

## CATCH II Fully integrated catchment planning



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- Potts and Stojanovic (2012) *Linking coasts and catchments*, final report and research summary
- Spray (2012) *Review of operational experiences and approaches to the implementation of an ecosystems approach and ecosystem services within integrated catchment management in policy and practice*, final report and research summary
- Waylen *et al* (2012) *Stakeholders perceptions of connections for integrated catchment management*, final report

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## **Executive Summary**

### **Background to research**

In the last decade, catchment management has seen a wealth of new “top-down” legislation and policy initiatives, such as the EU Water Framework Directive, to take forward emerging demands for better integration and delivery of multiple benefits for society and the environment at the catchment scale. In parallel, there has been a growth of “bottom up” initiatives, some of these now representing advanced approaches to Integrated Catchment Management (ICM), for example, Tweed Forum, the Westcountry Rivers Trust and Association of Rivers Trusts (now called the Rivers Trust). The CATCH-II project represents a key opportunity to further learn from existing ICM experience, and contribute to the challenge of making catchment management relevant to practitioners.

### **Objectives of research**

This research assessed selected projects with ICM experience; in particular examining the link between national “top-down” policy processes and local “bottom-up” catchment scale initiatives. The focus was on opportunities and challenges to delivering national policy commitments for water management at the catchment level. We addressed three main issues: 1) working across scales 2) aligning policy planning processes, and 3) engaging with stakeholders and communities.

### **Research activities**

Experiences of 16 ICM projects outside Scotland were reviewed. They were chosen to reflect a diversity of scales, issues and governance arrangements. They were identified through a review of water management activities currently carried out in the UK (e.g. Demonstration Test Catchments, Defra Pilot Catchments, etc.), and through the UNESCO HELP basin network and contacts. A mix of documentary analysis and interviews was used to examine the ICM projects, the interviews being transcribed and classified into themes through use of NVIVO7 software.

### **Key findings and recommendations**

Overall, ICM projects surveyed differ widely in size, drivers and organisational structure. Variety in the characteristics of ICM projects suggests that there is not one type of solution for ICM, and that, to be effective, ICM must respond to the particular needs of the catchment, and the governance arrangements in which it occurs. However, diversity may come at a cost. Different drivers and organisational structures may create risks for the delivery of national water policies, and skew the quality and depth of implementation.

Working at different levels remains a challenge everywhere, but no ICM project has opted for either further centralisation and control, or full decentralisation. Instead, many countries have complemented traditional top-down policy instruments, characterised by delivery control internal to statutory agencies and strictly aligned national policies, with further external delivery by providing catchment-wide contractual tools, planning processes and economic incentives to local communities, voluntary organisations and the corporate sector. These instruments embrace the multi-level nature of ICM and aim to overcome competition

between national and local priorities through greater partnership, integrating local priorities in national policy and further subsidiarity of decision-making.

No ICM project surveyed presents a strong integrative framework. Rather, the distributed model, where policy frameworks operate mostly independently, dominates. However, some success in integration and delivery occurs in many ICM projects surveyed. Differences and conflicts between priorities and policy processes can be overcome by collective learning and creating inter-dependence in decision-making. Partnership-working is essential, for example through better communication, collaborative projects, and joint policy planning and implementation.

All ICM projects engaged widely with local communities and landowners. Local voluntary groups appear to be a powerful way to create a “local champion” for ICM, although they appear vulnerable to shifting funding cycles and local interests.

Findings therefore suggest the following recommendations:

- Governance arrangements for ICM should be adapted to the context in which the project or initiative operates.
- Successful leadership for ICM can be assumed by statutory organisations, civil society, local communities or the corporate sector.
- Public policies may successfully support non-governmental ICM by setting up voluntary management planning processes and contractual agreements, and resources to support stakeholder collaboration.
- Time for collective learning should be built into decision-making processes, for example through resources for liaising and meeting and allowing rolling partnership projects.
- The statutory and policy framework should create a sense of inter-dependence among those involved; for example through co-responsibility in policy planning and delivery, and the use of policy instruments formalising co-management (e.g. contractual agreements, joint service delivery).
- Partnership working should be facilitated simultaneously at multiple levels of governance, i.e. national, regional, local.
- Mix of policy instruments (e.g. strong, clear regulatory frameworks, economic incentives) associated with strong local engagement is the most effective way to foster behaviour change for ICM.
- Devolution of decision-making to the lowest level is a powerful method for change as it creates a sense of ownership and responsibility, but the process needs to be accompanied by an adequate policy framework to be effective.
- A policy framework encouraging locally-led delivery of ICM would focus on providing the resources and building the capacity of “local champions” to interpret ICM principles locally, engage with local stakeholders, deliver projects with multiple partners and act as a mediator between conflicting interest.
- A policy framework encouraging locally-led delivery of ICM would also encourage the involvement of statutory organisations where local stakeholders fail to take forward national priorities for water management.

**Key words:** Catchment management, policy integration, local engagement, governance.



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## 1. INTRODUCTION

This report is one part of the wider project *CATCH II - Fully integrated catchment management planning (CRW007)*. The other component undertaken by the University of Dundee focused on a review of operational experiences and approaches to the implementation of an Ecosystem Approach and ecosystem services within Integrated Catchment Management in policy and practice. A third part of the project looked at connectivity with Coastal Management Planning.

