

The effects of the life span of products in LCA: a case study for dwellings

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In life cycle assessment (LCA), the life span of a product can influence the environmental performance of that product, especially when its use phase has a significant contribution to the total performance. This is for example the case for dwellings, where energy consumption for heating and maintenance are important factors. It is common in dwelling LCAs to assume a default life span of the dwelling of 75 year. From a housing stock point of view, this may be in practice far too short. Regarding the current building, demolition and replacement rates in most Western European countries, an average dwelling life span of at least 400 years is required to keep the current housing stock fulfilling the actual level of housing provision.

To assess the effects of the dwelling life span on the environmental performance, we calculated the effect of life cycle extension on the environmental performance of the Dutch standard reference dwelling and compared the results with the effects of using different building materials with different life cycles, and different energy conservation options. The results may be useful in the discussion about the impact of life cycle extension and whether to focus on the building materials or on decreasing environmental effects of the use phase by e.g. energy conservation.

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