

SUSTAINABLE WATER STEWARDSHIP

INNOVATION THROUGH COLLABORATION



UNIVERSITY OF
CAMBRIDGE

25
YEARS

PROGRAMME FOR
SUSTAINABILITY LEADERSHIP

love every drop
anglianwater 

Since its inception in 2010, the Sustainable Water Stewardship Collaboratory has been championing a fundamental shift in the way we manage water. Convened by the University of Cambridge Programme for Sustainability Leadership (CPSL) and sponsored by Anglian Water, the programme has brought together forward-thinking organisations, government and communities to explore better ways of managing and valuing water for today and the future.

Only transformational change will address the significant challenges we face as a region and country.

By pioneering and exploring new approaches, this Collaboratory has built expertise and encouraged shared action and innovation to address the disjointed ways in which water is currently managed.

This document summarises the progress the Collaboratory has made to date and the discussions from the workshop on Sustainable Water Stewardship: Pooling Innovation which was held on 6 December 2012 in London. CPSL and Anglian Water would like to thank all those involved, both in the event and throughout the Collaboratory, for their insights, contributions and expertise.

The next phase of this Collaboratory will continue the development of new approaches to water stewardship to achieve greater natural resilience at a lower overall cost. This will help government, business and communities to better manage risks, particularly those associated with changing weather patterns.

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A SuDS basin that holds water occasionally can be a playground or school drama space at other times

Photograph: Robert Bray Associates LTD

The Collaboratory

The Sustainable Water Stewardship Collaboratory seeks innovative solutions to problems caused by the fragmentary way in which water is currently managed and regulated. The Pooling Innovation workshop brought together thought leaders from a wide range of sectors and disciplines to share the achievements of the Collaboratory so far and discuss future directions.

The Collaboratory is made up of four cross-sector Working Groups:

Water allocation:

The objective of this group was to assess the potential for water trading as a way to improve the fairness of water allocation. The research showed the opportunity for new forms of water allocation based upon the participation of key stakeholders and the use of sophisticated demonstration models.

Financing mechanisms:

This group set out to identify in what situations and under what terms, finance might be provided to create projects and promote practices that bring greater sustainability to water-related issues at catchment scale.

Behaviour change:

This group considered how local community engagement in water stewardship at catchment level could be harnessed to promote improved use of water resources. Their research showed a strong community interest in being involved in bringing about credible change.

Regulation and planning:

The aim of this group was to investigate the planning and regulatory changes that would lead to improved water stewardship. New planning guidance will empower planners to engage with water issues. A scoping study proved the need for a toolkit to enable and encourage the integration of sustainable water stewardship into local planning processes.

Foreword

New approaches to water

The University of Cambridge Programme for Sustainability Leadership (CPSL) is dedicated to working with leaders from business, government and civil society on the critical global challenges of the 21st century.



Our objective is to address sustainability issues that are both complex and challenging. Business platforms focus on topics where companies can have a significant impact on policy and practice, and where collective action is needed. Our concept of 'collaboratories' is based on the spirit of 'innovation without walls' that has resulted in many technological and scientific breakthroughs. It is hard to imagine a subject which ticks all of these boxes more comprehensively than water.

A wide range of industries depend heavily on water. These include not only obvious candidates such as energy providers and food producers, but also those where the embedded water within their supply chains is less immediately apparent but nevertheless significant. Water availability is thus critical to their business operations. Equally, flood risk reduction is a key issue not only for the insurance industry but for many others. The construction industry must play its part in ensuring that new developments address the requirements of sustainable water provision and disposal. Agro-chemical industries and farmers have a vital role in eliminating pollution from water sources.

Ensuring that water is managed, carefully stewarded and made available in an equitable fashion is now therefore a subject of vital interest to business. Financing these objectives at a time of economic uncertainty is a major challenge that will require a great deal of intellectual effort to solve. I am, however, confident that CPSL's international alumni network contains leaders with capability and enthusiasm to join us to address the complex issues which we will be facing in the next phase of our work.

As you will read in this report, the Collaboratory has already been doing pioneering work in this field and we are most grateful to all of the members of the working groups and the steering group who have given generously of their time to take part in the initial analysis and scoping work. I would especially like to thank Lord Selborne for his invaluable contribution as Chair of the Steering Group since the Collaboratory's inception, and Professor Tim O'Riordan for his work as Special Adviser.

We are most grateful to Anglian Water for their financial support as well as for their engagement in all of the various strands of activities. We hope that we have justified their confidence in supporting the earliest and therefore riskiest phase of this initiative. We very much look forward to developing the next phase with Anglian Water as well as with other key stakeholders who are paving the way to find solutions to the pressing problems related to water.

A handwritten signature in black ink that reads "Polly Courtice". The signature is written in a cursive, flowing style.

Polly Courtice, LVO
Director, University of Cambridge Programme for Sustainability Leadership



Introduction

Two years after the launch of this initiative, I am encouraged by the progress that has been achieved already on a subject that is both intractable and vital.

We set out in 2010 to build a broad and knowledgeable community of interests that would inform the development and implementation of new policy measures, and this has been achieved. The commitment of all of those who have taken time out of their busy professional lives to grapple with the range of challenging issues that are outlined in this report has been heartening. Indeed, one of the most notable aspects of the workshop in December 2012 was not only the fascinating observations of those presenting their results so far, but the enthusiasm of other participants to become involved.

This engagement could not have come at a more timely moment. The water industry faces challenges from population growth and redistribution, from climate change, from increasingly damaging and more widespread flooding, and from water scarcity. As climate scientists have long been predicting, weather patterns are already becoming more unstable, leading to increased incidence of flooding, drought and ecosystem vulnerability. The direct dependence on water of a huge range of businesses is well-known. The introduction of ecosystem valuation and the increasing concern for enhancing resilience and integrity of biodiversity also suggest that this is the time to act. From the government's

side, the conditions for introducing change are at this moment being put in place. The draft Water Bill published in July 2012 has the objective of slashing red tape and allowing the industry to modernise.

The 2014 Periodic Review (PR14), which will set the prices of water services for the consumer and the overall expenditure patterns for the water companies, offers a similar opportunity for reform and innovation.

The next phase of this initiative therefore offers an exciting challenge for a wide range of actors from business, the public sector, the third sector and land-owners and managers to build on the work that has been done so far and to seek genuinely novel solutions to catchment-wide governance that will deliver truly sustainable water stewardship.

A handwritten signature in black ink that reads "J M Selborne".

Earl of Selborne, GBE, FRS

Treasurer, All-Party Parliamentary Group on Water
Chairman of Collaboratory Steering Group

Pooling innovation

We live in a world of weird weather – in 2012 we had too little water, followed immediately by too much. The abnormal has become the normal. Yet we are still a long way from addressing and managing water and land-use on a catchment-scale to adapt to this new reality. Change cannot be achieved by a few regulatory tweaks, nor can water companies or any government agency working in isolation turn things round. The issues are highly interconnected and it is almost impossible, working in organisational silos, to change the somewhat entrenched ways of managing water that came about when water appeared to be a cheap, readily available commodity. It is only collaborative efforts that will allow us to overcome the sheer momentum of the old ways of doing things.

