



# CREW's role in addressing Scotland's water policy challenges

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The James Hutton Institute



The Scottish Government  
Riaghaltas na h-Alba



# The CREW Vision

*“To connect research and policy, delivering objective and robust analysis and professional opinion to support the development and implementation of water policy in Scotland”*



The Scottish Government  
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# How CREW works

Partnership led by James Hutton Institute, contracting in expertise from:

- James Hutton Institute
- Universities via HEI networks
- Register of expertise

Projects – short (call down) and longer term (capacity building)

Policy teams have direct access



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# CREW Register of Expertise

- **Co-ordinating:** matching - right expert at right time to right needs
- **Adding value:** building on existing work and knowledge
- **New opportunities:** liaison, building internal capacity and income generation
- Wide range of water expertise;
  - Source to sea
  - Rural and urban
  - Biophysical to social sciences
  - Engineering to environment

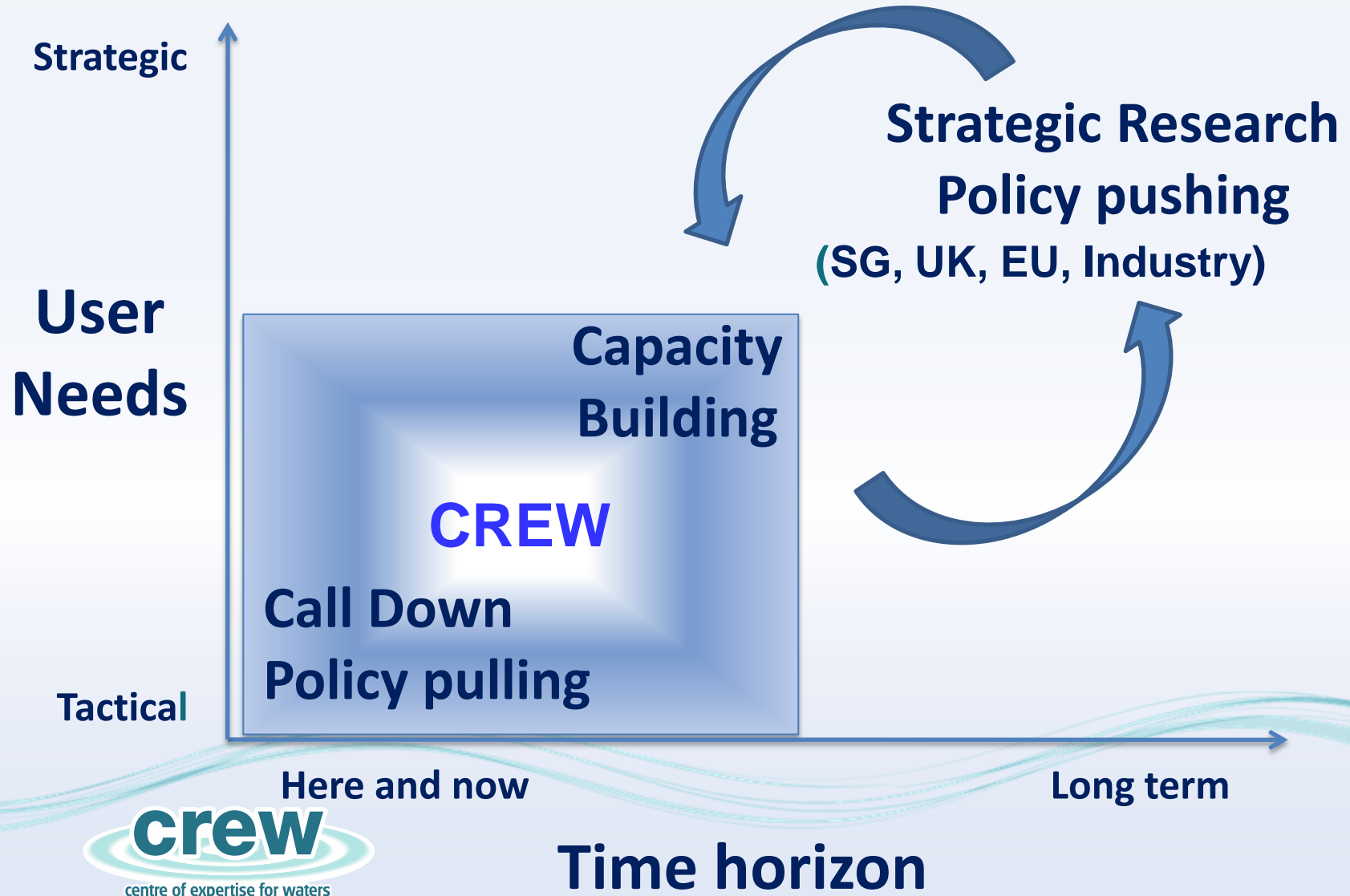


# Philosophy – building capacity

- Policy starting point
- Making best use of science
- Collaboration
  - integrated evidence at local scale
  - broadening networks of expertise
- Better use of existing international evidence
- Adaptive approach – learn, learn, learn!



