

What's new in SimaPro 8.0?



Colophon

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1 Introduction

PRé is proud to present the new release of SimaPro 8 equipped with an updated database that includes ecoinvent v3.

The most important improvements are the introduction of ecoinvent 3 and of regionalized water footprint methods, the update of existing impact assessment methods, and a significantly quicker calculation engine.

2 ecoinvent 3

Ecoinvent 3 has a completely different modeling approach compared with ecoinvent v2. This is extensively documented on the ecoinvent website (www.ecoinvent.org): we do recommend you take some time to read through the documentation so that you get an understanding of the differences. Part of this documentation is also available via the SimaPro Help menu. Note that the ecoinvent v2 manuals are still included for reference purposes, with the manuals on energy now partially translated in English.

Because of the changes, it is not possible to update the ecoinvent 2 library to ecoinvent 3. However, SimaPro 8 will copy your existing projects that use ecoinvent v2 and will try to relink your existing models to comparable ecoinvent v3 processes where possible. This allows you to investigate and understand the differences between ecoinvent v2 and v3.

In addition Ecoinvent 3 was developed in a new database format, EcoSpold 2. It was decided not to adapt SimaPro's database structure to EcoSpold 2. SimaPro users can view the original data in detail on www.ecoinvent.org using their ecoinvent login or by registering as guest. Note that import and export in EcoSpold 2 is not supported.

The main changes and the relevant aspects of its implementation in SimaPro can be summarized as follows:

2.1 New modeling approaches

The "consequential" modeling approach was introduced next to the widely used attributional modeling approach named "allocation, default". Each data library is supplied in two forms:

- Unit processes – fully transparent and including uncertainty data
- System processes – aggregated datasets without uncertainty data

This means that there are four different ecoinvent 3 libraries to choose from in SimaPro 8: "allocation, default – unit", "allocation, default – system", "consequential – unit", and "consequential – system". Please see the manual "Introduction to LCA with SimaPro 8" to learn more about the different allocation methods.

2.2 New product naming style

In SimaPro, product names are a combination of the ecoinvent 3 product and so-called activity names, together with the geography and the (abbreviated) modeling approach used.

For example:

"Electricity, high voltage {NL}| electricity production, hard coal | Alloc Def, U".

2.3 Introduction of Market Processes

In ecoinvent 3, consumption mixes are introduced for all products in so-called “market for” processes. These replace the production and country mixes in ecoinvent 2.

For example:

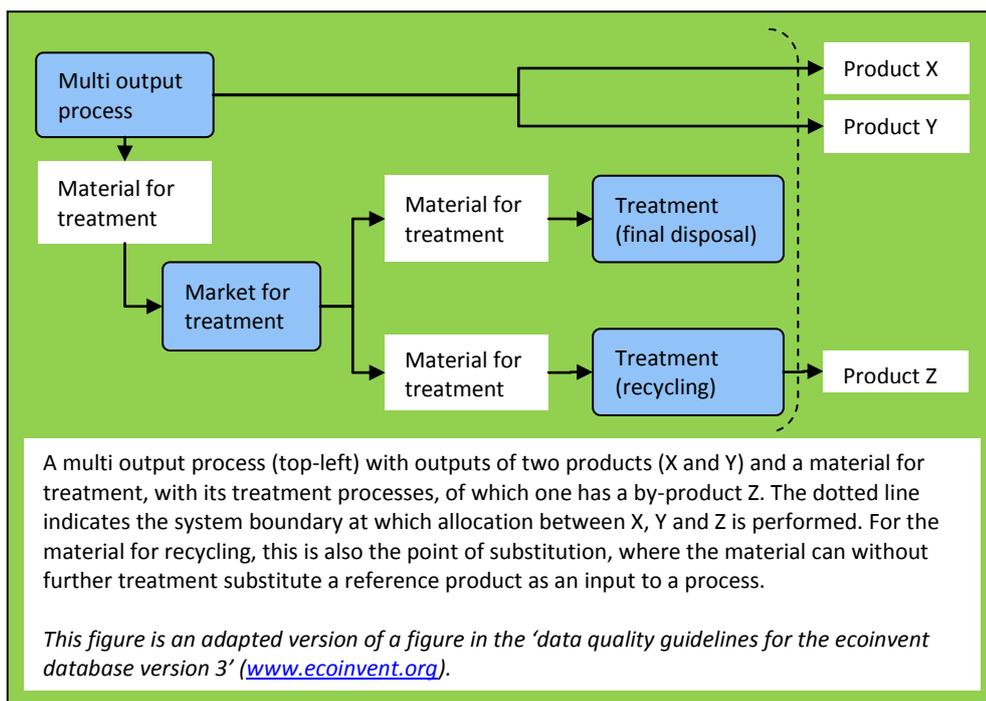
“Electricity, medium voltage {GLO} | market for | Alloc Def, U”.

