

CATCHMENT MANAGEMENT: LINKING WATER POLICY, PRACTICE AND SCIENCE

Notes from a UK-ADAPT Workshop held in London on 16th January 2006

Introduction & Chair: Peter Costigan – Science Co-ordinator NRRA (Defra)

Peter Costigan provided a brief background on the UK-ADAPT initiative and reviewed its objectives. Peter explained that the initial scope was very broad, with the aim of generating more effective pieces of work. Projects listed on the UK-ADAPT website database are close to our initial target of 150 (currently 137). A wide scope of pollutants and water bodies is represented, and the focus on research based projects is starting to change to practical approaches. Since UK-ADAPT began in 2003, there have been some key policy developments, including the introduction of Catchment Sensitive Farming Officers (CSFOs), and the Rural Economy and Land Use programme (RELU). The two previous UK-ADAPT workshops focused on website development, but today the focus is on linking policy approaches to practical solutions and research needs

Session One – Policy Context and Approaches

1. Helen Hazzledine (Defra) ‘England Catchment Sensitive Farming Delivery Initiative: From policy to outcomes – the missing link: delivery’

- The England Catchment Sensitive Farming Delivery Initiative runs from 1st April 2006-2008 (19th December 2005 launch)
- CSF is a voluntary initiative for WFD implementation, with £10M funding in year 1 and £15M in year 2
- According to the EA, 80% of rivers are at risk of not meeting WFD targets
- 40 priority catchments have therefore been identified by EA (Defra press release available)
- CSF officers (approximately 30) will undertake appraisal (data collection etc) as well as co-ordinate and facilitate local actions (steering groups), workshops and demo events. A key activity will be undertaking farm visits for advice and encouragement of agri-environment schemes.
- There will be 8 ‘Lead CSFOs’ (will also be CSFOs) in total (1 in each RBD)
- Associate CSFOs will also be appointed from other organisations, working outside priority catchments.
- CSFO recruitment adverts went out in December 2005. Positions will be in the place by 1st April 2006.
- Extra £5M funding in year 2 will be used for capital grants scheme to help with mitigation measures e.g. fencing, moving gates, pumps etc. Grant rate likely to be 30-50% on first come basis (farmers must match the rest of the cost). Grants will not be paid if ELS / HLS is an option instead, but individual assessments will be made
- There will be 3 levels of monitoring and evaluation. Water quality assessments will include sediment, pesticides, N & P, FIOs etc.

2. Kevin Jones (WAG) ‘Integrated catchment management policy in Wales’

- Cross compliance and CAP reform should bring significant long-term benefits in Wales
- Currently, 5000 people have applied for ELS (concern that some are put off by paperwork)
- 300 agreements exist for organic conversion
- 25% land is in agri-environment schemes (e.g. ‘Tir Gofal’)
- 2 CSF pilot areas (S Wales, intensive dairy) and (N Wales, Beef & Sheep)
- Water quality is not a massive problem in Wales, but isolated hotspots do occur
- Farmers are generally keen on agri-environment schemes and stewardship etc.
- The Rural development plan for Wales is being reviewed
- Wales has a multi-agency approach which was difficult to set up but works well
- Negative aspects of the Welsh approach include the fact that 4 or 5 schemes are running at national scale. This is confusing, and there are problems, e.g. dual / match funding payments assume drop in livestock rates and arable fields (not realistic); multiple farm visits take place for different things; possible lack of definitive data on water quality; and it is difficult to distinguish between impacts of environment schemes and commodity prices e.g. fertiliser has got very expensive.
- Future prospects include identifying key targets catchments, tailored management plans, common monitoring framework, and accepting that positive results may be slow to materialise
- Future options available include: 1 single scheme for Wales, compulsory CSF, new capital grant projects, CSFOs, management options in existing schemes, co-ordinated sheep dipping, and pilot schemes in target catchments.