# Research landscape



# What does CREW work on?

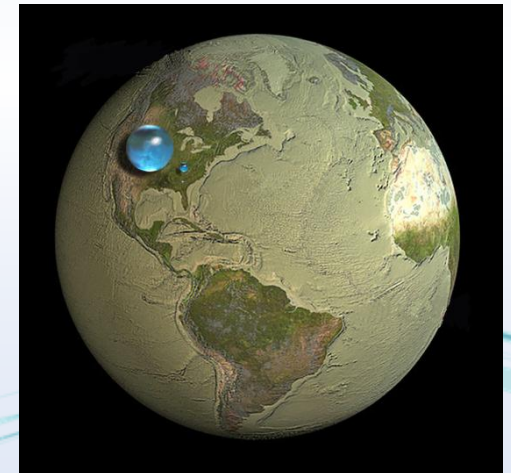
Policy priorities;

- Hydro Nation Policy, including the Water Resources (Scotland) Act 2013
- Implementation of the Flood Risk Management (Scotland) Act 2009
- Water Framework Directive and River Basin Management Planning
- Scotland Rural Development Programme
- Links to CAP reform, Climate Change policy, Land Use Strategy etc



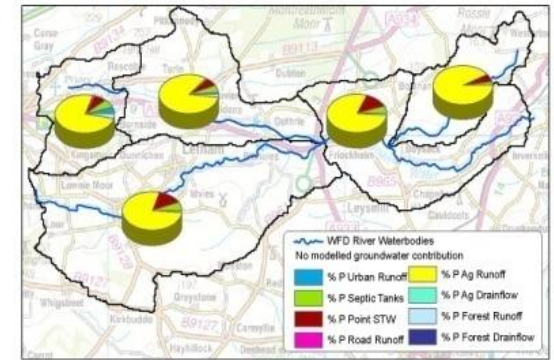
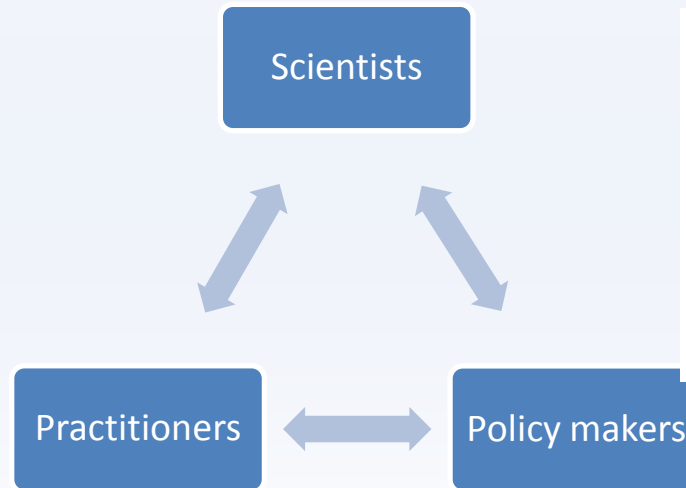
# Hydro Nation Scholars Programme

- Part of the Government's Hydro Nation Policy, managed by CREW
- 4 PhD students for 2013
- Up to 7 students will be funded in 2014





# How does CREW deliver?



## Short term - Call Down

Reliable and impartial information from leading experts to meet immediate policy need; briefings, advice, synthesis and translation.

