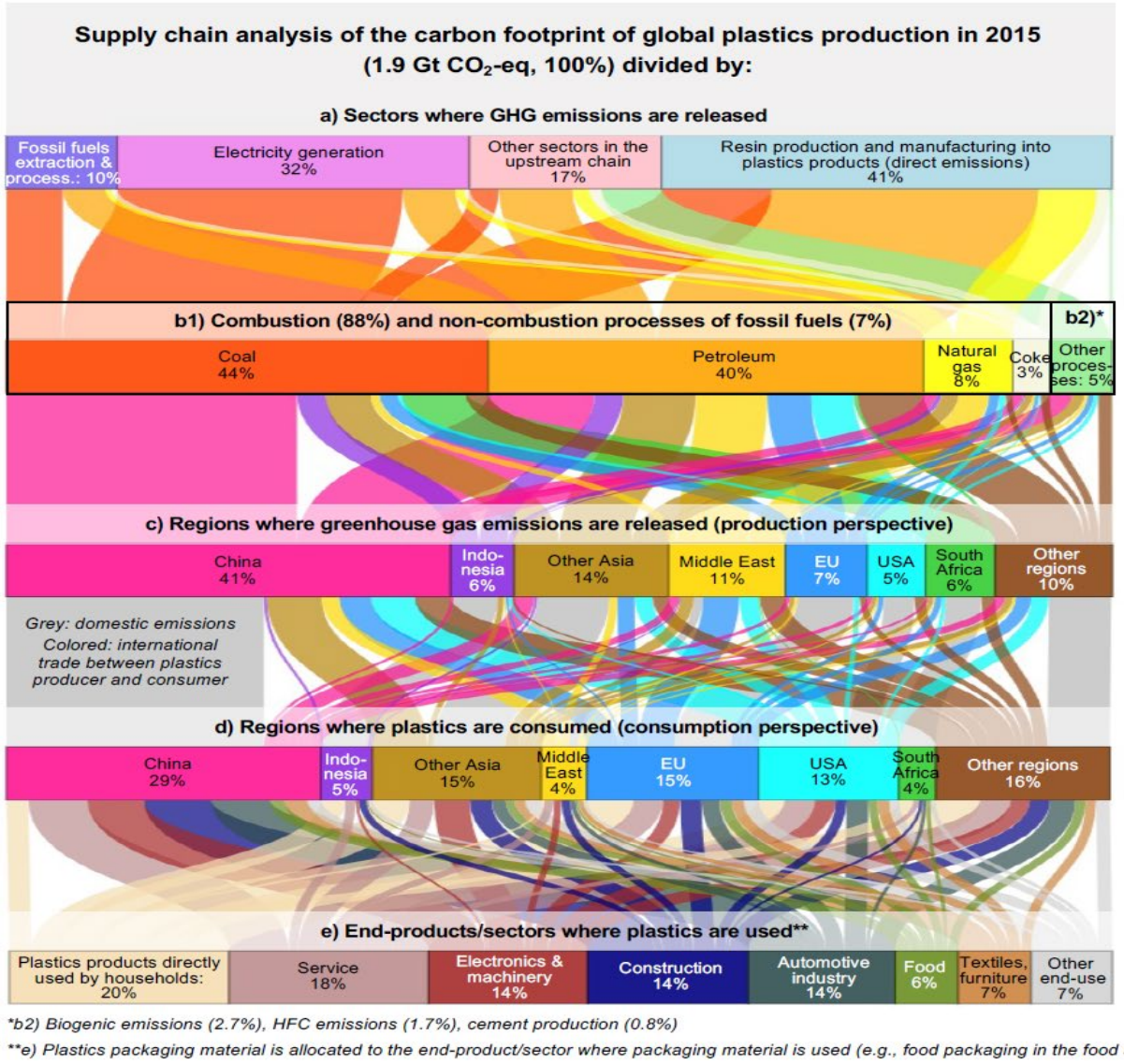
CORRECTNESS: Do the contents of the figure reflect the underlying data?