This research comes at a critical juncture for water management, with stakeholders showing increasing interest in holistic, sustainable and integrated approaches (e.g. Newson 2011). Of crucial interest is the challenge of “operationalising” emerging and existent approaches with the overall objective of realising multiple benefits. Many of the most pressing challenges (i.e. sustainability, pollution, risk) extend beyond traditional scales of analysis and management, requiring meaningful integration across catchments in terms of valuing the environment in a multidimensional manner. This includes integration of policies, resources and funding with operational practice, as well as improved communication and knowledge dissemination. There is a recognised need for “tools” and methodologies to support such efforts and for research to become more grounded in the social and economic challenges facing Scotland and much of the developed world. Learning from best practice offers opportunities to consolidate and contextualise what is known, alongside dissemination of that knowledge to relevant policy-makers, agencies, land owners, managers and practitioners (Ison *et al* 2007)

Integrated catchment management (ICM) has emerged as one area where there has been a concerted effort to address these challenges. In the last decade, catchment management has seen a wealth of new “top-down” legislation and policy initiatives to take forward emerging demands for better integration and delivery of multiple benefits for society and the environment at the catchment scale. The advent of River Basin Management Planning as part of the requirements of the EU Water Framework Directive (WFD) has encouraged greater stakeholder participation (Blackstock and Richards 2007; Collins *et al* 2007; Hendry 2008). The emphasis on ‘a catchment approach’ to sustainable flood risk management within the Flood Risk Management (Scotland) Act (2009) focuses on the potential benefits of a holistic and integrated approach (Spray *et al* 2010). The Act similarly demands partnerships and stakeholder participation. In parallel, there has been a growth of “bottom up” initiatives and originally these tended to be small scale and focused on single-issues. Some of these now represent advanced integrated approaches to ICM, for example, in the UK, Tweed Forum, the West Country Rivers Trust and the Association of Rivers Trusts (Cook *et al* 2007; Cook *et al* in press). Globally, networks such as the UNESCO IHP-HELP Basins promote ICM initiatives and support the sharing of on-going experience (e.g. Allen *et al* 2011; Curtiss and Cook 2006; Ryan *et al* 2010, Spray and Comins 2011).

What remains as the major challenge for most, if not all of these organisations and initiatives, is turning concepts and policy into practice through sustained and monitored implementation (Watson and Collins 2007). ICM in particular has become the “target” of increasing criticism as to its inability to drive theory into implementation (Biswas 2004; Cook and Spray 2012). The lack of a “simple” methodology for integration and the need for learning from effective stakeholder-led initiatives is widely recognised. The original CATCH handbook (CATCH 2009) was one such early initiative in Scotland to aid implementation of river basin management planning for the WFD by bringing together examples of best



practice and shared learning from catchment partnerships. The CATCH-II project represents a key opportunity to further learn from existing experience, and contribute to the challenge of making catchment management relevant to practitioners.

## **1. RESEARCH DESIGN**

This research aims to assess selected, on-going ICM experience, in particular with regards to linking national “top-down” policy processes with local “bottom-up” catchment scale initiatives. Focus is on identifying opportunities and challenges to delivering policy commitments for water management at the catchment level, in particular issues of 1) working across scales; 2) aligning policy planning processes; and 3) engaging with stakeholders and communities.

Experiences of sixteen ICM projects outside Scotland represent the main empirical basis of the research. The projects were selected to reflect a diversity of scales, issues and governance arrangements for ICM. They were identified through a review of water management activities currently carried out in the UK (e.g. Pilot Catchments, Demonstration Test Catchments and Catchment Sensitive Farming), and through the UNESCO HELP basin network database and contacts.

A mix of documentary analysis and interviews was used to examine the ICM projects. Documents analysed include previous UNESCO reports, policy documents, technical reports, academic literature and web-sites. For each catchment, at least one representative of a relevant organisation involved was interviewed to provide greater depth of the ICM experience. In England, additional governmental and non-governmental staff were interviewed, including the UK Government Department for Environment, Food and Rural Affairs (DEFRA), Environment Agency national and regional leads on river basin management, and a representative of the umbrella organisation the Rivers Trust (for further information on trusts within the charity movement of the same name), and the Westcountry Rivers Trust.

The research spanned the period between November 2011 and April 2012. Interviews were transcribed and classified into themes through NVIVO7. Themes were identified inductively based on the general research objectives (e.g. aligning planning processes, working across scales, engaging stakeholders). Themes included: background and drivers for the ICM project, funding arrangements and resources, strategic management planning, partnership working, mechanisms for partnership working, local engagement and mechanisms for local engagement. Themes were then examined to identify commonalities and differences between ICM projects. Preliminary results were presented at a stakeholder workshop in March 2012. The workshop encouraged input and debate with national and local Scottish policy-makers and stakeholders working on ICM. The workshop, and a follow-up questionnaire, provided an opportunity to refine information needs and adjust the last stages of data analysis.

