



**WATER SECURITY**  
Knowledge Exchange Programme



## Specific Priority Subject 3.3 Summary Report

### Informing Decision Making for Water Resources Management

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## Document History

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21/03/12	Final	Peter Woodward	Quest Associates	Dustin Garrick	Report distributed to participants and uploaded to the website

## Acronyms

WSKEP      Water Security Knowledge Exchange Programme

## Acknowledgement

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## Summary

This report is the Summary Outcomes Report of the WSKEP Specific Priority Subject Workshop 3.3 on Informing Decision Making for Water Resource Management. It includes an introduction reporting the key recommendations resulting from the Workshop. This document will be made available on the Programme website [www.wskep.net](http://www.wskep.net). The full Participants Outcomes Report was distributed to all participants of the Workshop.

## Disclaimer

This document reflects only the combined views of participants at the Workshop

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## Contents

Document Information .....	2
Document History .....	2
Acronyms .....	2
Acknowledgement.....	2
Summary .....	2
Disclaimer .....	2
Contents .....	3
1. Overview .....	4
1.1. Introduction .....	4
1.2. What is the big science issue / challenge .....	4
1.3. Networks and alliances.....	4
1.4. The Water Security KE Programme.....	5
2. The workshop and report.....	5
3. Towards a shared understanding of the Priority Subject Area .....	6
4. Making the most of current research activity.....	6
5. Identify areas for potential future research activity / collaborations.....	7
6. Improving alliances and networks.....	7
7. How do we maximise the value of the Water Security KEP?.....	8

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# 1. Overview

## 1.1. Introduction

The decision challenge for water resources management is: how to cost-effectively ensure security of supply for various water users, whilst preserving and enhancing the aquatic environment, under conditions of severe uncertainties. Decision-makers face a whole host of future uncertainties, including climate change impacts, demographic and behavioural change, land use changes and changes in the natural environment.

In the UK, water resources management has evolved incrementally within a changing governance context, traditionally based upon the deterministic comparison of a single value of supply, or yield, with annual demand. New approaches are needed. Sustainable management of water resources requires a long term perspective, with more sophisticated forms of decision making that address (i) future changes and uncertainties and (ii) the requirements for sustainable quantities and quality of water in the aquatic environment.

## 1.2. What is the big science issue / challenge

The workshop demonstrated some new opportunities for research to inform decision making for water resources management. There was significant interest in water trading as a means to address water scarcity and facilitate supply-demand planning under conditions of uncertainty. Multiple criteria analysis and re-evaluating principles of water resources decision making were proposed as potential pathways to evaluating tradeoffs between different goals and adaptive decision making under uncertainty. There were also new ideas and interest around simulation, integrating water into urban planning, and embedding an ecosystem perspective into water management. These new emerging ideas are not necessarily costly, but this thinking needs to be fed into decision making. Research projects specifically examining the communication of and uptake of science offer insights that can be applied across the board.

## 1.3. Networks and alliances

A number of barriers to effective networking and communications between researchers and users were identified at the workshop. Differing levels of knowledge, skills, accessibility, and willingness to engage amongst stakeholders was posed as a major challenge. The fluidity of staff and institutional barriers can impede collaboration, as can practical time and money constraints.

Workshop participants discussed ways in which alliances and networks can be enhanced to improve decision making. Engaging and consulting the stakeholders relevant to the issue being researched was considered a key driver for bridging the divide between researchers and users. Researchers must use straightforward and jargon-free information to ensure that their work is accessible and applicable to non-academics. Silo thinking and single sector networks need to be replaced by innovative, cross-sectoral and solutions driven collaborations.

## 1.4. The Water Security KE Programme

There were promising new connections made at the workshop, but participants voiced the need for some kind of continuity and way of building on these relationships into the future. Whilst there is a value in workshops, they also have their limitations; real progress will only be made as a result of sustained collaboration. Ensuring that a broad cross-section of stakeholders are engaged will be essential, including energy, farming and ecological networks. Communicating the practical benefits of the programme, as well as providing incentives to share ideas will be key to its success.

## 2. The workshop and report

This workshop was the second in a series being run on behalf of the Water Security Knowledge Exchange Programme (WSKEP) with funding from NERC. It was organized by the Centre for Environmental Change Institute at the University of Oxford.

Nine Priority Subjects were identified at a national consultation event held in June 2011. The theme of this workshop was **‘Informing Decision Making for Water Resources Management’**

The workshop was designed to support the following key aims:

- increase awareness and uptake of research outputs in the focus area of ‘assessing upstream methods of land/water management that improve water quality and quantity’
- identify user needs and potential future research projects
- strengthen research/user group collaboration and networks

The workshop was divided into 4 sessions with initial presentations (available separately) as follows:

- Session 1      Setting the scene and making connections**  
Introduction: Graham Leeks, Principal Hydrologist, CEH Wallingford
- Towards a shared understanding of Priority Subject Area**  
Introduction: Prof Jim Hall, Environmental Change Institute, University of Oxford
- Session 2      Making the most of current research activity**  
Introduction: Dr Julien Harou, University College London
- Session 3      Identify areas for future research activity/collaborations**  
Introduction: Dr Dan Osborn, Research Councils UK and NERC Lead for Living with Environmental Change (LWEC)
- Session 4      Alliances, networks and advice to the WSKEP**  
Introduction: Dr Carolyn Roberts, Environmental Sustainability Knowledge Transfer Network, University of Oxford

The heart of the workshop time was devoted to opportunities for participative working among the 50 delegates. This Report features the outcomes from those interactions as written up by delegates during the sessions. As such this report is primarily aimed as an ‘aide memoire’ for participants.