This Collaboratory has imaginatively tackled the complex web of issues that affect the ways in which water is provided and disposed of. Leaders from key sectors have sought to break out of the traditional straitjackets of thinking and accepted practice to explore innovative solutions. Cross-sector groups have looked at specific issues ranging from redesigning water allocation and reassessing planning, regulation and finance, to achieving catchment-wide behaviour change. In all cases, a multitude of interesting and innovative ideas have emerged that are worthy of further investigation, with the support and engagement of additional stakeholders. For example applying the concept of ‘water banks’ (whereby farmers are encouraged to invest in rainwater storage in times of prolonged rainfall in order to make new water available during periods of drought and flood), brings together issues relating to planning, behaviour change, finance, regulation and water allocation.

Indeed, co-operation – bringing together those who represent a wide range of interests in the public, private and third sectors – is central not only

to the way in which we work in this Collaboratory. It is also the key to achieving water stewardship based on the vital role water plays in all our lives. What is very exciting is the willingness of a wide range of very busy people and organisations to work together with enthusiasm and creativity. The loss of the regional strategic planning framework means that we need to find other ways to bring these diverse interests together. Catchment-based governance offers the best way forward. Our task now is to make this a reality by applying our emerging ideas to case studies.

Professor Tim O’Riordan, Emeritus Professor at the University of East Anglia and Special Advisor to the Collaboratory

Collaborating for success

Keynote Speaker: Peter Simpson, Managing Director, Anglian Water

My work in the water industry has taken me around the world, spanning eight countries on three continents. So I have seen at first-hand how long-term access to secure supplies of water is one of the most pressing environmental and economic challenges the world faces today.

Here at home, managing water sustainably is a significant issue too, as it impacts every home and business across the UK. Here in the east of England we operate in the driest and fastest growing region of the country. We are highly vulnerable to the impacts of climate change and to extremes of weather. In 2012 alone we experienced the driest conditions for nearly a century, followed by devastating floods.

Our reliance on water to grow crops, operate our businesses, to keep our environment healthy and to underpin economic growth is all too clear.

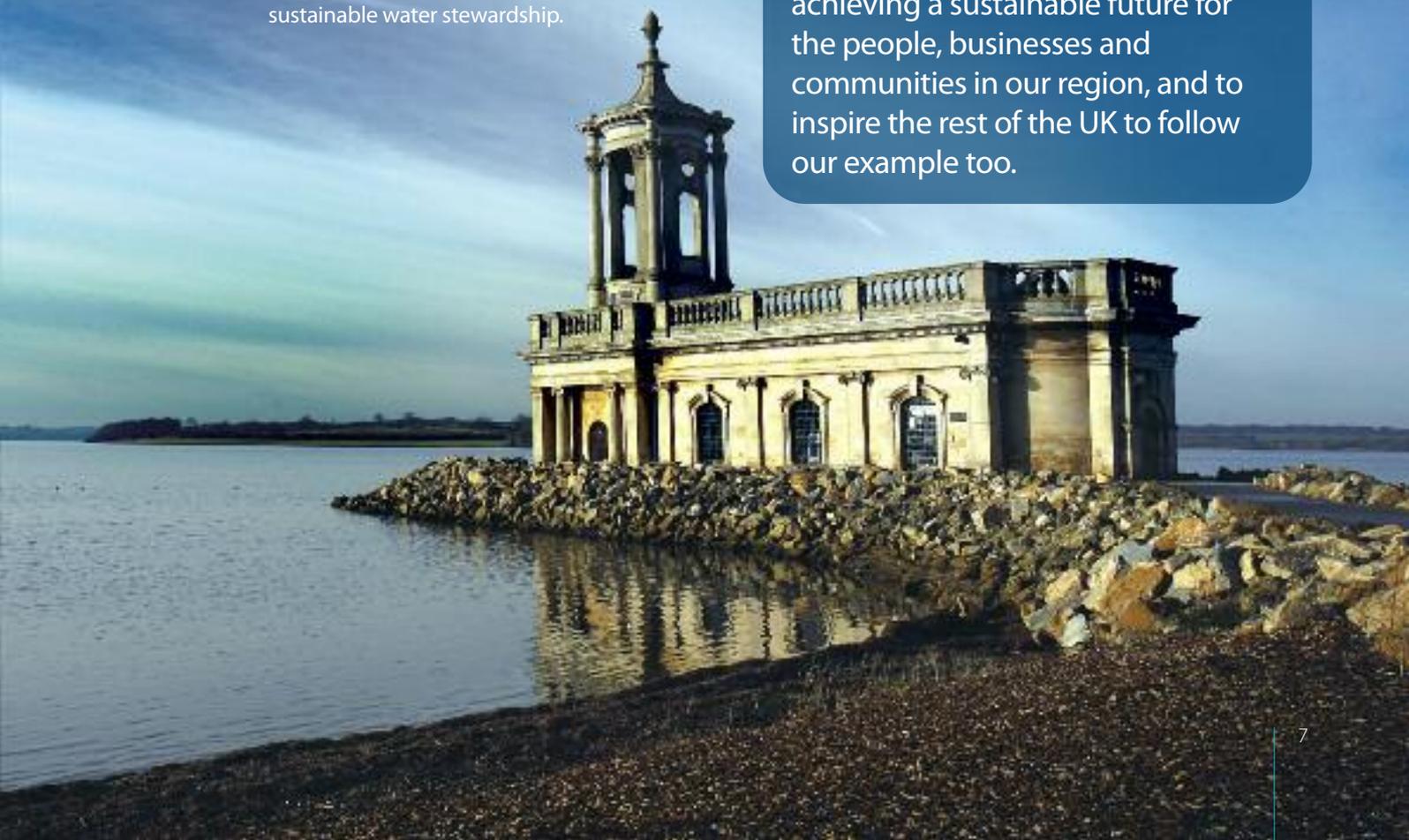
We recognise that engineering solutions alone cannot deliver the solutions to the many challenges we face. Which is why we are focussing on driving innovation and behavioural change, working with our customers and many others to future proof our water resources. Collective action is the only way to achieve sustainable water stewardship.

It's all about putting water at the heart of a whole new way of living, which is why we're so passionate about Love Every Drop, our strategy for a sustainable future.

We want to lead the way in raising awareness about the value of water and change fundamentally how we all engage with it and use it.

That's why two years ago we pioneered the Water Stewardship Collaboratory with the University of Cambridge Programme for Sustainability Leadership. We are grateful to so many leaders from key sectors who have come together and committed to action. We now need even wider collaboration to unlock the benefits of the progress we've made. The success of agriculture, manufacturing and the health of the environment rests on our collective ability to drive the programme forward.

By working together to shape how we see and manage our natural capital we have every chance of achieving a sustainable future for the people, businesses and communities in our region, and to inspire the rest of the UK to follow our example too.



Government leadership

Keynote Speaker: Sonia Phippard, Director, Water Risk and Flood Management, DEFRA



Sustainable urban drainage enhances the environment and provides valued green space in Peterborough

DEFRA welcomes this exciting and groundbreaking CPSL initiative. Water is a key driver of economic growth and the Government is working on a number of projects to help create the next generation of water stewardship and to improve the value that is placed on water.

Society has too readily assumed that water will always be available. The drought in 2011 and 2012 showed us that we cannot be complacent and that such events seriously impact our ability to meet projected demand for water. The Government's White Paper, *Water for Life* published in December 2011, stressed the importance of long-term investment in order to deliver efficiency and resilience in the provision and disposal of water. The draft Water Bill is now undergoing pre-legislative scrutiny and will provide the legislative framework for the reform of the water market and remove the barriers to competition. This will encourage new players and new ways of thinking and will contribute directly to our future resilience and to the environment. The EFRA Committee has now completed the evidence gathering stage and has published its findings for our consideration.