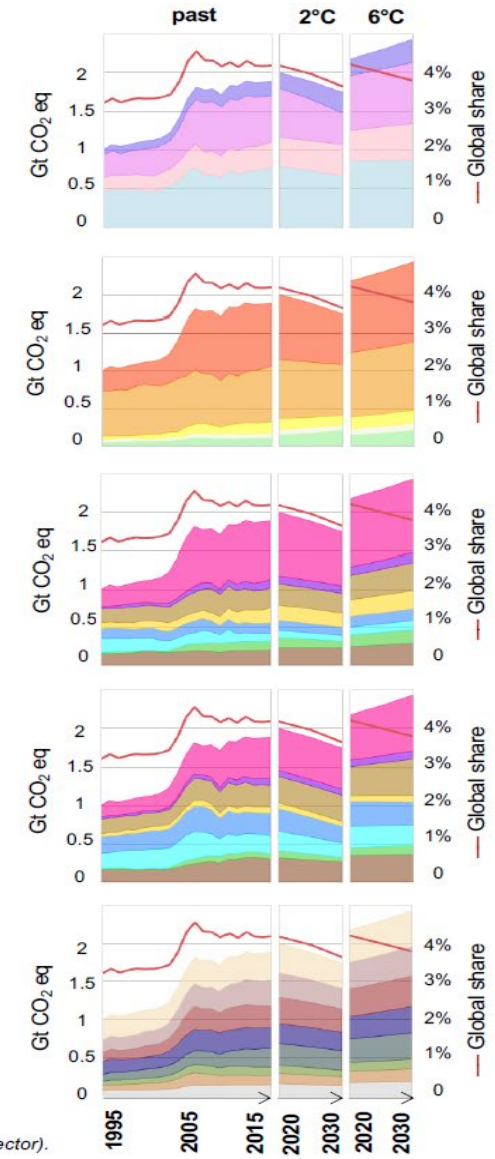
RELEVANCE - Make complex things clear

Does the figure reveal relationships to me for which I would otherwise have had to invest more brain energy to detect them?

