GreenDelta

sustainability consulting + software

Webinar: What's new in openLCA 1.6

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GreenDelta GmbH

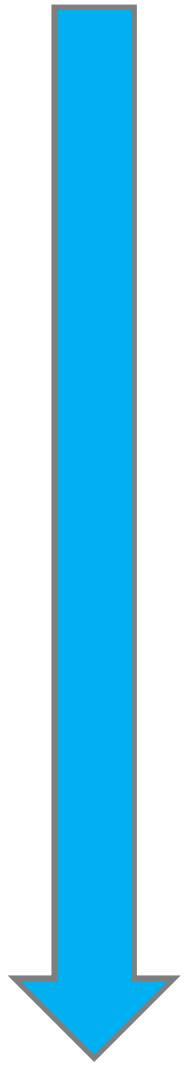
May 8 th, 2017

Content

- GreenDelta and openLCA
- New features in openLCA 1.6
  - Data Quality Systems
  - Collaboration server
  - Update manager
- Other improvements
- Upcoming trainings
- Questions

GreenDelta and openLCA

GreenDelta and openLCA



- v.1.0 2006/2007
- v.1.1 2009
- v.1.2 2011
- v.1.3 2013
- v.1.4 2014
- v.1.5 2016
- **v1.6 2017**

New features in 1.6

Data quality systems

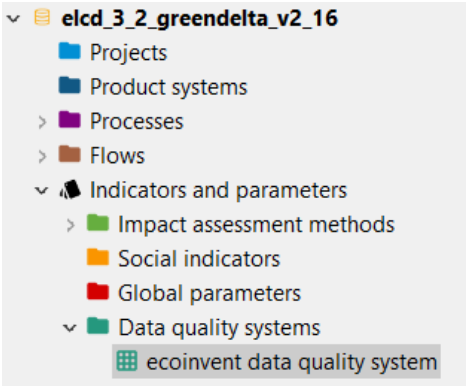
openLCA Data quality

Motivation

- Be able to document and calculate data quality

Solution in openLCA

- New database element: Data Quality System



- The user can create his/her own system for evaluating data quality → flexible (e.g. choose number of indicators)

openLCA Data quality systems

- Ecoinvent „Pedigree matrix“ as exemplary DQ system

ecoinvent data quality system

Data quality system: ecoinvent data quality system

▸ General information

▾ Indicators & Scores

	1	2	3	4	5	Add score
Reliability	Verified data based on measurements	Verified data partly based on assumptions or non-verified data based on measurements	Non-verified data partly based on qualified estimates	Qualified estimate (e.g. by industrial expert)	Non-qualified estimates	Remove indicator
Completeness	Representative data from all sites relevant for the market considered, over and adequate period to even out normal fluctuations	Representative data from > 50% of the sites relevant for the market considered, over an adequate period to even out normal fluctuations	Representative data from only some sites (<< 50%) relevant for the market considered or > 50% of sites but from shorter periods	Representative data from only one site relevant for the market considered or some sites but from shorter periods	Representativeness unknown or data from a small number of sites and from shorter periods	Remove indicator
Temporal correlation	Less than 3 years of difference to the time period of the data set	Less than 6 years of difference to the time period of the data set	Less than 10 years of difference to the time period of the data set	Less than 15 years of difference to the time period of the data set	Age of data unknown or more than 15 years of difference to the time period of the data set	Remove indicator
Geographical correlation	Data from area under study	Average data from larger area in which the area under study is included	Data from area with similar production conditions	Data from area with slightly similar production conditions	Data from unknown or distinctly different area (North America instead of Middle East, OECD-Europe instead of Russia)	Remove indicator
Further technological correlation	Data from enterprises, processes and materials under study	Data from processes and materials under study (i.e. identical technology) but from different enterprises	Data from processes and materials under study but from different technology	Data on related processes or materials	Data on related processes on laboratory scale or from different technology	Remove indicator
Add indicator	Remove score	Remove score	Remove score	Remove score	Remove score	

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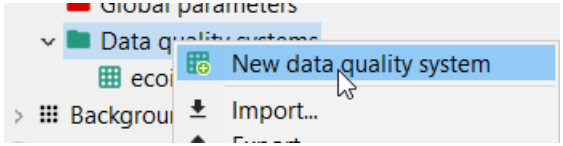
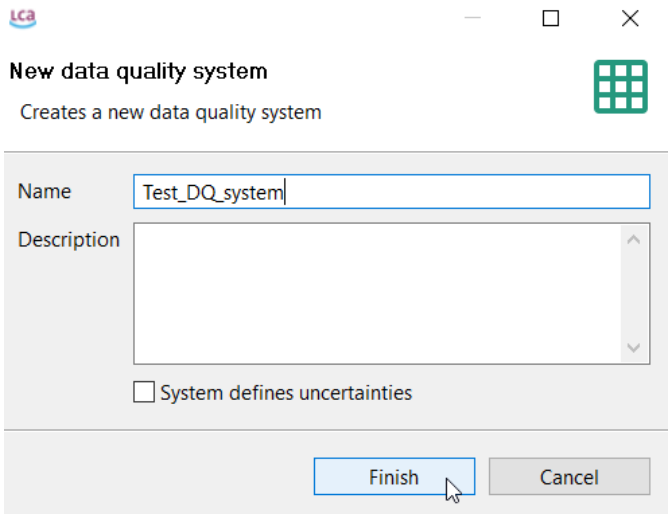
openLCA Data quality systems

- Creating a new DQ system

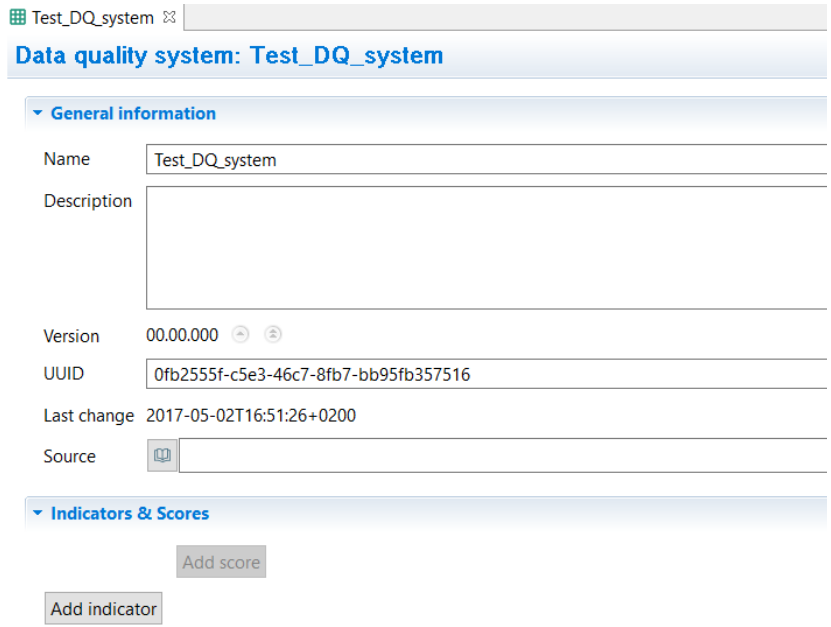
1.



2.



3.



4.

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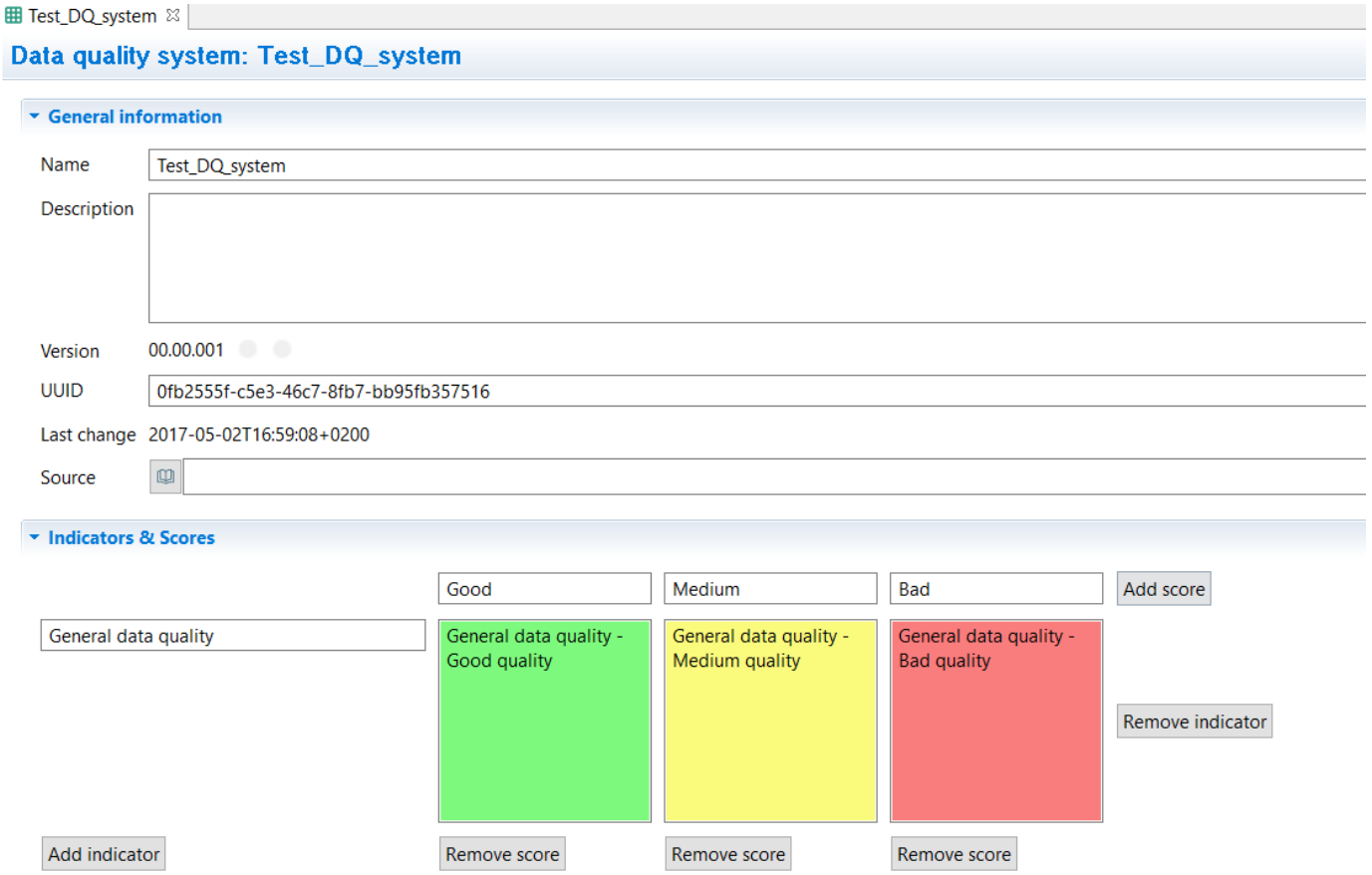
- Defining indicators and scores