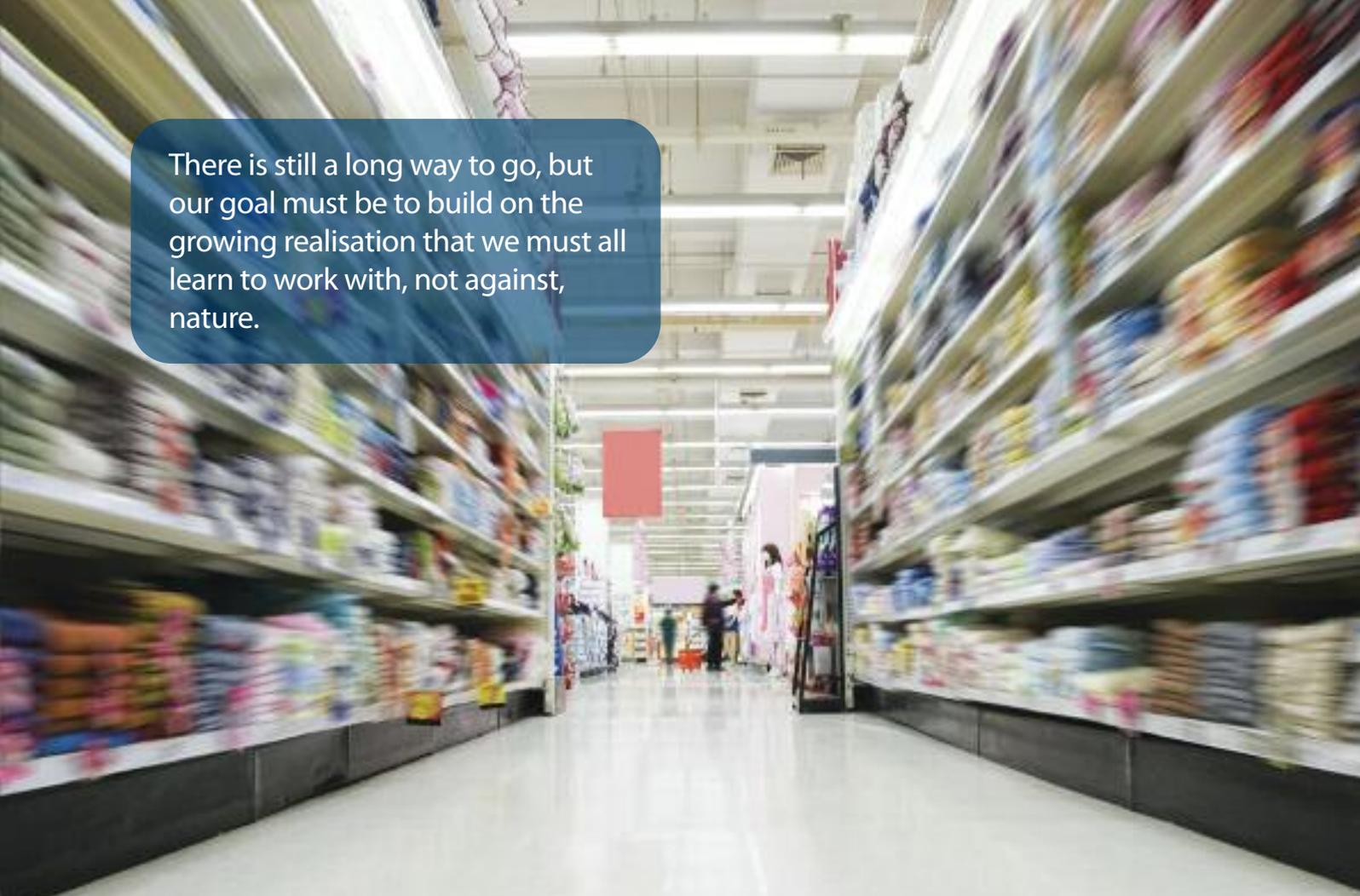
We want to take an innovative approach to reforming the current abstraction management regime to make sure that it is flexible enough to cope with the challenges of climate change and increased demand from a growing population. It needs to be smarter and more responsive to future uncertainty. We are

currently learning the lessons from the catchment pilot projects that we ran in 2011, and staff from the Environment Agency have been closely involved with this Collaboratory over the past year. Our own conclusions coincide with those of the Collaboratory, that environmental improvements can best be delivered through partnerships working at catchment scale. We see the value of involving all sections of society in these partnerships, including local community groups and business. Reducing demand for water is key not only to keeping costs down but also to building resilience. The farming and land-owning community can play a vital role in storage and slowing the flow of water. Businesses need to get involved with us on issues to do with integrating thinking on water quality and supply, and flood risk.

This is also an important time for water companies to engage with others in the preparation of their Water Resource Management Plans. Reducing demand for water is one of the key policy priorities that we expect water companies to address in their Plans.



DEFRA looks forward to continuing to work with this Collaboratory to help us deliver our vision for an innovative, efficient, resilient water sector.



There is still a long way to go, but our goal must be to build on the growing realisation that we must all learn to work with, not against, nature.

Business risks and opportunities

Keynote Speaker: Dr Alan Knight, OBE, Environmental Sustainability Director, Business in the Community

Water touches very many aspects of business, not just in the obvious industries such as food and drink production and power generation. As the realisation grows that demand is beginning to exceed supply, more and more companies are looking critically at their water footprint as a key risk factor for their businesses.

Many are taking action to reduce their usage, setting targets and reporting against performance, in anticipation of potential changes in charging and abstraction regimes. Whilst the food and drink manufacturers have led the way on this, other industries are now getting the message and looking at water usage, not only within their own operations, but up and down their supply chains. The difference, compared to carbon footprinting, is that there is no one-size-fits-all solution. Policies and business strategies need to be tailored to the local context.

It is more complicated to formulate business strategy where the situation is not straightforward and data cannot be reduced to a single headline number. The same is true when it comes to

changing consumer behaviour. Memories are short, and despite last spring's drought, the torrential downpours that followed in the summer have made it harder to persuade people of the need to use water more frugally. Only a minority of people put a high priority on conserving water, even when it comes to a simple matter such as not leaving the tap running unnecessarily. From water-efficient showerheads and washing machines through to shampoos that require less water to rinse them out, business can play a role in designing products that reduce water consumption. Choice editing - the removal of high water usage products from the market - may be an option.

There are also opportunities for companies to explore reusing water in their own production processes, for example in cleaning or cooling. The UK's Roundtable for Sustainable Consumption found that consumers were ready and willing to take action to reduce their resource consumption, but that clear leadership and support were needed from government and business for them to do so. Significant change happens fastest when corporations take the initiative.

Water Allocation

The Challenge

The challenge of climate change means we need to find more innovative ways to ensure secure water resources in the future. At stake is the security of safe, constant water supplies, so it has never been more important or timely to explore these solutions. The Water Allocation project, co-funded by DEFRA and Anglian Water, aimed to determine the potential of water trading as a way to allocate water more effectively.

The Project: This study brought together a broad range of leading local and national stakeholders: the National Farmers' Union, the Royal Agricultural Society of England, Natural England, the Environment Agency, DEFRA, Ofwat, WWF-UK, the Association of Drainage Authorities, Anglian Water, Cranfield University, Atkins, the RSPB, and the Broads Authority. The focus of the group was on effective water trading markets, to enable allocation of water in the Upper Ouse and Bedford Ouse Catchment in East Anglia.