The entries

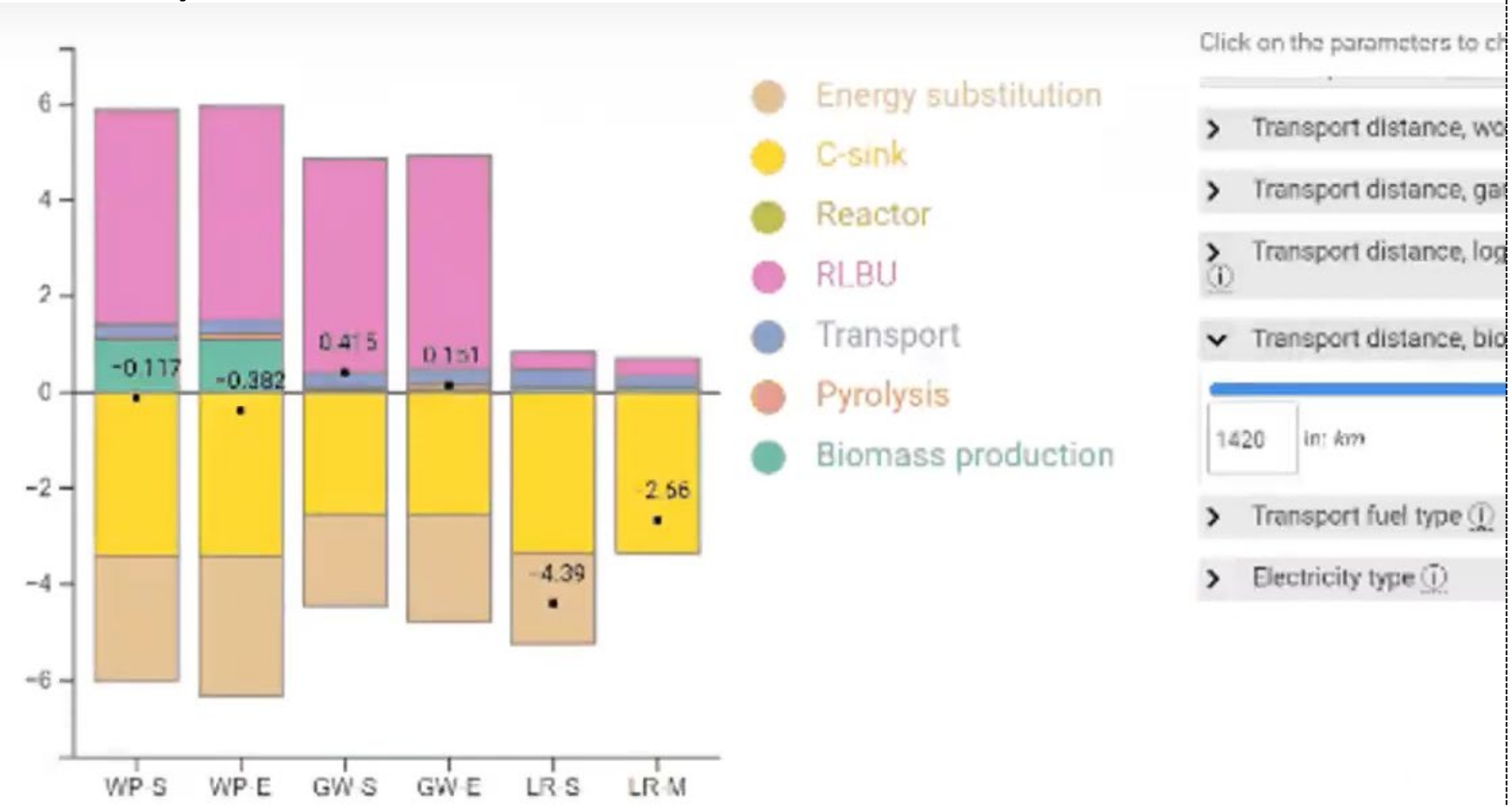
Livia Cabernard – Global supply chain analysis





