

Science for Environment Policy

Water management: five policy conditions to help overcome the challenges of an uncertain future

'Adaptive co-management' could help water managers cope with future shocks and unpredictability brought by climate change, according to a recent study. They identify five conditions for policies that would create an enabling environment for this management approach, which include the need to account for water's ecological functions, and for stakeholders to learn from each other.

We know that [climate change](#) will present challenges for future [water management](#), but it is impossible to know the precise nature of these problems. Supporters of adaptive co-management say that it could protect ecosystems as well as human livelihoods, and enables water management to be flexible in the face of uncertainty. It is underpinned by the belief that humans are part of nature and, therefore, social and ecological systems must work together.

Adaptive co-management combines elements of co-management with adaptive management, the authors of this study explain. Co-management brings together communities of resource users and managers (which may include government) to collectively manage resources. Power is, therefore, shared between all stakeholders with more rights at a local level. Adaptive management allows participants in a co-management system to adapt to change through 'learning-by-doing'.

The authors of this study analysed previous research to explore how government [policy](#) could create an environment where adaptive co-management can thrive. From this, they categorised five policy conditions which enable this:

1. Functions of water

Policy must account for both the economic and non-economic value (e.g. supporting [biodiversity](#)) of [water](#) and its range of functions for nature as well as human livelihoods.

2. Change and uncertainty

Policy must recognise that change and uncertainty are unavoidable and that we must learn to live with them.

3. Resilience and adaptive capacity

In order to cope with change and uncertainty, measures to promote resilience and adaptive capacity should be encouraged, even if they lead to short-term losses. Both the resilience of the management system and the resilience of ecosystems are important.

4. Participation and scale

Sharing management rights with stakeholders is one way of enhancing social resilience. Thus, there should be full participation of all key stakeholders in decision-making and co-production of knowledge, particularly from resource users and those who directly influence the condition of water.

5. Process and learning

Water management should be seen as a long-term social process that develops through cycles of joint learning.

Continued on next page.



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As a case study, the researchers studied English water policy to see whether it includes these five categories. They analysed seven key government documents published between 2008 and 2013 and concluded that English policy does indeed support many aspects of adaptive co-management.

For example, an ecosystem-services approach to water management is embraced, strongly influenced by the UN's [Millennium Ecosystem Assessment](#). In addition, there has been a very positive attitude towards stakeholder participation since 2011, coinciding with increased influence of the EU's [Water Framework Directive](#) (WFD). The WFD encourages stakeholder participation at the regional river-basin scale as part of attempts to bring all water bodies up to 'good' ecological and chemical status. The researchers comment that the policy documents capture the role of joint learning in developing adaptive and resilient strategies, to some extent, as part of this river-basin management approach.

They advise policymakers to introduce objectives to encourage joint learning, and to recognise that social learning is necessary in the face of uncertainty. Furthermore, while English water policy pays attention to the resilience of physical infrastructure and ecosystems, it must also do so for the social aspects of management, they say.

