Local Management of Water Catchments and River Basins: Drawing on International Experience

Laurence Smith, University of London

10th International Riversymposium & Environmental Flows Conference, Brisbane, 3-6 September 2007
Outline

1. Work in progress: research project outline
2. Characterising the problem
3. Alternative models for water governance
4. An example from the USA
5. Key lessons to date

A research project financed by RELU

http://www.relu.ac.uk/
Project Principals and Partners:

- University of London (SOAS), Wye campus
- University of East Anglia
- University of Kent
- Westcountry Rivers Trust
- Environment Agency and Institute of Grassland and Environmental Research
- Upper Thurne Working Group and Broads Authority
- New York State Water Resources Institute, Cornell University, NYS Depart. of Env. Conservation, Upper Susquehanna Coalition
- ‘Water4all’ partners including water protection programmes in Aalborg, Denmark and Oldenburg, Germany.
Project Objectives

• A comparative analysis of international catchment management experience: technical procedures, policies and governance arrangements

• Investigation of how best to extend the scientific and policy achievements of water protection programmes in the US, other European countries and elsewhere to the UK

• Detailed assessment of two case study catchments: upper Tamar, SW England and Upper Thurne, Broads

• Development of a catchment management template for integration of scientific investigation with decision-making and implementation to achieve environmental, economic and social objectives.
**Project structure**

**Strand A:** case study catchments, Upper Tamar, Upper Thurne

- Stakeholders, partnerships, issues, goals, outreach needs

- Characterise and understand the catchment: pollutants, use of models

- Finalise goals and test management scenarios with stakeholders, assess physical, economic and social impacts

- Assess implementation options and possible governance arrangements

**Strand B:** comparative analysis of international catchment management programmes

- Lessons for analysis, monitoring, governance and policy

**Catchment management template**
Catchment management: a ‘wicked problem’?

A ‘wicked’ natural resource management problem:

• complex and contradictory
• clusters of interrelated problems
• high levels of uncertainty
• diverse competing values and interests
• many production and consumption externalities
• requires trade-offs and multiple decision criteria
• solutions for one group generates other problems
• intractable for any single organisation
Challenges of rural diffuse water pollution

• farming is the main source, but also produces food, sustains rural communities and creates landscape attributes

• the ‘polluter pays’, the ‘consumer pays’, or costs are shared?

• pollution sources are numerous, dispersed and with multiple paths and sometimes uncertain cause-effect relationships, thus the costs of regulation (monitoring & enforcement) are high

• solutions require a well ‘tailored’ mix of regulation, policies/incentives, voluntary action and direct interventions.
Models for water governance

The aim is to protect and manage water resources in a catchment in which people can live, work and play.

Alternatives:

1. Centralised and monocentric

2. Local autonomy

3. Decentralised, polycentric and multi-stakeholder
   • local determination within the framework of higher regulation
   • built on existing organisations
   • capable of adaptive management
   • much more than delegation
An example: The New York City Watershed and the Delaware County Action Plan (DCAP)

Key features:
• multi-level, multi-stakeholder and adaptive approach, with local leadership and strong legitimacy and accountability

• initiated locally in response to threat of regulation and loss of local autonomy

• a strong scientific base, effective use of monitoring and modelling, and initial focus on best farm management practices

• includes wider catchment measures
New York City Water Supply System
Delaware County Action Plan

- Cannonsville Reservoir Basin – agricultural basin
- New York City water supply
- P ‘restriction’ impedes economic growth of county
The Cannonsville Reservoir
3 Barriers: Redundancy

Source → Landscape → Stream → Corridor
DCAP Component

Stream Corridor Management
Monitoring Stations

R Farm
Shaw Road

DEC Continuous WQ Stations
USGS Gauging Stations

Streams
Watershed

Monitoring Stations

Cannonsville Reservoir

01422738
01422500
01422389
01424108
0142400103
01422747
01423000
01421900
01421614
01422747
0142400103
DCAP Partners

DCAP integrates all levels of government authority, coordinates actions at County level by agencies and other bodies, and preserves local planning prerogatives.

- **Local**
  - Planning, SWCD, CCE, Eco.Dev, Farm Bureau, DPW, Communities, NRCS, Chamber, IDA, WSA

- **Regional**
  - CWC, DEP, WAC

- **State**
  - WRI, DEC, DOH, DOS, DOT, Ag & Mkts, NYSSWCC, Cornell, ESF

- **Federal**
  - EPA, USDA, Army Corps
Watershed Planning and Implementation Process

- Stakeholders, issues and goals, outreach
- Load reductions, management options, assess impacts
- Evaluate, report, adapt
- Management, monitoring, outreach
- Data collection & analysis, pollutant loads & sources
- Workplan, milestones, responsibilities, finance, policy

US EPA, 2005
Other examples can be drawn from the UK and nearby Europe and from wider international experience.
Key lessons drawn to date

1) Each catchment and all sources of pollution must be analysed in an integrated and holistic way. Environmental criteria must be integrated with the economic, social and cultural goals of those affected by change.

2) Catchment management for protection of water quality requires reflexive decision making and adaptive management (process not blueprint).
Watershed planning and implementation is an iterative and adaptive process.

US EPA, 2005
3) Land management and diffuse sources of pollution have a local basis and protection of water at source needs local instruments, participation of stakeholders and an enabling regulatory environment. Includes:

- local leadership, legitimised by local accountability and endorsement from higher government, supported by a technical and advisory steering committee
- agreed strategic goals (establishing interdependence of stakeholders in recognition of a shared problem)
- and specific objectives that are realistic and measurable (e.g. the use of TMDLs)
- engagement of all stakeholders from the earliest stages
• a strong scientific base including monitoring of effectiveness
• widely targeted public awareness raising, information and education campaigns
• farm level intermediaries that are knowledgeable, trusted and have local acceptance
• incentives for farmers: ‘win-win’ BMPs, capital grants, compensation for income foregone
• adequate financial resources
• flexibility and capacity to evolve in form, scope and responsibilities as knowledge and experience are gained.
Thank you for listening, for more information, please contact:

Laurence Smith
l.smith@soas.ac.uk
Tel: 00 44 (0)207 5942699

Project website:
http://wri.eas.cornell.edu/relu/index.php

Project blog:
http://catchmentmanagement.blogspot.com/