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Article

Water Co-Governance for Sustainable Ecosystems: Reflections and Recommendations from Pilot Processes in the UK

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Abstract: As part of the Water Co-Governance for Sustainable Ecosystems (WaterCoG) project, this research evaluated two river catchment pilots in the United Kingdom (UK) via a series of semi-structured interviews in order to better understand how collaborative governance (co-governance) approaches contribute to water governance. The findings demonstrate that the participatory process used by catchment partnerships (comprising stakeholders working together within a catchment area) to co-produce knowledge has enabled them to jointly identify improvements that are more meaningful than previous actions to those involved or affected by the situation in their catchment. However, there are concerns about the balance of social, economic and environmental interests in decision making, as well as perceived misunderstandings about the situation in the catchment as a whole. All interviewees (comprising stakeholders from across different scales and levels of water governance) recognized benefits from working together. They also observed that progress to deliver measures is impeded by policies and institutions that are not conducive to partnership working. The interviewees recognized and valued the significant capacity and capability of catchment partnership host organization(s) to facilitate and enable the development of the catchment partnership. However, they also raised important questions about the host's ability to represent the needs and interests of all catchment partnership members. The recommendations emerging from this research suggest ways to improve water co-governance, including considering the feasibility and desirability of the catchment partnership host; reconceptualizing catchment management plans as a process rather than an outcome; conducting and regularly reviewing a stakeholder analysis of catchment partnership members; working more closely together with other types of partnerships and committees; engaging in and providing opportunities for developing skills in systems thinking, social learning and collaborative actions; working with the UK Government to develop place-based policies and plans; and engaging in dialogue with the UK Government and other bodies to review access to funding and other types of resources.

Keywords: water governance; catchment management; ecosystems; sustainability; systems thinking; social learning; collaborative actions; UK



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1. Introduction

The 2030 Agenda for Sustainable Development was adopted by all United Nations Member States in 2015. It provides a plan of action for people, planet and prosperity. The 17 Sustainable Development Goals (SDGs) and 169 targets demonstrate the scale and ambition of the Agenda. They build on the Millennium Development Goals and seek to complete what these did not achieve [1]. The SDGs are integrated and indivisible, but in the context of water governance, two goals are particularly relevant: Goal 6 aims to 'ensure availability and sustainable management of water and sanitation for all'; and Goal 17 asserts to 'strengthen the means of implementation and revitalize the global partnership for sustainable development' [1].

As described in Borowski-Maaser et al. [2], earlier research has pointed towards the benefits of and barriers to collaborative governance (co-governance) approaches [3–9],

including the need to integrate social learning processes—wherein stakeholders learn from each other and with each other, leading to changes at societal level—into catchment management [7,9–13]. The European CIS-Guidance on Public Participation only strongly encourages active involvement of stakeholders [14] but, at this point, not many water managers follow the guidance. Thus, there remains a need for local experiences and better understandings in co-governance processes [2].

It is in this wider context that the Water Co-Governance for Sustainable Ecosystems (WaterCoG) project implemented 16 pilots to identify shared challenges and lessons learned. The project demonstrates through the adoption of new participatory, ecosystem service-based approaches that implementation and integration of water management frameworks can be achieved at the same time as providing additional social, economic and environmental benefits not currently being realized. The three-year project brings together nine partners from Sweden, Germany, Denmark, the Netherlands and the UK in a consortium led by The Rivers Trust. For further information on the WaterCoG project, please visit: <https://northsearegion.eu/watercog/> (accessed on 24 March 2021).

The aim of the research presented in this paper was to evaluate two pilots undertaken as part of the WaterCoG project in the UK in order to better understand the role of knowledge and tools in water co-governance processes, the connection of governance levels in water co-governance processes, and water co-governance process design and implementation. Furthermore, to make recommendations to improve water co-governance.

This paper sets out the background and context for the UK catchment pilots, data and methods, results and discussion, and recommendations and next steps. In addition, a synthesis paper by Borowski-Maaser et al. [2] provides an overview of the wider project-level evaluation from 11 of the 16 pilots, including the background and context for the WaterCoG project, development of the evaluation process, and key messages emerging from it.

2. Background and Context for the UK Catchment Pilots

In recognition that ‘water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such’, the Water Framework Directive establishes a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater in the European Union. It entered into force in December 2000 committing EU Member States to develop River Basin Management Plans and accompanying Programmes of Measures by 2009 to achieve ‘good’ water status by 2015 (with some extensions depending on circumstances).

As described by Foster et al. [15], in March 2010, the WWF-UK and the Angling Trust initiated legal proceedings against the UK Government by applying for a judicial review of the 2009 River Basin Management Plans. They challenged the legality of the plans because ‘they do not set specific targets or a coherent timeframe to address the poor ecological status of many rivers and lakes in England [and] rely heavily on a wide range of reasons for inaction which the Directive only allows to be used in exceptional circumstances’ [16]. Following extensive talks, the challenge was settled before reaching court; and in March 2011, the UK Government published a Statement of Position on the principles of River Basin Planning Guidance and the future direction of Water Framework Directive implementation. Significantly, it asserted the belief that ‘more action is desirable at the catchment level’ and announced a pilot phase to develop and start to implement catchment plans [17]. To this end, 25 pilot catchment partnerships were established: 10 hosted by the Environment Agency and 15 by other organizations including NGOs, water companies, local authorities and national park authorities.