openLCA Data quality systems

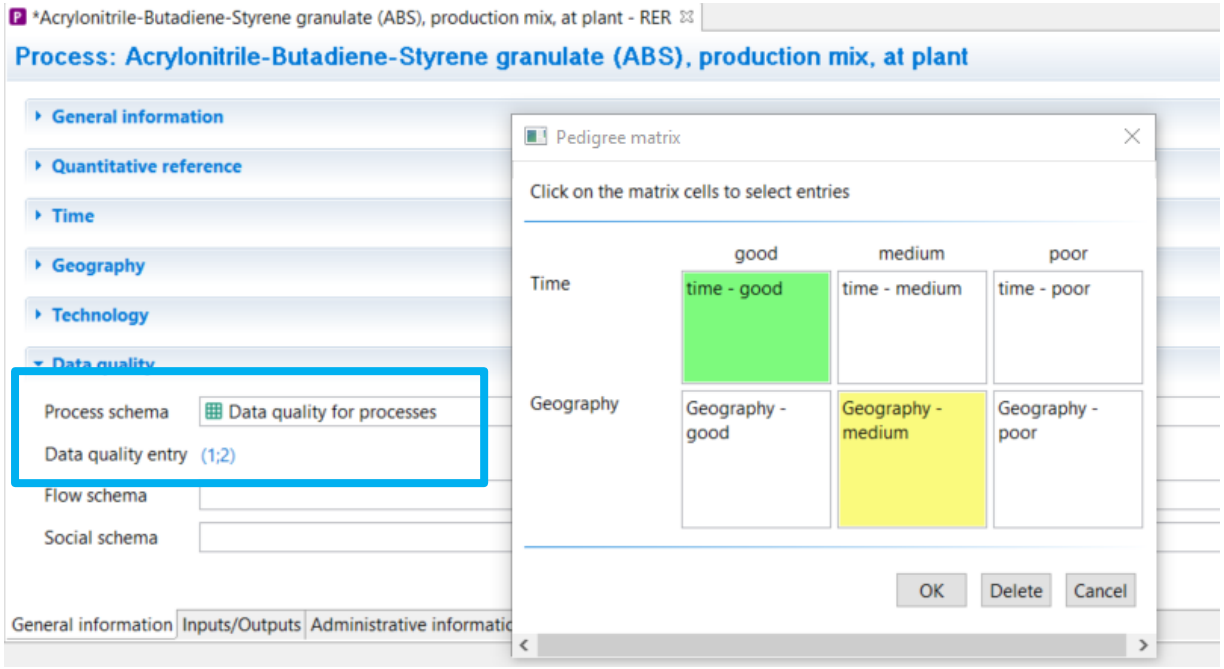
Using a DQ system

- Data quality systems can be used on three levels:
  1. For the general data quality of a process
  2. For the data quality of each exchange in a process
  3. For the data quality of social aspects

openLCA Data quality systems

Using a DQ system

- Data quality systems can be used on three levels:
  1. For the general data quality of a process



Only for documenting data quality !

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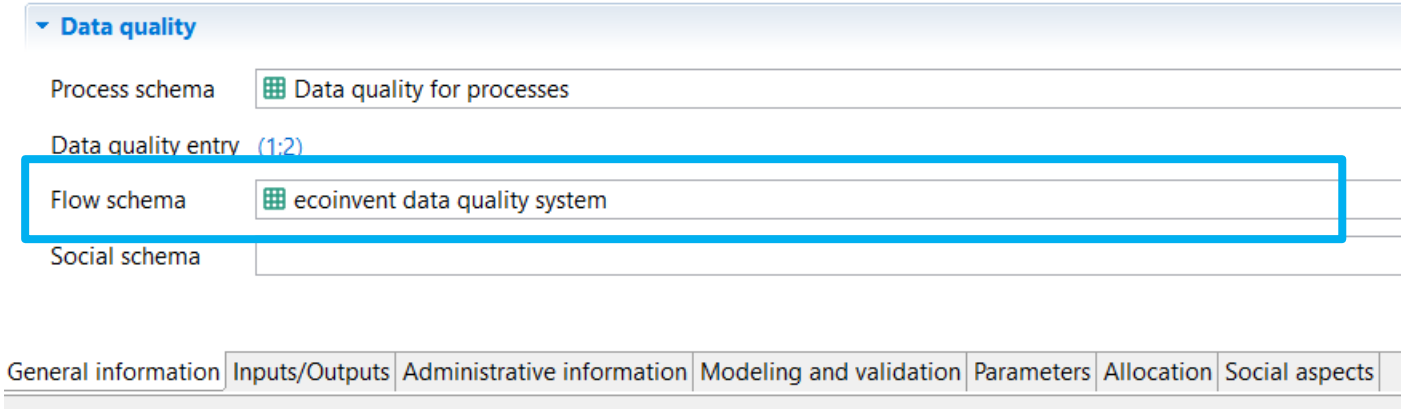
Using a DQ system

- Data quality systems can be used on three levels:
  2. For the data quality of each exchange in a process



openLCA Data quality systems

Using a DQ system

- Data quality systems can be used on three levels:
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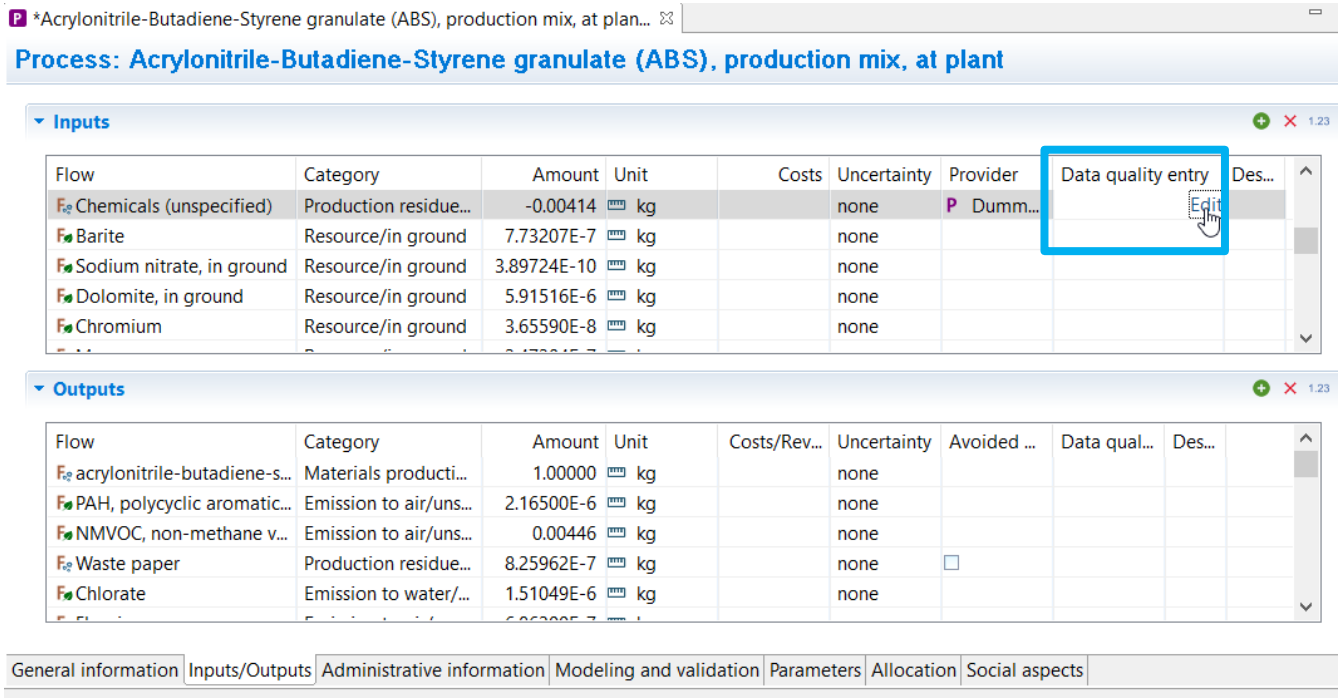

Before: „Pedigree matrix“

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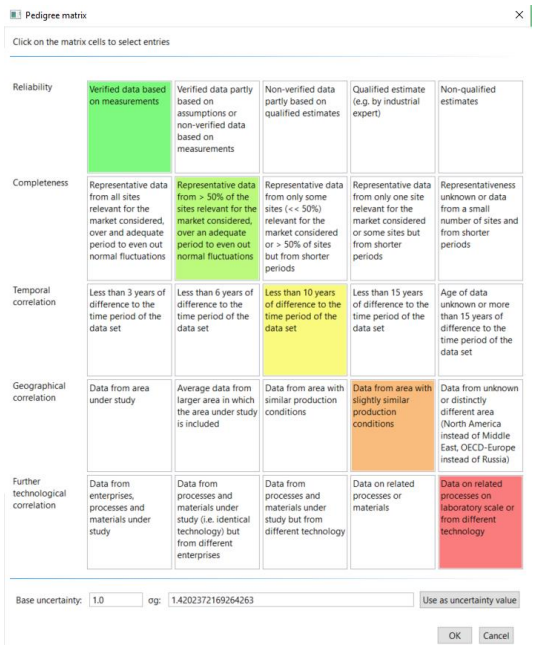
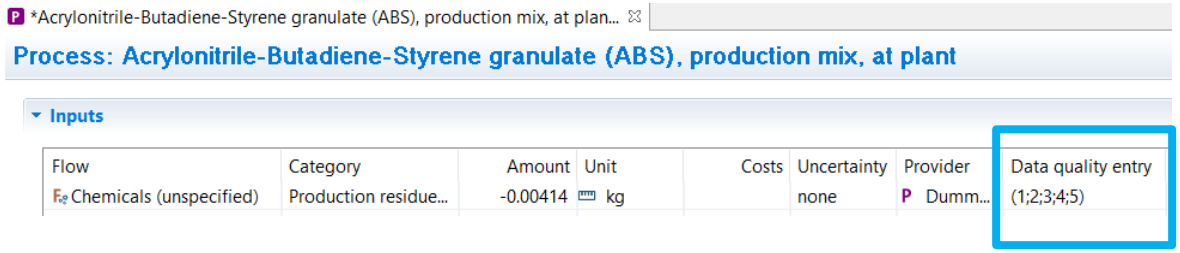
Using a DQ system

- Data quality systems can be used on three levels:
  2. For the data quality of each exchange in a process





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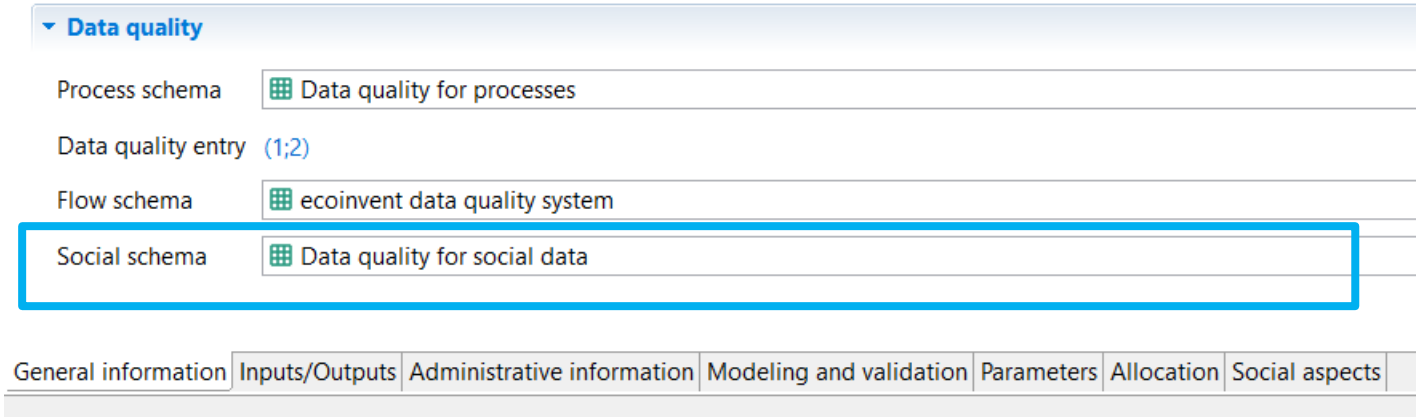
Using a DQ system

