

Linking water pollution to impacts on water resources

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Life Cycle Assessment (LCA) of water consumption considers impacts on the Area of Protection (AoP) "Resources", depending on the regeneration time. However there is no method that links water pollution to the AoP resource. Because of the increasing concern over the state of water resources available for future generation, this study aims to answer if there is a link between water pollution and impacts on water resources.

This talk proposes a definition of water resource as part of the AoP resource and why it will be relevant to consider impacts on that AoP for certain types of pollution.

The AoP resources generally reflects the resources available for future users. The water resource is characterised by its potential provided services, that is, its functional value. Damage to water resources can therefore be defined as the decrease in availability of those functions for future generations due to degradative or consumptive uses

In order to consider that link in Life Cycle Impact Assessment (LCIA) we propose a new water use impact pathway which can be integrated into existing impact categories.

Results proposed take into account the fact that it is crucial not to double-count the impacts which are already assessed on human health and ecosystem quality. For that purpose, and to fit well with the definition given to the water resource, two phenomena are considered: the persistence of pollutants in a water body and the pollution of a water resource currently unused.

The consideration of long-term impacts of pollution is an important and sensitive matter in LCA, because they are very uncertain, and yet they often dominate results of impacts on human health and ecosystems. In contrast, the representation of long-term impact through water functionality loss for potential future users is the damage *per se* that could be assessed on the AoP resources.

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