The pilot phase concluded in March 2013, and subsequently the UK Government published a policy framework to encourage the wider adoption of the catchment-based approach [18]. In 2019, there are 100+ catchment partnerships operating across the water management catchments in England. See <https://catchmentbasedapproach.org> for further information (accessed on 8 May 2019).

2.1. Cam and Ely Ouse Catchment Pilot

The Cam and Ely Ouse (CameEO) catchment is part of the Anglian river basin district in England, UK (Figure 1). It covers an area of 3600 km² and incorporates the River Great Ouse and four main tributaries (Cam, Lark, Little Ouse, and Wissey) [19]. The catchment is characterized by flat, low-lying land, much of which is below sea level. It is predominantly rural, with more than 80% of the land use for agriculture. The main urban areas within the catchment are Cambridge, Royston, Saffron Walden, Newmarket, Bury St Edmunds, Ely and Swaffham, which together account for less than 5% of the land use. However, there is rapid growth and development in the area [20].



Figure 1. CameEO catchment area showing the main rivers and tributaries [21].

Most of the water bodies (rivers, reservoirs, canals and groundwater) in the catchment fail to meet the standards required by the Water Framework Directive. Many water bodies have been physically modified for flood defense, land drainage, water storage or navigation. There are also water quality issues due to pollution, particularly from wastewater discharges and diffuse rural sources, and water quantity issues in some areas from over-abstraction [20]. The whole catchment is designated as a Nitrate Vulnerable Zone (2017) for surface water and groundwater under the EU Nitrates Directive (see <https://environment-agency.cloud.esri.uk.com/farmers/> (accessed on 8 May 2019)).

The CameEO catchment partnership was formed in 2013 following sub-catchment involvement during the pilot stage of the catchment-based approach. It is currently co-hosted by The Rivers Trust and Anglian Water. The Rivers Trust is a registered charity, originally founded as the 'Association of Rivers Trusts' in 2001. It is the umbrella body for more than 60 Rivers Trusts across the UK and Ireland. Anglian Water is a water company, regulated under the Water Industry Act 1991. The co-hosts provide support for a Water Stewardship Business Board (comprised of businesses in the agricultural supply chain) and four sub-catchment partnerships, which are largely self-driven and organized by their members: Wissey, Little Ouse and Thet, Lark, and Cam. The partnership members have co-developed a CameEO Catchment Partnership Action Plan, which sets out their vision, terms of reference, objectives and a delivery plan. Their recent projects have generally focused on working with agriculture (especially on water sensitive farming), community engagement and river restoration, e.g., reprofiling, removal of excessive vegetation and invasive non-native species, and litter picking to reduce plastic pollution. For further information, see <http://www.cameopartnership.org/wp-content/uploads/2019/08/V1-CameEO-Action-Plan-19-20-compressed.pdf> (accessed on 24 March 2021)

2.2. Wharfe and Lower Ouse Catchment Pilot

The Wharfe and Lower Ouse catchment is part of the Humber river basin district in England, UK. It covers an area of 743 km² and incorporates the River Wharfe, lower part of

the River Ouse and their tributaries (Figure 2). The catchment is almost entirely rural and relatively sparsely populated. The upper area of the catchment lies within the boundary of the Yorkshire Dales National Park, which is known for its outstanding landscape, diversity of wildlife and rich cultural heritage. Farming and tourism are the main employers and activities in the area, but rural villages are also popular with commuters from nearby cities of Leeds and Manchester [22].



Figure 2. Dales to Vales River Network showing the Wharfe and Lower Ouse catchment (green) and Swale, Ure, Nidd and Upper Ouse catchment (blue) [23].

Most of the water bodies (rivers, reservoirs, canals and groundwater) in the catchment fail to meet the standards required by the Water Framework Directive, particularly on ecological criteria. The main reason for failure (29%) is physical modification of water bodies for flood defense, navigation, power generation, and water abstraction. There are also water quality issues from high sedimentation and pollution from wastewater discharges and agricultural runoff, and (in some areas) invasive non-native species [24]. Recently, the wider area has experienced extensive flooding, most notably on Boxing Day in 2015, when 3355 properties around Leeds were flooded, including 672 businesses [25].

The catchment partnership (known as the Dales to Vales River Network) covers the Wharf and Lower Ouse catchment, and the Swale, Ure, Nidd and Upper Ouse catchment. It was formed in 2013 as part of the wider adoption of the catchment-based approach. It is currently hosted by the Yorkshire Dales Rivers Trust, which is a registered charity founded in 2004. The interactive River Wharfe Catchment Management Plan provides data and information about the catchment as well as past, current and proposed projects. Much of their recent work has targeted natural flood management, including building bunds, leaky dams, and planting trees to ‘slow the flow’ of the rivers. For further information, see <http://dvrn.co.uk/upper-wharfe-catchment/> (accessed on 8 May 2019).