The project showed the potential for new forms of water allocation based upon better information, participation of stakeholders and the use of economic water resource models.

Three objectives underpinned the work:

- To establish the feasibility of an effective trading system at catchment level
- To provide stakeholders with an evidence base about water trading at catchment level
- To create a compelling case to inform and influence policy

Research was undertaken in two phases between May and November 2012. The first phase involved engagement with stakeholders around water management and an understanding of water trading and its potential. Stakeholders included abstractors within the catchment, the Environment Agency, Ofwat and local land managers. In the second phase, two demonstration trading platforms and models were showcased at interactive stakeholder workshops: Common Pool (using a 'hands on' trading demonstration) and Improved Pairwise (using a hydroeconomic model).



Key findings:

- A one-size-fits-all solution is unlikely, common principles exist but local solutions are needed
- Abstractors in this study had limited experience of the current trading system or appreciation of the value / price of water
- Trading water at short notice is generally seen as a positive development
- Fit-for-purpose licences are needed
- Water management is a complex system driven by social, environmental and economic factors. Understanding that system is key to understanding how water trading might work
- DEFRA must ensure careful sequencing and sufficient time for reform.

An independent company, HR Wallingford, specialising in research into the water environment and climate change, was commissioned to lead the research team. Collingwood Environmental Planning was responsible for the stakeholder engagement. Dr Julien Harou of University College London and Dr John Raffensperger of the University of Canterbury, New Zealand, looked at tools to assist in promoting the trading of water. Professor Mike Young, Director of the Environment Institute at Adelaide University in Australia, provided expertise on water entitlement and water allocation systems used worldwide.

Abstraction reform is in its infancy and the role of water trading in the UK as part of that reform remains unclear, partly due to a lack of focused research with local stakeholders. This was an exploratory piece of research which framed water trading in a social, environmental and economic context, so that it was possible to investigate barriers and facilitators to water trading in practice.

The implications for policy makers and business are clear: with additional funding, this research could usefully be expanded into other catchments to investigate whether lessons from the research could be scaled up. The demonstration models could also be developed further. For example, the Common Pool could be used as a trading laboratory to investigate behaviour and outcomes under different scenarios and to suggest improvements to the user interface.

Chair: Jean Spencer, Anglian Water

Detailed reports for Phases 1 and 2 are available on the CPSL website





The Opportunity

Both the research and the feedback at the workshop identified a real need for changes to the current system of water allocation in order to promote innovation in water use and improve efficiency. The Working Group and those involved in the project felt water trading offered significant opportunities to help in this process. Key to success is long-term planning for water, linking drivers such as projected population growth, but this Working Group showed the undoubted short-term benefits offered by trading.

There are a number of opportunities arising from this work; significant gains may be had by working strategically with diverse abstractors. This will help secure economic growth by assessing and planning for resource requirements including long-term infrastructure planning.

Also, integrated water trading approaches with water resource management and flood risk management are possible. For example, water trading can be combined with increasing the amount of water storage in a catchment. Alternatively, the amount of water abstracted can be reduced by working with nearby abstractors to look at their discharges and opportunities for water re-use.

There are, of course, also barriers, which include concerns over third parties trading water as a commodity in certain markets and making it too expensive for some abstractors. A further concern is the issue of water company domination (by volume) of the water abstraction market in most catchments.

Next steps:

- Refining and testing the models further:
 - Trial the improved pair-wise model in a small catchment, setting up a pre-approved list first.
 - Repeat the exercise in a catchment with a greater industrial presence.
 - Work with stakeholders to understand the implications of the unstated assumptions and how behaviour might change through the life of a licence.
- Developing existing ideas for overcoming the challenges and exploring the identified opportunities.
 - These might include evaluating potential benefits of any trading system against likely costs of environmental monitoring, administration costs and scrutiny.
 - Options also include looking at the impact on future trading of restoring unsustainable abstraction.
 - Water Resources Planning exercises carried out across all sectors within a catchment would offer the opportunity to explore the role of trading.

This project has worked to generate compelling evidence to influence and inform the abstraction reform agenda. As the work was co-funded by DEFRA, there is a direct link into their evidence base and the results are being shared with their Advisory Group members.

Behaviour change

The Challenge



Current levels of water consumption are unsustainable and many people do not consider the true value of water. This group aimed to encourage local ownership of interventions promoting the value of water. The longer term objective was to investigate whether a community-focused governance model for water stewardship would support behaviour change in the long-term.

Key findings: Wide stakeholder research showed a firm interest in the idea of community governance and there was strong interest in remaining involved to bring about credible change.

The project: This project sought to engage stakeholders collaboratively to develop an innovative 'governance' model for water stewardship at the community level, recognising the multiple benefits water brings to lives and society. This project brought together DEFRA, the National Trust, the NHS Norfolk, the RSPB, Anglian Water, the Wildlife Trusts, the Consumer Council for Water, Waterwise, and Corporate Culture.

The Wissey catchment was selected for the trial in order to align with the DEFRA Integrated Catchment Management (ICM) pilot project being run by Anglian Water. The ICM pilot brought together stakeholders across the Wissey catchment to identify solutions to the challenges and pressures facing the catchment. The Collaboratory workstream dovetailed with that pilot, focusing on a sub-section of the catchment, the River Gadder from Swaffham to Stoke Ferry. It drew in stakeholder groups beyond those

traditionally involved in catchment management schemes and set the framework for developing a model for community engagement which would recognise the multiple benefits for all stakeholders. The land use in this catchment is predominantly agricultural but there are centres of population and some industry. The project therefore supported the investigation of water as an engaging factor between urban and rural communities.

Central to this project was a collaborative approach which engaged local stakeholders.

One-to-one interviews were held with key influencers in the catchment in order to understand the issues and secure their involvement. In addition, a baseline survey was carried out with 200 members of the community, including land-owners and users, members of the public, businesses, communities and service providers, to determine their current knowledge and attitudes to water, identify opportunities and gauge interest. Workshops then brought stakeholders together to explore the benefits of change, build the case for action, identify a vision for success and create potential solutions.

Key conclusions and recommendations:

The biggest concerns identified were pollution of rivers, loss of natural habitat, water scarcity and drought; 94 per cent were concerned about water scarcity. Residents and businesses alike felt strongly about water conservation and the need to protect the environment and outdoor space. There were differences between residents and business: businesses valued the natural environment for its health benefits and for commercial reasons such as food productivity, tourism and its value to the local economy, whereas residents stressed its importance in helping children to develop, and improving health, wellbeing and community life.

Both groups were positive about establishing a local group to improve the water environment, seeing it as an opportunity for the community to work together on local issues. Both groups believed that the water company and government should contribute towards any scheme, though residents felt businesses who would benefit should also contribute.

Overall there was a high interest in volunteering and 'in kind' support, particularly in the case of smaller projects. More generally the idea of community governance was very well liked and there was strong interest in remaining involved.

Chair: Amanda Long, East of England Co-operative Society

The Opportunity

It is clear from the work so far that there is a good understanding of the dangers of drought and flooding. In this rural catchment the benefits of storage, rainwater reuse and effective drainage are all understood. It would be instructive to see how the trial would translate in an urban catchment, where the possibilities for collaborative working are very different.

The key questions for the next phase of work are:

- Could there be a future for community – based ‘governance’ / mutual resource stewardship? How should it be framed? Are River Trusts an appropriate blueprint? How much of a role can volunteers play?
- Could such a model become standard practice as part of a more ambitious approach to integrated catchment management?

