

Institution: SOAS
Unit of Assessment: 19 Business and Management Studies
Title of case study: Influencing Water Management in the UK and Internationally
<p>1. Summary of the impact (indicative maximum 100 words)</p> <p>Water is essential to society. The water industry constitutes a significant part of economic activity locally, nationally and internationally, and land and water management are crucial to environmental quality. Typically, water resources are governed by top-down, hierarchical approaches at state level. In contrast, the research of Professor Laurence Smith has demonstrated the success of approaches that privilege local stakeholder input and collaborative management at catchment level. Research outputs have contributed to improved and reformed water management in the UK and internationally, evidenced by their adoption by local authorities, NGOs, Defra and others, and promotion in the guidance proffered by organisations including Defra and the OECD.</p>
<p>2. Underpinning research (indicative maximum 500 words)</p> <p>Laurence Smith is a management scientist working on natural resources, rural development, and water management. He has researched and advised in the UK and internationally, including work for Defra, DFID, the World Bank, the FAO and the IWMI. He joined SOAS in 2007 and has since been PI for four UK Research Council and Defra-funded projects on catchment management. 'Catchment' refers to the sub-basins of tributaries, or a whole river basin itself, as defined by the watersheds that divide surface drainage. The interdependence of human land and water uses with each other and natural processes requires holistic analysis and catchment-based management; and coordination of action is needed for areas that rarely correspond to administrative boundaries. Over abstraction, flood risk and water quality degradation are interdependent challenges for which local responsibilities for land use, farm and other businesses, planning and recreation frame key management options that must also be matched with higher level policy and regulation. The research investigated how to best protect water within landscapes that achieve the economic and social goals of the resident communities and businesses.</p> <p>A first project, 'Catchment Management for Protection of Water Resources,' was funded by the Rural Economy and Land Use Programme (RELU), a collaboration of three UK Research Councils (with additional funding from Scottish Government and Defra). Aiming to advance understanding of rural challenges in the UK, RELU required interdisciplinary research by natural and social scientists working together and the ability to inform policy and management practice. This project holistically researched the scientific and management achievements of successful catchment programmes in the USA, Australia and NW Europe, and tested lessons in two UK catchments (Tamar and Thurne). The project derived a 'template' to integrate catchment science and management. Key components of this are adaptive management, a twin-track ('analytic-deliberative') approach of technical assessment and inclusive local deliberation, and multi-agency collaboration. Decentralisation to catchments requires that locally acceptable responsibilities and rights are translated from higher-level regulation and provision is made for vertical coordination and accountability, and inter-locality cooperation. Meaningful stakeholder participation integrates environmental and health criteria with economic and social goals; whilst assessments, planning and implementation are enhanced by local knowledge, acceptance and 'ownership'. Locally trusted technical providers are needed as intermediaries, farm advisors and for assessments, planning and monitoring. Programmes require a shared knowledge base, advisory and incentive approaches backed by cost-effective regulation, and effective communication and decision-support tools. For the latter, the project developed a catchment 'report card' and an innovative participatory modelling approach for collective understanding of the scale and severity of pollution and solutions (the Extended Export Coefficient plus model; ECM+). These tools were developed in collaboration with environmental scientists from UEA. Contextual analysis determined that although the EU, USA and Australia all show shift from top-down governance of natural resources towards more collaborative forms, the degree and form of this is limited by how multi-level governance works.</p> <p>A second RELU project, 'Innovative Market-Based Mechanisms and Networks for Long Term Protection of Water Resources,' built on collaboration in the first project with the Westcountry Rivers Trust and South West Water in the Tamar catchment. It investigated means and institutional</p>

Impact case study (REF3b)

requirements for Payments for Ecosystem Services schemes that can complement regulation and advice in incentivizing owners to 'set-aside' or better manage land of priority for water protection.

3. References to the research (indicative maximum of six references)

- a. Benson, D., Jordan, A., Smith, L.E.D., "Is Environmental Management Really more Collaborative? A Comparative Analysis of Putative 'Paradigm Shifts' in Europe, Australia, and the United States," *Environment and Planning A*, 45, 7, 2013, p1695-1712. doi:10.1068/a45378
- b. Smith, L.E.D., Inman, A, and Cherrington, R., "The Potential of Land Conservation Agreements for Protection of Water Resources," in *Environmental Science and Policy*, 24, 2012, p92-100. doi: 10.1016/j.envsci.2012.07.017
- c. D. Benson, A. Jordan, H. Cook, and L.E.D. Smith, "Collaborative Environmental Governance: Are Watershed Partnerships Swimming or Are They Sinking?," in *Land Use Policy*, 30, 1, 2013, p748-757. DOI: 10.1016/j.landusepol.2012.05.016
- d. Krueger, T., Page, T., Hubacek, K., Smith, L.E.D. and K. Hiscock, "The Role of Expert Opinion in Environmental Modelling," in *Environmental Modelling and Software*, 36, 2012, p4-18. <http://dx.doi.org/10.1016/j.envsoft.2012.01.011>
- e. Cook, H., Benson, D., Inman, A., Jordan, A. and L.E.D. Smith, "Catchment Management Groups in England and Wales: Extent, Roles and Influences," in *Water and Environment Journal*, 26, 1, 2012, p47-55. DOI: 10.1111/j.1747-6593.2011.00262.x
- f. Smith, L.E.D. and K. S. Porter, "Management of Catchments for the Protection of Water Resources: Drawing on the New York City Watershed Experience," *Regional Environmental Change*, 10, 4, 2010, p311-326. DOI: 10.1007/s10113-009-0102-z

Outputs a, b, d and f have been submitted to REF 2.

