

# GreenDelta

sustainability consulting + software

## Approaches to simplify footprint assessment

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# Approaches to simplify footprint assessments

## **1 Introduction**

**a) footprint assessments**

**b) why simplification**

## **2 The challenge of smart simplification**

## **3 Simplification options**

## **4 How, and when, simplify? Guidelines for simplification**

## **5 Summary & outlook**

# 1 Introduction

# 1 Introduction, footprint assessments

A broad variety of assessment methods are called footprints:

- Ecological Footprint (Wackernagel et al. 1996)
- Carbon Footprint (e.g. Wiedmann and Minx, 2008, ISO 14067)
- Water Footprint (e.g. Hoekstra et al., 2011)
- Product Environmental Footprint, Organisational Environmental Footprint (European Commission, JRC, [http://ec.europa.eu/environment/eussd/smgp/product\\_footprint.htm](http://ec.europa.eu/environment/eussd/smgp/product_footprint.htm), 2013)
- Different company-specific footprint assessments
- ...
- See e.g. Fang, K., Heijungs, R. and De Snoo, G.R. (2014) Theoretical exploration for the combination of the ecological, energy, carbon, and water footprints: Overview of a footprint family, *Ecological Indicators*, 36: 508-518.

# 1 Introduction, footprint assessments

- Methods that try to assess the environmental impacts of products (sometimes also organisations), typically over the life cycle (resource extraction, production, use, disposal)

# 1 Introduction, why simplification

Footprint assessments are inherently complicated and „difficult“:

- High data demands
- Detailed modeling steps
- Difficult-to-communicate details
- Technically challenging (some; e.g. water footprint requires region-specific information and assessment)

# 1 Introduction, why simplification

Footprint assessments are inherently complicated

→ It is interesting to look for

- Cost reductions
- Time reductions (also: for use in product design, or for a mass of products, very short study time is mandatory)
- And for ways to make them just easier...

## 2 The challenge of smart simplification



## 2 The challenge of smart simplification

Footprint simplification is easy →

Just leave out difficult-to-get data and simplify the modeling.

## 2 The challenge of smart simplification

Just leave out difficult-to-get data and simplify the modeling.

One example:

Prosuite approach for assessing qualitative social indicators over the life cycle:

**“the assessment of the qualitative indicators [over the life cycle] is made by use of expert elicitation”**

Prosuite Handbook on a novel methodology for the sustainability impact assessment of new technologies, 2013, p 25, <http://prosuite.org/web/guest/the-prosuite-framework>



## 2 The challenge of smart simplification

→ Footprint simplification is easy, but gets difficult when you want to maintain a method that is

- credible
- correct and consistent
- able to create new insights

## 2 The challenge of smart simplification

→ Footprint simplification is easy, but gets difficult when you want to maintain a method that is

- credible
- correct and consistent
- able to create new insights, and
- still valid.

## 2 The challenge of smart simplification

- *Smart simplification* makes footprint faster, less complicated, less costly, and preserves at the same time those aspects in the approach that are desirable.  
(“method efficiency”)