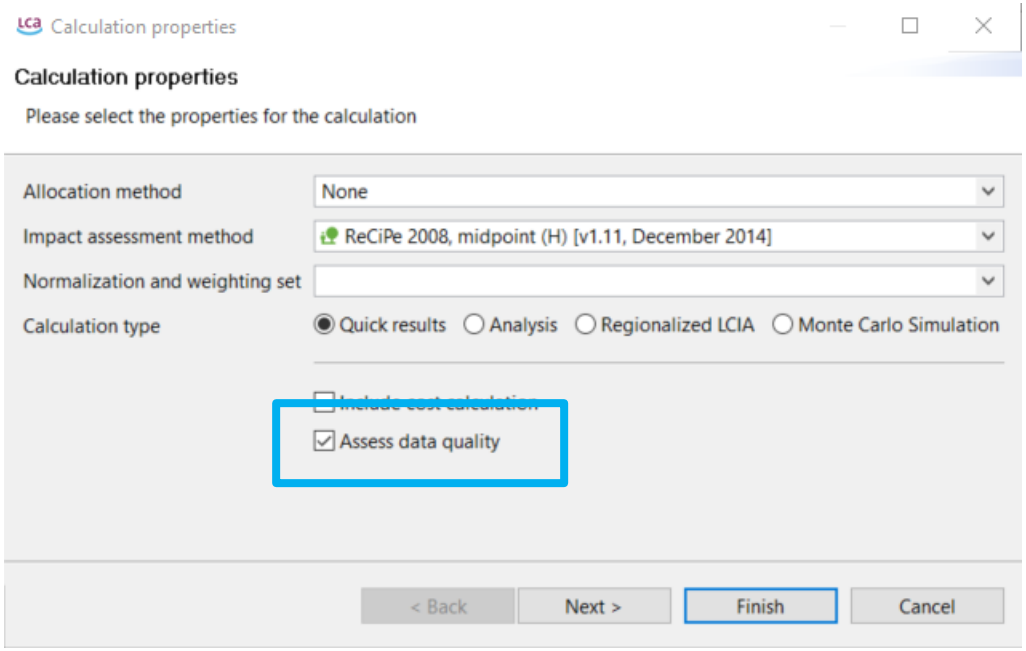
- Data quality systems can be used on three levels:
  3. For the data quality of social aspects



openLCA Data quality systems

Calculation with DQ system

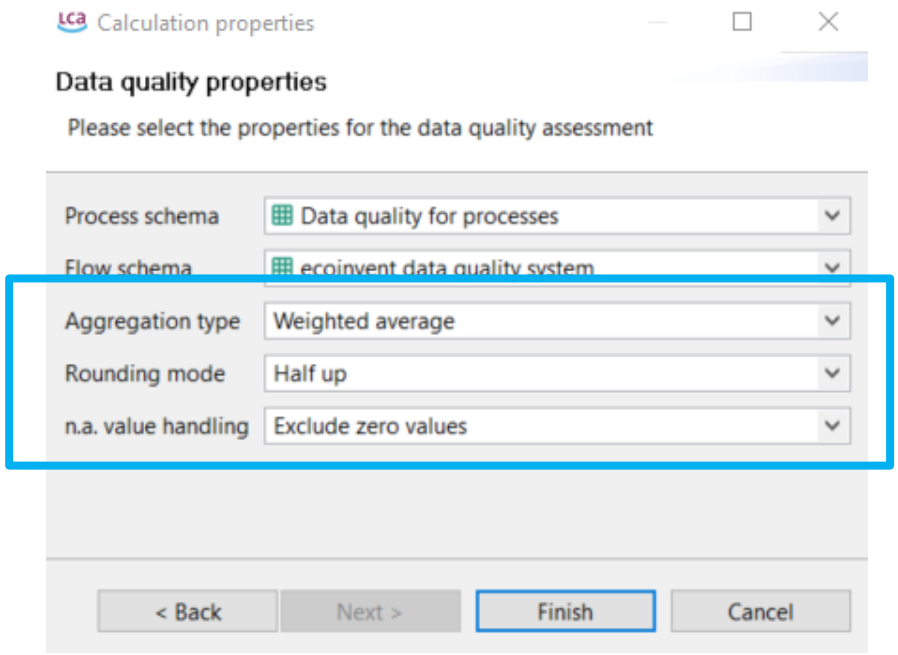
- For the calculation of the data quality of a product system an aggregation needs to be done.



openLCA Data quality systems

Calculation with DQ system

- You are free to select an aggregation method, a rounding method and what to do with exchanges that do not have a data quality value.



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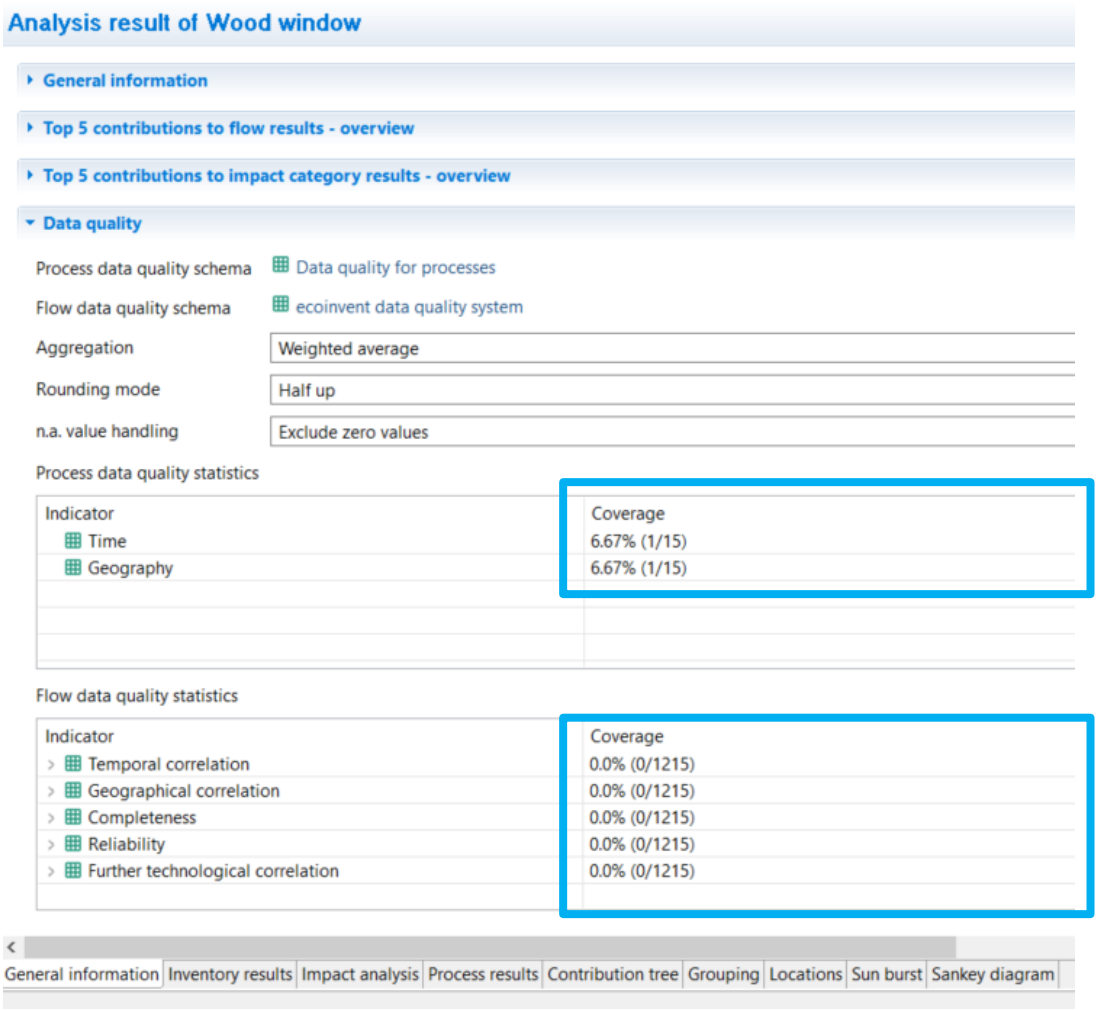
Calculation with DQ system



Number of processes that have process DQ defined

Number of elementary flows that have DQ defined

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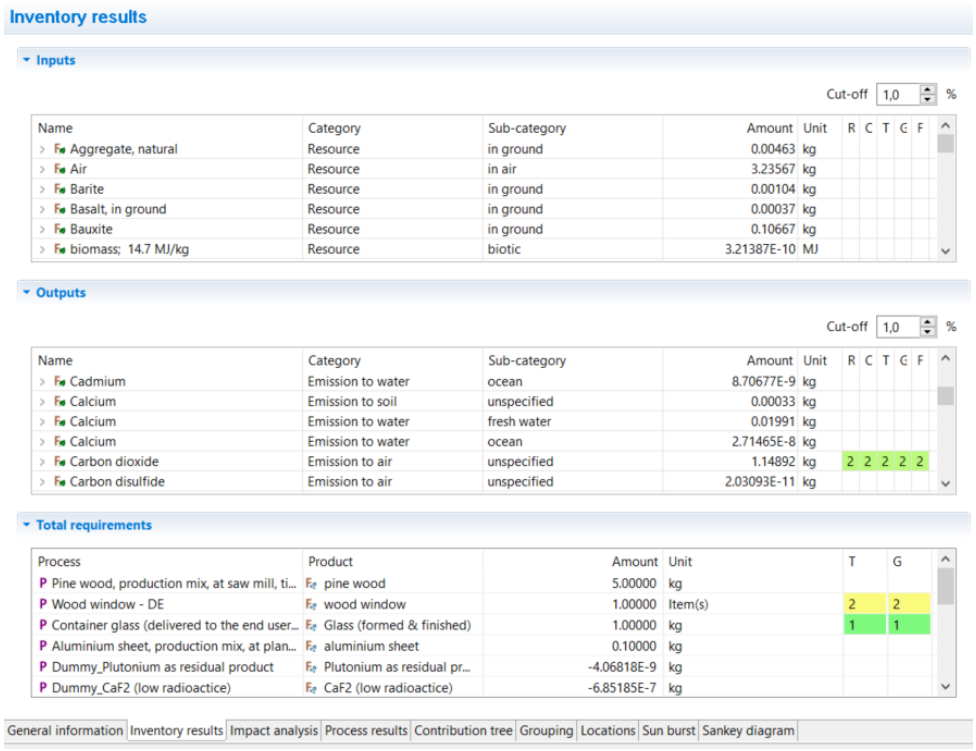
Calculation with DQ system

- The calculated data quality is shown in the **inventory results tab** and the LCIA results/impact analysis



Inventory results

Inputs

Cut-off 1,0 %

Name	Category	Sub-category	Amount	Unit	R	C	T	G	F
Aggregate, natural	Resource	in ground	0.00463	kg					
Air	Resource	in air	3.23567	kg					
Barite	Resource	in ground	0.00104	kg					
Basalt, in ground	Resource	in ground	0.00037	kg					
Bauxite	Resource	in ground	0.10667	kg					
biomass; 14.7 MJ/kg	Resource	biotic	3.21387E-10	MJ					