External, competitively won funding that has supported the publications above and projects discussed:

1. "Developing a Catchment Management Template For the Protection of Water Resources: Exploiting Experience from the UK, Eastern USA and Nearby Europe": RELU Research Award (ESRC, RES-229-25-0009-A) November 2007 to December 2010, £724,153;
2. "Innovative Market-Based Mechanisms and Networks for Long Term Protection of Water Resources": RELU Research Award (ESRC, RES-240-25-0018) October 2010 to October 2012, £187,594;
3. "Developing a Catchment Management Template to Mitigate Non-point Source Pollution in China: Scoping Study": Sustainable Agriculture Innovation Network (SAIN) (Defra and Ministry of Agriculture, China) October 2010 to June 2011, £50,000;
4. "Knowledge, Policy and Practice for Sustainable Nutrient Management and Water Resources Protection in UK and Chinese Agro-ecosystems": Sustainable Agriculture Innovation Network (SAIN) (Defra and Ministry of Agriculture, China) February 2013 to January 2016, £760,756.

The team on Project 1 were finalists for the 'Best Example of Interdisciplinary Methodology and Scientific Innovation' award by the RELU Programme (94 projects). This project also featured as a case study of impact in the independent evaluation of the RELU programme.

4. Details of the impact (indicative maximum 750 words)

Smith's research has produced outputs of direct relevance to policy-makers and managers in the water industry, agricultural sector, local authorities and NGOs. It has influenced UK national policy and gained recognition internationally. Project 1 has had significant impact on Defra, OFWAT, the

Impact case study (REF3b)

Environment Agency (EA), water companies, rivers and wildlife charities, and House of Lords contributions to EU policy (1, 2 and 3, below). Similarly, Project 2 which has also been utilised by the OECD. Specifically, Project 2 findings on the legal basis for land conservation agreements has been utilised in the Defra 'Payments for Ecosystem Services: A Best Practice Guide', 2013. (6, 9)

In Project 1, catchment management was framed as a 'wicked problem', and this has been widely adopted and cited. In November 2010, project outputs were presented to the Defra Water Policy team and senior managers of the EA and OFWAT. Following this a discussion paper setting out detailed prescriptions for catchment management in England and Wales was requested by Defra (4). An invited presentation was made at Defra's national Water Stakeholder Forum in March 2011, where the then Parliamentary Under Secretary for Natural Environment and Fisheries announced the adoption and piloting of a 'Catchment Based Approach' (CaBA) for renewed EU Water Framework Directive implementation. Soon after, the Environment Secretary announced new funding for river restoration, including a Catchment Restoration Fund to support local projects and trialling of the new CaBA. In August 2011 Defra and the EA launched the CaBA with 25 pilot catchments, a quarter of all catchments in England and Wales. These were innovative trials of a more decentralised and adaptive approach supported by many of the research findings and recommendations made by Smith and his team. From 2011-12, Smith provided informal advice to Cascade Consulting, who were evaluating the 25 trials for Defra. In September 2012, Smith became an invited member of the EA Catchment Planning System External User Group. In October 2012, he was invited by Defra to join its Water Quality Professional Advisory Group, which advised both Defra and the EA on the development of a policy framework for national implementation of the CaBA. The new policy framework was published in May 2013. In June 2013, new funding and tendering for local catchment partnerships nationwide were announced, with contracts subsequently awarded to establish CaBA partnerships across the country.

Smith provided both written and oral evidence in 2011 to the House of Lords Select Committee on Agriculture, Fisheries and the Environment, which addressed the UK's enactment of EU Water Policy. In the Committee's subsequent published report, Project 1 is cited 15 times in the main text, and the project's management template is included in summary form as the final annex. The Committee concluded that freshwater should be managed at a more local, catchment level than is currently the case, allowing local rivers trusts, amenity groups, anglers and farmers to play a much greater role in decisions about water management in order to reconnect people with the value of water as a resource. The Committee agreed that catchment level management is a useful way to secure local involvement in water management; conclusions that follow the research findings. (7)

