
Impact Category. Eutrophication Potential

Brief summary. Eutrophication refers to the addition of nutrients causing excessive biomass growth and decay in water or soil, resulting in oxygen depletion

Units. kg PO₄³⁻-equivalents

Detailed summary. The nutrients that mainly contribute to eutrophication are nitrogen and phosphorus. In freshwater ecosystems, phosphorus is usually the limiting nutrient whilst in marine and terrestrial ecosystems, nitrogen is usually the limiting nutrient. Addition of waste heat to a water body may also contribute to eutrophication because it may stimulate increased biomass production (Baumann and Tillman, 2004).

Input sources of these nutrients include run-off from agricultural land and wastewater treatment facilities. Eutrophication is site-dependent because the effect of a change in trophic status depends on ambient conditions.

A study of national lakes concluded that pastoral land use in New Zealand is associated with eutrophication and ecological deterioration. This study estimated that 32% of New Zealand lakes could be eutrophic or worse (NIWA, 2010). Nitrogen and phosphorus concentrations in South Island surface waters are generally more compliant with New Zealand guidelines than are North Island rivers and streams (McDowell, 2010).

References.

1. Baumann, H. and A.-M. Tillman, *The Hitchhikers guide to LCA. An orientation in life cycle assessment methodology and application.* 1st ed. 2004: Studentlitteratur AB.
 2. McDowell, R.E. Larned, S.T. and Houlbrooke, D.J. 2010. Nitrogen and phosphorus in New Zealand streams and rivers: control and impact of eutrophication and the influence of land management *New Zealand Journal of Marine and Freshwater Research* 43: 985–995.
 3. NIWA, 2010. Lake water quality in New Zealand 2010: status and trends. <http://www.mfe.govt.nz/publications/ser/lake-water-quality-in-nz-2010/index.html>
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