- How can the cultural and ingrained limitations of current approaches to stewardship be overcome?
- What finance and investment mechanisms would be most appropriate to underpin investment in catchment projects?

Next steps:

Ongoing work is needed to understand the impacts of community involvement on behaviour, for example whether it leads to improved water efficiency, and to observe whether testing the model results in any other local benefits.

Through such a process, people can develop a vision, agree on shared values and behaviour, make informed decisions and act together to manage the natural resources of their catchment. It can perhaps best be described as reconnecting communities with water.

A rivercare group clean up their local river



Financing mechanisms

The Challenge

The focus of the Collaboratory is innovation in stewardship, but even the most promising ideas need to be accompanied by practical proposals for how they can be financed. This is no easy task given the wide range of potential stakeholders with differing aims, resources, authority and responsibility.



The objective of this Working Group is to develop finance models that will offer incentives to invest in projects with objectives such as improving water quality or availability, reducing flood risk or providing greater ecosystem integrity.

Key findings: The key actors - those who are best placed to influence and those who will derive value from improved outcomes – were identified. As a first example, financing schemes for improving the management of surface water run-off have been analysed in detail and five potential models identified.

The Project: Using the management of surface water run-off as a case study, this Working Group aimed to answer the following questions:

- How could storm-water run-off control be better financed?
- How can the cost of flooding be reduced?
- How can the cost of water services be reduced?
- How should insurance and water companies be incentivised to contribute more to the building of storm-water management infrastructures?

Five main financing schemes for water catchment management infrastructure development were identified:

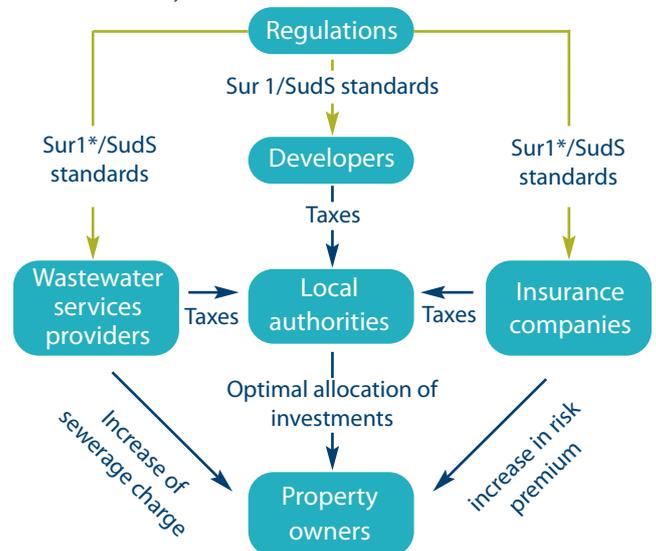
1. Financing through taxes (see diagram opposite): introduction of new taxes and centralisation of the allocation of new investments in a dedicated agency.
2. Third-party financing: the initial investment is financed by actors benefiting from the new infrastructures, as

well as banks and other financial institutions, using a Water Services Company (WASCO) [similar to an Energy Services Company, ESCO], or perhaps a municipal variant of this.

3. Financing by the stakeholders: stakeholders (property owners, local authorities, insurance companies, wastewater service companies and developers) invest directly in new infrastructure.
4. Financing through full-cost pricing: this strategy applies user fees to finance new infrastructure.
5. Financing by the developers and / or the landowners: the initial investment is paid by the developers, who expect to recover it by selling the real estate at a higher price.

The research suggested that the specific finance model selected for a given catchment area will be determined by both the nature of the project(s) and the terms of engagement of the stakeholders. Each model may be subject to barriers that make it difficult to implement, in particular administrative barriers, risks that are perceived to be high, the lack of appropriate forms of finance, and a lack of clarity and stability of regulation. Among the solutions available to transcend these barriers are a wider diffusion of the concept of a WASCO; an explanation of the underlying business model; the development of better tools to cover the risks involved; and the definition of clear and stable rules by regulators.

In the next stage of work, stakeholder interviews and collective workshops would be conducted to determine the relative acceptability of the five finance models in specific catchment areas, and the ability of each model to unlock the required finance (at suitable terms) for an array of sustainability aims.



The model based on finance through taxes.

*Represents management of surface water run off. SudS are sustainable urban drainage

The Opportunity

Catchment project finance is not just about provision of clean water and removal of sewage. It is about the financing of projects that protect and enhance the quality of life for inhabitants – a quality tied intimately to our waterways.

This Working Group made progress in identifying opportunities to unlock the finance for complex, catchment-scale projects. There are barriers with respect to social acceptability, the terms of the finance and the investment risks involved, which should be assessed with further research and through better development of the evidence base for models.

The most important step forward will involve bringing stakeholders together around specific catchment areas to identify the enthusiasm for – and willingness to provide finance through – the different models in specific projects.

Facilitated workshops would be used to develop the suite of incentives for public and private sector groups to engage in catchment-scale projects. They would help define who is willing to bring finance through debt or equity; the terms they seek to ensure a return on their investment; the ways in which finance, governance and social agreement must be coordinated; and the value placed on different water and land services by the diverse actors.

Feedback from the breakout groups suggested that it would be worth exploring other successful case studies of collective finance, for example in the energy sector. However, when considering even a single example such as management of surface water runoff, there is no standardised problem but instead many different situations; this will therefore require a variety of financing options.

This reinforces the need to look for local solutions; the likelihood of collaboration is much greater where the benefits are concrete and identifiable, rather than abstract. Community infrastructure levies are likely to be more palatable than centralised taxation.

The benefits to society of greater sustainability in water management are clear, but the challenge remains of turning these benefits into a willingness to provide finance. The lesson from the work done so far is that both the public and private sectors expect to share responsibility, and hence there must be both public and private good created by the project.

Opportunities exist for the creation of for-profit WASCOs (or similar organisations); increased asset value of properties; reduced operating costs (including insurance premiums) for properties; and improved amenities of ecosystems and their habitats to make regional areas more attractive as a base for employment. This opens significant avenues for engagement with the Local Enterprise Partnerships, which could emerge as the public-private vehicle for catchment-scale management.

“There is no generic problem and there therefore can be no generic finance solution, just multiple opportunities requiring different financing approaches.”

John Scott, Chief Risk Officer, Zurich Global Corporate

Regulation and planning

The Challenge



Many planners pay little attention to water supply and waste water disposal issues when planning new developments. This is due to the way the water industry has been regulated and managed in the recent past, which led planners to presume that any water demanded from new developments would be met. Spatial planners need a toolkit that will help them integrate the sustainable provision and disposal of water into the local planning process. At present such guidance does not exist.

Key findings: Through consultation with local planners, the Environment Agency, DEFRA, DCLG and other key representatives, it was identified that there is a clear need for planning guidance for water. This is more than just a planning matter, as some aspects of catchment-scale comprehensive water management, for example agricultural land use, are not covered by the formal spatial planning process. A scoping study has been written that has demonstrated the necessity of developing a toolkit for spatial planners that will outline the technical issues as well as the opportunities for achieving multiple benefits from the use of water.

The project: The new National Planning Policy Framework (NPPF), published in March 2012, provides the policy 'hooks' for developing local planning policy for water management, but does not explain the issues behind the policy or the importance of integrated water planning. Nor does it show the role of water infrastructure in enabling sustainable development. Because water is no longer plentiful in the east and south, it is becoming very difficult to locate and design new development that is sustainable in terms of water supply, disposal and drainage. Through consultation with organisations

and practitioners, it is clear that guidance is urgently needed to ensure that water stewardship is fully integrated into local plans and that strategic water management objectives – for example water efficiency in new development and managing surface water to prevent flooding and pollution – are taken into account in deciding all future planning applications.