When a specific supplier is not known, it is recommended to use the country’s “market for” process. The market processes can be found in SimaPro in separate categories from the underlying transformation processes – the latter contain all the inputs and outputs from and to nature and other processes. In the network view, the market processes are marked to distinguish from the other processes.

Please note that as market processes are automatically generated they do not contain detailed documentation.

2.4 New allocation procedure

A new approach to recycling products and allocation in case of multi-functional processes was implemented in the “allocation, default” version. The approach is much more comprehensive than the previous, but is also more complex. The figure below gives some basic explanation.



2.5 New data

Besides all technical innovations, new data were added to the database. An important addition is the new water use data in all datasets of ecoinvent 3, which were implemented including information on the location of extraction. The water flows are specified on country or regional level. Also, several new datasets were added to ecoinvent 3. For example, new types of transport, cement production, chemical production, horticultural and other agricultural production processes were added. Other data improvements are the updated and improved electricity processes and the more sophisticated way that transport is modeled in the new version.

3 Water footprint assessment

Because regionalized water use data is now available through ecoinvent 3, several spatially differentiated water impact assessment methods were implemented in SimaPro 8. This means that all water flows from groundwater, rivers, lakes and unspecified natural origin in the ecoinvent 3 libraries and the implemented water footprint methods are country or region specific. For example, the flow "Water, river, CN" is used in the Chinese irrigation process and has an environmental impact factor in each implemented water footprint method. This way, the total impact of water use in the life cycle of a product can be calculated in SimaPro 8 while the differences in impact per country/region are addressed.

The new methods category "Water footprint" was added, containing the following new regionalized methods:

- Boulay et al 2011 (Water Stress indicator),
- Hoekstra et al 2012 (Blue water scarcity)
- Pfister et al 2009 (Water Stress Index),
- Boulay et al 2011 (human health),
- Motoshita et al 2010 (human health),
- Pfister et al 2009 (human health, ecosystems quality, resources – based on Ecoindicator99),
- Pfister et al 2010 (human health, ecosystems quality, resources – based on ReCiPe).
- Ecological scarcity 2006 (water only)

Besides new methods, the impact assessment methods ReCiPe, CML-IA, Ecological scarcity 2006, EDIP 2003, EPD 2008, and USEtox were updated.

If you wish to maintain the methods as they were in SimaPro 7, please make a copy of the method(s), either in the methods library or to your project.

4 Quicker calculation engine

The amount of life cycle inventory data that a data library contains increased significantly by introducing ecoinvent 3. PRé noticed that the calculation engine in SimaPro, which was based on a widely used and recognized concept in LCA software (matrix inverse), was not very efficient when calculating very large models. The calculation engine was therefore replaced by a reliable and much faster calculation routine.

The actual calculation speed depends on many factors such as speed of disk drive, processor and network and the Windows version. With the new calculation engine, the speed no longer depends on the data library size. With this change, SimaPro 8 is ready for even larger data libraries in the future.

Please note that the increase in calculation speed is compensated by the much larger models of the ecoinvent 3 unit libraries, and especially in transferred projects that use both ecoinvent 2 and 3. Loading the data is now the determining factor. Note that once a first calculation on unit processes is done, the loaded data will be stored in the memory of the computer so that following calculations will be much faster.

5 More information?

If you have questions about the new ecoinvent data or the modeling in ecoinvent 3, please contact ecoinvent via support@ecoinvent.org or check the user forum on www.ecoinvent.org.

Please contact support@pre-sustainability.com or your local partner if you have questions on the ecoinvent implementation of ecoinvent 3 in SimaPro or any other questions related to the update.