## 2. MAIN CHARACTERISTICS OF ICM PROJECTS

Table 1 presents some of the main characteristics of ICM projects surveyed. Eleven catchments are situated in the UK (outside Scotland), and one catchment in each of the following countries: Australia, France, Philippines, Portugal and the United States of America. They vary widely in size, from 450 km<sup>2</sup> to 115,000 km<sup>2</sup>. Population density ranged from less than 8 inhabitants per km<sup>2</sup> for the Australian Goulburn-Broken, to 1,160 inhabitants per km<sup>2</sup> for the Don catchment in England.

**Table 1 – Some key characteristics of selected ICM projects**

Catchment	Country of catchment	Start of ICM*	Size (km <sup>2</sup> )	Population density (per km <sup>2</sup> )	Organisational structure
Adour-Garonne	France	1964	115,000	61	Statutory agency
Aire	England, UK	2011	1,160	948	Registered charity
Ballinderry	Northern Ireland, UK	1984	450	73	Registered charity
Davao	Philippines	2004	4,200	476	Partnership forum
Don	England, UK	2006	1,720	1,163	Registered charity
Frome-Piddle	England, UK	2010	900	189	Water company
Goulburn Broken	Victoria, Australia	1997	24,300	8	Statutory agency
Guadiana	Portugal/Spain	2005	12,000	19	Statutory agency
Hampshire Avon	England, UK	1999	1,750	131	Partnership projects
Iowa-Cedar	Iowa/Minnesota, US	2009	32,690	31	Partnership forums
Kennett	England, UK	1990	1,160	151	Registered charity
Parrett	England, UK	2000	1,700	176	Partnership forum
Yorkshire**	England, UK	2004	4,860	123	Registered charity
Tamar	England, UK	1995	1,800	189	Registered charity
Tyne	England, UK	1994	2,900	276	Registered charity
Welland	England, UK	2010	1,680	149	Registered charity

\* It was difficult to locate the start of the ICM approach, therefore the date provided usually represents the date the organisation was set up or the start of the partnership. Where possible this represents the start of an ICM approach.

\*\* Includes the Swale, Ure, Nidd & Wharfe

Four main types of organisational structure were surveyed: ICM led by statutory agencies water companies, charities, and partnerships. ICM projects in Australia, France and Portugal were led by statutory agencies. In England, the Frome-Piddle ICM is led by Wessex Water, a drinking and waste water company. Many other ICM projects in England are led by registered charities (for example rivers trusts) aiming to restore the water environment.

Partnerships are a frequent form of ICM, some being more formal than others. The Hampshire Avon ICM has a long history of collaborative projects between local charities (e.g. Wildlife Trusts) and public organisations (e.g. Environment Agency, Natural England). The Parrett ICM is structured around regular meetings between local stakeholders. In the Iowa-Cedar ICM, two partnership forums (i.e. the U.S. Inter-Agency Co-ordination team and Cedar River Coalition) encourage voluntary engagement between politicians, governmental and non-governmental organisations. The Davao ICM is a network of politicians, practitioners in public agencies, and representatives of civil society and the corporate sector.



ICM projects have widely different histories (Table 2). Most started as a response to damages caused by diffuse pollution and habitat degradation, usually due to pressures from agricultural activities and flood protection engineering. Point source pollution is also a major driver for many ICM projects, often when agricultural diffuse pollution also contributes to lowered water quality levels. Improving fisheries represented a stronger driver in English Rivers Trusts. Major flood events in the Parrett and Iow-Cedar catchments were at the origin of their ICM projects. Water scarcity, in part due to intensive irrigation and drinking water abstraction, is an important driver in the Adour-Garonne, Kennett, Goulburn-Broken, Guadiana and Welland watersheds.

Overall, the ICM projects surveyed differ widely in size, drivers and organisational structure. Variety in the characteristics of ICM projects suggests that there is not one type of solution for ICM, and that, to be effective, ICM must respond to the particular needs of the catchment, and the governance arrangements in which it occurs. However, diversity may come at a cost. Different drivers and organisational structure may create risks for the delivery of national water policies, and skew the quality and depth of implementation. The next sections examine how ICM projects deal with this complexity, and how they have set up ways to work across scales and policies, and how national organisations engage with local stakeholders.

**Table 2 – Main initial drivers of ICM projects**

Catchments (N=16)	Initial drivers for ICM					
	Diffuse pollution	Habitat degradation	Point source pollution	Fisheries	Flooding	Scarcity
Adour-Garonne	X	X	X			X
Aire	X	X	X	X		
Ballinderry	X	X		X		
Davao	X		X		X	
Don		X		X		
Frome-Piddle	X		X			
Goulburn Broken	X		X			X
Guadiana	X		X			X
Hampshire Avon	X	X	X		X	
Iowa-Cedar	X		X		X	
Kennett	X	X	X			X
Parrett	X	X			X	
Yorkshire	X	X			X	
Tamar	X			X		
Tyne		X		X		
Welland	X	X				X
<b>Total</b>	<b>14</b>	<b>10</b>	<b>9</b>	<b>5</b>	<b>5</b>	<b>5</b>

### 3. WORKING ACROSS SPATIAL SCALES

Working at a catchment level is challenging. Priorities at the catchment level may for example not adhere to those identified at national, regional or local levels. In addition, decision-making processes may be set along administrative boundaries rather than hydrological ones. A catchment approach to water management must work across multiple layers of governance, each with its own set of rules, policies and stakeholders.

