

A fresh look at effective river restoration

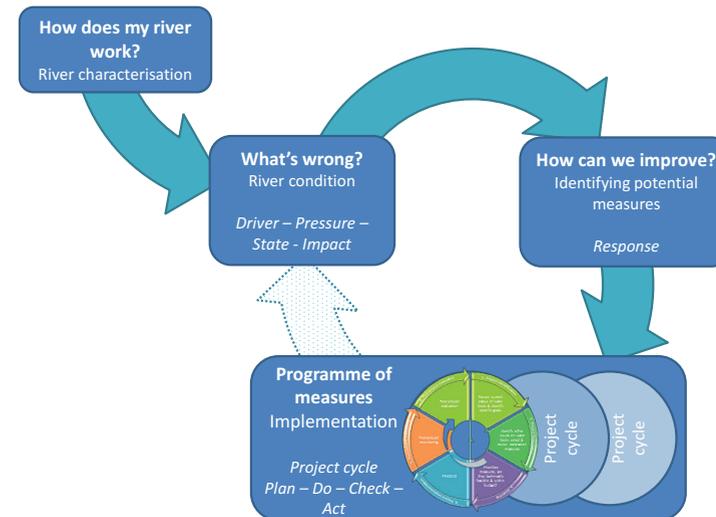
The assessment of the First River Basin Management Plans conducted in the context of the Water Framework Directive indicated that 40% of European rivers are affected by hydromorphological pressures that are caused predominantly by hydropower, navigation, agriculture, flood protection and urban development. A consortium of 26 partners coordinated by Deltares was therefore established to generate substantial output as part of the REFORM project (REstoring rivers FOR effective catchment Management) to support the implementation of the Water Framework Directive (WFD). The relevant results for application in river management have been summarised in a user-friendly way in the REFORM wiki. Furthermore, the outcomes of REFORM have been discussed and disseminated through stakeholder workshops, an international scientific conference, a summer school, numerous presentations, newsletters, policy briefs and eighty scientific publications.

Hydromorphological assessment should consider physical processes and appropriate temporal and spatial aspects beyond the boundaries of river restoration projects and the lifespan of projects. REFORM therefore developed an open-ended hydromorphology framework incorporating multi-scale spatial and temporal aspects that helps users to develop our understanding of the morphology and dynamics of river reaches and their causes. Vegetation and plants can play a cost-effective and significant role as physical ecosystem engineers in river restoration. Riparian and floodplain ecosystems are not subject to extensive monitoring but they are crucial to river morphodynamics and ecology. Direct measurements of hydromorphological processes and riparian vegetation are much more suitable for the assessment of hydromorphological degradation than measurements of in-stream biota.

Current biological sampling methods are not appropriate for capturing hydromorphological impacts and they underestimate the influence of hydromorphology on biota. There is a need to



Final REFORM conference



River basin management and REFORM

develop new biota sampling methods that are more sensitive to impacts of this kind. By contrast with the present situation, this should include sampling habitats (such as riparian habitats) that are particularly affected by hydromorphological degradation and assessing hydromorphology in ways that cover the entire range from excellent to bad status. This outcome of REFORM led to the establishment of a task group on hydromorphology as part of the European Common Implementation Strategy for Ecological Status (CIS ECOSTAT).

Restoration projects should adopt a synergistic approach with other resource users to secure win-win scenarios and draw up well-defined quantitative success criteria ranging from, for example, hydromorphological improvements to the expected beneficial impact on biota and ecosystem services. REFORM delivered a restoration planning framework which has the potential to substantially enhance the efficiency and effectiveness of restoration.

Hydromorphological restoration had positive effects on biota, even in small restoration projects. Restoration pays off because it improves ecosystem services such as landscape appreciation and flood risk attenuation. River restoration benefits not only aquatic biota but also terrestrial and semi-aquatic species. The key to success is to select measures that restore specific limiting habitats at relevant scales. To optimise the overall positive effect on biota, it is therefore essential to monitor and - if necessary - adjust restoration projects.

Further reading:
www.reformrivers.eu