## Capacity Building Projects

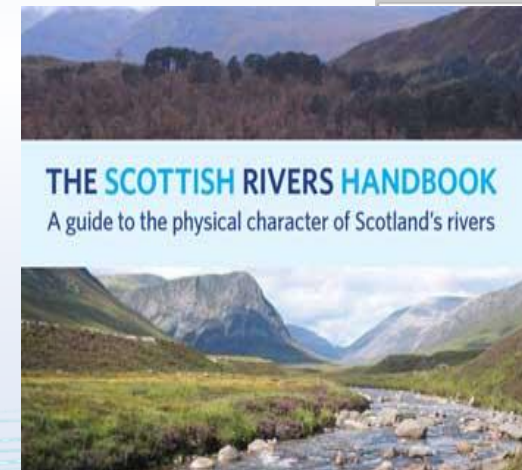
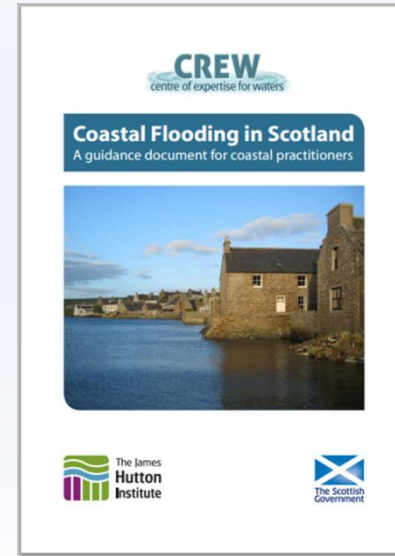
Research projects developed with policy colleagues to help meet medium term policy needs – mainly building on existing information

# Short term – call down

Organisation	Description of Request
Scottish Water	Expert opinion on the potential opportunity to recover humic and fulvic acids during the water treatment process
SEPA	Literature review on diffuse pollution problems in watercourses related to forestry activities with regard to suspended solids, nutrients, pesticides and acidification
SEPA	Translating soil maps into indicators of diffuse pollution risks
Scottish Water	Development of a matrix to shortlist sites for a pilot Water Restoration Park facility based on costs, plant performance and local characteristics
Scottish Water	A review of technologies for treating water and wastewater, and for producing renewable energy from water in rural Scottish communities
SEPA	Highlight examples of monitoring where personal monitors have the potential to be, or currently are, being used. The focus is aquatic monitoring
Scottish Government	Honest broker role in an Environmental Technology Verification workshop
Scottish Water	Literature review on current best practise on fats, oils and greases (FOG) management.
Scottish Government	Policy paper detailing the Reservoirs Act 1975 issues managers came up against when implementing NFM measures in Pickering
Scottish Government	Creation of information board material for Natural Flood Management demonstration

# Capacity Building Projects

- SRDP water quality options
- Review methods to identify urban diffuse pollutants and identify measures
- Natural flood management
- River functioning and resilience
- Coastal flooding and impacts
- Mapping of climate change impacts
- Catchment management planning
- Water, health and well-being



# SEPA Agricultural Best Management Practices

Best Management Practices (BMP) guidance; helping



protecting soils and incre  
in Scotland

Constructed Farm Wetlands (CFW)

Design Manual for Scotland and Northern Ireland



MITIGATION METHODS – USER GUIDE

An Inventory of Mitigation Methods  
Guide to their Effects on Diffuse W  
Pollution, Greenhouse Gas Emission  
Ammonia Emissions from Agricult



Newell Price, J.P., Harris, D., Taylor, M., Williams, J.R., Anthon  
Duethmann, D., Gooday, R.D., Lord, E.I. and Chambers, B.J. (J  
and  
Chadwick, D.R. and Misselbrook, T.H. (Rothamsted Research, N

December 2011

Prepared as part of Defra Project WQ01



Field Wetlands Reduce Diffuse  
Pollution from Agricultural Land



Mitigation options for reducing nutrient  
emissions from agriculture

A study amongst E

O.F. Schoumans (Ed.),  
M.J. Lilaor, A. Lo Porto,



JRC SCIENTIFIC AND TECHNICAL REPORT

RIVER BASIN NETWORK  
on

Water Framework Directive and Agriculture

PRACTICAL EXPERIENCES AND KNOWLEDGE  
EXCHANGE IN SUPPORT OF THE WFD  
IMPLEMENTATION (2010-2012)



Hydrobiologia (2011) 674:5–24  
DOI 10.1007/s10750-011-0754-0

WETLAND RESTORATION

Evaluation of nutrient retention in four restored Danish  
riparian wetlands

Carl Chr. Hoffmann · Brian Kronvang ·  
Joachim Aude

Mitigation Options  
Constructed wetlands  
areas of agricultural land.  
to trap sediment and  
ways including surface  
ditches. As agriculture is an  
to diffuse pollution, trapping  
phosphorus and nitrogen  
to improve water quality  
the requirements of the EU  
directive.



