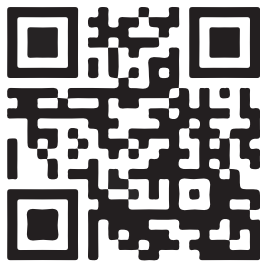


## Life cycle assessment of buildings Assessing the global ecological quality of a building with eLCA



<http://www.bauteileditor.de>

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Apart from the architectural and functional quality of a building, the ecological quality as well has become more important in the last few years. One reason are the global requirements set by the assessment systems for sustainable building. While in the usual planning process, the environmental effects of the energy requirements of a building are considered in line with the Energy Saving Ordinance, the integrated planning approach, which forms the basis of sustainable building, also takes the ecological quality of the building materials used into account. Environmental impacts resulting from the production and disposal of materials and from maintaining a building are thus to the same degree considered in the global assessment as the energy required during the use of a building. Based on this extended approach, the environmental effects of a building are assessed over its whole life cycle, from its construction to its demolition. The ecological assessment of buildings is based on the ÖKOBAUDAT database. ÖKOBAUDAT is an open source internet database of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety which can be found at [www.oekobaudat.de](http://www.oekobaudat.de). It provides various building material data sets and their global ecological qualities. The ÖKOBAUDAT data sets are based on strict quality criteria and are laid down as basic data

in the Assessment System for Sustainable Building (BNB).

The arithmetical assessment of the ecological quality of a building over its whole life cycle is provided by the so-called life cycle assessment (LCA) for a building.

### eLCA, an LCA tool for buildings

The BBSR has developed the eLCA tool, which is easy to use and which helps the user generate a BNB-based life cycle assessment for buildings. With eLCA, both new buildings and existing buildings, which have to be refurbished, can be assessed. In addition to the LCA for buildings, it is possible to assess the transports based on the building materials used.

The ÖKOBAUDAT data sets required for the assessments have already been fully integrated in eLCA. One important reason for developing eLCA was to depict all data and the assessments based on them in a comprehensible, transparent way. Especially eLCA's core component, the component editor, supports the user in entering the building components. A dynamic diagram depicts the modelled components and allows a visual control.

The calculations performed with eLCA can also be interpreted and understood by unexperienced users. Following an intensive test phase at universities, within research projects and in the context of assessing buildings according to the BNB, users now have a life cycle assessment tool for buildings at hand by which they are able to assess new and existing buildings according to the BNB. The tool was presented to the public during the BAU 2015 in Munich.

### 1 Entering building components with the eLCA component editor

330 Exterior walls BUILDING - BUILDING CONSTRUCTIONS

Facade\_East [1835] ELEMENTS

**General**

Name \*  Attributes

U-value  R-value

Description  Demanting  Separation  Utilization

Installed capacity \*  Reference value \*

- ① Interior paint dispersion paint rub-resistant
- ② Gypsum plaster (plaster), 20.00 mm
- ③ Brick section, 240.00 mm
- ④ Reinforcement (synthetic resin filler), 2.00 mm
- ⑤ Insulation, 100.00 mm
- ⑥ Reinforcement (synthetic resin filler), 4.00 mm
- ⑦ Synthetic resin plaster - VDL, 2.00 mm
- ⑧ Insulating glass double-paned, 24.00 mm

Linked building elements

Building element (opaque)	Installed capacity	DIN 276	
1. Gypsum plaster/paint	350 m²	336 Exterior wall claddings, interior	Edit   Remove   Delete
2. Bricks 24 cm	350 m²	331 Load-bearing exterior walls	Edit   Remove   Delete
3. ETICS	350 m²	335 Exterior wall claddings, exterior	Edit   Remove   Delete
Building element (non-opaque)			
1. Windows_insulating glass	50 m²	334 Exterior doors and windows	Edit   Remove   Delete