

Science for Environment Policy

The public value of including scientific information in groundwater protection policies

The public places a high value on the use of scientific information, especially regarding climate change, in the management of groundwater resources, a case study in Finland indicates. This suggests that incorporating scientific research into management policies is likely to have the support of stakeholders in the region.

The Rokua esker region in Northern Finland, which covers about 90 km², is a popular area for tourism and recreation, as well as [forestry](#). In the last few decades, [water](#) levels in local lakes, which are fed by groundwater, have been dropping. The reasons for this are unclear, although [land use](#) impacts (particularly draining peat land for forestry), climate change and the natural variability of the water system could all play a part. To date, there has been insufficient research to understand what long-term environmental damage could be caused by failing to act to combat declining groundwater levels or what environmental improvements could be achieved by revising management plans for the area.

In this study, funded by the EU GENESIS¹ project, researchers interviewed 171 residents and visitors to investigate how they value different management options of water resources in this area. In particular researchers were interested in whether respondents felt scientific knowledge should be used to reduce the uncertainties associated with climate change and to improve understanding of the interactions between human impacts and water resources.

Experts decided on three management options to address the problems that included: (i) limiting peat land drainage in the groundwater area, (ii) increasing the conservation area and (iii) using technical solutions to restore water levels in peat lands, groundwater and lakes. If implemented, these are all expected to meet requirements of the EU's [Water Framework Directive](#) and [Groundwater Directive](#), as well as supporting local ecosystems.

The management options were based on the following attributes: water quality; recreation; total land income (e.g. from logging, peat harvesting or tourism); investment in research; and a one-off payment by households to implement the policy measures. Once respondents had been given a description of the problems in the area, they were asked to choose between a series of different scenarios listing different levels of management interventions for each attribute.

Analysis revealed that respondents placed the highest value on scientific research, especially in relation to reducing climate change uncertainty. Households would be willing to pay between €33-37 for this attribute in water resource management. Respondents also valued improving the quantity of groundwater and increasing recreation highly and were willing to pay an average of €23 and €11, respectively, for these attributes. Far less value was attached to management plans offering opportunities for income from land use activities, such as forestry or peat harvesting.

The researchers conclude that understanding how the public value different management options is vital for developing future plans for the region that will be acceptable to all stakeholders.



23 January 2014
Issue 358

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Source: Koundouri, P., Kougea, E., Stithou, M. *et al.* (2012). The value of scientific information on climate change: a choice experiment on Rokua esker, Finland. *Journal of Environmental Economics and Policy*. 1(1): 85-102. DOI:10.1080/21606544.2011.647450.

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To cite this article/service: "[Science for Environment Policy](#)": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

1. The GENESIS project (Groundwater and Dependent Ecosystems: New Scientific and Technological Basis for Assessing Climate Change and Land-use Impacts on Groundwater) is supported by the European Commission under the Seventh Framework Programme. See: www.thegenesisproject.eu