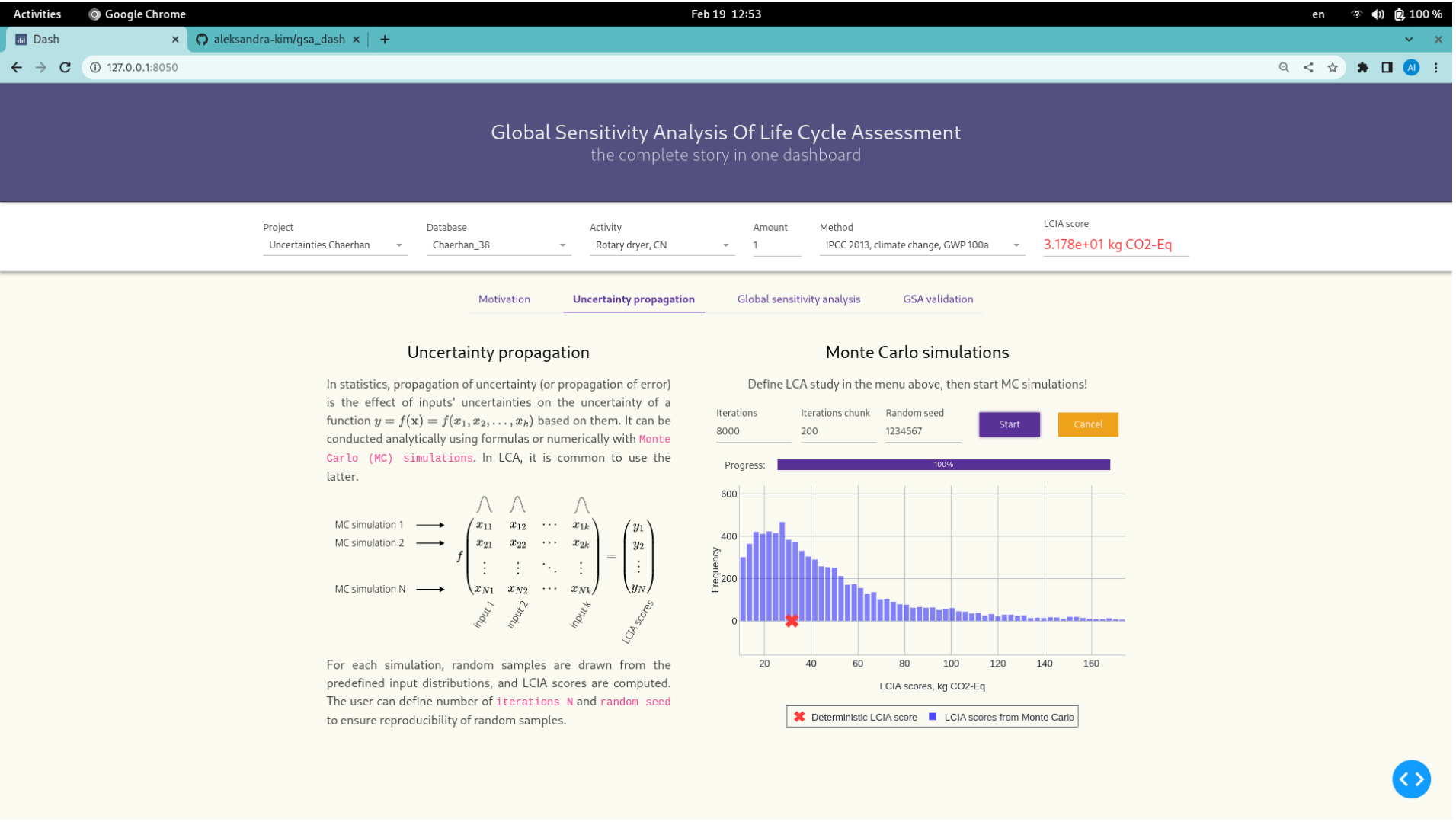
- Inviting to explore despite the **high information density** – due to e.g. consistent choice of colours; clear summary over time at the right; good choice of font/font size/font colour.
- **Orientation easy** - the viewer can start from the top and explore their way down.

Elias Azzi – bw2widgets: Turn your parametrized LCA models into interactive HTML/JS contribution analysis charts



- **Easy** for everyone; Simple and despite of that still informative.
- **Interactivity invites** the viewer to explore ways on how to improve the system under research. Steps are well explained.
- Font sizes and colours are fresh
- Usual elements of a user interface => users can orientate quickly naturally explore the results.

