WATER SECURITY
Knowledge Exchange Programme

Specific Priority Subject 3.2 Summary Report

Assessing Water-Related Business Risks

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Lead Author	Peter Woodward
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Acronyms

WSKEP Water Security Knowledge Exchange Programme

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Summary

This report is the Summary Outcomes Report of the WSKEP Specific Priority Subject Workshop 3.2 on Assessing Water-Related Business Risks. 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. 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.

Contents

1. Overview

1.1. Introduction

It might be considered to be somewhat ironic that this WSKEP workshop on Assessing Water-Related Business risks took place in the north-west at a time when the south and east were suffering one of the driest winters on record and water restrictions are starting to be imposed. But the north-west is not immune to drought problems (1995 and 2003 are good examples) and businesses in the region were hit hard by the floods of 2005 and 2009. Some of the workshop participants had been directly affected by these events and this provided a real focus for some of the discussions.

Risks with major impacts are strongly related to the extremes of floods and droughts, but also to the impacts of future change in either the use of the land or the changing climate. Decisions based on assessment of risks require evidence in the form of predictions of either frequencies of extremes or of future changes. Both are difficult. We have relatively limited information with which to estimate the tails of the distributions for floods and droughts, and such analyses usually require an assumption of stationarity, when we suspect that those frequencies might be changing. Climate models and models of future land management might provide an indication of potential future change but are known to be subject to significant uncertainties. In particular, for water, climate models do not do well in predicting precipitation in some areas when compared to historical records, and their use in impact studies relies on bias corrections and change factors.

This suggests that assessing risks to business should be done circumspectly and within an adaptive decision framework. The Ofwat Asset Management Plan (AMP) approval process for the water utilities has a 5 year cycle which allows a review of both processes (such as allowing for the impacts of climate change; the availability of new technologies; etc.) and planning, although planning for some major infrastructure works requires much longer time scales. Outside the water industry, there was a suggestion that business is to some extent protected by the successes of the water utilities in providing a ready supply of good quality water at low cost, except under very rare circumstances. While many businesses have water efficiency programs, this is very often a marginal risk. Businesses that depend directly on water bodies may have greater risks from floods, droughts and algal blooms, including those from Windermere represented at the workshop.

Martin Furness from Ofwat gave an overview of the AMP process, particularly in respect of the sustainable use of upland catchments in AMP5. This is of great importance to the water industry and society in general, in that deterioration of water source areas can lead to expensive treatment for water supply, as well as issues in meeting the requirements of the Water Framework Directive and Floods Directive. He raised a number of important questions about assessing the risk, when there is limited knowledge about what goes on to the land, the pathways of pollutants to stream channels, the degradation of peatlands, ecological responses and other issues. It is therefore difficult to generalise about what constitutes good practice (including dealing with all the relevant stakeholders), but much more exchange of

information is required. The role of regulation relative to voluntary measures was also raised with the aim of achieving quantifiable, sustainable, cost beneficial, emerging benefits, within a changing climate, that are community owned.

1.2. What is the big science issue / challenge

The overriding issue is providing quantitative evidence, especially in respect of future change and future impacts of management decisions. Phil Haygarth (Lancaster University) introduced this topic with emphasis on the management of diffuse pollution. He noted that these are complex wicked problems and illustrated the discussion with reference to the Defra Demonstration Test Catchment programme where the effectiveness of different management practices are being assessed in 3 main catchment areas, the Eden, the Wensum and the Avon. There is an issue about whether any improvements will be seen in water quality within the time scale of the initial project, but such science studies are essential to provide the evidence for testing models that could be employed in assessing risk more widely.

The discussions raised a number of other science issues (see detailed report). A wide range of water-related risk research projects were identified, many to do with improving the evidence for effective management measures, particularly when regulators are involved. How to deal with uncertainty was raised as a particular issue.

1.3. Networks and alliances

This section of the program was introduced by Kieran Conlan (Cascade Consulting). He noted that there were too many knowledge exchange programs, often overlapping; no central repository of information about the programs and how to get involved in them; and minimal support for involvement of those people working at the hard end of water management. There were many barriers to involvement, not least the difficulty of understanding the language used, replete with acronyms that will not be understood by everyone. The set up of the programme is difficult for outsiders to follow and even more difficult to penetrate. It takes a long time to follow all of the required avenues to identify the correct route to access collaborative opportunity. He suggested that there is a need funding for evidence collation as well as engagement, using an easily accessible web portal; a need for such programmes to be more than talking shops, with defined outputs and uptake; a need to foster good and enduring business relationships; and a need to avoid the tendency to be responsive rather than proactive, which in part reflects a lack of definition in who it is intended to influence.

In the final introductory talk, Keith Beven (Lancaster University) summarised the experience gained in the NERC Catchment Change Network KT project. This network was concerned with developing ways in which risk and uncertainty might be incorporated into decision making for assessing catchment change, with focus areas in flood risk, water scarcity and diffuse pollution. This involves real communication issues between professional partners and other stakeholders about how to handle different sources of uncertainty and how to interpret the results of such studies. What had evolved from the process was the concept of Guidelines for Good Practice for different application areas where decisions about uncertainties must be

agreed and recorded, providing both a communication tool and an audit trail for later evaluation. As one of the workshop participants noted, the aim is not to dictate to users and stakeholders about how to deal with uncertainties but to involve them in the process. Such an approach might be useful in other applications areas and networks.