## 3 Simplification options

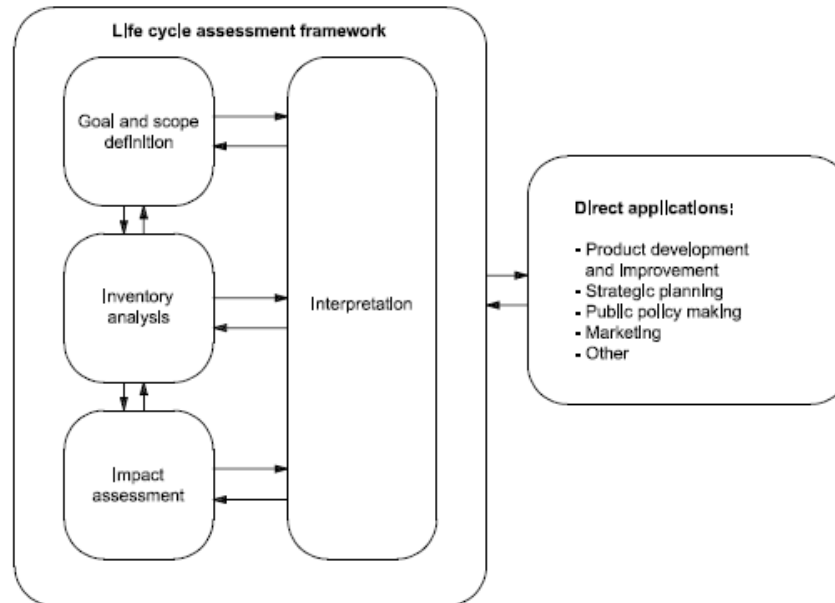
## Simplification options

- Reduce data collection
- Reduce the number of indicators
- Simplify the modeling
- Use efficient software

# Simplification options

- Reduce data collection
- Reduce the number of indicators
- Simplify the modeling
- Use efficient software

This is all related.





## Simplification options

- Reduce data collection → use generic databases
- Reduce the number of indicators → especially those that require different data, different modeling, different communication
  - Water footprint in addition to carbon footprint
  - Soil organic matter in addition to carbon footprint
  - Risk information in addition to carbon footprint
- Simplify the modeling → linear models instead of nonlinear response models
- Use efficient software → generic software reduces need for training and explanation; specific software may be better suited to the approach and to the company

4 How, and when, simplify?

## How, and when, simplify?

- A difficult question.
- For example, Product Environmental Footprint, JRC:
  - Draft method:
    - Described in pilot draft report
    - 14 indicators
    - Some not supported by (all main) generic databases (Soil Organic Matter, e.g.)
    - Default „standard“ approach for all products
  - „one size fits all“ approach, hence inefficiencies
  - Benefits due to a unified, generic approach
  - LONG coordination activities

# Product Environmental Footprint: Final draft outline

- Executive Summary
  - Context
  - Objectives and target audience
  - Process and Results
  - Relationship to the Organisation Environmental Footprint Guide
  - Terminology: shall, should and may
  - 1.1 Approach and examples for potential applications
  - 1.2 How to Use this Guide
  - 1.3 Principles for Product Environmental Footprint Studies
  - 1.4 Phases of a Product Environmental Footprint study
- 2. Role of Product Environmental Footprint Category Rules (PEFCRs)
  - 2.1 General
  - 2.2 Role of PEFCRs and relation with existing Product Category Rules (PCRs)
  - 2.3 PEFCR structure based on the Classification of Products by Activity (CPA)
- 3. Defining the Goal(s) of the Product Environmental Footprint Study
  - 3.1 General
- 4. Defining the Scope of the Product Environmental Footprint Study
  - 4.1 General
  - 4.2 Unit of analysis and reference flow
  - 4.3 System boundaries for Product Environmental Footprint Studies
  - 4.4 Selecting Environmental Footprint Impact Categories and Assessment Methods
  - 4.5 Selecting additional environmental information to be included in the PEF
  - 4.6 Assumptions/limitations
- 5. Compiling and Recording the Resource Use and Emissions Profile
  - 5.1 General
  - 5.2 Screening step (recommended)
  - 5.3 Data management plan (optional)
  - 5.4 Resource Use and Emissions Profile Data
    - 5.4.1 Raw Material Acquisition and Pre-processing (Cradle-to- Gate)
    - 5.4.2 Capital goods
    - 5.4.3 Production
    - 5.4.4 Product Distribution and Storage
    - 5.4.5 Use stage
    - 5.4.6 Modelling logistics for the analysed product
    - 5.4.7 End-of-Life
    - 5.4.8 Accounting for Electricity Use (including Use of Renewable Energy)
    - 5.4.9 Additional considerations for compiling the resource use and emissions profile
  - 5.5 Nomenclature for the Resource Use and Emissions Profile
  - 5.6 Data quality requirements
  - 5.7 Specific data collection
  - 5.8 Generic data collection
  - 5.9 Dealing with remaining unit process data gaps / missing data
  - 5.10 Handling multi-functional processes
  - 5.11 Data gathering related to the next methodological phases in a PEF study
- 6. Environmental Footprint Impact Assessment
  - 6.1 Mandatory Steps: Classification and Characterisation
    - 6.1.1 Classification of Product Environmental Footprint Flows
    - 6.1.2 Characterisation of Environmental Footprint Flows
  - 6.2 Optional Steps: Normalisation and Weighting
    - 6.2.1 Normalisation of Environmental Footprint Impact Assessment Results
    - 6.2.2 Weighting of Environmental Footprint Impact Assessment Results
- 7. Interpretation of Product Environmental Footprint results
  - 7.1 General
  - 7.2 Assessment of the robustness of the Product Environmental Footprint model
  - 7.3 Identification of Hotspots
  - 7.4 Estimation of Uncertainty

