



GaBi databases in openLCA

Update of datasets and LCIA methods

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INTRODUCTION

GaBi databases are available in openLCA and can be purchased via the nexus website, <https://nexus.openlca.org/>. In order to better address some characteristics and functionalities of openLCA, slight changes were applied to GaBi databases to optimise their use in openLCA.

The changes include an update of datasets and an extension and modification of LCIA methods available in openLCA.

Users should also be aware of the somewhat different modelling approach GaBi data sets suggest, being mainly system processes.

UPDATE OF DATASETS

Modifications and updates of data sets are listed below. All these modifications have the approval of PE.

1. Radioactive wastes product flows to elementary flows

In order to consider radioactive wastes (e.g. “High radioactive waste”) in the LCIA calculation, the type was changed to elementary flows (from product / waste).

2. Update process with reference flow as input and output

There were several processes in GaBi whose reference flow was included both as input and output in the exchanges (e.g. “Cargo” in transport processes). For them, a different input flow was selected to avoid errors during the calculation of the product system in openLCA (e.g. “Cargo, in transport”).

3. Update processes with elementary flows or input flows as reference

In openLCA, the reference flow in a process must be a product flow and output. As this constraint does not exist in GaBi, some GaBi data sets have a reference product on the input side or have elementary flows as reference. For these cases, a different reference was selected, in coordination with PE. None of these changes have affected the inventory or LCIA results.

UPDATE AND EXTENSION OF LCIA METHODS

openLCA methods have been extended to include characterisation factors from GaBi that were not already present in them. The impact categories global warming, acidification, eutrophication and photochemical oxidation of CML baseline method were updated. Please be aware that the GaBi factors at time may differ from official literature data. Further, slight differences may exist between openLCA and GaBi LCIA results as flow additions and factors have been used starting from the ILCD export of GaBi, applying the GaBi ILCD export mapping (by PE International).

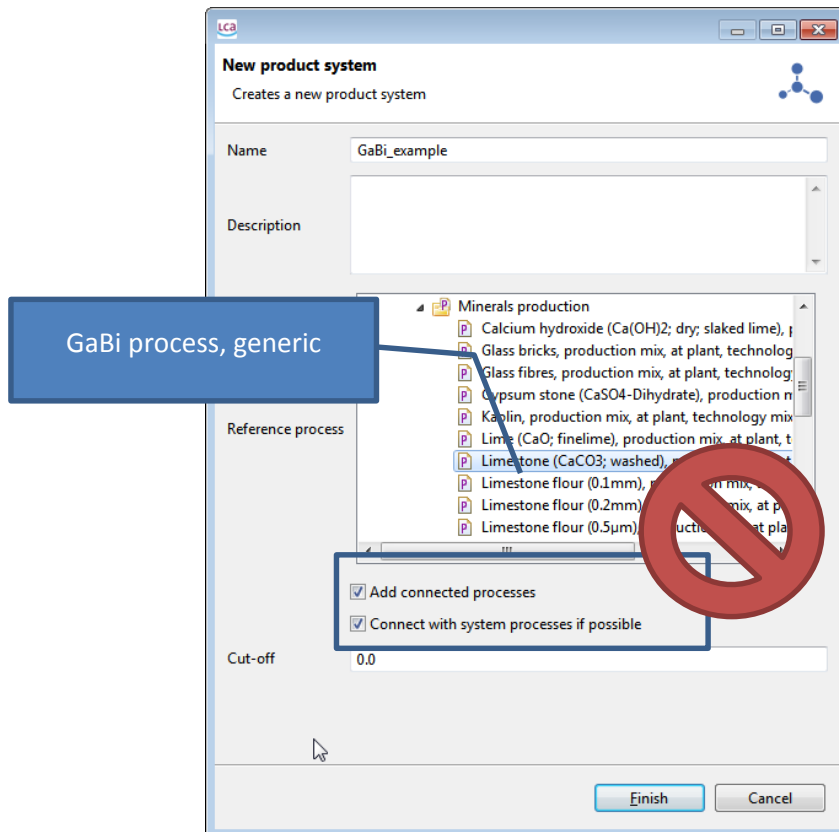
The method containing GaBi characterisation factors is named “CML (baseline) + GaBi”. The original “CML (baseline)” method from openLCA is also included in the compilation.