Aleksandra Kim: Dashboard for Global Sensitivity Analysis



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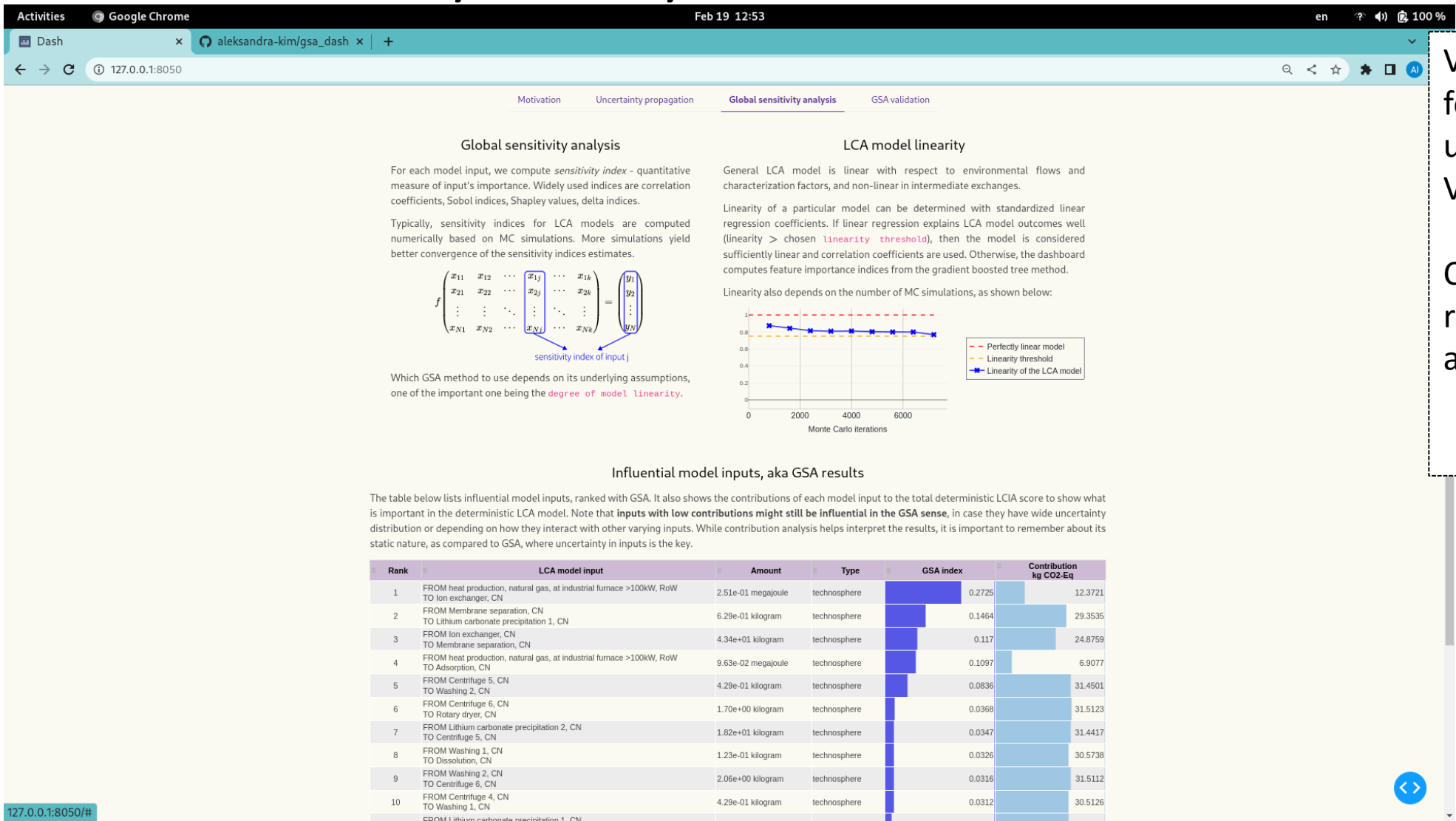
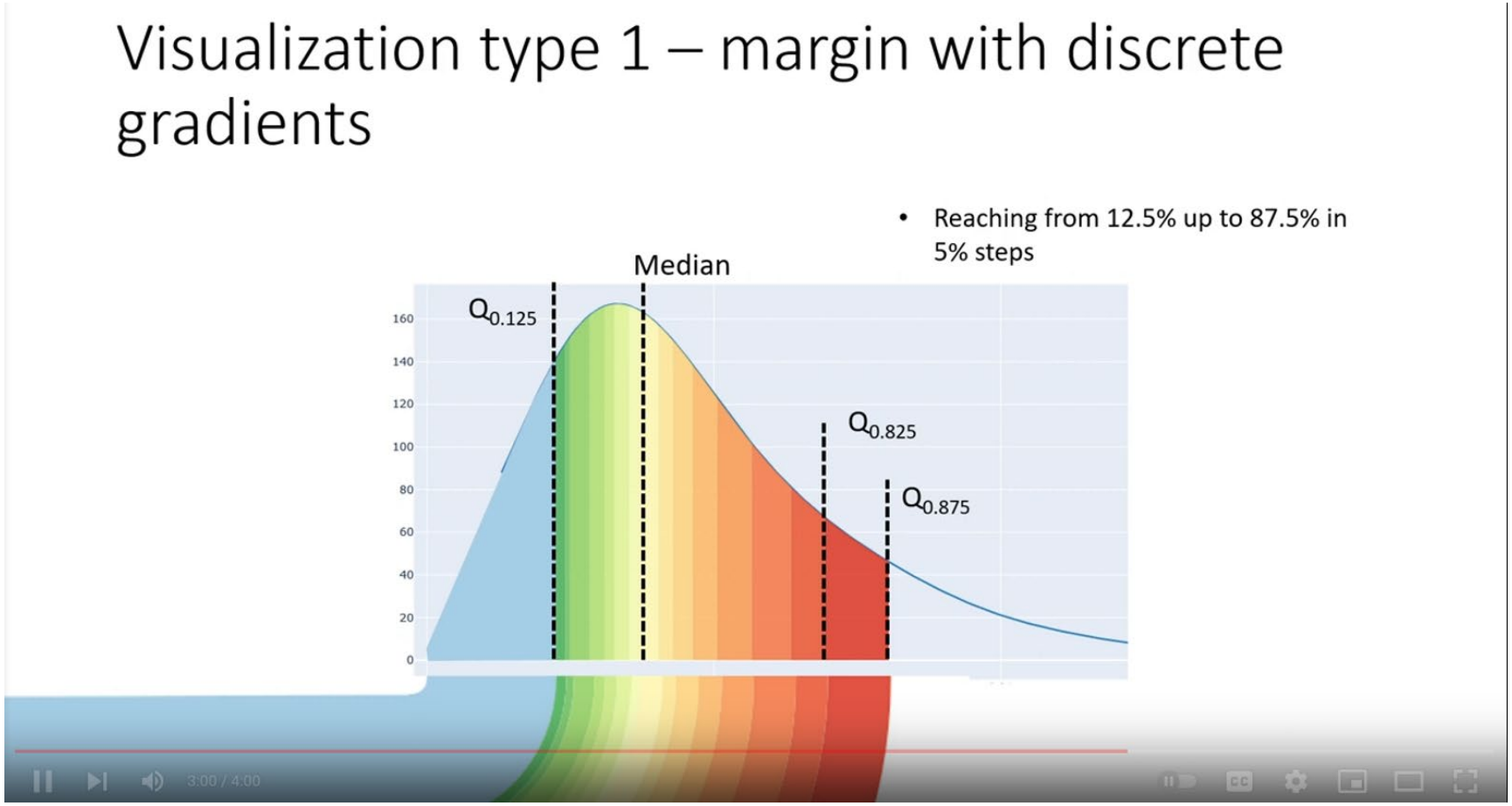