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  - 6.1 Mandatory Steps: Classification and Characterisation
    - 6.1.1 Classification of Product Environmental Footprint Flows
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  - 6.2 Optional Steps: Normalisation and Weighting
    - 6.2.1 Normalisation of Environmental Footprint Impact Assessment Results
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- 7. Interpretation of Product Environmental Footprint results
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  - 7.2 Assessment of the robustness of the Product Environmental Footprint model
  - 7.3 Identification of Hotspots
  - 7.4 Estimation of Uncertainty
  - 7.5 Conclusions, Recommendations and Limitations
- 8. Product Environmental Footprint Reports
  - 8.1 General
  - 8.2 Reporting elements
    - 8.2.1 First element: Summary
    - 8.2.2 Second element: Main Report
    - 8.2.3 Third element: Annex
    - 8.2.4 Fourth element: Confidential Report
- 9. Product Environmental Footprint Critical Review
  - 9.1 General
  - 9.2 Review Type
  - 9.3 Reviewer Qualification
- 10. Acronyms and Abbreviations
- 11. Glossary
- 12. References
- Annex I: Summary of Key Mandatory Requirements for Product Environmental Footprint and for Developing
- Annex II: Data Management Plan (adapted from GHG Protocol Initiative )
- Annex III: Data collection checklist
- Annex IV: Identifying Appropriate Nomenclature and Properties for Specific Flows
  - Raw material, Input: Crude oil (Rules 2, 4, 5)
  - Emission, output: Example: Carbon Dioxide (Rules 2, 4, 9)
  - Product flow: Example: T-shirt (Rules 10-17)
- Annex V: Dealing with Multi-functionality in Recycling Situations
- Annex VI: Guidance on the calculation of Direct Land Use Change emissions relevant for climate change
- Annex VII: Example for a PEFCRs for intermediate paper products - Data quality requirements
- Annex VIII: Mapping of terminology used in this PEF Guide with ISO terminology
- Annex IX: PEF Guide and ILCD Handbook: major deviations
- Annex X: Comparison of the key requirements of the PEF Guide with other methods

# Guidelines for simplification

## Rule 1: Precisely describe what you want to do

„Goal and scope of the approach“

- Questions to be answered;
- Related solutions existing already (i.e., other established approaches, or the approach that you want to simplify)
- Product types, „other things“ that will be investigated
- Addressees of the answers (B2B, NGOs, policy, ...)
- Who is performing the footprint
- How is the approach involved in other activities (of yourself, of other parties)
- Time and effort foreseen per analysis

# Guidelines for simplification

**Rule 2: Take other existing approaches and solutions as far as possible**

„Standing on the shoulders of giants“

- Even applying always 14 indicators and a unified approach can lead to an overall simplification (→ „economies of scale“).
- Establishing an own method really requires effort and stamina
- Especially critical: Indicator sets, „metrics“, since they require exchange and communication

## Guidelines for simplification

**Rule 3: Make it as simple as possible, but don't simplify further. Avoid model jargon and model artefacts**

This seems obvious, but is often violated.