Table 3 presents the main governance mechanisms identified in ICM projects surveyed that link the national to the local level, including: policy instruments for statutory water improvements; statutory river basin planning; voluntary partnerships; and incentives for catchment planning.

**Table 3 – Mechanisms used to link national and local levels in water and land management**

Mechanism	Managed by	Scale of action	Examples
Policy instruments for statutory water improvements	Federal/national government & statutory agencies	Organisations and individuals	All
Statutory river basin planning	Federal/national government, statutory agencies	River basin	European ICMs, Gouldburn-Broken
Voluntary partnerships	Charities, corporate sector, statutory agencies	River basin & catchment	English and Northern Irish ICMs, Iowa-Cedar, Davao
Incentives for catchment planning	Local government, stakeholders and/or statutory agencies	Catchment & landscape	English ICMs, Adour-Garonne, Iowa-Cedar, Gouldburn-Broken

All ICM projects operate in a policy environment setting out multiple regulatory, economic, and awareness-raising instruments to encourage changes in water use and land management by citizens, land managers, the corporate sector, etc.. Policy instruments tend to be managed by federal or national governmental organisations, and their objectives therefore tend to be strictly aligned on federal or national priorities, where they are set.

In European and the Gouldburn-Broken ICMs, traditional policy instruments are complemented by statutory management planning at river basin level. Statutory management plans in Europe are aligned on EU WFD objectives, and may not reflect other regional or local priorities (e.g. amenity, tourism). In the Gouldburn-Broken ICM, statutory management plans are primarily driven locally, although they remain aligned with legal requirements set at state and federal levels. In the Iowa-Cedar and Davao ICMs, voluntary partnerships are the dominant forms of ICM intervention since no statutory river basin management is required. They involve not only regulatory agencies and representatives of civil society and the corporate sector, but also state and local politicians. Priorities are set by participating stakeholders instead of legislative requirements.

In England, several types of charities (e.g. Rivers Trusts, Fisheries Trusts, Wildlife Trusts, etc) are active in ICM in parallel to statutory river basin planning. Where synergies arise between their priorities and national ones, they work in partnership with statutory agencies (e.g. Environment Agency, Natural England, Forestry Commission), effectively exploiting national policy instruments to (partly) meet local priorities.

While traditional instruments in water and land management policies dictate much of the opportunities available, charities may raise resources from a variety of other sources to meet their own priorities. Local government and/or European (e.g. Life, Interreg) funding was particularly useful in the Ballindery, Hampshire Avon, Parrett and Tamar ICMs to help set them up. Charities may also obtain funding from other charities and interest-groups. Recorded ones include: the Heritage Lottery, Fisheries and Woodland Trusts, WWF, RSPB, National Farmers Union, Campaign for the Protection of Rural England. Charities were divided with regards to the benefits of raising resources from fundraising and membership because of the resources required to reach out to local communities. When used, membership fees nevertheless contributed to sustaining the financial viability of the charity.

Charities may also raise resources from the corporate sector. In the Tamar, the charity uses resources made available by South-West Water to implement ICM, in particular for incentivising changes in rural land management to improve water quality. Some charities have set up profit-making businesses to fund their charity work and secure financial sustainability. For example, the Ballindery ICM runs a hatchery, while the Tamar and Tyne ICMs provide hydrological, ecological and policy consultancies. Several charities also profit from the Landfill Communities Fund, offering tax credit to landfill operators for contributions to charities.

A main problem with using voluntary partnerships for delivering water policy commitments, and in particular with charities, is the risk that certain areas might not attract local interest. Implementation of ICM can therefore become highly heterogeneous across the territory, focusing on certain areas which attract sufficient local concern to foster participation. Government would therefore need to fill the gap, either by delivering ICM through statutory agencies, or by further encouraging locally-led ICM.

#### **4.1. Encouraging a catchment approach**

Governments and statutory agencies have set up several schemes to encourage voluntary catchment approaches, although for different reasons and in different ways. In England, DEFRA and the EA set up two schemes to encourage a catchment approach. First, the Catchment Restoration Fund is an application-based, competitive grant scheme prioritising collaborative, catchment-wide interventions to meet EU WFD objectives. Second, the Pilot Catchment programme selected 25 catchments to scale interventions for the EU WFD down from the river basin to the catchment level. Activities in pilot catchments are led by one or two local organisations, with the aim to obtain a commitment for action by 2013. Finding synergies between interventions for the EU WFD and for responding to local issues and concerns is encouraged. Several Environment Agency regional offices are now appointing “catchment coordinators” responsible for interacting with organisations at catchment level.

In the Iowa-Cedar ICM, the state of Iowa provides grants for the establishment of Catchment Management Authorities and for the development of catchment management plans, in particular when they can contribute to reducing diffuse pollution and alleviate flooding. Diffuse pollution is a federal priority, while flooding became a state priority after the 2009 floods. A Catchment Management Authority is a legal entity based on the collaboration of two political units (e.g. local authorities). It is allowed to levy local rates, but this has not been used yet. Recent developments have emphasised community involvement and control of the planning process.