3. Rob Morris (SEPA) 'Policy developments and diffuse pollution in Scotland'

- SEPA is 10 years old this year and diffuse pollution has been highlighted as a key issue for all this time and action is needed now to meet WFD requirements.
- RBMP strategy recently published for Scotland and there are several ongoing catchment projects
- Catchment initiatives are more successful with long term funding and dedicated officer / project manager etc.
- Urban diffuse pollution flagged up as key issue.
- Diffuse pollution is a significant pressure in Scotland. Article 5 WFD report on pressures and impacts has been published and confirms this. A significant Water Management Issues Report is due in 2007 which will provide a further assessment of pressures for the RBMP.
- Agriculture and forestry are major land uses in Scotland.
- The policy context is complex but the goals are clear for WFD. Aligning agricultural drivers and WFD will be key. The RBMP process will allow for an increasing focus on the measures.
- Priorities for 2006: area advisory groups, priority catchments, national and targeted 'General Binding Rules' and targeting farm support through Land Management Contracts (LMCs). SEPA proposes that a CSF type approach is also required in Scotland.
- Farmers have many other things to think about e.g. waste regulations, Pollution Prevention and Control, Controlled Activities Regulations (i.e. abstractions, impoundments etc) and EC Nitrates Directive
- SEPA also need to expand monitoring network
- Farm support will be delivered via LMCs (3 different tiers) in Scotland and will be fully operational by 2007
- We need to make sure CAP reform and rural development are properly linked in with WFD implementation
- 68% of farms currently non-compliant and 57% actually causing pollution according to detailed surveys carried out by SEPA staff at over 2000 farms.

4. Harry Gracey (DARD) 'Nitrates Directive – a compliant action plan for Northern Ireland'

- Good relationships between farmers and staff at DARD working on policy and agri-environment schemes
- Advice is good, but may be done endlessly without result. Money must be available for mitigation measures
- Nitrates directive is key priority in NI. Well documented eutrophication problems e.g. Lough Erne
- 3 NVZs (1000ha) designated in 1999. 4 more NVZs added in 2004, then designation of total territory (action programme now under consultation)
- 60% grant aid available for farm nutrient management scheme (£45m budget). Farmers under pressure to complete applications by March
- The initial NVZ action programme used closed periods for organic and chemical N similar to England. The revised programme will be much more restrictive, including a minimum of 22 weeks for storage (26 weeks for pigs and poultry).
- Chemical P can only be used where there is a crop requirement (according to soil test) (S. Ireland has also restricted manure P if soil P is high)
- Further information available at www.doeni.gov.uk

Discussion of Session 1

- **Phil Haygarth** - Kevin Jones raised points about uncertainty of water quality results and the long time until visible impacts. We need to think about ways of rewarding progress and measuring it e.g. actual update of schemes etc
- **Bob Breach** - DWPA involves all farmers. Only a few are engaged but it is the other 80-90% who are not. We need to simplify agri-environment schemes, demonstrate the problem (evidence), and provide financial incentives that work e.g. links to farm assurance scheme.
 - Kevin's response – approach in Wales to get more farmers is to throw lots of money at the initiative and this is working, but the amount of money is not sustainable in long-term.
 - Bob Harris – incentives for farmers may be cost effective
 - Rob Morris – huge amount of money needed just to get farmers interested in first place. £5.5M spent on capital measures for BWD implementation, so huge challenges for WFD. Motivation is key as well as money.

- Helen Hazzeldine – Defra have been looking into farm assurance schemes. The problem is that the industry and consumer are not identifying with environmental issues, therefore not feasible at the moment. Animal welfare takes consumer priority.
- **Mark Shepherd** – Interesting to note different approaches in UK for WFD. Each country has slightly different ideas, but how much knowledge sharing goes on?
 - Helen Hazzeldine - Defra have established some links.
 - Peter Costigan – fact that we are devolved will inevitably lead to different approaches.
 - Kevin Jones – potential for more / better links.
- **Martin McGrath** – What measures are in place for cross border RBDs?
 - Helen Hazzeldine – CSFOs in England will have responsibility for maintaining contact with Welsh counterparts, but capital grants will only be available from Defra CSF for farms actually in England.
 - Kevin Jones – area advisory groups / steering groups within catchments are envisaged as key tool for cross border RBD co-operation. Many examples already exist e.g. Tweed Forum.