The scoping study is the first step towards provision of guidance that will address these issues.

We have been told that such guidance should encourage engagement and foster innovation. To do this it must not be prescriptive. It should explain what planners need to do, not how they should do it and be illustrated with examples of good practice. It must link to flood risk management to show the synergies between managing water and managing flood risk.

Crucial to the dissemination of planning guidance is the concept of 'catchment ambassadors'. There are already catchment co-ordinators in many different organisations. Better co-ordination would enable them to act as communicators between stakeholders and to assist with the interpretation and implementation of planning guidance.

In addition there is a need to reassess the three strands of regulation for water care in England. This includes efficiency and customer service (Ofwat and the Consumer Council for Water), safe drinking water (the Drinking Water Inspectorate), and environmental protection (Environment Agency and Natural England). Investigations so far have concentrated on considering whether networked advice on sustainable water care at catchment scale would lead to improvements in regulation.

The concept of catchment ambassadors is also relevant to other activities within the Collaboratory - for example, to the behaviour change work, where there is a need to investigate how the views of formal and informal stakeholders could be bridged, and to the work on finance, where there could be a role in mediating catchment-based financing opportunities. The financing aspect is particularly challenging as there are no ready-made financial arrangements for delivering comprehensive water stewardship on a catchment scale. These are interesting concepts which will each need to be piloted in innovative case studies over the coming year.

Chair: Professor Tim O'Riordan, University of East Anglia

The Opportunity

Outcomes that would be unachievable on cost grounds alone are achievable when the cost is shared between those benefitting. The new planning guidance that is to be drafted in 2013 will promote partnerships so that the objectives of different groups can be consolidated.

Feedback from the Pooling Innovation workshop stressed the importance of involving those with responsibility for provision and disposal of water in local development plans. The Localism Act offers the opportunity for Integrated Catchment Management Plans to be given more teeth and to be made deliverable through the Act. Longer-term decision-making is needed in infrastructure and development projects to ensure that resilience is built into development appraisals.

The clear wish was expressed for more radical approaches, given the scale of the land use and water resource issues facing all regions of UK. This perspective involves extending the concept of conventional planning approaches to overall land use and water care, for example designing drainage arrangements in open countryside in order to retain storm water and slow down its subsequent movement. Another example is the creation of buffer zones of soil and vegetation to increase biodiversity and provide natural cleansing of water to reduce the costs of subsequent treatment. A third example is the provision of guidance on the characteristics of future

buildings so that rainwater is harvested on roofs and in tanks, and hard surface drainage is channelled into groundwater or into surface storage for supply and wildlife enhancement. The overall task is to build expertise so that overall water management is integral to building and land-use design.

The next steps:

A wide range of pilots, trials, initiatives and best practice projects have been completed or are in train across the whole spectrum of land management covering provision of water, flood prevention, demand management, new build, adaptation, emergency response, etc. In some cases there are published case studies. Analysing the learning from these in order to bring all of this experience to bear on new policies and practices is a significant task – but the consensus from the workshop was that this work is both urgent and important. Scaling up from pilot scale to landscape-scale, catchment-scale and regional-scale are thus the next steps.

The key issue will be to show that what is being proposed is genuinely geared towards saving future costs, improving overall environmental resilience, and bettering the health and wellbeing of all water users.

“The Water Stewardship Collaboratory can create change by enabling the ‘nesting’ of the various levels of water resource planning – at local, regional and national scales. The rigour of catchment management planning must be integrated with people’s passion for water to drive local action.

“The breakout groups and the overall workshop were highly optimistic that this can be done – provided the politicians carry through their previous commitments to ‘Make the Space for Water.’”

**Robert Jarman, Sustainability Director,
National Trust**





"Working with a range of people with different technical, intellectual and commercial interests to find new ways of working together has been fascinating and rewarding and I would very much like to continue and develop this theme."

Mike Woolgar, Managing Director, Water & Environment, Atkins

"I would be interested in communicating / participating in subsequent developments, particularly in the area of water allocation."

Mark Mulcaly, Water Resources Manager, Nestlé Waters

"Thank you for involving me in such an interesting project. It was a great opportunity to actually think about the issues rather than chase around reacting to them."

Rob Cunningham, Head of Water Policy, Royal Society for the Protection of Birds

Support for continued cross-sector engagement

"As a result of the challenging season we experienced in 2012, we have set up a number of regional meetings with our potato growers to discuss the situation. We would be interested in being involved with the future work of the Collaboratory, which is working in an area that is of great importance and interest to our business."

Mark Pettigrew, Sustainability Manager, Pepsico

"Please keep me informed of future developments. I am particularly interested in the proposed guidance for planners."

Sarah Lewis, Planning Practice Officer, Royal Town Planning Institute

"I would be very interested in hearing about the next phase of this project and finding out how I might become involved."

Brian Nash, Director, Sustainability and Environment, Ingredion Inc.

Taking a holistic view of water

Toby Willison, Director Anglian, Environment Agency

The Environment Agency has been working closely with this Collaboratory since its inception, as its objectives are very much in line with our own. From our perspective, one of the most important attributes of this initiative is its convening power and its ability to bring together the skills and knowledge of those who can work on these challenging issues in a spirit of openness and trust.

The collaboration between government and the regulators, industry, NGOs and academia is very powerful. We need to build on the excellent work that has been done so far and take advantage of the networks that have been established, bringing in other groups, such as landowners and community leaders, who also need to be at the table.

Key to achieving sustainability of our water in the future will be to take a holistic view of the supply



chain. We need to be imaginative about the interventions that will support change. We need to put more effort into sharing good practice and into ensuring that successful pilot projects are disseminated and become mainstream.

The Environment Agency looks forward to its future involvement with this Collaboratory.



The way forward

Dr Jake Reynolds, Director, Business Platforms, CPSL

Over the last year this Collaboratory has wrestled with four sets of complex, interrelated challenges, all representing critical paths to improved water stewardship. Cross sector experts have worked together, addressing a broad range of the most complex questions in this area. We have made significant headway, but the extreme weather of 2012 has shown us just how urgently we need to address these risks and build resilience.

Business as usual will not solve the problems we face. The next phase of CPSL's Water Stewardship Collaboratory will bring together even more organisations and businesses to prepare strategies and solutions for coping with these extremes. Now is the time to seize the opportunities from operating in this increasingly volatile environment and spearhead the case for action.

The Pooling Innovation event on 6 December 2012 marked the first major milestone of this Collaboratory and we now enter a new phase. Excellent research studies have helped to illuminate each of the workstreams and together they have facilitated the definition of an exciting programme for the year ahead. We are grateful to Anglian Water for their support and engagement during this foundation stage and look forward now to engaging with a variety of businesses from a variety of sectors who will work with us to drive this agenda forward and ensure that their needs are addressed.

As the enthusiasm and engagement of delegates at Pooling Innovation demonstrated, we are making significant progress. The workstreams have been led by experts who have consulted widely, including with those who hold the responsibility for implementing solutions. This collaborative process ensures that we have a solid foundation of analysis on which to base future more practical phases with stakeholders.