Forest Research

Woodland for Water:  
Woodland measures for  
meeting Water Framework  
Directive objectives

Environment Agency



Rural Sustainable Drainage  
Systems (RSuDS)

between 2008 and 2012 from  
is located on farms in  
umbria has shown that field  
effective at trapping eroded  
tonnes of sediment were stor  
usually, equating to the follow  
ing tes:

- 1 – 0.07 tonnes ha<sup>-1</sup> yr<sup>-1</sup>
- 2 – 0.4 tonnes ha<sup>-1</sup> yr<sup>-1</sup>
- 3 tonnes ha<sup>-1</sup> yr<sup>-1</sup>

with sediment in runoff wa  
in the field wetlands at the

- 0.01 – 1 kg TP ha<sup>-1</sup> yr<sup>-1</sup>
- 0.02 – 2 kg TN ha<sup>-1</sup> yr<sup>-1</sup>

ely monitored wetland  
months also shows wetl  
ph the wetlands improved  
following effects found in

- 60% reduction in mean  
13 mg l<sup>-1</sup> to 1 mg l<sup>-1</sup>.
- 35% reduction in mean  
14 mg l<sup>-1</sup> to 9 mg l<sup>-1</sup>.

Universit  
Readin

Capital Grant Scheme

Farmer Handbook (CSF 3)



Research Monograph: 4

The Research Agency of the  
Forestry Commission

# Scotland Rural Development programme 2014 - 2020

## Assessing potential water and soil quality options, their evidence base and potential to deliver multiple benefits

### Aims

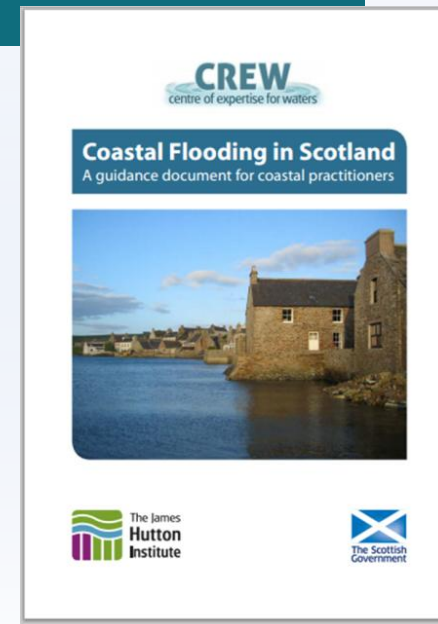
1. Assess the evidence base and potential for multiple benefits
2. Are there any gaps ?
3. What design guidance is available?

### Process

1. Co-development of spec
2. Review of options
3. Expert opinion
4. Workshop

# Impact of CREW

- Amendment to Water Resources Bill – valuing water
- Coastal erosion brief for Minister
- Parliamentary committee session on flood insurance
- WFD reporting on climate change and future water quality
- Development of SRDP options to improve water

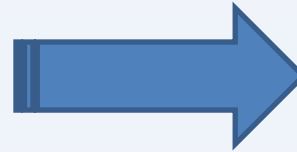


# Challenges

- Identifying, understanding and translating needs
- The right people are busy people
- Time horizons for policy implementation short/unknown
- Simplifying complexity
- Valuing science and understanding politics
- Silo thinking
- Water – large subject area

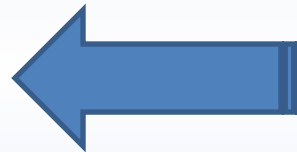
# Science Policy Interface

Collation and synthesis  
Short timescale  
Multidisciplinary  
Understanding of policy needed



Policy  
pulling

Policy  
pushing



Applied strategic  
Anticipation of policy ?s  
Longer term



# What makes an effective science policy interface?

- Publications, conferences ✕
- Social process
- Multi-way flow of information = KE
- Common understanding of questions – shared ownership
- Common language
- Multi-disciplinary working
- Quality relationships
- Time needs to be spent if science-policy-practice interface is to be successful



# An invitation to get in touch...

## Building the Community of Practice for Water

- integrating water science expertise across Scotland
- showcasing our excellence and international quality

### Contact CREW:

- By email: [enquiries@crew.ac.uk](mailto:enquiries@crew.ac.uk),  
Jannette.MacDonald@hutton.ac.uk
- By telephone: +44 (0) 1224 395 395
- Register as an expert via the website

[www.crew.ac.uk](http://www.crew.ac.uk)