## Simplification rule 3: [...] avoid model artefacts

### Instructional example, ecoinvent 3:

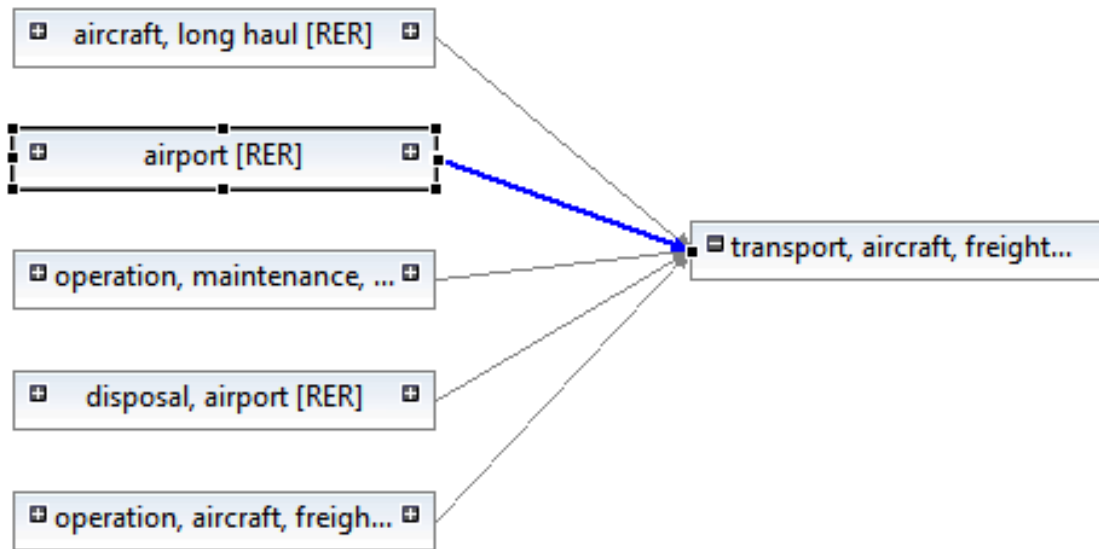
Idea: Market modeling.

All products are not directly delivered by a production process, but the production process delivers to a market, which in turn delivers to other processes

→ this allows a more flexible connection of processes.



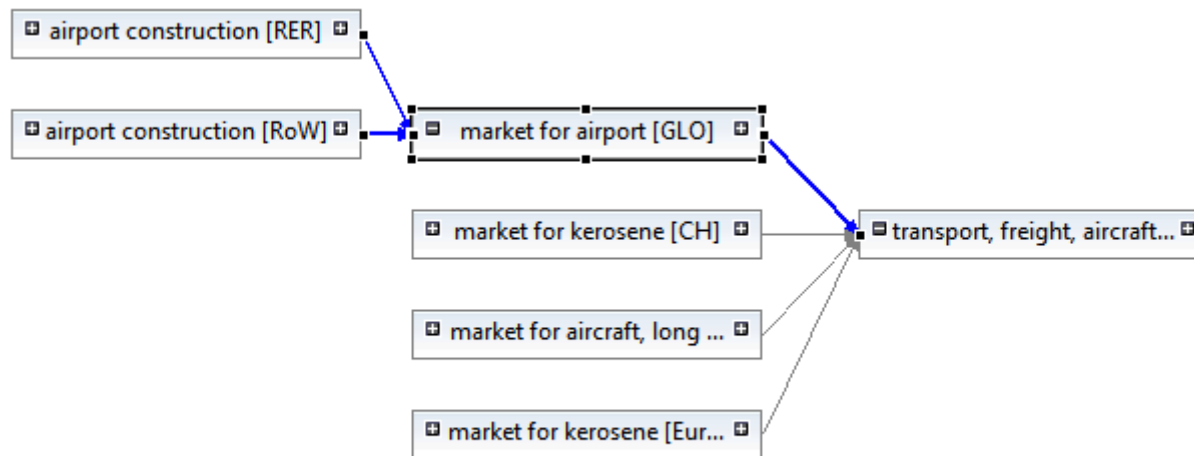
## Simplification rule 3: [...] avoid model artefacts



Ecoinvent 2.2, airport is used as infrastructure input for airfreight transport

(screenshot from openLCA, [www.openlca.org](http://www.openlca.org))

## Simplification rule 3: [...] avoid model artefacts



Ecoinvent 3, airport is used as input into „market for airport“, which is used as input for airfreight transport (screenshot from openLCA, [www.openlca.org](http://www.openlca.org))

# Simplification rule 3: [...] avoid model artefacts

## Process: market for airport

### Inputs

  1.23

Flow	Category	Flow prop...	Unit	Amount	Uncertainty	Default pr...	Pedigree u...
⚙️ airport - RER	4210:Constructio...	Number o...	Item(s)	0.2678767...	none	airport co...	
⚙️ airport - RoW	4210:Constructio...	Number o...	Item(s)	0.7321232...	none	airport co...	