The Goulburn-Broken ICM operates within a nested governance arrangement. At higher levels, the Murray-Darling River Basin Authority sets the objectives for the whole river basin, spanning several Australian states. At local level, several schemes foster local community-led natural resource management, such as the Landcare programme, funded through government, the corporate sector and other charitable and local sources. The Goulburn-Catchment Catchment Management Authority is an intermediate level, statutory-based, but community-led organisation. A Board of appointed local community members supervise the work of the Catchment Management Authority. In addition to licensing water use, leading strategic management planning at river basin level and delivering floodplain management, the organisation coordinates and co-manages several federal and state funding streams for water and land management in order to meet catchment priorities.

Several levels of governance operate in the Adour-Garonne ICM. The statutory-based water agency is responsible for EU WFD statutory management planning across the river basin. It can draw on a tax on drinking and waste water bills to implement the plan. The water agency provides grants to support the development and implementation of voluntary catchment management plans. Three types of plans exist. Two are led by local stakeholders (e.g. local authorities, regulatory agencies, civil society, the corporate sector, etc). Priorities can therefore differ from those of the EU WFD. Plans must be approved by the state, and participants must implement them –although there is no strict legal requirement to do so. A new type of plan was recently set up to encourage catchment plans with the specific objective to meet EU WFD objectives for ‘good ecological status’. It requires less consultation and engagement between local stakeholders than the other two. All catchment plans must meet the EU WFD requirements as a baseline.

#### **4.2. Lessons learned**

Overall, working at different levels remains a challenge everywhere, but no ICM has opted for either further centralisation and control or full decentralisation. Instead, many countries have complemented traditional top-down policy instruments, characterised by delivery control internal to statutory agencies and strictly aligned to national policies, with further external delivery by providing catchment-wide contractual tools, planning processes and economic incentives to local communities, voluntary organisations and the corporate sector. These instruments embrace the multi-level nature of ICM and aim to overcome competition between national and local priorities through greater partnership, integrating local priorities in national policy and further subsidiary of decision-making. Findings therefore suggest the following lessons learned:

- Governance arrangements for ICM should be adapted to the context in which it operates.
- Successful leadership for ICM can be assumed by statutory organisations, civil society, local communities or the corporate sector.
- Public policies may successfully support non-governmental ICM by setting up voluntary management planning processes and contractual agreements, and resources to support stakeholder collaboration.

#### 4. ALIGNING PLANNING PROCESSES

No national policies relevant to ICM projects (e.g. water, flood, agriculture, etc) are fully integrated and synchronised in any ICM projects surveyed, and no “master plan” existed that aligned federal or national interventions across a range of policies for ICM. Rather, policies tend to operate through different spatial and time scales, priorities and policy instruments, which are most suited to deliver their respective primary objectives.

Table 4 presents the main sectors and policies involved in the ICM projects, as identified during interviews through references to core areas of work and partners involved. In this research, ICM projects were initially selected to cover adequately attempts to mitigate diffuse pollution, habitat degradation and flooding, all of which are significant pressures on the water environment in Scotland. Many ICM projects surveyed therefore included a strong rural component in which policies and sectors such as biodiversity, rural development, fisheries and agriculture take a central role.

**Table 4 – Main policies covered by ICM projects**

Catchment	Main sectors/policies currently involved								
	Biodiversity	Drinking & waste water	Rural development	Fisheries	Agriculture	Flooding	Spatial planning	Navigation	Energy
Adour-Garonne	X	X	X	X	X	X	X	X	X
Aire	X	X		X		X	X	X	
Ballinderry	X	X	X	X	X		X		
Davao	X	X	X		X	X	X		X
Don	X	X		X			X		
Frome-Piddle		X	X		X				
Goulburn Broken	X	X	X	X	X	X	X		
Guadiana	X	X			X	X	X	X	X
Hampshire Avon	X	X	X	X	X	X			
Iowa-Cedar	X	X	X	X	X	X	X		
Kennett	X	X	X	X			X		
Parrett	X	X	X		X	X	X		
Yorkshire	X		X	X	X	X			
Tamar	X		X	X	X				
Tyne	X	X	X	X	X	X	X	X	
Welland	X	X	X	X		X			
Total	15	14	13	12	12	11	11	4	3

Biodiversity remains a strong driver for ICM projects particularly because of legislative drivers (e.g. EU WFD, EU Habitats and Birds Directives, UN Convention on Biological Diversity). Local fisheries associations are very active in the UK to encourage interventions to improve river morphology for fish migration and spawning. Rural development is also particularly well represented in the UK because of the responsibilities of the biodiversity regulator in managing agri-environment schemes through the Rural Development Programme (i.e. Natural England). Most ICM projects engage with farmers, agricultural advisors and interest groups (e.g. National Farmers Union) to encourage changes in rural land management to improve water quality and run-off.

With their considerable impact on the water environment (through abstraction, pollution and flooding), water companies are also associated with most ICM projects. The involvement of local authorities is mostly related to the improvement of the amenity of river environments for local communities. Remarkable exceptions include the Parrett and the Aire ICMs where interviewees mentioned close involvement of local authorities on flooding issues and fish migration.