Outputs

Cut-off 1,0 %

Name	Category	Sub-category	Amount	Unit	R	C	T	G	F
Cadmium	Emission to water	ocean	8.70677E-9	kg					
Calcium	Emission to soil	unspecified	0.00033	kg					
Calcium	Emission to water	fresh water	0.01991	kg					
Calcium	Emission to water	ocean	2.71465E-8	kg					
Carbon dioxide	Emission to air	unspecified	1.14892	kg	2	2	2	2	2
Carbon disulfide	Emission to air	unspecified	2.03093E-11	kg					

Total requirements

Process	Product	Amount	Unit	T	G
Pine wood, production mix, at saw mill, ti...	pine wood	5.00000	kg		
Wood window - DE	wood window	1.00000	Item(s)	2	2
Container glass (delivered to the end user...	Glass (formed & finished)	1.00000	kg	1	1
Aluminium sheet, production mix, at plan...	aluminium sheet	0.10000	kg		
Dummy_Plutonium as residual product	Plutonium as residual pr...	-4.06818E-9	kg		
Dummy_CaF2 (low radioactice)	CaF2 (low radioactice)	-6.85185E-7	kg		

General information | Inventory results | Impact analysis | Process results | Contribution tree | Grouping | Locations | Sun burst | Sankey diagram

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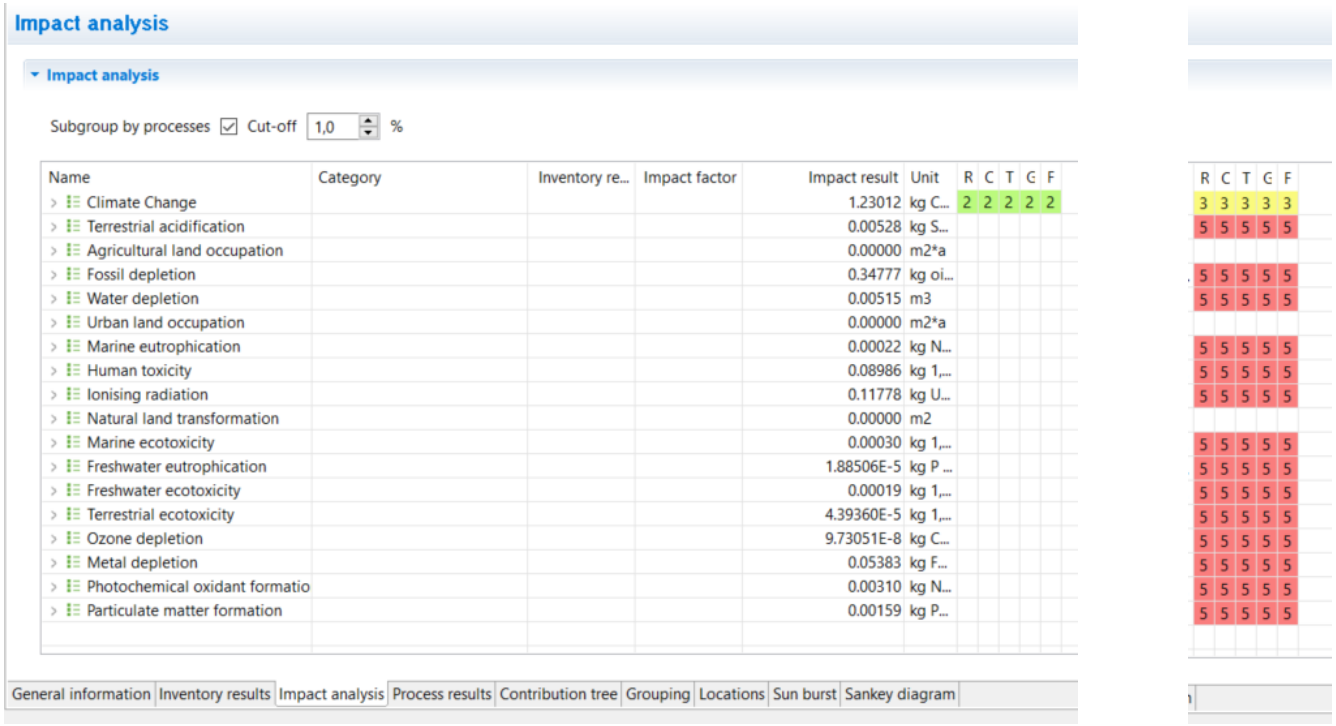
Calculation with DQ system

- The calculated data quality is shown in the inventory results tab and the **LCIA results/impact analysis**



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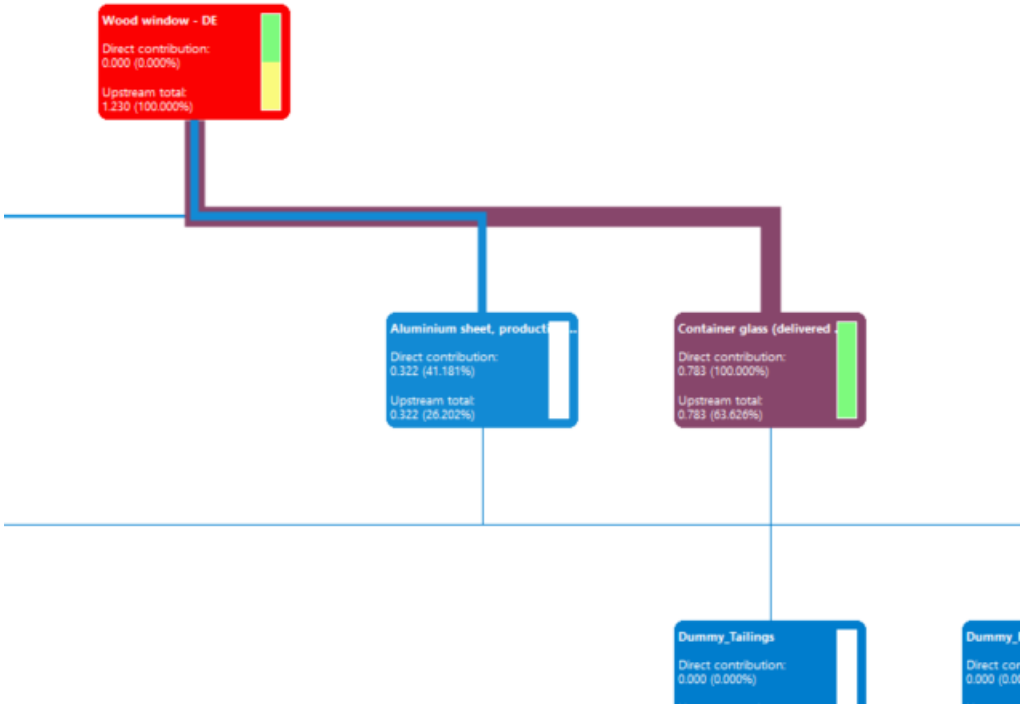
Calculation with DQ system

- The process data quality is shown in the **sankey diagram**



openLCA Data quality systems

Uncertainty data derived from DQ system

- Ecoinvent data quality system („Pedigree matrix“)

ecoinvent data quality system

Data quality system: ecoinvent data quality system

▸ General information

▸ Indicators & Scores

▾ Uncertainties

	1	2	3	4	5
Reliability	1.0	1.05	1.1	1.2	1.5
Completeness	1.0	1.02	1.05	1.1	1.2
Temporal correlation	1.0	1.03	1.1	1.2	1.5
Geographical correlation	1.0	1.01	1.02	1.05	1.1
Further technological correlation	1.0	1.05	1.2	1.5	2.0

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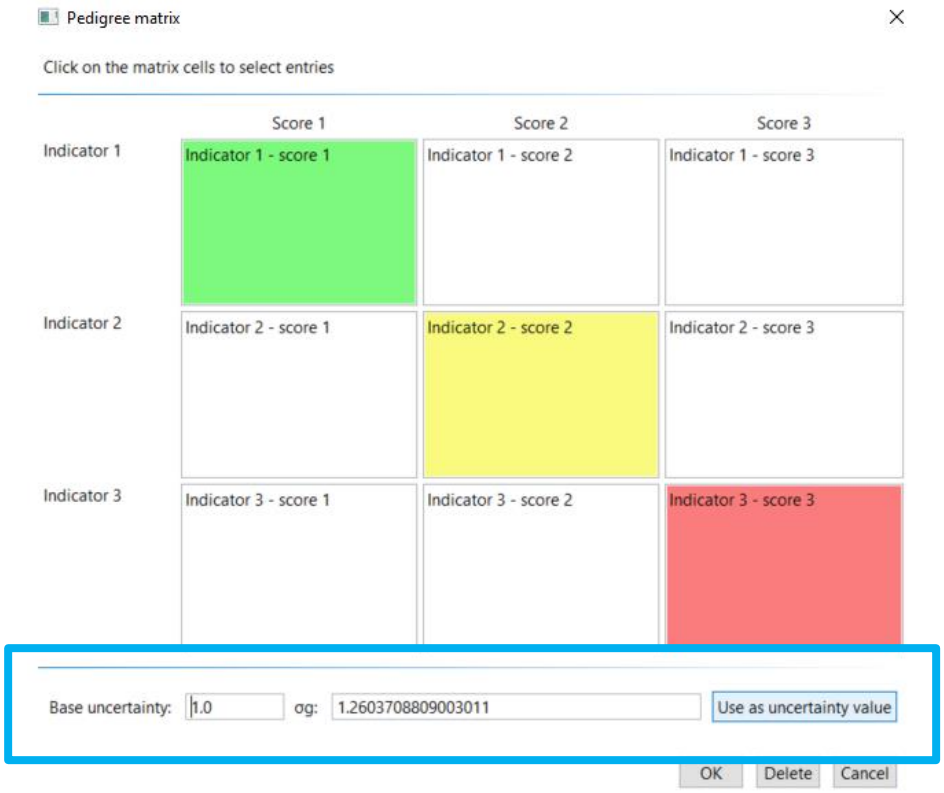
Uncertainty data derived from DQ system

- From the information in the DQ matrix (and the underlying uncertainty facors for each cell), an uncertainty (σg) can be calculated.
- This uncertainty can be applied to the uncertainty column for exchanges