Session 2 – Practical Case Studies

1. Nicola Downton (Wessex Water) ‘Catchment management – an alternative to water treatment’

- 80% of Wessex water supply is from groundwater. There has been a gradual increase in nitrates but generally boreholes are within EU limits. However there is one instance where action is a priority – options include treatment (£150 per acre to customers) or catchment officer working with farmers.
- Working with farmers is the preferred option – funding is in place and CSF will help.
- First stage is complex characterisation of catchments, and identifying and contacting all farmers. Historical farm data has been requested (not compulsory) and soil sampling is undertaken.
- Dairy farmers tend to be more traditional; arable farmers more forward thinking.
- Wessex approach is to say that they have a problem and can farmers help?, i.e. it is not labelled as the farmers problem and there is no involvement of regulatory body.
- Advice is specific to the catchment, not generic.
- Groundwater is not covered in Environmental Stewardship schemes and this is a problem.
- Impacts of measures implemented will be measured for water quality and farm income.
- 5 year project: indicators of success will be numerous, not just lower N levels (which will probably take >5 years). Lower N levels in local boreholes will be good indicator, changes in farm practice etc.
- Part of WAGRICO project → official launch later this year (March).

2. Denise Reed (Scottish Natural Heritage) ‘Lunan Lochs – Natural Care Environment’

- This scheme has been run by SNH for last 2 years. Covers 5 small lochs (4-8m depth, 20-80ha size). All 5 lochs are SSSIs and SACs.
- Upper catchment is mostly deciduous woodland; lower catchment is intensive agriculture.
- Scheme aims to reverse deterioration in water quality (mainly P from agriculture).
- SNH initiative ‘Natural Care Scheme’ has a target of 80% of land under improved management, agreed with the Scottish Executive.
- Lunan lochs is seen as a pilot approach for Scotland.
- 20 land holdings identified in catchment and management contracts for better / changed practice to reduce DWPA and soil erosion set up.
- Pollution audits on individual farm basis undertaken, to avoid farmer picking ‘easy’ mitigation options from generic list of measures.
- Visual evidence of algal blooms helps engage stakeholders to problem.
- Expert advice is key and adds credibility to project.
- Local farmer champion could not be found as catchment was too widespread, therefore lack of community spirit.
- Monitoring and measuring success is based on SEPA standing water standards, pondweed, and trophic status.
- Benchmark WFD targets not yet available to incorporate.
- 2 years into project and agreements with farmers only just being finalised, so no indicators of success yet. However, 16 farmers have signed up (>80% of catchment).

3. Kevin Jones (Welsh Assembly Government) 'Lake Bala and Deepford Brook, the Demonstration Projects'

- WAG has 2 demonstration projects: Lake Bala (North Wales) and Deepford Brook (Pembrokeshire). They took 10-12 months to set up and have been running for 2 months now. Farmers have been keen to sign up to the initiative. Both catchments are intensively farmed, but need different approaches.
- Various things available to farmers e.g. free soil sampling, advice, plans, grants, water quality monitoring etc. Use of the PLANET decision support system is promoted. The project is also looking at being more farmer-friendly, e.g. using imperial not metric, use of field names not numbers.
- Project aims to test effectiveness of multi-agency approach, high resource projects in small areas, whole catchment approach, one to one advice, farmer friendly management plans, and value of farm records.
- Limit of £6k per farm for capital grants. Farmers are also being paid to keep proper management diaries.
- Main stakeholders and subsidiary stakeholders kept informed via newsletters etc and half the catchment signed up at the launch meeting.

4. Phil Jordan (University of Ulster) 'Blackwater TRACE – finding and fixing the leaks'

- This is a large multi stakeholder project, EU funded, cross border river. Blackwater catchment is the largest river feeding into Lough Neagh, 95% grassland catchment.
- P transfer is key issue, many inputs e.g. industry, WWTW, septic tanks and agriculture. Main influence is high soil P fields prone to storm runoff.
- Aim of Blackwater TRACE project is to improve chemical water quality (P) at catchment scale.
- Surveys, monitoring and land use diaries will all be linked to toolkit including riparian fencing, altered practices, nutrient plans etc.
- Monitoring data has helped identify leaks from infrastructure e.g. hardstandings, septic tanks. Storm events clearly link with peaks in P. 92% of P load is storm associated diffuse pollution. Third pollution type (i.e. not point or diffuse) = spillages of e.g. fertiliser, unrelated to storms.
- Work costed for infrastructure to provide quick fixes on leaks (only 8% of P).