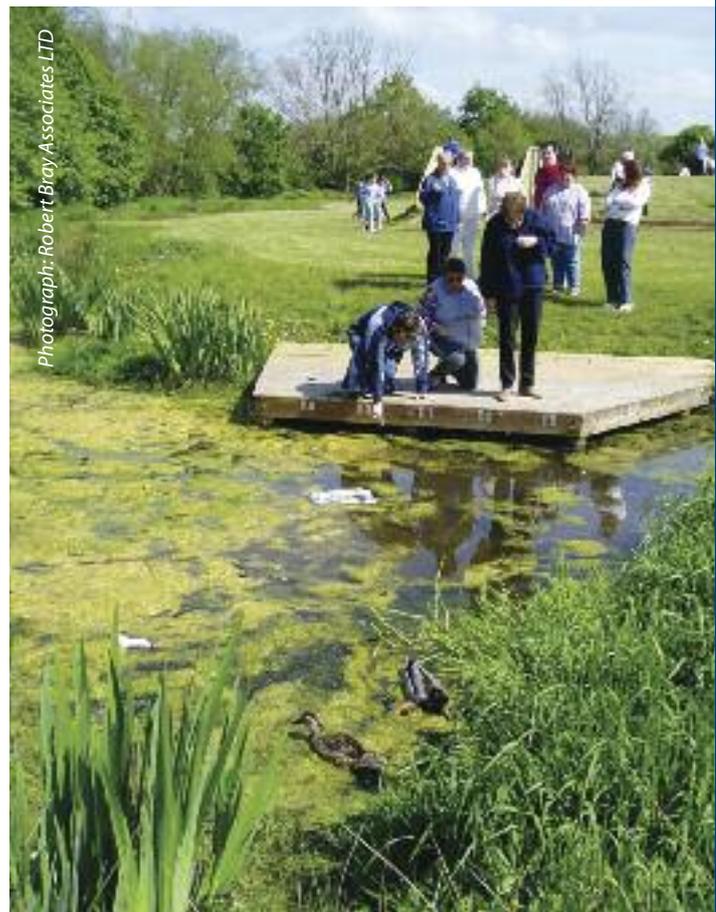
There are some excellent beacons of good practice from which we can learn. Too often these remain one-off exercises that go no further. Our task now is to analyse and learn from them as well as disseminate lessons of our own. Specifically, we wish to test our insights through applied projects and draw lessons from the experience and know-how of others.

As with energy and carbon emissions, more and more companies now recognise the importance of

water to their business. And, as with energy, using water responsibly has positive economic as well as environmental and social consequences. For example, the insurance industry has a clear interest in reducing the costs of flooding, whilst farmers, food producers and energy companies are only too aware of the importance of managing water to avoid scarcity. But there are many other examples of how business and society, gain from solutions such as improved drainage, rehabilitation of natural habitats and pollution management.

We know that water is a renewable, but finite, resource. Water stewardship requires us to use water wisely whilst renewing the sources from which we derive it and this is a key time for pooling innovative ideas about how this can be achieved. Some of the proposals we are working on have clear economic benefits, though it is not always obvious how they can be financed. Some will need to be facilitated by regulatory changes as neither property rights nor markets are aligned to long-term financing of catchment-scale water stewardship.

Now is the time for businesses and government agencies to work together. The opportunity to design innovative solutions that will help us adapt to changing environmental conditions, build resilience and reduce costs, both now and for the future, is immediate. We plan to build a flexible, enthusiastic and committed team to identify and implement these solutions in the next phase of this Collaboratory. Collective action is needed and we will work across sectors to take the lead on active solutions and impact policy and business practice.



Photograph: Robert Bray Associates LTD

Entering a new phase of action

The time is right to bring business, government and communities together to address the substantive risks of flood and drought arising from changing weather patterns and increasing demand for water resources. There is an opportunity to build a coherent strategy to achieve this on a catchment basis which can enhance nature, make communities more resilient and enterprising, and generate new jobs. This process will engage not only the water industry and regulatory bodies, but also a wide range of stakeholders affected by drought and flood. To support this, the next phase of CPSL's Water Stewardship Collaboratory will put the results of its Phase I research to the test in two exciting lighthouse projects in urban and rural contexts.

We know what the challenge is...

The paradoxical combination of increasingly frequent flooding and growing pressure on over-consumed water resources poses a genuine threat to current and future economic activity in the UK. Businesses are assessing the water-related risks in their supply chains and infrastructure, and are recognising that they and their suppliers cannot provide sustainable solutions by themselves.

- The characteristics of these risks often vary between different businesses, communities and public agencies, but viable solutions can be developed collectively. This process will need to be tested through projects on the ground, which will in turn generate representative case studies.
- Businesses are impacted both directly and indirectly by too much or too little water in their value chain. In order to build more resilient strategies for the future businesses need support to reach solutions. That support has to be developed through new mechanisms of funding and scientific advice.
- Currently there is a lack of clarity around effective and durable ways to bring together stakeholders to deal with these challenges on both an urban and a rural a catchment basis.

... plans are a good first step...

Stakeholders including Anglian Water, the Environment Agency, NFU, local land owners, UK Irrigation Association and Cranfield University are already engaging in the development of a water resource management plan in a rural catchment in Norfolk. This arose out of an integrated catchment management pilot scheme, hosted by Anglian Water, one of a network of such schemes sponsored by Defra. There is an opportunity for major interests in the region to become a part of this and to establish similar work in other catchment areas.

... but implementation is more important

Various factors affect the implementation of water management strategies, including developing planning guidance and creating access to new arrangements of funding. These issues have been examined in some detail in the first phase of this Water Stewardship Collaboratory. Through the development of urban and rural lighthouse projects in Peterborough (flood management and reducing excessive water consumption) and the river catchment in Norfolk, businesses now have an opportunity to translate this work into real-life solutions for action.

Both projects will engage stakeholders such as the water industry, business, regulators, land owners, conservation bodies, local authorities, and communities around the core questions of:

- How should the management of water resources be planned to reduce risk and create collective and sustained benefit?
- How can the necessary finance be raised to deliver practical solutions over the necessary long payback periods?
- What adjustments to the planning regime are needed to support these comprehensive water care approaches?
- How can stakeholders work together over the longer term to maintain momentum, yet be continually involved?

Next steps

Key businesses can benefit from being at the heart of these innovative lighthouse projects in East Anglia. They will learn how to lower costs, reduce risk, identify new enterprise opportunities, and secure their place in a community tackling these new challenges. These practical examples will have value to companies far beyond these individual projects.

It is in the interests of all companies to understand the implication to their supply chains of the increased incidence of flooding and growing pressure on water resources. Increasing farmers' resilience to the onset of changing weather patterns can only be achieved through the collaboration of farmers, agribusiness, processors and retailers. The implementation of new water strategies in owners and civil engineering firms with the capacity to planning policy will provide property developers, land address the long term benefits of reduced flooding risks and bring in additional benefits for water management, biodiversity and urban planning; this will also provide opportunities for the financial institutions backing them. Other businesses have a stake in managing risks from droughts and flooding and the subsequent impacts on logistics, tourism, energy supply and financial services; they will therefore benefit from engagement in this ambitious Collaboratory.

CPSL invites companies to become a part of shaping this development and leading on solutions to better manage risks from the increasing incidence of drought and floods.