### Outputs

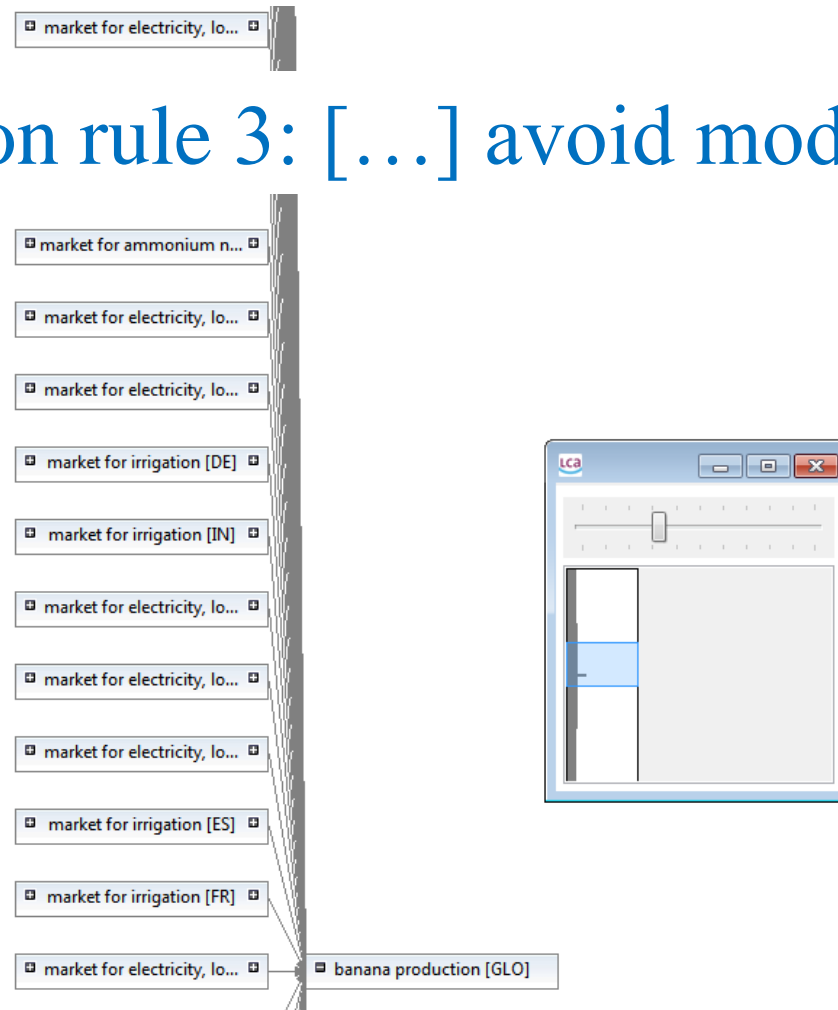
  1.23

Flow	Category	Flow prop...	Unit	Amount	Uncertainty	Avoided pr...	Pedigree u...
⚙️ airport - GLO	4210:Constructio...	Number o...	Item(s)	1.0	none		

Ecoinvent 3, market for airport, details

(screenshot from openLCA, [www.openlca.org](http://www.openlca.org))

## Simplification rule 3: [...] avoid model artefacts



Ecoinvent 3, banana production, global → > 100 market inputs, including irrigation market Germany (screenshot from openLCA, [www.openlca.org](http://www.openlca.org))