Discussion of Session 2

- **Eunice Lord** – issue of groundwater mitigation for nitrates in Wessex project.
 - Nikki Downton - effect on reducing peaks would be a key priority for water companies. Need to show reduction in leaching from rooting zone.
- **Steve White** – who is giving farmer advice and what level of qualifications are needed?
 - Nikki Downton – FACTS and BASIS qualified advisors, experienced, need to be specialist in many areas.
- **Louise Heathwaite** – how do aims of specific projects relate to impacts on aquatic ecosystems?
 - Phil Jordan – project aim was specific to reducing P inputs, however invertebrate surveys have been done. Louise also asked about incidental pollution and how we can manage this.
- **Roger Trengove** – as capital grants only pay a %, how much buy-in is there from farmers?
 - Phil – 90% in some instances, because 100% capital grants available.
- **Bob Breach** – Nikki's project was the only one that mentioned groundwater. This is in increasing gap in projects. Everyone stresses importance of farm visits but how do we avoid overlap? Peaks identified in monitoring should perhaps be monitored as standard.
 - Nikki Downton – based locally and knows local agronomists, therefore can be introduced via them to farmers. Agronomists happy to share workload, combine visits etc. Also more environmentally aware now.
 - Rob Morris – recognise need to monitor peaks, could use American Total Maximum Daily Loads (TMDL) approach to manage diffuse pollution for priority catchments.
 - Kevin Jones – farm business consultants visit farms quarterly as standard, so opportunity to link in with agri-environmental work and benefits of schemes.
 - Hannah Bartram – lack of tools to deal with groundwater pollution. Problems with focus on rural development budget in Wales, may be cut.
- **Bob Harris** – why don't farmers sign up to agri-environment schemes?
 - Nikki Downton – perceived extra workload and loss of income, lack of incentive to make changes. Farmers feel swamped by red tape. Need to show economic benefits of changes.
 - Bob Harris – in UK we have lost connection with local environment, need to learn from e.g. Holland and Denmark (Water4All project).
 - Denise Reed – people who didn't sign up were not necessarily the worst offenders. In Scotland, people were closely associated with lochs and bought in to responsibility.

- Eunice Lord – governments putting up money shows farmers they are serious. We also need more hard evidence that things work.
- **Steve White** – we have focused on carrots, where do sticks come in? Where is the threat e.g. pesticide tax, VI?
 - Peter Costigan – DWPA document from Defra suggested voluntary approach will be used first and regulatory approach will be developed.
 - Steve – IPU has been worked on for ages (c.13 years) with voluntary approach and there is still no improvement in the Thames area.
 - Harry Gracey – link to Nitrates Directive and there will be sticks available to use for WFD.
 - Hannah Bartram – CSFOs are advisors and must report problems to EA
 - Harry Gracey – there may be problems with farmers not wanting to allow EA on farm.
 - Steve White – codes of best practice are voluntary. If not followed, they are not breaking the law.
- **CLA** – farmers recognise on the whole that pollution needs to be addressed. Nutrient management plans are popular and deliver long-term results.
- **Kirsty Blackstock** – socio-economic research work has been done on farmer types e.g. a ‘good’ farmer perceived as productive, not environmentally conscious.
- **Mark Shepherd** – what gaps are still left to research?
 - Denise Reed – phosphate load budgets e.g. septic tanks vs. birds vs. farming.
 - Nikki Downton – cost benefit analysis of mitigation measures.
 - Bob Breach – work done in VI shows you need evidence of environmental improvement, ideally at no cost or even saving money.

Session 3 – Research Perspective

1. Phil Haygarth (BBSRC) ‘Practical solutions, ‘quick fixes’ and rigorous soil-water science’

Water is one of the most complex environmental sciences. Scientific research is undertaken at various scales from molecule up to catchment. At the finest scale, hypotheses are tested and conclusions are reached. At catchment scale, we observe what happens and learn what happens, rather than test hypotheses. The key is to have all scales of research progressing at the same time. Investment in basic science is key to balancing ‘quick fixes’.

Comments

- Bob Ferrier – our understanding of catchment science is cyclical and should evolve, perhaps policy makers need to realise this more.
- Bob Foy – huge body of knowledge exists on specific areas e.g. winter applying manure, but this is not directly translated into policy.
- Peter Costigan – science must be combined with socio-economic issues and this is how some science gets lost. Need for continuing science.
- Bob Breach – ‘quick fix’ implies ‘won’t work’. Need to make science available and understandable to farmers and policy makers.
- Eunice Lord – we get stuck with general questions such as what impact would all farmers doing best practice make to water quality. We only know specific impacts of specific practices.
- Steve White – does science help us understand the wider issues? Yes, but we’re running with 20 years investment in science.
- Bob Harris – translation of science into policy still isn’t always happening. Politics can mess things up.
- Mike Pocock – 137 projects on UK-ADAPT website suggests that not enough linkage is going on and everyone is working separately.
- Mark Shepherd – challenge is that we are working at an unfamiliar large scale. CSF approach presents opportunity to link in new research projects.