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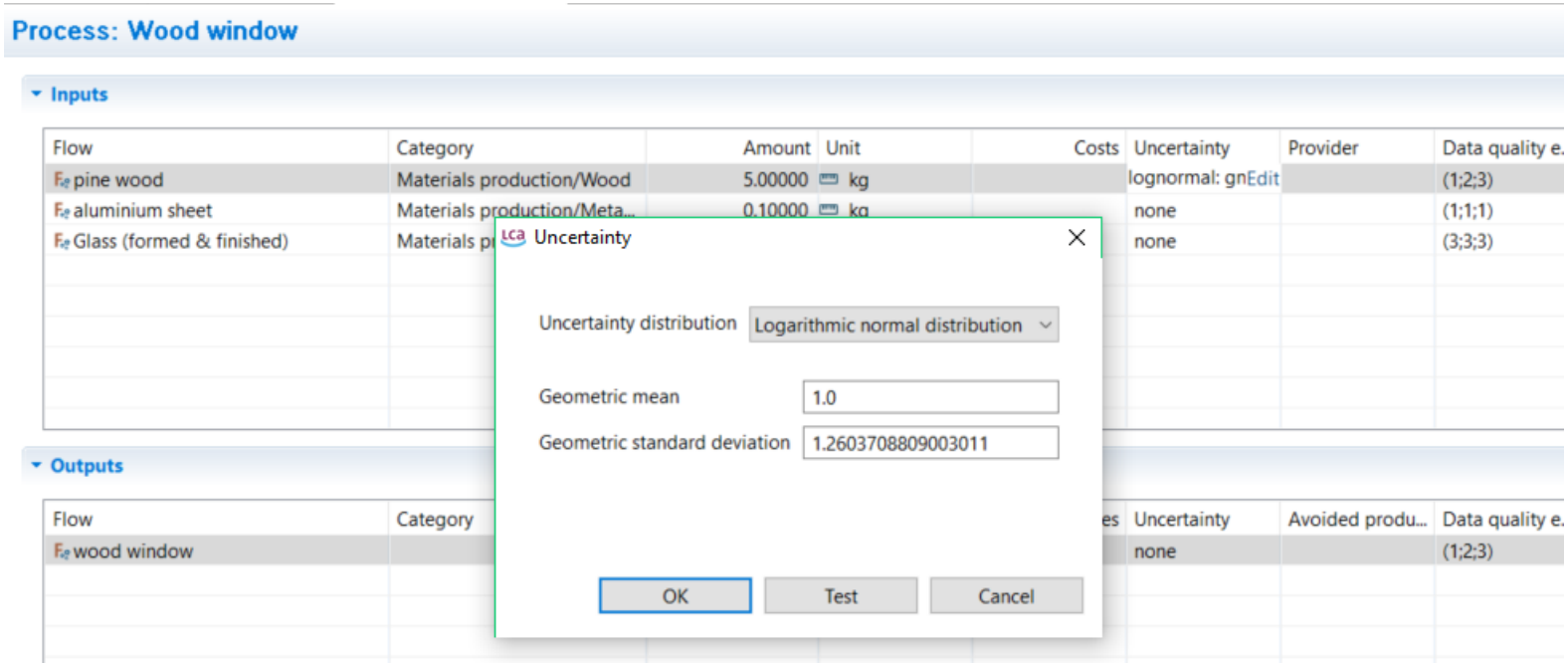
Uncertainty data derived from DQ system

- It then appears in the „Uncertainty“ column



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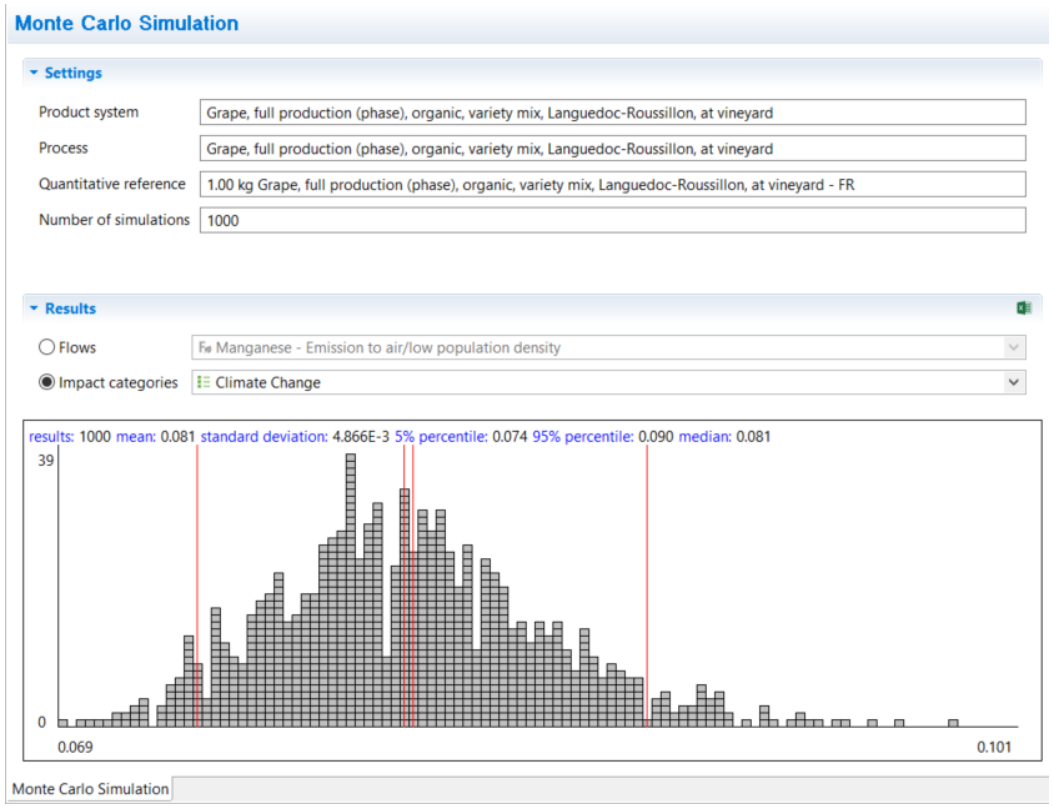
Uncertainty data derived from DQ system

- This uncertainty data can be used for the Monte Carlo simulation



New features in 1.6

Collaboration server

openLCA Collaboration server

Motivation

- Facilitate group work and establish a real multi-user environment
  - Different potentially distributed users should be able to work within the same database
  - Quality assurance (e.g. tracking of changes) is needed

Solution

- openLCA as LCA modeling application
- Web application and server (or several) for storing the repository

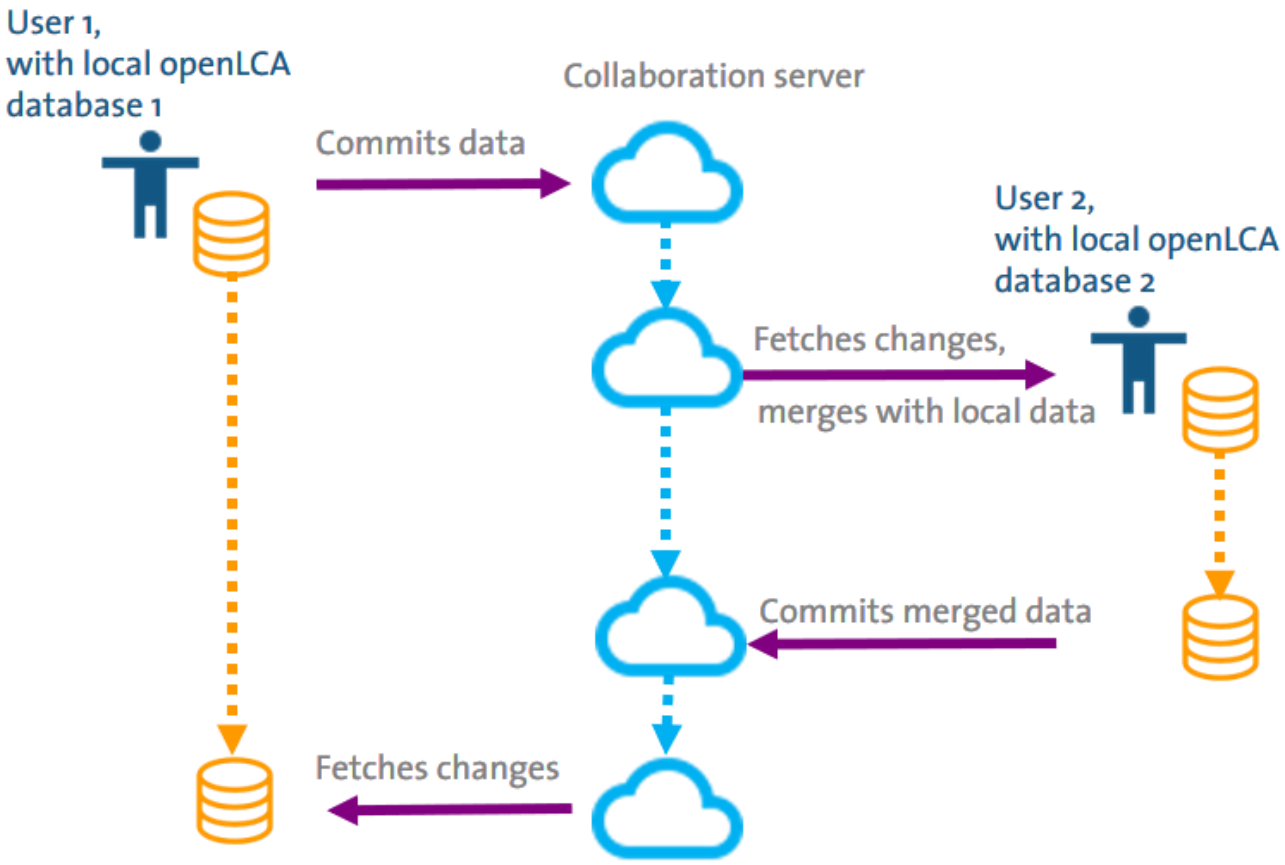
openLCA Collaboration server

Functions

- User rights management system
- All changes are documented
- Versioning allows roll-backs
- A diff tool shows where data differs before accepting changes

openLCA Collaboration server

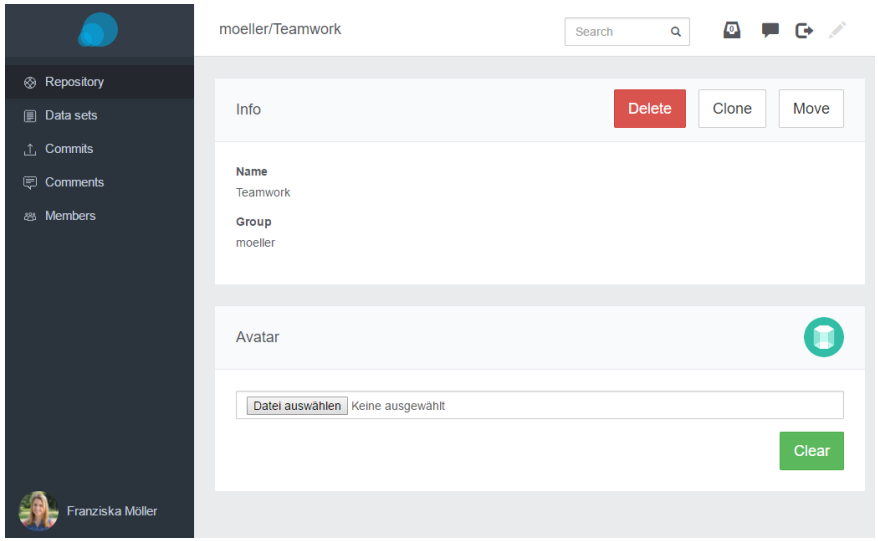
Exemplary use case (distributed workgroup)