Very easy orientation, good font size, very neutral & unobtrusive**, creates trust**; Very natural and flawless

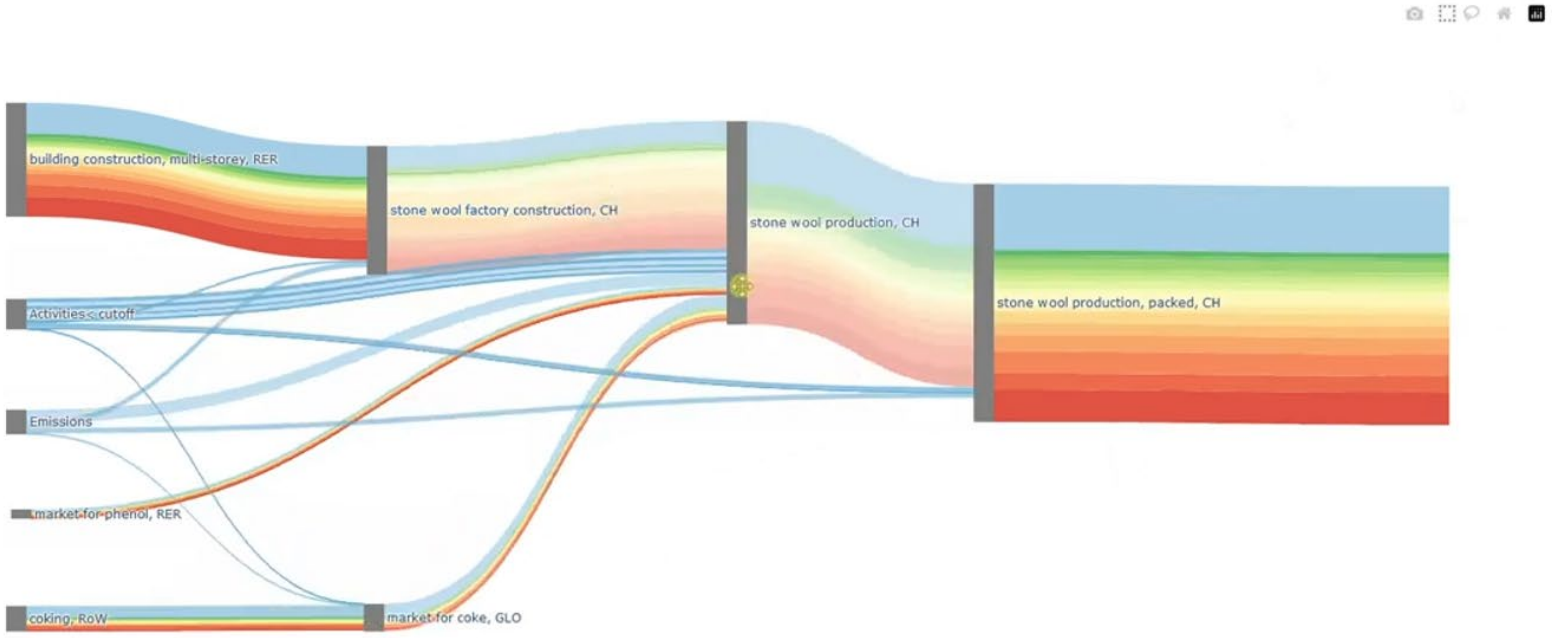
Clear representation of a rather **complex topic** with an innovative dashboard.