2. Louise Heathwaite (Lancaster Environment Centre) ‘Pragmatic decisions from uncertain science’

Our knowledge is partial and our ability to predict is limited. This is shown in models when we try to calibrate them or run them in new catchments. Most data is rarely as good as we want it to be and this is what we base our models on. Risk analysis and uncertainty could be a huge growth initiative – IAHS has a publication initiative in this area. Data sharing is key to helping improve data collection. Gaps in our knowledge include: groundwater-surface water interactions; landscape ecology; resilience and thresholds, and what happens after we go over water quality limits such as 50mg/l NO₃; cross disciplinary e.g. RELU; knowledge transfer (exchange) and the financial cost of doing this.

Comments

- Bob Ferrier – understanding of potential impacts is key.
- Steve White – decisions need to be made at local level but policy needs to be made at national level.
- Bob Breach – not enough emphasis is given to the need for long-term projects and groundwater is often overlooked. Need to be brave enough to give policy makers information along with warning tags of uncertainty – we can't avoid making decisions now.
- Eunice Lord – with nitrates, funding was not available to implement what scientists recommended.
- Louise Heathwaite – simpler models and knowledge sharing are key.
- Peter Costigan – links need to be better with science and policy implementation.
- Kirsty Blackstock - how do policy makers admit uncertainty to farmers?
- Harry Gracey – if we don't see improvements in water quality, we need to make the measures tighter.
- Peter Costigan – uncertainty has to be acknowledged, although it is very difficult to do so.

3. Kirsty Blackstock (Macaulay Institute) 'Socio-economic perspectives on catchment management: Current research'

- Three types of changes are involved in catchment management: economics, legislation and attitude change.
- There is a technical emphasis on catchment management, rather than how people think and feel, and so this is how social science can help.
- Can we put monetary value on the things we are trying to manage?
- Useful tools could include presenting the cost of increased water bill to farmers to get them to adopt changed practices.
- Building partnerships takes years of trust, but research projects are often only 3 years.
- What happens when a project ends, how do we manage transition between different projects but same stakeholders?
- We need to learn how to learn from best practice.

Comments

- Steve White – most people don't understand what a catchment is and how their behaviour affects it.
- Bob Breach – we need to think carefully about who the messenger is, i.e. most farmers will ignore links to Defra, EA and repeated projects.
- Bob Harris – should we debate use of countryside for activities other than agriculture, e.g. in Germany farmers are specifically tasked with water management.
- Mike Pocock – we often forget to differentiate different water users, within farmers and within the whole community.
- Amanda Craig – catchment officers will start to build relationships and meet all users, going some way to help.
- Bob Ferrier – selective decommissioning of agriculture if we overexploit our resources?
- Denise Reed – politically unacceptable if we pay farmers huge amount of money for doing nothing?
- Steve White – scope for socio-economic work with water industry for DWPA

4. Eunice Lord (ADAS) 'Defining and assessing success'

We often can't measure success because we haven't defined it. Many projects are around that do not have defined objectives. For example, the CSF initiative is trying to do many things to improve water, but objectives are not properly defined. Headline objective of WFD is ecological improvement. At catchment scale, evidence is often based on single outlet monitoring points. Often, we don't think about what we are monitoring until project / scheme has started, therefore no baseline conditions. Do we have enough causal links i.e. indicators of good ecology to properly defend ourselves?

Comments

- Bob Foy – invertebrates are a cheap, simple way to monitor for nutrients. Good, researched guidelines exist for ideal P limits.
- Bob Breach – making progress, i.e. reduction of pollutant levels, is an indicator of progress. Simple models coupled with appropriate monitoring will be a starting point for WFD / CSF.
- Louise Heathwaite – we need to identify most responsive parts of catchment systems in order to quantify effect of storm peaks.
- Bob Harris – use international case studies to learn from other countries as they are way ahead of us.

- Mark Shepherd – policy makers and EU accept the long-term nature of changes but farmers will not, therefore we need to be careful about using international examples.

Closing Remarks

The initial outcomes of the workshop were summarised by Peter Costigan. Everyone concluded that it had been a useful day.

AOB

Bob Breach suggested that it would be useful to see a timeline of when projects and initiatives are starting / finishing