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Land Management, River Restoration and the Water Framework Directive

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The influence of catchment land-use on river ecosystems is well established, with negative changes in hydrology, sediment supply and pollutants causing widespread degradation in modified catchments across Europe. The strength of relationship found between different land-use types and impacts on river systems varies from study to study as a result of issues around data quality, scale, study design and the interaction of stressors at multiple scales.

Analysis of large-scale datasets can provide important information about the way that catchments pressures affect WFD objectives at a national scale. Comparisons of relationships between land-use and WFD status in different types of catchment within the UK allow an assessment of catchment sensitivity and analysis of the catchment characteristics which influence these relationships. The results suggest prioritising catchments at or near land-use thresholds, or targeting waterbodies with limited land-use pressures but which are failing to achieve GES or GEP.

This paper uses UK datasets on land cover and WFD waterbody status to examine how catchment land-use impacts on WFD status and to evaluate opportunities to achieve Good Ecological Status or Good Ecological Potential. Agricultural and urban land-use are shown to have different types of relationship with respect to the likelihood of achieving Good Ecological Status, and with clear threshold effects apparent for urban land-use in the catchment. Broad-scale analysis shows the influence of different sized buffer strips in mitigating the negative effects of different types of land-cover, and reinforces the positive effects of riparian woodland on river ecosystems and their potential under the WFD.