Elements from this report will be used to inform further development of the Water Security KEP.

### 3. Towards a shared understanding of the Priority Subject Area

Table groups discussed the contextual presentation by Jim Hall and noted key insights and issues, supported by a brief narrative, that enrich the Priority Subject Area, as follows:

Ref	Insight/issue
3.1	What is the tolerance of risk for new value creation and large scale adaptation?
3.2	Understanding the different needs of the full range of users and requirements (not just drinking and potable)
3.3	Structural complexity, both stakeholders and institutions are both a driver of planning and management and also a source of uncertainty
3.4	Water resource planning must address both quality as well as quantity in different locations
3.5	Research into food security must include/consider international/imported food reliability and the need for increased water demand
3.6	What stage to introduce 'science' research into solving practical problems
3.7	How to drive and facilitate sharing? Language, networks, traditional relationships etc
3.8	Change from deterministic to probabilistic planning to support decision making for wide range of stakeholders

### 4. Making the most of current research activity

This session gave participants the opportunity to learn more about current research programmes and to make new connections to add value to research taking place. Julien Harou introduced some research projects.

Individuals then gave a short introduction to research work they were involved with. Other participants had the opportunity to connect with programmes that interested them. Comments were captured, and participants logged their interest. 44 connections were identified across 8 research programmes.

## 5. Identify areas for potential future research activity / collaborations

Through table group discussions, individuals were invited to identify key propositions where further research/activity could be of value in taking forward this Priority Subject Area.

Other delegates were invited to join in a conversation to further develop the proposition and indicate if they were interested in collaboration in this area, beyond the workshop.

Eight propositions were developed and discussed, as follows:

<b>Ref</b>	<b>Propositions for further research / activity</b>
5.1	Understanding and operationalizing resilience?
5.2	Develop tools to inform integrating water into future urban planning
5.3	Impact of new land use change on water resources leading to planning/policy incentives for behaviour change
5.4	Customer engagement on issues around the value of water and responsible water use
5.5	Multiple criteria multidimensional management Assessing trade-offs between different goals to make informed decisions
5.6	Re-evaluation of principles of water resources decision making which provides basis for adaptive decision making under uncertainty
5.7	Improved urban flood model adaptation using multi-resolution approximation

## 6. Improving alliances and networks

Dr Carolyn Roberts, Environmental Sustainability Knowledge Transfer Network, University of Oxford, gave an overview of alliances and network approaches that help foster research and practice in this area.

Delegates, in table groups, were then invited to make suggestions for steps to further improve communication and networking, as follows:

<b>Ref</b>	<b>Suggestions to improve networks/communication</b>
6.1	From 'risk' driven to 'creating value' driven communications
6.2	Ensure clarity of intended outcomes
6.3	More focus on SME sector, a source of innovation with solution focus, who need a voice

6.4	'Knowledge Exchange Shop' with technology translators, salespeople to speak to business/academic users, and no silo thinking
6.5	Overload of single sector networks. Consider what is my network purpose? Turn problems into opportunities
6.6	Need for plain English on terminology and support for all participants
6.7	The stakeholder base relevant to the issue has to be engaged and consulted. More focus on innovation and opportunity, less on continuation of conventional research
6.8	Realise the limitation of workshops. Solution is sustained collaboration. Need prototypes

## 7. How do we maximise the value of the Water Security KEP?

Table groups were invited to suggest ways to maximise the value of the Water Security Knowledge Exchange programme, as follows:

<b>Ref</b>	<b>Insights for WSKEP</b>
7.1	Focus towards water demand reduction - behaviour and value
7.2	Practical solutions driven programme. Consider funding the proposed ideas for projects. Need to persuade NERC to fund more solutions driven research on standard research grants
7.3	Stimulate the private sector to invest more in R & D . matching responses from research community
7.4	The UK becomes internationally recognised as the first major country recognised for being the first to embed ecosystems in water management
7.5	How can we assess the success of take-up of knowledge by the user?
7.6	Communicate practical benefits
7.7	Maintain and improve incentives to share ideas
7.8	Need to promote/disseminate the outputs and potential to decision makers. What difference does the research make?
7.9	Updated and maintained web



In addition, individuals were invited to make further comments/ideas to assist in taking forward both the outcomes from the workshop and the wider Water security Knowledge Exchange programme.

7.10	Need real focus on small high fidelity groups to define problems and obtain solutions
7.11	Continue the dialogue. Involve non-standard stakeholders (eg bring in food sector, not just agriculture)
7.12	Water security is connected to food security, carbon, energy and other challenges – all of which will be affected by global warming. So research projects need to look beyond their specialist area for better value
7.13	Need to look for step change opportunities, rather than incremental change and search for optimal solutions (which are probably not optimal anyway, given uncertainty)

End