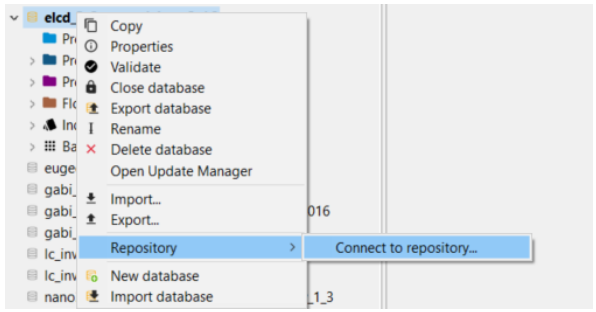
openLCA Collaboration server

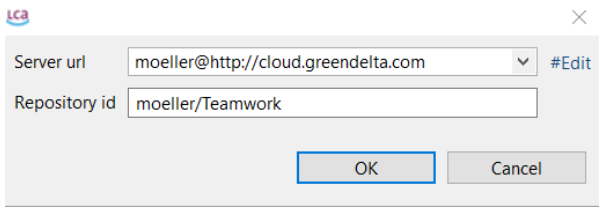
Exemplary use case – work flow

- A repository is created and User 1 and User 2 are members



- User 1 connects local db to repository





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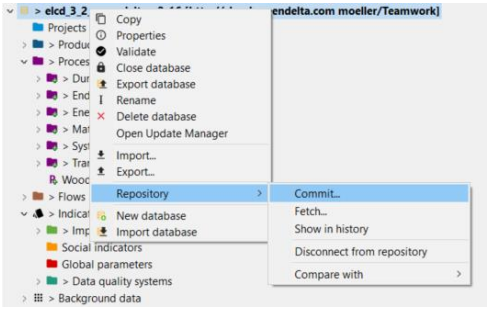
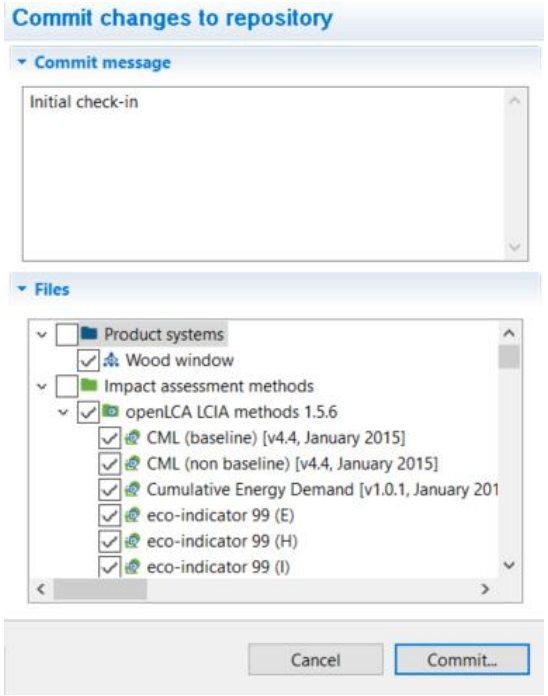
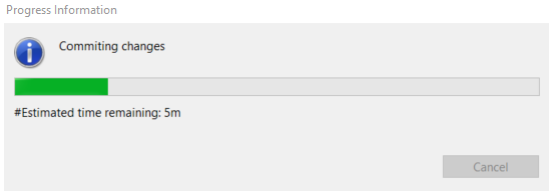
openLCA Collaboration server

Exemplary use case – work flow

- User 1 commits data







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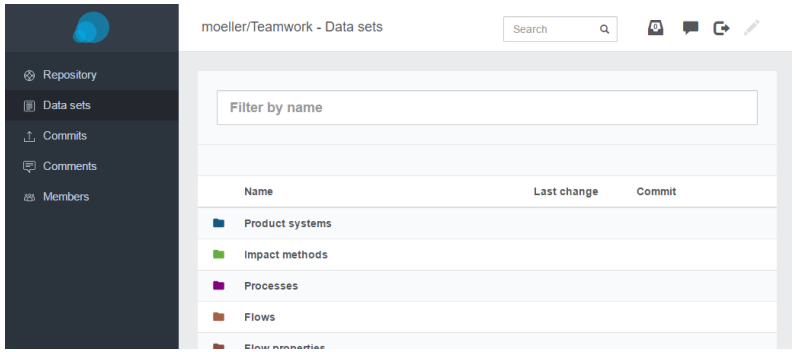
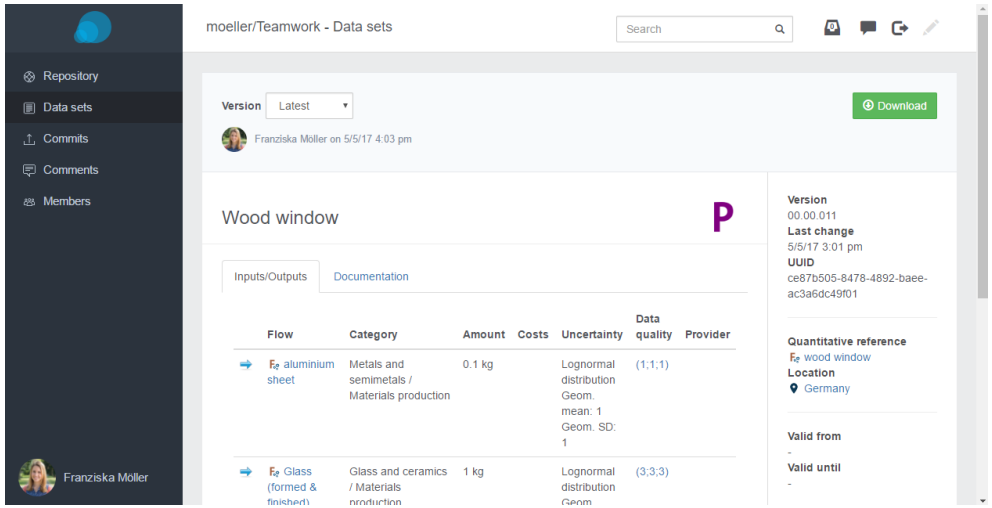
openLCA Collaboration server

Exemplary use case – work flow

- The data appears on the collaboration server





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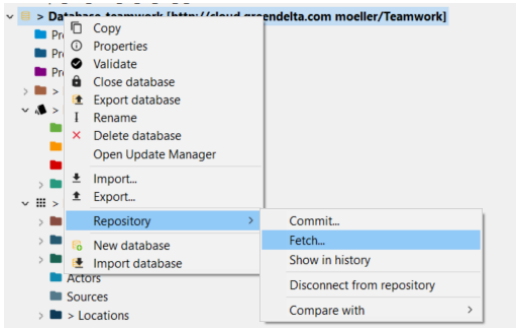
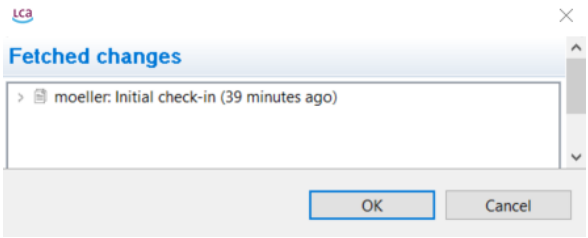
openLCA Collaboration server

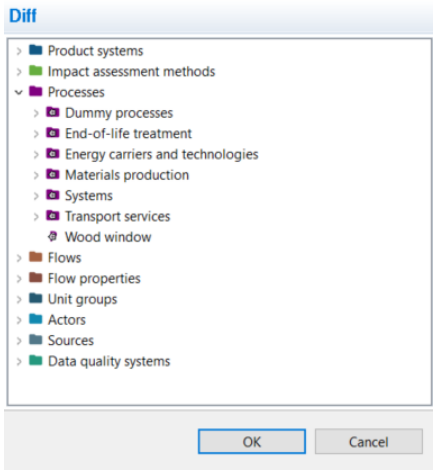
Exemplary use case – work flow

- User 2 connects to the same repository and fetches data





- Summary of differences to local database appears



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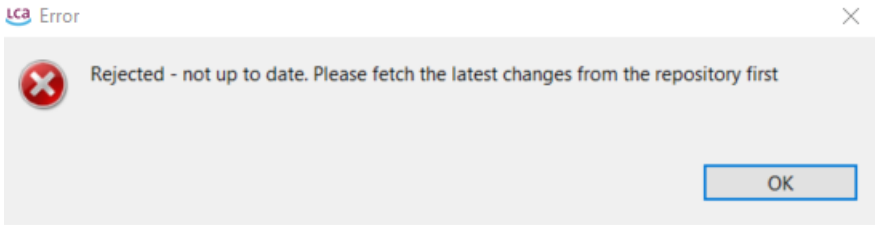
openLCA Collaboration server