Overall, all ICM projects surveyed aim to take into account a wide range of sectors and policies in order to address the range of issues that impact on a catchment. However, ICM projects also appear to prioritise certain interventions, policies and sectors over others, depending on the main drivers for the ICM projects, and the particular policy environment in which the ICM project evolves. Interviewees mentioned several mechanisms used to overcome gaps between policies and improve their implementation for successful ICM.

### **5.1. Mechanisms for aligning planning processes**

When asked for the main elements underpinning successful integration in catchment management, interviewees usually mentioned good inter-personal relationships between relevant organisations in an enabling policy environment. Regular communication, face-to-face exchange over a long-time and collaborative working helped foster trust and a willingness to compromise, and to help each other. Four types of collaboration could be identified.

1. Interviewees first mentioned that lines of communication can be improved by employing a liaison officer, organising regular meetings, and creating a forum for discussion and learning. The Gouldburn-Broken ICM, for example employs staff specifically responsible for interacting with other organisations. The Iowa-Cedar ICM mainly works through regular meetings and working groups on issues of interest to participating stakeholders. Informal meetings may appeal to more stakeholders, open up debates, encourage learning and help reach compromises. A more formal process might tempt stakeholders into holding their own positions. The main disadvantage of informal approaches is reliance on individual voluntary contributions and resources, making the process vulnerable to funding opportunities, changes in personnel and the willingness of participants.
2. Many ICM projects coordinated interventions through collaborative, time-limited projects. The Hampshire Avon, for example has now built on more than ten years of successive



projects led by a common steering group. Advantages in working on a project basis are opportunities to pool resources and leverage funding, resulting in “getting more with less” for individual partners. Disadvantages mainly include the costs of the bureaucratic process required to prepare and justify collaborative projects, in particular for statutory agencies, and the challenge of securing commitment beyond the project.

3. Greater communication and collaborative projects were used to improve coordination, and may result in greater integration when partners integrate internally learned lessons over time. Interviewees mentioned that planning processes may also be aligned more systematically at organisational and policy level. At organisational level, stakeholders may set up partnership agreements for the delivery of specific functions. Memoranda of Understanding, for example, are commonly used in many ICM projects. Where delivery of specific land and water interventions can be better achieved through other organisations, the Gouldburn-Broken ICM project sets service level agreements with other state agencies. The Adour-Garonne ICM project is using Statements of Intent with local authorities and the agricultural sector, in order to coordinate and integrate water issues in their planning procedures.
4. The advantages of aligning administrative processes come from streamlining decision-making, avoiding redundancy between organisations, and saving resources. Partnerships are however vulnerable to organisational dynamics (e.g. staff movement, resource availability) and therefore may collapse over time or in crisis situations where statutory duties or core interests are prioritised. In those cases, partners must modify contract agreements, transfer responsibilities to other partners, or reduce ambitions - all solutions leading to reduced rates of implementation on the ground.

## 5.2. The role of strategic management planning

At a policy level, organisations may develop common guidance and assessment procedures, strategies and action plans. Eleven ICM projects (out of 16 surveyed) have or are preparing a strategic management plan. In the Adour-Garonne ICM, one of the three types of catchment plan legally requires drinking water, wastewater, and spatial policies to be compatible with the plan. Preparing a strategic management plan however may divert resources from implementation and must be justified.

Interviewees believed that planning should have a specific purpose. Where stakeholders have a good record of collaborative working and project delivery, the plan may help project partners go further and identify priorities, better coordinate activities under a common framework, broadly guide investments, and structure long-term implementation. Where collaboration around ICM had been lacking, plans may be an opportunity to raise awareness of water issues across relevant stakeholders, gather scientific and local knowledge to foster collective learning, and encourage cooperation through identifying synergies and inter-dependence between stakeholders.

The Davao ICM project, for example, has engaged in a planning process in order to raise interest in diffuse pollution, sanitation and flooding issues in the city. It now uses the plan to

create support from elected officials for greater consideration of water issues in other policies (e.g. spatial, agriculture, etc).

In other ICM projects, plans tend to have little formal coercion. Interviewees usually stressed that successful delivery was opportunistic. Activities carried out tended to be in response to available funding, local or political support, or situations of crisis (e.g. flood), rather than as part of a strictly well planned approach. It is also apparent that some of the five ICM projects with no strategic management plan have a very good track of delivering ICM anyhow. The Parrett and the Tamar ICMs, for example both engage extensively with the farming community to deliver water quality improvements, and changes in rural land management have been secured over the years.

### **5.3. Lessons learned**

Overall, no single model of ICM planning and delivery presents a strong integrative framework. Rather, the distributed model, where policy frameworks operate mostly independently, dominates. However, some success in integration and delivery occurs in many ICM projects surveyed. Differences and conflicts between priorities and policy processes can be overcome by collective learning and creating inter-dependence in decision-making. Partnership-working is essential, for example through better communication, collaborative projects, and joint policy planning and implementation. Findings therefore suggest the following lessons learned:

- Time for collective learning should be built into decision-making processes, for example, through resources for liaising and meeting and allowing rolling partnership projects.
- The statutory and policy framework should create a sense of inter-dependence, for example, through co-responsibility in policy planning and delivery, and the use of policy instruments in formalising co-management (e.g. contractual agreements, joint service delivery).
- Partnership working should be facilitated simultaneously at multiple levels of governance, i.e. national, regional, local.

