



Eutrophication: small-scale, targeted approach the way forward

A series of national Action Plans has dramatically reduced water pollution from the agricultural sector in Denmark, although significant improvements in aquatic ecosystems are yet to be seen. A shift towards small-scale environmental management in sensitive areas is now needed to ensure further improvements to water quality, according to researchers.

The agricultural sector is a major part of the Danish economy and farming practices have intensified over time. In the 1970s and 1980s the increased discharge of nutrients from farm fertilisers and manure contributed to eutrophication. Eutrophication occurs when high nutrient loads cause excessive plant growth and decay, reducing water quality and damaging ecosystems.

Concern over this pollution led to the introduction of a series of national Action Plans in 1985 and 2004. Together with EU Directives and international obligations, these have targeted agricultural practices that contribute to eutrophication.

By 2003, changes in agricultural practices, such as regulating the density of farm animals and stricter storage rules for manure, reduced the nitrogen load from agriculture that reached aquatic ecosystems by 48 per cent. In addition, improved treatment of wastewater cut phosphorus loads by 80 per cent. Other measures included: reducing the surplus of nitrogen from excessive fertiliser application, more efficient use of animal manure, and reducing the use of artificial fertilisers.

However, only small improvements have occurred at ecosystem level despite clear reductions in nitrogen and phosphorus concentrations in water bodies. This could be due to the time difference between implementing remedial measures and recovery in habitats, as well as far-reaching physical, biological or chemical changes occurring in ecosystems.

The future management of aquatic habitats will be strongly influenced by the Water Framework Directive¹. The researchers suggest there is now the opportunity to replace the old regime, of regulating all areas equally regardless of the individual impact on the environment, with a new approach of evaluating environmental impacts on a small geographical scale.

Some important changes include: taking a holistic view, focusing on a wider range of detailed measures which are tailored for specific sites and where there is great potential for reducing nutrient loads; extensive cost-benefit and cost-effectiveness analysis at the local scale; taking time lags into account when evaluating measures; recognising that baseline conditions change over time; and ensuring active participation by the agricultural sector early in the planning process to create win-win situations.

1. See: http://ec.europa.eu/environment/water/water-framework/index_en.html

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