# Simplification rule 3: [...] avoid model artefacts

Inputs 1/21

Flow	Category	Flow property	Unit	Amount	Uncertainty	Default provider	Pedigree uncertainty
ammonium nitrate, as N - GLO	2012:Manufacture of fertilizers and ...	Mass	kg	0.00682	lognormal: gmean=6.82E-3 gsigma...	market for ammoniu...	
electricity, low voltage - ASCC	3510:Electric power generation, tran...	Energy	kWh	5.20722103663224E-6	lognormal: gmean=5.21E-6 gsigma...	market for electricity, l...	
electricity, low voltage - AT	3510:Electric power generation, tran...	Energy	kWh	4.76097681768024E-5	lognormal: gmean=4.76E-5 gsigma...	market for electricity, l...	
electricity, low voltage - AU	3510:Electric power generation, tran...	Energy	kWh	1.75438080011033E-4	lognormal: gmean=1.75E-4 gsigma...	market for electricity, l...	
electricity, low voltage - BA	3510:Electric power generation, tran...	Energy	kWh	6.61814031165116E-6	lognormal: gmean=6.62E-6 gsigma...	market for electricity, l...	
electricity, low voltage - BE	3510:Electric power generation, tran...	Energy	kWh	6.69070826791834E-5	lognormal: gmean=6.69E-5 gsigma...	market for electricity, l...	
electricity, low voltage - BG	3510:Electric power generation, tran...	Energy	kWh	2.41901145878967E-5	lognormal: gmean=2.42E-5 gsigma...	market for electricity, l...	
electricity, low voltage - BR	3510:Electric power generation, tran...	Energy	kWh	3.35405058997836E-4	lognormal: gmean=3.35E-4 gsigma...	market for electricity, l...	
electricity, low voltage - CA-AB	3510:Electric power generation, tran...	Energy	kWh	2.471072457083E-5	lognormal: gmean=2.47E-5 gsigma...	market for electricity, l...	
electricity, low voltage - CA-BC	3510:Electric power generation, tran...	Energy	kWh	5.45543982648933E-5	lognormal: gmean=5.46E-5 gsigma...	market for electricity, l...	
electricity, low voltage - CA-MB	3510:Electric power generation, tran...	Energy	kWh	3.16343626122342E-5	lognormal: gmean=3.16E-5 gsigma...	market for electricity, l...	
electricity, low voltage - CA-NB	3510:Electric power generation, tran...	Energy	kWh	1.8503109825568E-5	lognormal: gmean=1.85E-5 gsigma...	market for electricity, l...	
electricity, low voltage - CA-NF	3510:Electric power generation, tran...	Energy	kWh	3.72449454768247E-5	lognormal: gmean=3.72E-5 gsigma...	market for electricity, l...	
electricity, low voltage - CA-NS	3510:Electric power generation, tran...	Energy	kWh	2.26812227302949E-5	lognormal: gmean=2.27E-5 gsigma...	market for electricity, l...	
electricity, low voltage - CA-NT	3510:Electric power generation, tran...	Energy	kWh	3.48584144437091E-7	lognormal: gmean=3.49E-7 gsigma...	market for electricity, l...	
electricity, low voltage - CA-NU	3510:Electric power generation, tran...	Energy	kWh	1.45639828112804E-7	lognormal: gmean=1.46E-7 gsigma...	market for electricity, l...	
electricity, low voltage - CA-ON	3510:Electric power generation, tran...	Energy	kWh	1.373180342047E-4	lognormal: gmean=1.37E-4 gsigma...	market for electricity, l...	
electricity, low voltage - CA-PE	3510:Electric power generation, tran...	Energy	kWh	4.31249438044228E-8	lognormal: gmean=4.31E-8 gsigma...	market for electricity, l...	
electricity, low voltage - CA-SK	3510:Electric power generation, tran...	Energy	kWh	9.40680395991667E-6	lognormal: gmean=9.41E-6 gsigma...	market for electricity, l...	
electricity, low voltage - CA-YK	3510:Electric power generation, tran...	Energy	kWh	3.33062365311172E-7	lognormal: gmean=3.33E-7 gsigma...	market for electricity, l...	
electricity, low voltage - CH	3510:Electric power generation, tran...	Energy	kWh	4.54266052185716E-5	lognormal: gmean=4.54E-5 gsigma...	market for electricity, l...	
electricity, low voltage - CL	3510:Electric power generation, tran...	Energy	kWh	4.27934873542696E-5	lognormal: gmean=4.28E-5 gsigma...	market for electricity, l...	
electricity, low voltage - CN	3510:Electric power generation, tran...	Energy	kWh	0.00233614551384779	lognormal: gmean=2.34E-3 gsigma...	market for electricity, l...	
electricity, low voltage - CZ	3510:Electric power generation, tran...	Energy	kWh	4.75068232668793E-5	lognormal: gmean=4.75E-5 gsigma...	market for electricity, l...	
electricity, low voltage - DE	3510:Electric power generation, tran...	Energy	kWh	4.21846757455138E-4	lognormal: gmean=4.22E-4 gsigma...	market for electricity, l...	
electricity, low voltage - DK	3510:Electric power generation, tran...	Energy	kWh	2.68961628139909E-5	lognormal: gmean=2.69E-5 gsigma...	market for electricity, l...	
electricity, low voltage - ES	3510:Electric power generation, tran...	Energy	kWh	2.12059736743727E-4	lognormal: gmean=2.12E-4 gsigma...	market for electricity, l...	
electricity, low voltage - FI	3510:Electric power generation, tran...	Energy	kWh	6.49730911353692E-5	lognormal: gmean=6.50E-5 gsigma...	market for electricity, l...	
electricity, low voltage - FR	3510:Electric power generation, tran...	Energy	kWh	3.62592615760253E-4	lognormal: gmean=3.63E-4 gsigma...	market for electricity, l...	
electricity, low voltage - FRCC	3510:Electric power generation, tran...	Energy	kWh	1.59532899887423E-4	lognormal: gmean=1.60E-4 gsigma...	market for electricity, l...	
electricity, low voltage - GB	3510:Electric power generation, tran...	Energy	kWh	2.75880175199292E-4	lognormal: gmean=2.76E-4 gsigma...	market for electricity, l...	
electricity, low voltage - GR	3510:Electric power generation, tran...	Energy	kWh	4.63135525137179E-5	lognormal: gmean=4.63E-5 gsigma...	market for electricity, l...	
electricity, low voltage - HICC	3510:Electric power generation, tran...	Energy	kWh	8.25166072172749E-6	lognormal: gmean=8.25E-6 gsigma...	market for electricity, l...	
electricity, low voltage - HR	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - HU	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - IE	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - IL	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - IN	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - IT	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - JP	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - KR	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - LT	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - LU	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - LV	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - MC	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - MD	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - ME	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - NL	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - NO	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - NZ	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - PL	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - PT	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - RO	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - RS	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - RU	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - SE	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - SI	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - SK	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - TH	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - TR	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - UA	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - UK	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - US	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - VE	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - VN	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - YU	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - ZA	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	
electricity, low voltage - ZW	3510:Electric power generation, tran...	Energy	kWh	1.30930308330068E-5	lognormal: gmean=1.31E-5 gsigma...	market for electricity, l...	