RECOMMENDED MODELLING APPROACH WITH GABI DATA SETS

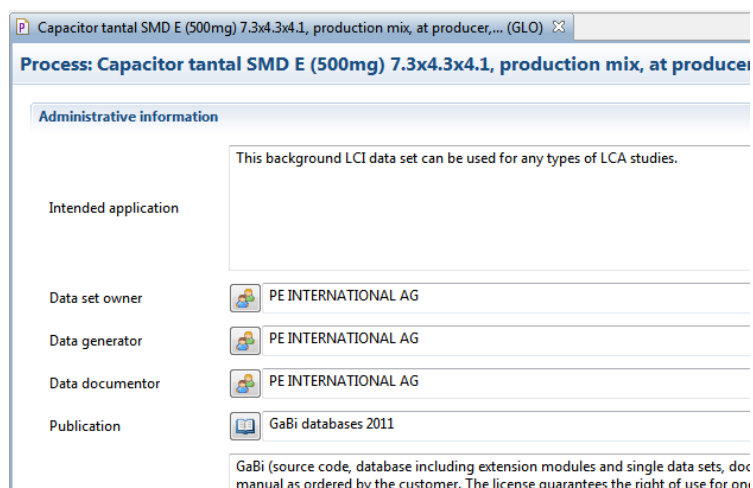
openLCA allows to automatically build the supply chain of the product, in contrast to the GaBi software, where a system is manually built by the user. GaBi datasets offer, therefore you could say, more flexible ways for connecting them with each other. We decided to maintain this functionality, in coordination with PE.

This has practical consequences for using data sets in LCA models.

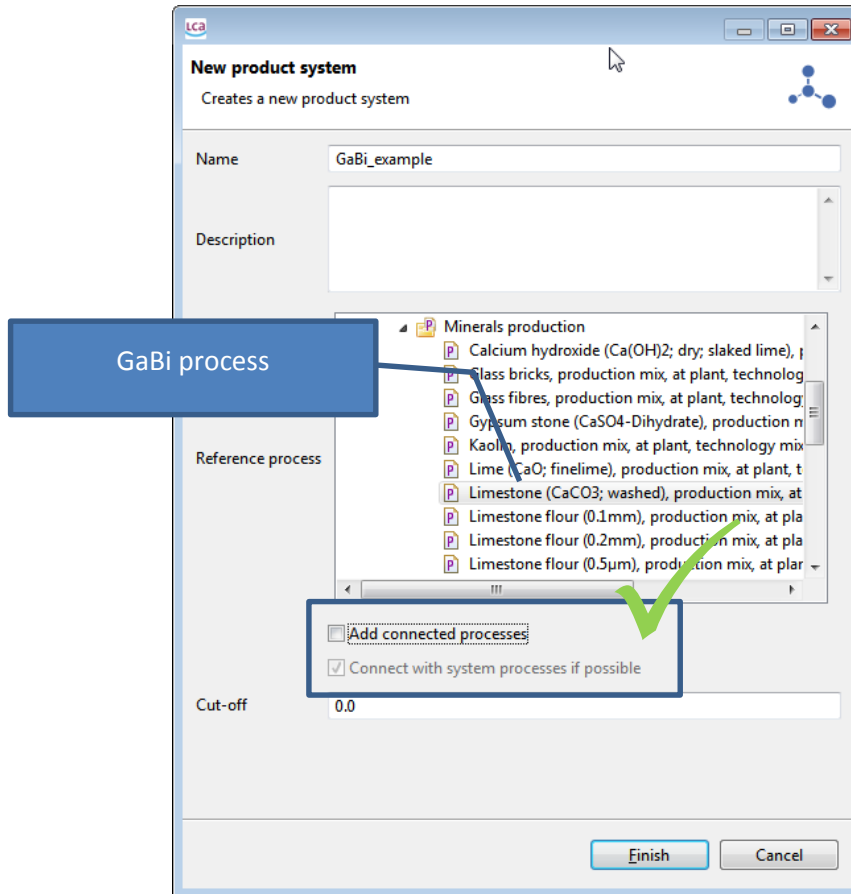
1. It is not recommended to let openLCA automatically create a product system containing generic GaBi data sets.



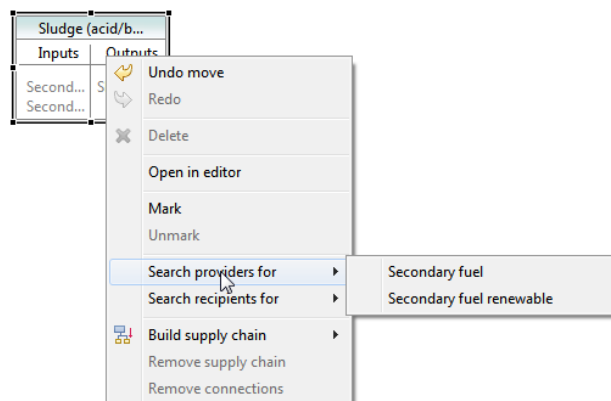
You can identify the GaBi data sets in a database with data from several sources by checking the administrative information sheet of the process data set; GaBi data sets have PE International as creator.