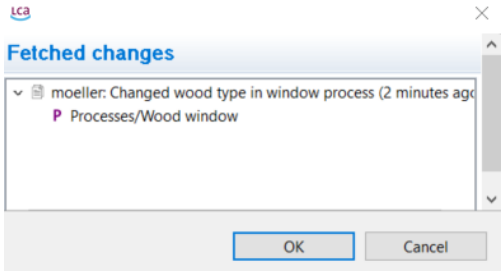
Exemplary use case – work flow

- User 2 makes change in local data and commits again to repository

- User 1 makes change in local data and wants to commit



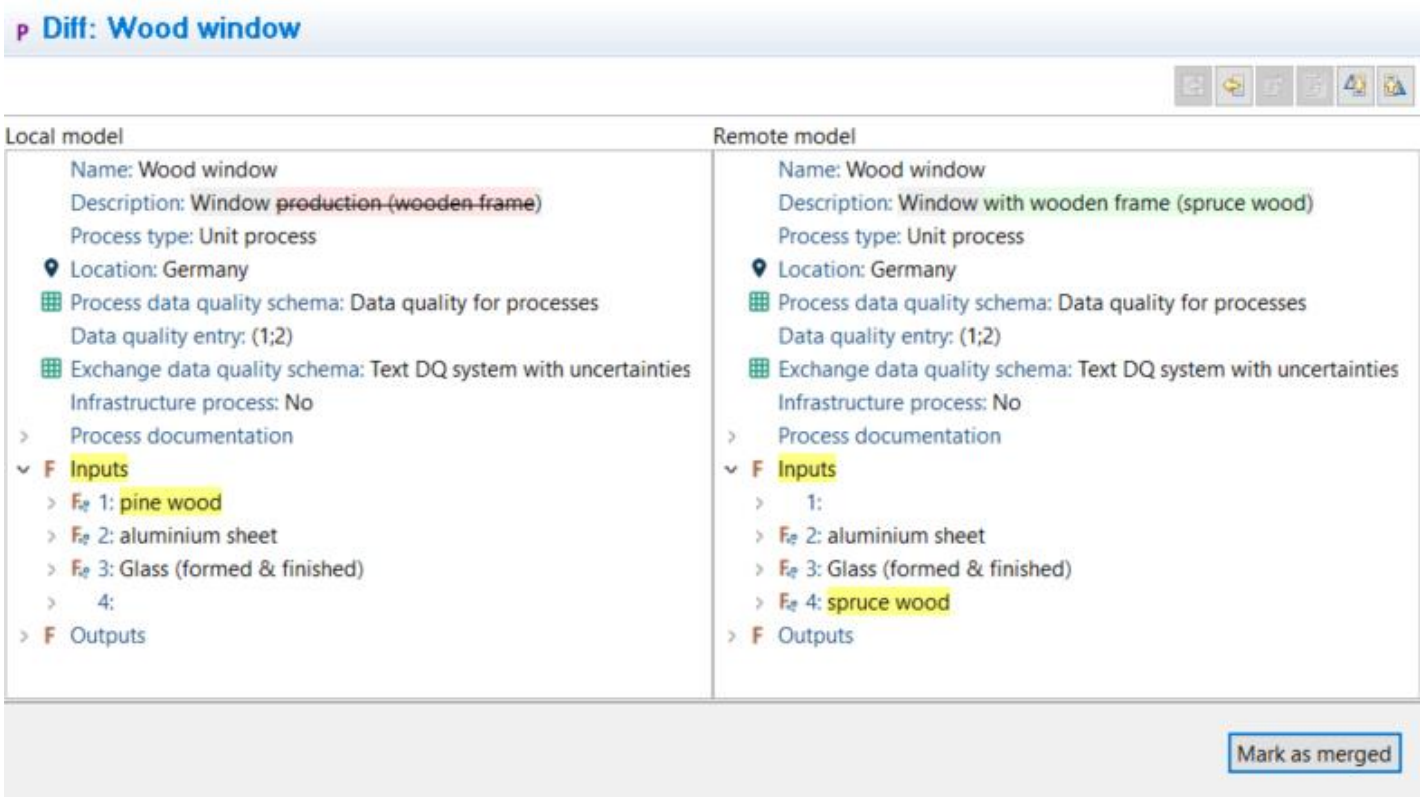
- User 1 fetches changes



openLCA Collaboration server

Exemplary use case – work flow

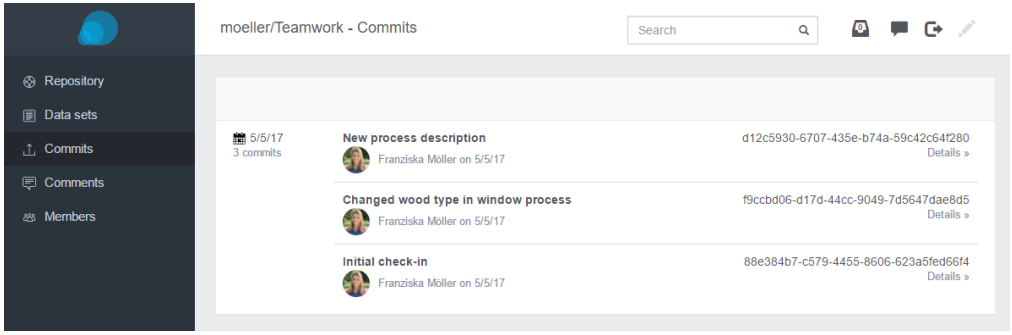
- Diff tool shows the differences in the data



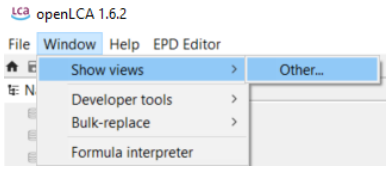
openLCA Collaboration server

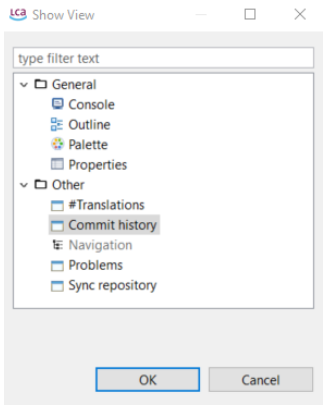
Exemplary use case – work flow

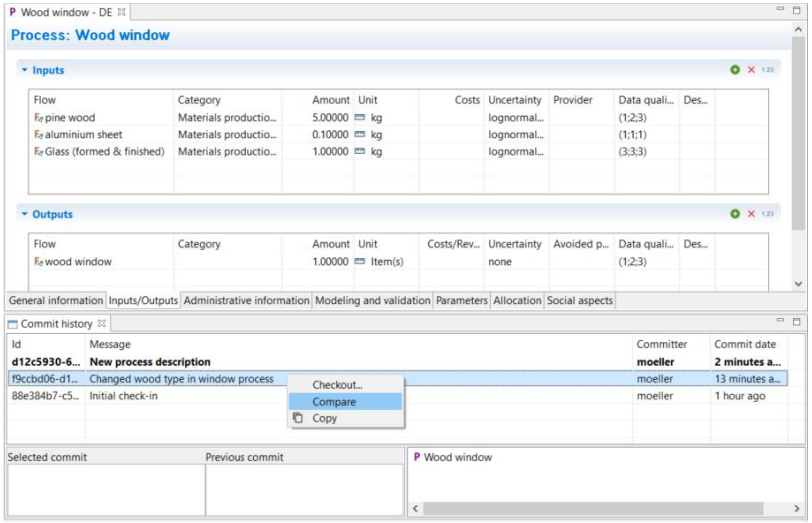
- Commit history in the web app



- Commit history in openLCA





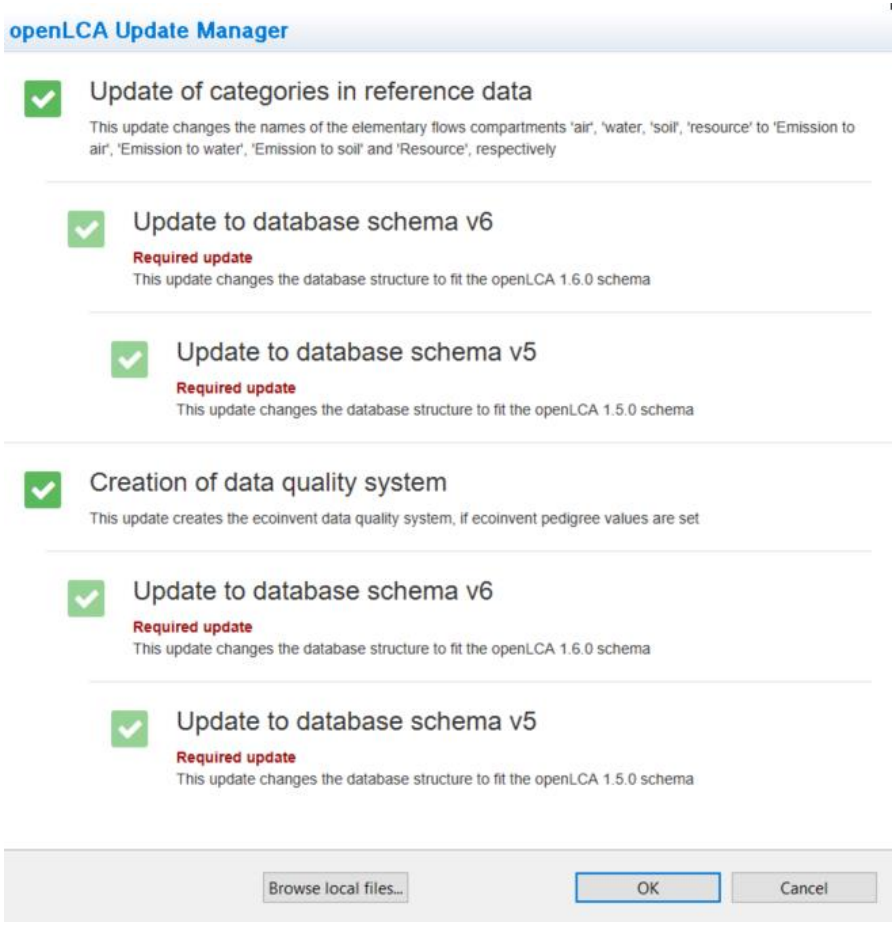


New features in 1.6

Update manager

openLCA Update manager

- When opening a database that is not up-to-date all possible updates are shown



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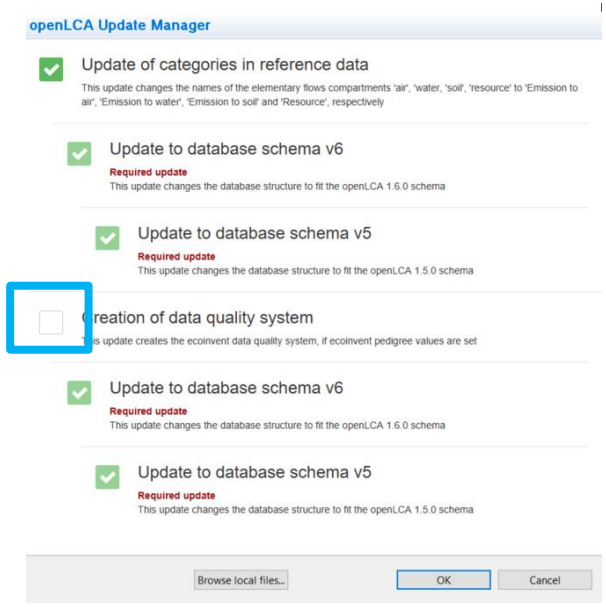
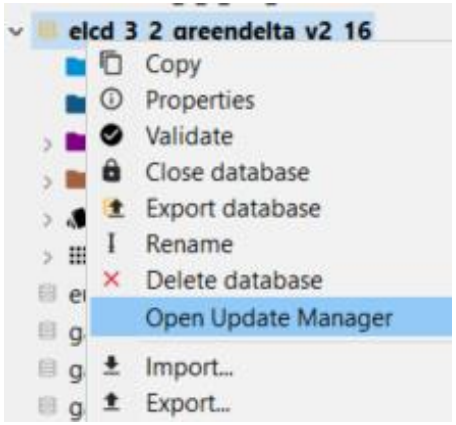
openLCA Update manager

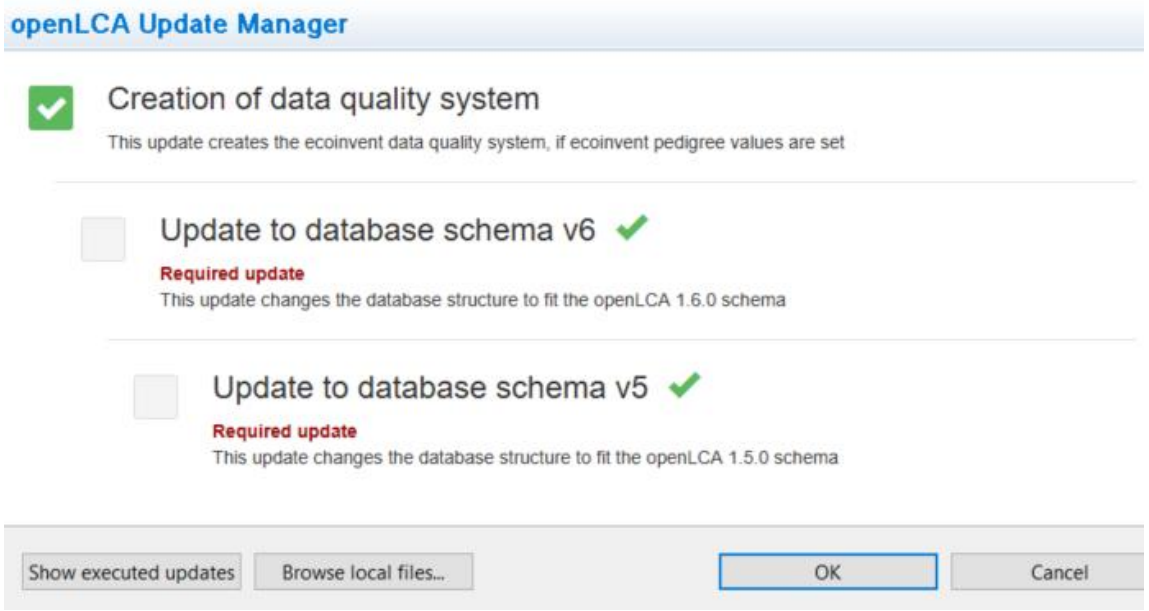
- All updates are checked by default (recommended)
- Required updates have to be installed
- Optional updates can be un-checked and installed later