## **5. ENGAGING WITH LOCAL STAKEHOLDERS**

Those ICM projects surveyed all closely engaged with land managers, local communities and voluntary organisations for different purposes. Drivers for engaging with local stakeholders include raising awareness of the water environment, and increasing local support for changes required to improve the water environment.

Various means are used to communicate and inform local stakeholders: newsletters; river festivals; press releases; leaflets; posters; road shows; facebook sites; twitter; etc. Sometimes local stakeholders are encouraged to comment upon organisational activities through consultations, or through more innovative approaches. In the Gouldburn-Broken ICM for examples, wiki sites were created where people can directly edit the information displayed.

Some ICM projects try to create a more in-depth debate with local communities and directly involve local communities in the decision-making process. Workshops and fora are organised as part of robust knowledge exchange programmes. For example, in the Iowa-Cedar ICM, the US Army Corps of Engineers together with The Nature Conservancy and the State of Iowa are assisting local communities in developing a catchment plan. Visioning workshops are organised to evaluate trade-offs of future land use scenarios, and to identify priorities for the catchments.

Statutory organisations sometimes worked in partnership with local voluntary organisations. Rivers, Wildlife and Fisheries Trusts in England, and community groups under the Australian Landcare scheme were the most developed forms of active local voluntary organisations amongst those ICM projects surveyed.

### 6.1. Working with local voluntary organisations

Using the language of one interviewee, the work of local organisations could be distinguished between *researching*, *campaigning* and *delivering*. Such local non-governmental organisations, or Participative Catchment Organisations (Cook *et al* 2012), are often formed as charitable trusts and have their roots in the communities and environments in which they operate (Spray and Comins 2011).

As *researchers*, local voluntary organisations may help sample and monitor the water environment, gather scientific evidence, compile examples of good practice and disseminate information. Working with such local bodies may help statutory organisations improve their knowledge of local issues, local projects and help identify potential land managers willing to cooperate in ICM.

As *campaigners*, local voluntary organisations may foster interests and support at local level through volunteering and educational activities and, at a national level, by responding to consultations and lobbying politicians. Such local bodies may also be able to identify local champions who will influence the local community, and build momentum and support for change.

As *deliverers*, local voluntary organisations may improve communication between public authorities and stakeholders, and improve the coherence of the activities carried out in the catchment. They can raise awareness and provide advice to local communities and land managers. They may also identify funding opportunities or raise funds themselves to deliver on-the-ground projects. In addition to seeking innovative means to effect change, many Rivers Trusts relied on incentives created by traditional policy instruments (e.g. regulations, economic instruments) to foster behavioural change. This may represent an opportunity for public organisations, where it is quicker and cheaper to use local groups than to build capacity internally, in particular at a time when public organisations are not allowed to grow.

Risks associated with working with local community groups could be identified in the information collected from ICM projects surveyed. Local voluntary organisations may be strongly focused on one type of issue or specific area of interest, to the detriment of a more holistic or catchment-based approach. For example, some interviewees pointed out the risks of promoting single issues, such as salmonid fisheries in the case of certain Rivers Trusts.

Alternatively, Wildlife Trusts, with their broader landscape-wide, biodiversity concerns were seen by some interviewees not to be focused on improvements to the water environment.

Local voluntary organisations may also vary over time in their capacity to deliver because they rely on external funding, trustees and volunteers. They are particularly vulnerable to changing funding streams for core activities, and to uncertainty and change in local politics and priorities. Such organisations often find it hard to be able to sustain internal capacity, as they rely on few staff and non-competitive salaries. Local knowledge and the trust of the local community may be lost if and when project officers move on.

In England, The Rivers Trust, as an umbrella organisation has helped individual Rivers Trusts with learning from each other, sharing expertise, identifying funding opportunities, and generally building capacity for implementing ICM (e.g. managing partnerships, delivering projects, engaging with land managers and local communities). In Australia, the Landcare has been a long-term mechanism to build capacity in local communities for managing natural resources. Despite declining memberships over time and low capacity, Landcare groups were found to be successful in terms of fostering strong commitment amongst core members (Curtis and Cooke, 2006). This would suggest that governmental support and an adequate policy framework is required to sustain local community action, particularly with respect to core funding of the organisations themselves.

## 6.2. Lessons learned

Overall, ICM projects engaged widely with local communities and landowners. Local voluntary groups appear to be a powerful way to create a “local champion” for ICM, although they appear vulnerable to shifting funding cycles and changing priorities of local interests. Findings therefore suggest the following lessons learned:

- A mix of policy instruments (e.g. strong, clear regulatory framework, economic incentives) associated with strong local engagement is the most effective way to foster behaviour change for ICM.
- Devolution of decision-making to the lowest level is a powerful means for change, as it creates a sense of ownership and responsibility, but the process needs to be accompanied by an adequate policy framework to be effective.
- A policy framework encouraging locally-led delivery of ICM would focus on providing the resources and building the capacity of “local champions” to interpret ICM principles locally, engage with local stakeholders, deliver projects with multiple partners and act as a mediator between conflicting interests.
- A policy framework encouraging locally-led delivery of ICM would also encourage the involvement of statutory organisations where local stakeholders fail to take forward national priorities for water management.