Hannes Schneider – Uncertainty of LCA results with sankey diagrams



Hannes Schneider – Uncertainty of LCA results with sankey diagrams

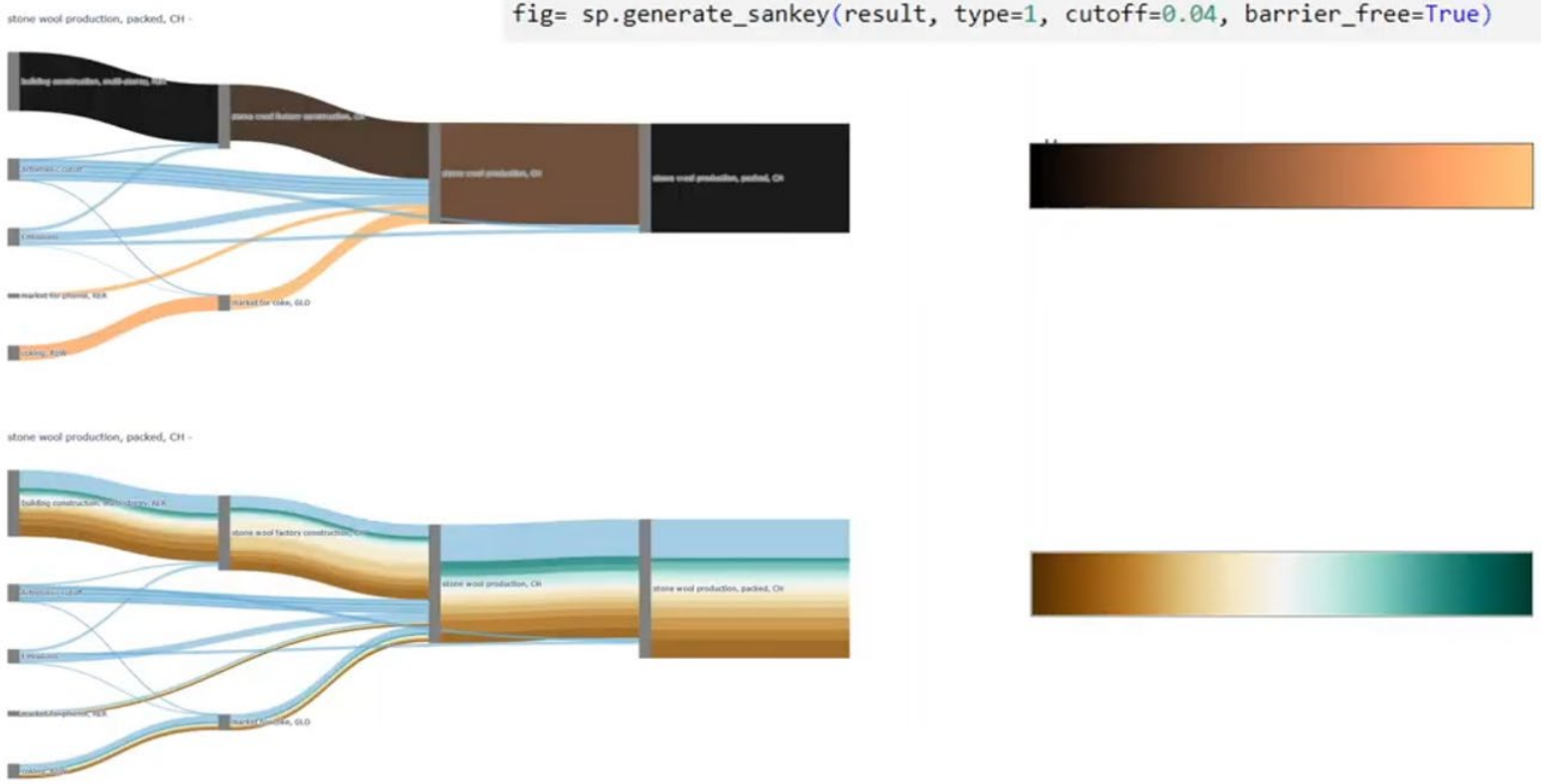
Interactive html file



Hannes Schneider – Uncertainty of LCA results with sankey diagrams

Barrier-free color scale

```
fig= sp.generate_sankey(result, type=1, cutoff=0.04, barrier_free=True)
```



Which flows have highest contribution AND highest uncertainty

Brain power needed to understand the figure, but interactivity **invites** to explore the story.

Innovative representation of an important topic, which could help decision makers prioritise actions.

Other entries

- *Téo Lavisse/Florent Bondin*: **Easy-to-understand graphics for everyday LCA practioners**
- *Romain Besseau/ Oliver Hurtig*: **Toolbox database explorer** and its **dashboard** that is designed to help explore and analyze the content of a database on a given topic
- *Lisa Zakrisson/Elias Azzi*: A **contribution analysis** applied to an LCA result based on a **parameterized** data inventory
- *Romain Sacchi*: Comprehensive library **polyviz** allowing the following visualizations to be created from LCA results: Sankey/Chord diagrams, Force-directed graphs, Treemaps, Choropleth maps, Violin plots
- *Muhammad Umer*: Identify the **most critical processes** and coalesce midpoint, endpoint LCA and process contributions

You are invited to check out the github repo