1.4. The Water Security KE Programme

The workshop made for an interesting day, with a range of perspectives on business risks reflected in the participants. There was a good appreciation that water-related risks are complex, involving both spatial and temporal structure, and that it can be difficult to separate out water-related risks from other issues. Four particular points were raised at the end that were relevant to WSKEP. These were to reduce the fragmentation of knowledge exchange in water-related area; increase the participation of "real" stakeholders; think of new ways of inspiring society in the water-related area, for example using art, poetry or a "Water Fest"; and to be prepared to share funding more widely, particularly in support for business to encourage uptake more effectively.

2. The workshop and report

This workshop was the fourth in a series being run on behalf of the Water Security Knowledge Exchange Programme (WSKEP) with funding from NERC. It was organized by Lancaster Environment Centre at Lancaster University.

Nine Priority Subjects were identified at a national consultation event held in June 2011. The theme of this workshop was '**Assessing Water-Related Business Risks'.**

The workshop was designed to support the following key aims:

- increase awareness and uptake of research outputs in the focus area of 'Assessing Water-Related Business Risks'
- 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: Alan Jenkins, WSKEP Lead, CEH Wallingford

Towards a shared understanding of Priority Subject Area
Introduction: Martin Furness, Principal Scientist, Ofwat

Session 2 **Making the most of current research activity**
Introduction: Phil Haygarth, Co-Director of the Centre for Sustainable Water Management, Lancaster University

Session 3 **Identify areas for future research activity/collaborations**
Introduction: Kieran Conlan, Managing Director, Cascade Consulting

Session 4 **Alliances, networks and advice to the WSKEP**
Introduction: Keith Beven, Distinguished Professor, Lancaster Environment Centre

The heart of the workshop time was devoted to opportunities for participative working among the 30 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 Martin Furness and noted key insights and issues, supported by a brief narrative, that enrich the Priority Subject Area, as follows:

Ref	Insight/issue
3.1	• Categorisation of risk is a key issue • Water risk cannot be isolated
3.2	• Low awareness of water risks and environmental change as business is protected by water industry • The true, total value of water is not clear to business – services rarely go wrong, so perceived as cheap and low risk
3.3	• Regulator response risks • People – public perception and business risk
3.4	• Supply-demand gap/risk issues • Costs to business of taking measures, dealing with extreme events and reduced water availability and quality impacts
3.5	• Risk: changing regulation – need for realistic regulation • Risk: future change – better information required

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. Phil Haygarth 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. 15 connections were identified across 9 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.

Ten propositions were developed and discussed, as follows:

Ref	Propositions for further research / activity
5.1	'Truffle Pigs' Research role into funding opportunities in UK and EU. Provide a clearing House funded by percentage of amounts found for users
5.2	Understanding/predicting/anticipating future change (dealing with known unknowns) and implications for policy
5.3	Information synthesis to be useful to business/stakeholders eg catchment scale delivery of a community toolkit for landscape management
5.4	Rediscovering the minimum level of regulation and regulatory bodies to achieve environmental improvement
5.5	The art of being a clown! Very simple techniques to provide scientific support for current and planned actions in real-world situation
5.6	Detailed study of climate change impacts on business within specific geographical areas (urban vs rural)
5.7	Can agriculture increase output whilst remaining sustainable with respect to environmental impact?
5.8	Valuing water to change behaviours (not necessarily £pounds)
5.9	Tertiary treatment technologies for cost-effective small-scale sewage treatment plants (including recycling nutrients)
5.10	Quantify business risk to enable business case for investment in mitigation activities

Prioritisation

Following the discussion, delegates were given 3 sticky dots to indicate the three propositions they believed should be given priority consideration.

The table below shows the results of this prioritisation:

Ref	Proposition	Dots	Position
5.8	Valuing water to change behaviours	13	1
5.3	Information synthesis to be useful to business/ stakeholders eg catchment scale delivery of a community toolkit for landscape management	12	2
5.10	Quantify business risk to enable business case for investment in mitigation activities	8	3
5.6	Detailed study of climate change impacts on business within specific geographical areas	8	3
5.7	Can agriculture increase output whilst remaining sustainable with respect to environmental impact?	7	5
5.1	Truffle Pigs	6	6
5.2	Understanding/predicting/anticipating future change (dealing with known unknowns) and implications for policy	5	7
5.4	Rediscovering the minimum level of regulation and regulatory bodies to achieve environmental improvement	2	8
5.5	The art of being a clown!	1	9
5.9	Tertiary treatment technologies for cost-effective small-scale sewage treatment plants	1	9

6. Improving alliances and networks

Keith Beven 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:

Ref	Suggestions to improve networks/communication
6.1	From ‘risk’ driven to ‘creating value’ driven communications
6.1	Stork on the Wheel! Drive towards localism through stewardship and ownership (of issues and solutions). Making community especially aware as local experts
6.2	Water sector research yellow pages. Case studies of relevant risks to business – what does future change mean for us?

6.3	Clear identification of points of contact Identification of expert in particular area
6.4	Emphasise solution-driven research technology transfer relevant to businesses
6.5	Learning how to talk more effectively to people out of our sector (non water professionals!)

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:

Ref	Insights for WSKEP
7.1	Solve the fragmentation problem: ICM/research/KT/KE single point entry (hub) for business
7.2	Make sure half the network and delegates are 'real' (non-water) people
7.3	Inspire society about water through art, poetry etc. 'Water fest'
7.4	Much more business involvement plus share funding to encourage uptake

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.

Ref	Insights for WSKEP
7.5	WSKEP could be the leader in changing perception to water as a valuable resource
7.6	Influencing funders to 'value water' more and provide further funding
7.7	Increasing feeling that to get business engagement, need to share NERC funding with user communities beyond universities to ensure buy-in
7.8	Catchment specific working group to go deep and narrow – this will drive out case studies/solutions etc.

End