



## **Evaluation of strategies for nature-based solutions to drought: a decision support model at the national scale**

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There is an increasing body of evidence in support of the use of nature based solutions as a strategy to mitigate drought. Restored or constructed wetlands, grasslands and in some cases forests have been used with success in numerous case studies. Such solutions remain underused in the UK, where they are not considered as part of long-term plans for supply by water companies. An important step is the translation of knowledge on the benefits of nature based solutions at the upland/catchment scale into a model of the impact of these solutions on national water resource planning in terms of financial costs, carbon benefits and robustness to drought.

Our project, 'A National Scale Model of Green Infrastructure for Water Resources', addresses this issue through development of a model that can show the costs and benefits associated with a broad roll-out of nature based solutions for water supply. We have developed generalised models of both the hydrological effects of various classes and implementations of nature-based approaches and their economic impacts in terms of construction costs, running costs, time to maturity, land use and carbon benefits. Our next step will be to compare this work with our recent evaluation of conventional water infrastructure, allowing a case to be made in financial terms and in terms of security of water supply. By demonstrating the benefits of nature based solutions under multiple possible climate and population scenarios we aim to demonstrate the potential value of using nature based solutions as a component of future long-term water resource plans. Strategies for decision making regarding the selection of nature based and conventional approaches, developed through discussion with government and industry, will be applied to the final model. Our focus is on keeping our work relevant to the requirements of decision-makers involved in conventional water planning. We propose to present the outcomes of our model for the evaluation of nature-based solutions at catchment scale and ongoing results of our national-scale model.