Instead of “auto-completing” the system containing GaBi processes, manually complete the life cycle:



Use the search provider / search recipient option in openLCA product systems to find providers for products (or recipients of products if you want to model the life cycle in a reverse way).



- It is good to let openLCA automatically create a product system containing GaBi data sets, IF the processes have all specified a default provider for their input products.

This can be done, in openLCA, in the input/output sheet of a process:

Process: Final manufacturing (carbon steel product) (gabiprofessionalwastemodified)

Allocation method: None

Inputs

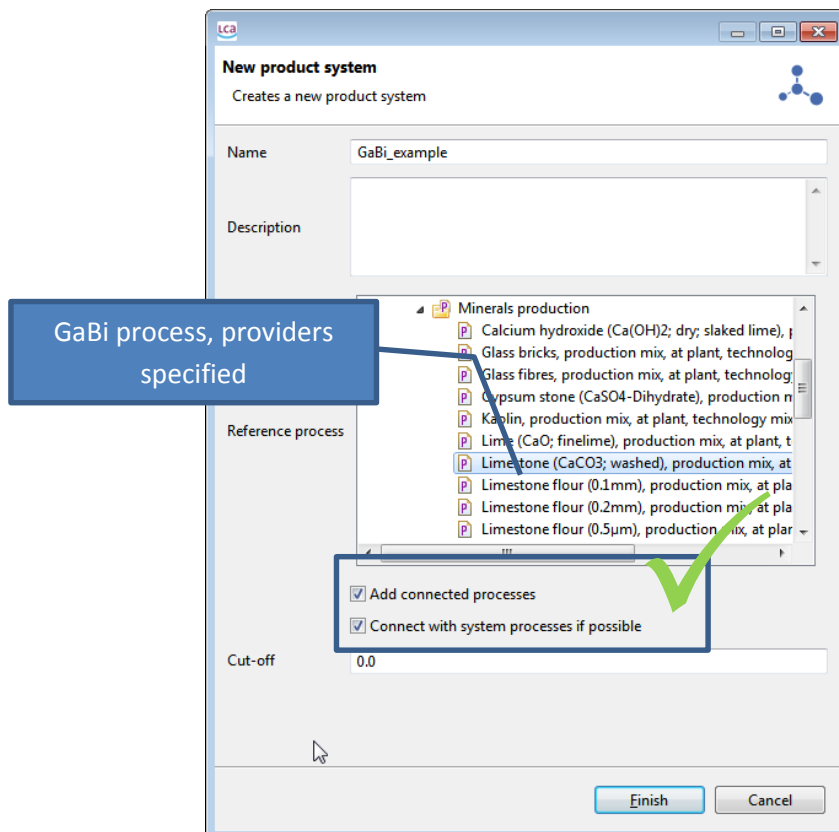
Flow	Category	Flow property	Unit	Resulting amount	Uncertainty	Default provider	Pedigree uncertainty
Steel hot rolled coil	Materi...	Mass	kg	1.0	No distrib...		

Final manufacturing (carbon steel product) (GLO)
 Steel hot rolled coil, production mix, at plant, blast furnace route, 1k... (GLO)
 Steel hot rolled coil, production mix, at plant, blast furnace route, 1k... (RER)
 Steel hot rolled coil, production mix, at plant, blast furnace route, th... (RER)
 Use Phase (carbon steel product) (GLO)

Inputs

Flow	Category	Flow property	Unit	Resulting amount	Uncertainty	Default provider	Pedi
Steel hot rolled coil	Materi...	Mass	kg	1.0	No distrib...	Steel hot rolled coil, production mix, at plant, blast furnace r...	

Obviously, the process data set can be used in a product system in a less flexible way as it always now obtains the product from the specified provider (which is also the reason why we did not add the provider in the generic data sets that are now available for openLCA).



- It is good to let openLCA automatically connect processes for a product system containing ecoinvent data sets, or your own data sets that link to ecoinvent, or any other database available in nexus with exception of the Ökobaudat. If you then want to include GaBi data sets, do this manually: add the product that is delivered from a GaBi process, and add this process

manually to your product system. You may also use the 'search provider' functionality shown above.