## 6. POLICY RECOMENDATIONS

Findings suggest the following lessons learned:

- Governance arrangements for ICM should be adapted to the context in which it operates.
- Successful leadership for ICM can be assumed by statutory organisations, civil society, local communities or the corporate sector.
- Public policies may successfully support non-governmental ICM by setting up voluntary management planning processes and contractual agreements, and resources to support stakeholder collaboration.
- Time for collective learning should be built into decision-making processes, for example through resources for liaising and meeting and allowing rolling partnership projects.
- The statutory and policy framework should create a sense of inter-dependence, for example through co-responsibility in policy planning and delivery, and the use of policy instruments formalising co-management (e.g. contractual agreements, joint service delivery).
- Partnership working should be facilitated simultaneously at multiple levels of governance, i.e. national, regional, local.
- A mix of policy instruments (e.g. strong, clear regulatory framework, economic incentives) associated with strong local engagement is the most effective way to foster behaviour change for ICM.
- Devolution of decision-making to the lowest, appropriate local level is a powerful means for change as it creates a sense of ownership and responsibility, but the process needs to be accompanied by an adequate policy framework to be effective.
- A policy framework encouraging locally-led delivery of ICM would focus on providing the resources and building the capacity of “local champions” to interpret ICM principles locally, engage with local stakeholders, deliver projects with multiple partners and act as a mediator between conflicting interests.
- A policy framework encouraging locally-led delivery of ICM would also encourage the involvement of statutory organisations where local stakeholders fail to take forward national priorities for water management.

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### Web-sites

**Adour-Garonne Water Agency:** [www.eugris.info/displayresource.asp?r=413](http://www.eugris.info/displayresource.asp?r=413)

**Aire Rivers Trust:** <http://aireriverstrust.org>

**Avon Rivers Trust**

<http://www.wiltshirewildlife.org/what-we-do/strategicrestorationandmanagementoftheriveravon.htm>

**Ballinderry River Enhancement Association:** [www.ballinderryriver.org](http://www.ballinderryriver.org)

**Davao Water Partnership:** <http://helpdavao.blogspot.co.uk/>

**DEFRA Pilot Catchment Programme**

<http://www.defra.gov.uk/environment/quality/water/legislation/catchment-approach/>

**Don Catchments Rivers Trust:** [www.dcrtr.org.uk](http://www.dcrtr.org.uk)

**Environment Agency Pilot Catchment Programme**

<http://www.environment-agency.gov.uk/research/planning/131506.aspx>

**Gouldburn-Broken Catchment Management Authority:** [www.gbcma.vic.gov.au](http://www.gbcma.vic.gov.au)

**Kennett Rivers Trust:** [www.riverkennet.org](http://www.riverkennet.org)

**Parrett Catchment**

<http://www.parrettcatchment.info/>

<http://www.catchmentfutures.org.uk/cfutures.htm>

**Iowa-Cedar**

<http://iowacedarbasin.org/cedar/>

<http://www.iowadnr.gov/Environment/WaterQuality/WatershedImprovement.aspx>

**Tyne Rivers Trust:** [www.tyneriverstrust.org](http://www.tyneriverstrust.org)

**UNESCO HELP Basin Network**

<http://www.unesco.org/new/en/natural-sciences/environment/water/ihp/ihp-programmes/help/>

<http://www.dundee.ac.uk/water/projects/europeanhelpbasins/>

**Welland Rivers Trust:** <http://www.wellandriverstrust.org.uk/>

**Wessex Water:** <http://www.wessexwater.co.uk/environment/>

**Westcountry Rivers Trust:** <http://www.wrt.org.uk/>

**Yorkshire Dales Rivers Trust:** <http://www.yorkshiredalesriverstrust.org.uk/>

## 8. APPENDIX I ORGANISATIONS INTERVIEWED

Catchments	Interviewed organisation	Network
Adour-Garonne	Adour-Garonne Water Agency	-
Aire	Aire Rivers Trust	-
Ballinderry	Ballinderry River Enhancement Association	-
Davao	Davao Partnership	UNESCO HELP
Don	Don Catchments Rivers Trust	UNESCO HELP
Frome-Piddle	Wessex Water	DEFRA Pilot Catchment
Goulburn Broken	Goulburn Broken Catchment Management Authority & Murray-Darling Basin Authority	UNESCO HELP
Guadiana (Portugal)	University of Lisboa	UNESCO HELP
Hampshire Avon	Natural England & Wiltshire Wildlife Trust	Demonstration Test Catchment, catchment sensitive farming
Iowa Cedar	Army Corps of Engineers & Iowa State Department of Natural Resources	UNESCO HELP
Kennett	Action for River Kennett	UNESCO HELP
Parrett	Somerset Water Management Partnership	Catchment sensitive farming
Swale, Ure, Nidd, Wharfe	Yorkshire Dales Rivers Trust	Catchment sensitive farming (Swale)
Tamar	WestCountry Rivers Trust	DEFRA Pilot Catchment, catchment sensitive farming
Tyne	Tyne Rivers Trust	DEFRA Pilot Catchment
Welland	Welland Rivers Trust	EA Pilot catchment, UNESCO HELP



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