2a Life Cycle Analysis tools

Short summary of characteristics

These tools helps the user to calculate environmental impacts “from cradle to grave”, of different alternatives. One example is Life Cycle Analysis (LCA) tools for building assessment, which in principle calculate emissions for the whole building over its entire lifetime.

The LCA approach requires detailed information of all the environmental impacts of the products and the materials involved, from different steps: including: Extraction of materials, production, transportation, operation, maintenance and disposal. There are many LCA tools developed in different sectors. BEAT is a LCA tool in the building sector, Orware is a LCA tool in the waste sector.

Stage that the tool is used

LCA tools can be used in the design process, to evaluate and choose between different alternatives, or in the evaluation of different solutions, for instance in an architectural competition.

Output from the tool

The output will be a calculation of different environmental impacts over the objects lifetime. This can include materials used, fossil fuels used and emissions produced. The Danish LCA tool for buildings, BEAT, calculates the environmental performance (emissions, outlets, waste etc.) of a building, based on a comprehensive database of building elements.

Experiences of use

Often LCA tools are developed by researchers and generally require a certain expertise or training by the user. LCA tools generally require lots of updated data to be input about products and processes involved in the object analysed (a building, a waste system etc.). Therefore, using the tool requires lot of information and can be very time demanding. Assessments are typically carried out by experts (often the tool developers).

The use of such tools has been rather limited in assessment of individual buildings, local waste plans or other small scale infrastructures. However, there are examples of tools that have incorporated LCA analysis in a simple manner, for instance the Dutch GPR3 tool for sustainable building design. Generally LCA tools seem to have larger potential for general assessments on building materials, waste strategies, assessment of comparable products and others, and as input to formulate policies and regulation on these areas.