openLCA Update manager

- Open Update manager from database

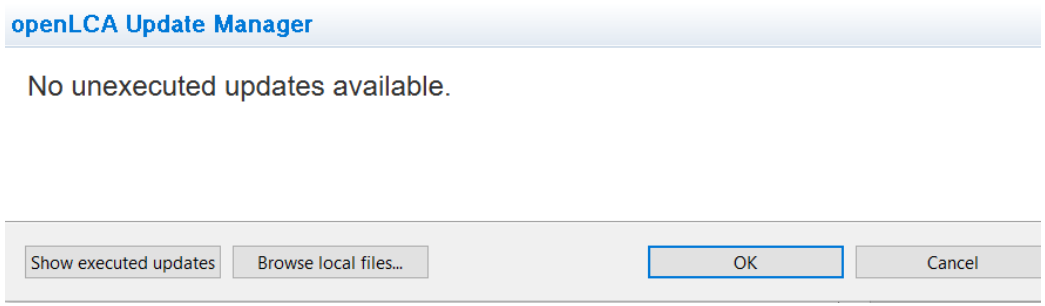




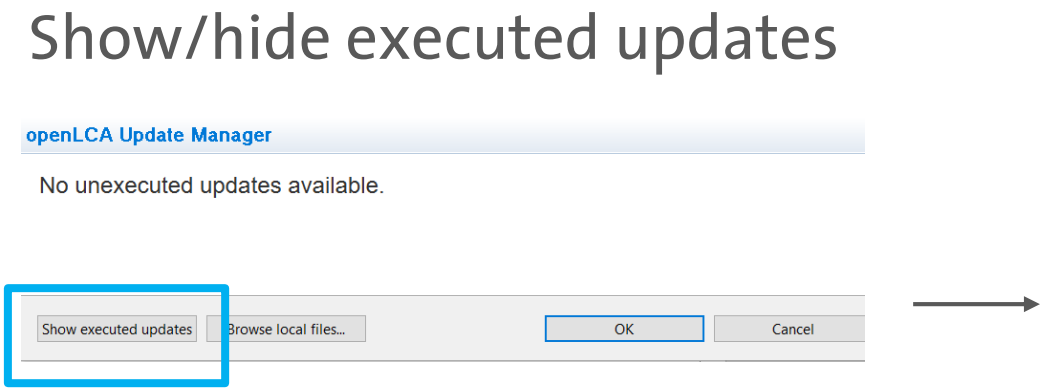
- Choose the updates which you want to run

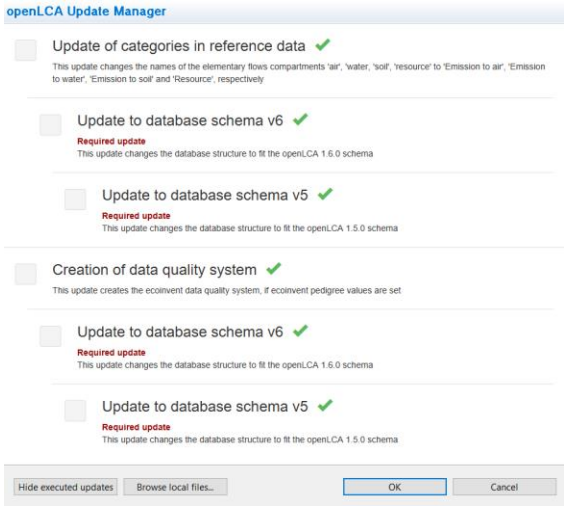
openLCA Update manager

- If no optional updates are available



- Show/hide executed updates



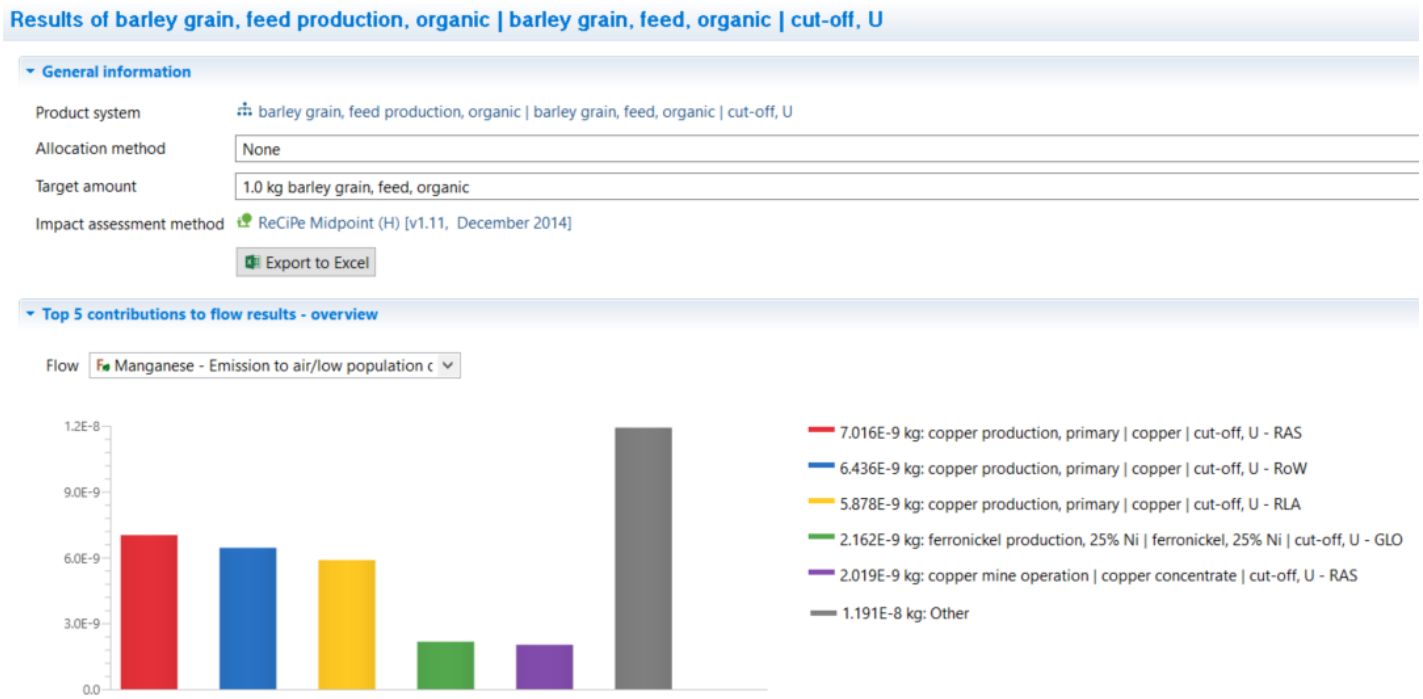


Other improvements

openLCA Other improvements

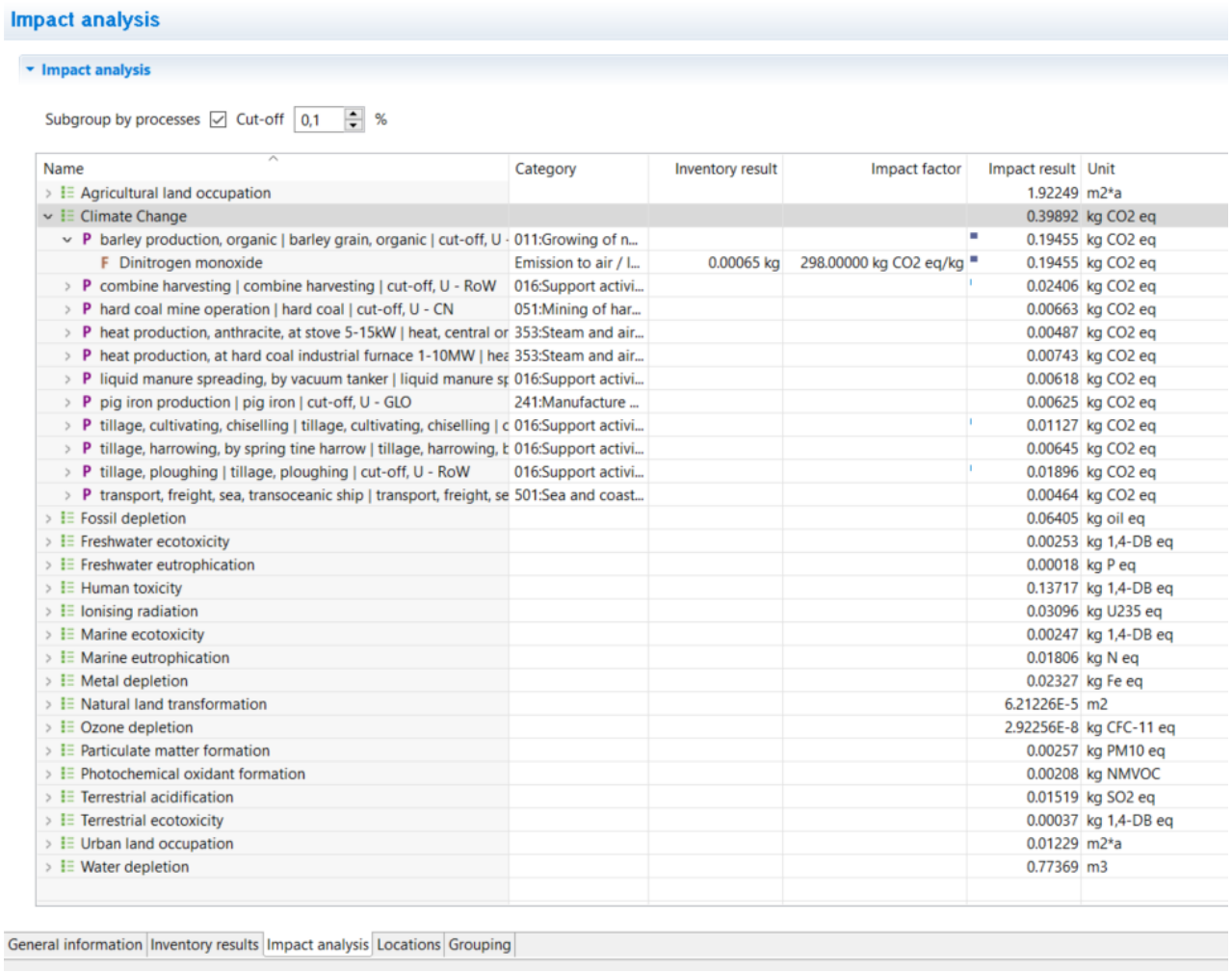
- Graphical improvements: No more pie charts (in General information and grouping tab)

→ to be able to display negative results



openLCA Other improvements

- Clean-up of Analysis results (New tab „Impact analysis“)



openLCA Other improvements

- Process results tab table entries can now be copied to clipboard

- New Hungarian translation

Sneak peek

- It will be possible in the next version (1.6.3) to save calculated result

→ create an aggregated (system) process out of a product system

Upcoming trainings

openLCA Upcoming trainings

Group trainings

Upcoming group trainings

- May 8 2017, 2pm CEST: FREE Webinar: What´s new in openLCA 1.6?
- May 22 & 23 2017: Life Cycle Assessment with openLCA (Berlin, Germany)
- June 13 & 14 2017: Life Cycle Assessment with openLCA (Paris or Bordeaux, France)
- June 2017: Introduction to openLCA and Life Cycle Assessment (Medellín, Colombia)
- Sept/Oct 2017: Life Cycle Assessment with openLCA (Berlin, Germany)

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Questions?

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sustainability consulting + software

Thank you!

Contact

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