Ecoinvent 3, banana production, global → > 100  
electricity inputs, also from Germany, Denmark

(screenshot from openLCA, www.openlca.org)

## Guidelines for simplification

**Rule 4: Select software tools that fit to your approach. Keep them in shape. Analyse and improve the workflow for creating the footprint**

E.g. BASF: Eco-Efficiency Analysis, > 15 years of experience, meanwhile 30 sustainability experts in different teams worldwide;

→ project to move from single-user, stand-alone LCA tool to super-fast web-tool with detailed analysis options, integrated into the companies' LDAP system, with detailed user rights management

(developed by GreenDelta, 2011-2013)

## Guidelines for simplification

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- flexible, open, scalable tools are better than locked, single purpose tools
- And also: standard tools are better than specific tools

## Guidelines for simplification

**Rule 4: Select software tools that fit to your approach. Keep them in shape. Analyse and improve the workflow for creating the footprint**

- flexible, open, scalable tools are better than locked, single purpose tools
- And also: standard tools are better than specific tools
- And further: most standard tools are locked tools that don't scale



## 5 Summary & outlook

## 5 Summary

Simplifying footprint approaches is often discussed and desired, and yet difficult.

I tried to identify four guiding principles for simplification, which are:

- Precisely describe what you want to do
- Take other existing approaches and solutions as far as possible
- Make it as simple as possible, but don't simplify further. Avoid model jargon and model artefacts
- „have an eye“ on software tools and workflow.

## 5 Outlook

- a) Let's hope that in future, software tools, databases, and users are more flexible than today, and better able to deal with different application contexts, and adapt the footprint approaches accordingly.
- b) Probably, a more unified approach will become predominant, which is more complex than carbon footprint today

# GreenDelta

sustainability consulting + software

## Thank you..

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