Endorsement and adoption of Smith's research is also evidenced domestically by leading public, private and third sector agencies concerned with water resource management. Of particular note is the project's impact on the business practices of South West Water Ltd: *"The project's twin track approach to water catchment management, combining robust science with comprehensive stakeholder engagement, has had a significant impact on South West Water and is instrumental in contributing to the company's evolving approach to its business. Martin Ross, South West Water's Environmental Manager, explains: "Previously there was no real connection between us and land managers, and the project gave us a way of guiding some initial engagement work in a much more comprehensive way ... now the whole of the company from the Chief Executive down is aware of our complete dependency on the way third parties treat land and water. We have begun to build a new business that is more outward focused and we are moving away from relying on expensive water treatment upgrading to sort out water quality."* (Meagher, 2012) (5)

The management template and recommendations also informed the Somerset Water Management Partnership's Review of Vision, Aims and Objectives published in October 2010. Under the CaBA, the Tamar catchment partnership (pilot and now continuation) originates from the case study under Project 1, and has built on that Project's stakeholder engagement and approach. The project's 'Ecosystem Health Report Card' has been widely cited as a model communications and management tool by the EA and rivers trusts. The ECM+ modelling approach has been applied in partnerships with the Broads Authority, the Westcountry Rivers Trust and the Defra Strategic Evidence and Partnership Project.

Nationally and internationally, impact has been achieved through dissemination activities involving non-academic stakeholders and also been evidenced through citation of project reports and related publications. Smith has given over thirty oral presentations at national and international

conferences including Stockholm Water Week and the European Geosciences Union. In its Studies on Water series, the OECD has cited Smith's work in its *Water Quality and Agriculture: Meeting the Policy Challenge* of 2012 (8). More recently, the OECD has 'showcased' relevant findings of Project 2 as a case study in its publication on *Providing Agri-Environmental Goods Through Collective Action* (10). A volume of international catchment management case studies with synthesis chapters that draw on the comparative and UK-based analyses completed during the projects will be published by Earthscan in 2014.

The success and impacts of Projects 1 and 2 have led to further funding to deepen and internationalise the agenda. Research funded by Defra and Ministry of Agriculture China, first as a scoping study and, from 2013, as a new research award, addresses mitigation of diffuse water pollution in China. As part of the research, Smith and Chinese partners are investigating the applicability of lessons from Projects 1 and 2 in three catchments and farming systems in China. The joint work with UEA on the ECM+ participatory modelling approach led to award of a two-year NERC Knowledge Exchange Fellowship for one of the project team at UEA.

5. Sources to corroborate the impact (indicative maximum of 10 references)

- 1) Results of project RES-2229-25-0009 <http://www.somerset.gov.uk/irj/public/home>
- 2) Results of project RES-2229-25-0009 http://www.water.org.uk/home/news/newsletters/view?newsletter=153&_frameset=true
- 3) Results of project RES-2229-25-0009 <http://www.ciwem.co.uk/policy-and-international/current-topics/water-management/integrated-water-management.aspx>
- 4) Smith, L., Bright, D. and Inman, A., 2011, *Appendix 2: A model for piloting new approaches to catchment management in England and Wales*. <http://www.coastms.co.uk/conferences/450>
- 5) Meagher, L.R., 2012, Rural Economy and Land Use Programme, Societal and Economic Impact Evaluation (REFERENCE PS110020) Part 1 Report and Part 2 Case Studies. <http://www.relu.ac.uk/news/Evaluation.htm>
- 6) Video: 'Catchment Management for Protection of Water Resources' <http://www.relu.ac.uk/news/Films.html>
- 7) Smith, L., Cook, H., Bright, D., Inman, A., Hiscock, K., Benson, D. and Jordan, A., 2012, Appendix 8 A 'Template' for Catchment Management, in *An Indispensable Resource: EU Freshwater Policy*, House of Lords, European Union Committee <http://www.publications.parliament.uk/pa/ld201012/ldselect/lducom/296/29602.htm> <http://www.publications.parliament.uk/pa/ld201012/ldselect/lducom/296/296.pdf> also 2011, *Evidence relating to catchment management and means for protection of water resources at source*, Submission to the House of Lords Inquiry into EU Freshwater Policy: <http://www.parliament.uk/business/committees/committees-a-z/lords-select/eu-environment-and-agriculture-sub-committee-d/> <http://www.publications.parliament.uk/pa/ld201213/ldhansrd/text/121205-0002.htm#12120577000261>
- 8) Parriss, K. et al., OECD, 2012, *Water Quality and Agriculture: Meeting the Policy Challenge*, OECD Studies on Water, <http://dx.doi.org/10.1787/9789264168060-en>
- 9) Smith, L.E.D., 2013, Land Conservation Agreements, in *Payments for Ecosystem Services: A Best Practice Guide*. Defra, London, pages 65-67: <https://www.gov.uk/government/publications/payments-for-ecosystem-services-pes-best-practice-guide>
- 10) Smith, L.E.D., 2013, The United Kingdom case study: payments for ecosystem services (PES) and collective action – 'Upstream Thinking in the South West of England', *Providing Agri-Environmental Goods Through Collective Action*, Trade and Agriculture Directorate and Environment Directorate, OECD, Paris, 259-270. http://www.oecd-ilibrary.org/agriculture-and-food/providing-agri-environmental-public-goods-through-collective-action_9789264197213-e