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## Impact Category. Land Use

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**Brief summary.** Land use can be described as the occupation and/or transformation of land for a specific use. This can have direct and indirect impacts on biodiversity, life support functions, and potential future uses of the land.

**Units.** m<sup>2</sup>/yr (land occupied or transformed, over a certain time period)

**Detailed summary.** Use of land for different purposes can have many direct and indirect environmental consequences. Unfortunately, there is no widely accepted assessment method so far for land use impacts [1]. Some of the pre-eminent methods are described below.

The 'Hitch Hiker's Guide to LCA' describes how while land use is a much debated topic within life cycle impact assessment, it can be broken into two areas: the actual use of land (occupancy) and the changes in land use (transformation) [2]. These two areas are also mentioned as a requirement in the International Reference Life Cycle Data (ILCD) system [3]. The Hitchhiker's Guide to LCA also mentions that characterisation of a change in land quality is complicated by the fact that assessment of change is relative. This is one of the may underlying difficulties with assessment of land use.

According to the Handbook on Life Cycle Assessment, the aspect that should be considered in a baseline listing of environmental impact categories is "loss of land as a resource" .This is measured in the units "m<sup>2</sup>.year" and described as "land occupation" [4]. Other relevant aspects of land use are destruction of physical habitats ("land use – loss of biodiversity") and impacts on life support functions. Life support functions include production of biomass, (re)generation of soil, regulation of climate, and so on.

The recently-developed ReCiPe 2008 impact assessment method provides an impact assessment method for land use, however it is complex and this method (like all other land use impact assessment methods) is not widely used [5].

Use of land has changed markedly since people first arrived in New Zealand; for example, prior to the arrival of humans in New Zealand, indigenous forest covered 82% of New Zealand's land area but now it covers just 24% of this area [6]. Most of the previously forested land has been converted into urban, horticultural or agricultural land uses. Recent loss of indigenous cover is particularly an issue because many of these indigenous environments are home to a large percentage of New Zealand's most seriously threatened species, habitats and ecosystems [7].

### References.

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