Delegates at Pooling Innovation

Attendee	Job title	Affiliation
Ian Holton	Permitting Manager	Aggregate Industries UK Ltd
Alan Woods	Managing Director	Alan Woods Associates Ltd
Alison Thompson	Project Manager, Water Allocation Group	Anglian Water
Clive Harward	Head of Water Quality & Environmental Performance	Anglian Water
Fiona Wood	Wissey Pilot Catchment Project Officer	Anglian Water
Jean Spencer	Regulation Director	Anglian Water
Jennifer Dean	Planning Liaison Manager	Anglian Water
Jonathan Clarke	Head of Systems and Service, Anglian Water Business	Anglian Water
Mark Pendlington	Director of Corporate Affairs	Anglian Water
Martin Silcock	Head of Policy and Regulatory Strategy	Anglian Water
Peter Simpson	Managing Director	Anglian Water
Richard Gard	Head of Public Affairs	Anglian Water
Stephen Langlois	Growth Planning and Equivalence Manager	Anglian Water
Nicolas Ceasar	Programme Director and co-Head of the Sustainability Practice	Ashridge Consulting
Henry Cator	Chairman	Association of Drainage Authorities
Graydon Jeal	Chief Consultant	Atkins
Mike Woolgar	MD Environmental and Water Management	Atkins
Ian Skelly	Journalist	BBC
John Oldfield	Director of Operations	Bedford Group of Internal Drainage Boards
Emma Stutz	Sustainability Manager	British Sugar
Simon Hooton	Head of Strategy and Projects	Broads Authority
Alan Knight	Environmental Sustainability Director	Business in the Community
Jake Reynolds	Director, Business Platforms	CPSL, University of Cambridge
Martin Roberts	Director, Natural Capital Leaders Platform	CPSL, University of Cambridge
Polly Courtice	Director	CPSL, University of Cambridge
Morgan Jones	Certification Manager	Carbon Trust
David Corbelli	Principal Environmental Scientist	Cascade Consulting
Paul Shaffer	Associate (Water Management)	CIRIA
Clare Twigger-Ross	Technical Director	Collingwood Environmental Planning
Tony Smith	Chief Executive	Consumer Council for Water
Andrew Day	Director of Sustainability	Countryside Properties
Keith Weatherhead	Professor of Water Resources and Climate Change Adaptation	Cranfield University
Chris Preston	Head of Water Supply and Availability, Infrastructure and Drinking Water Quality	DEFRA
Alison Maydom	Head of Water Efficiency Team	DEFRA
Sonia Phippard	Director, Water and Flood Risk Management	DEFRA
Maeve Hall	Assistant Manager Sustainability Services	Deloitte LLP
Claire Pollard	Deputy Chief Inspector (Science & Strategy)	Drinking Water Inspectorate
Andrew Tucker	Water Strategy Manager	Energy Saving Trust
Ali Taylor	Environment Planning & Engagement Manager	Environment Agency
Andrew Coleman	Environmental Assessment Manager	Environment Agency
Ian Barker	Head of Land and Biodiversity	Environment Agency
Richard Thompson	Strategic Environmental Planning Manager	Environment Agency
Toby Willison	Director, Anglian	Environment Agency
Cara Reece	Programme Manager	Environment Bank

The workshop was organised and run by: CPSL - Gemma Cranston, Katie Hiscock, Fergus Kirkpatrick, John Pharoah and Sheila von Rimscha
 Anglian Water - Sarah D'Arcy and Amanda Manchester



Attendee	Job title	Affiliation
Andrew Kuyk	Director of Sustainability	Food and Drink Federation
David Bellamy	Environment Policy Manager	Food and Drink Federation
Helen Samuels	Director, Water, Coastal and Environment UK	Halcrow Group Ltd
John Rumble	ERP Team Leader	Hertfordshire County Council
Earl of Selborne	Treasurer, All-Party Parliamentary Group on Water	House of Lords
Darren Lumbroso	Principal Engineer (Water Group)	HR Wallingford
Steven Wade	Climate Change and Water Expert	HR Wallingford
Michael Jack	Food and Agriculture Advisor	HSBC Bank plc
Alan Hayes	Senior Sustainability Analyst	IGD
Jean-Baptiste Gossé	Research Fellow	Judge Business School, University of Cambridge
Alan Turner	Sustainability Manager	Kent County Council
Rob Jarman	Sustainability Director	National Trust
Anna Wetherell	Senior Specialist – Hydrology & Hydrogeology	Natural England
Mark Mulcahy	Water Resources Manager	Nestlé Waters UK Ltd
Paul Hammett	National Specialist (water resources)	NFU
Noel Wheatley	Head of Environment and Water Quality	Ofwat
Elizabeth Wilson	Reader in Environmental Planning	Oxford Brookes University
Gareth Davies	Regional Director	Pell Frischmann
Julia Chatterton	Flood and Water Management Officer	Peterborough City Council
Nicholas Francis	Partner	Reckon LLP
Mark Robins	South West Regional Senior Policy Officer	Royal Society for the Protection of Birds
Phil Burston	Senior Water Policy Officer / Environmental Economist	Royal Society for the Protection of Birds
Rob Cunningham	Head of Water Policy	Royal Society for the Protection of Birds
Peter Bennett	Director	Savills and Babraham Farms
Frank Grimshaw	Economic Regulation Manager	Severn Trent Water Ltd
Phillip Dixon	Head of Market Reform	Southern Water
Sharon Darcy	Associate	Sustainability First
David Grantham	Water Efficiency Manager	Thames Water Utilities Ltd
Keith Colquhoun	Climate Change Strategy Manager	Thames Water Utilities Ltd
Peter Shand	Map of England Project Officer	The Royal Town Planning Institute
Neil Walmsley	Development Manager	Tomorrow's Company
Danielle Morley	Director	Twenty50
Matthew Neilson	Global Sustainability Manager	Unilever
Charles Ainger	Visiting Professor, Dept. of Engineering	University of Cambridge
Douglas Crawford-Brown	Director, Cambridge Centre for Climate Change Mitigation Research	University of Cambridge
Tim O'Riordan	Emeritus Professor	University of East Anglia
Peter Darby	Chairman	Veolia
Dawn Waterman	Head of Public Affairs	Water UK
Gavin Milligan	Group Sustainability Director	William Jackson Food Group
Stuart Dainton	Head of Partnerships	Woodland Trust
Conor Linstead	Senior Water Policy Advisor	WWF-UK
Lucy Lee	Freshwater Programme Manager (UK Rivers)	WWF-UK
John Scott	Chief Risk Officer	Zurich Global Corporate
Chris Ryder	Freelance Consultant	
Peter Bide	Freelance Consultant	

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The University of Cambridge Programme for Sustainability Leadership (CPSL) is dedicated to working with leaders from business, government and civil society on the critical global challenges of the 21st century.

CPSL contributes to the University's mission and leadership position in the field of sustainability via a mix of executive programmes and business platforms, informed by world-class thinking and research from the University of Cambridge and other partners.

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For further information please contact:

Dr Gemma Cranston, Programme Manager, Cambridge Programme for Sustainability Leadership.
T: +44 (0)1223 761711, M: +44 (0) 7795 580389, E: Gemma.Cranston@cpsl.cam.ac.uk

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In the UK

1 Trumpington Street,
Cambridge CB2 1QA, UK
T: +44 (0)1223 768850
F: +44 (0)1223 768831
E: info@cpsl.cam.ac.uk

In Brussels

Pericles Building
Rue de la Science, 23
Brussels B-1040
T: + 32 (0)2 894 9320
E: info.eu@cpsl.cam.ac.uk

In South Africa

PO Box 313
Cape Town 8000
T: +27 (0)21 469 4765
E: info.sa@cpsl.cam.ac.uk

www.cpsl.cam.ac.uk