3. Data and Methods

The evaluation method in the UK comprised a series of semi-structured interviews with 16 stakeholders in the Wharfe and CameEO pilots (Table 1) during early-2019. The stakeholders were identified by the pilot project leaders, and chosen specifically on the basis that: (1) as a group, they represent a diverse range of perspectives concerning water governance; and (2) as individuals, they have the local knowledge and experiences across different scales and levels of water governance to be able to inform the evaluation process. The number of interviews and the selection of stakeholders was thus strategic to achieving the evaluation objectives. An information sheet and consent form were provided to make explicit both the purpose of the study and the expectations of the participants. During the interviews, the participants were given the opportunity to talk freely about their own role

and the role of their organization in the study context, and the events that they perceived to be important (see Supplementary Materials for further information).

Table 1. Participants in the UK evaluation.

Area	Stakeholder Group	Organization
Wharfe	Government organizations	Environment Agency Yorkshire Dales National Park Authority Yorkshire Water
	Private organizations	Swarthghyll Farm Mott MacDonald
	Not-for-profit organizations	Yorkshire Dales Rivers Trust
	Community groups	Addingham Environment Group
CamEO	Government organizations	Environment Agency (2 stakeholders)
	Private organizations	Anglian Water (2 stakeholders) Cranswick
	Not-for-profit organizations	The Rivers Trust River Lark Catchment Partnership National Farmers Union
	Community groups	Thetford River Group (Little Ouse and Thet Partnership)

The evaluation method ensures that the issue of water co-governance is explored through a variety of lenses, which allows multiple facets of the situation to be revealed and understood [26]; and converging lines of evidence add strength to the findings [27]. However, it should still be borne in mind that the findings represent only the view of those involved in the evaluation process, as interpreted by the researcher.

4. Results and Discussion

The WaterCoG researchers and project partners collaboratively identified three themes which they perceived to be important to understanding and improving water co-governance:

- The role of knowledge and tools in water co-governance processes;
- The connection of governance levels in water co-governance processes; and
- Water co-governance process design and implementation.

Further information about the development of these themes is provided in Borowski-Maaser et al. [2]. This section presents the key insights and lessons learned from the UK pilots in relation to the themes.

4.1. The Role of Knowledge and Tools in Water Co-Governance Processes

Traditionally, research, policy and practice are conceptualized as domains that are separate and disconnected [8]. Research is conceptualized as a ‘place of knowledge production’ in which value-free facts are produced; policy is conceptualized as a ‘place of knowledge use’, in which the facts are used to inform policy making; and practice is conceptualized as a ‘place of knowledge adoption’. In this linear model, knowledge is disseminated from science to society, and communication is seen as the means to bridge the gap between these domains [28,29]. However, it has been challenged by numerous studies which assert that complex situations require scientists to ‘look beyond the facts’ to include others’ interests, thoughts, observations and data, and therefore, to include policy makers and practitioners in the production and use of knowledge in action [8]. In this context, and based on their own experiences from previous projects, the WaterCog project partners assert that knowledge is more relevant to decision making if it is interactively discussed, made in practice, and developed in a collaborative manner. This section reflects on the experiences of those involved in water co-governance processes in relation to co-producing knowledge in action, and jointly identifying what constitutes an improvement.

Both the Wharfe and CamEO catchment partnerships have catchment plans that have been collaboratively developed by the partnership members (see Section 2). From these

plans, as well as the interviews with partnership members for this evaluation, it is clear that the catchment partnerships have used—and relied heavily upon—scientific and technical data and information (e.g., GIS, water quality analysis, biodiversity monitoring) to inform the joint identification of actions to improve the water environment in their respective catchments. In the Wharfe catchment, some of the interviewees stated that they had found the presentation of the GIS data and information useful, particularly in terms of enabling them to ‘see’ their place (role and responsibilities) in the catchment, and how their activities and projects can affect their environment. The key point here is that the participatory process used by the catchment partnerships to co-produce knowledge in action enabled them to bring together different types of knowledge and experiences (e.g., academics and farmers), and in doing so, to jointly identify improvements that are more meaningful to those involved or affected by the situation.

However, when considering whose knowledge and experiences have been taken into account in decision making, some of the interviewees perceived that the situation is generally dominated by environment interests. In this context, one of the interviewees observed that “the catchment partnership needs a better balance between social, economic and environmental pillars [. . .] we aren’t just managing it for the birds and the bees – there are benefits for homes and economic growth too”. The interviews also revealed some areas where perceived misunderstandings (‘perceived misunderstandings’ means ‘something that can be interpreted (by an observer) as a failure (by someone) to understand word or actions (of someone else) correctly’) are leading to (potential) conflicts between catchment partnership members, e.g., about who is responsible for over-abstraction of water, or about the value of ducks on the village pond. From a researcher/author perspective, these misunderstandings demonstrate a lack of systemic awareness to some extent about catchment management, i.e., about the situation in the catchment as a whole from multiple perspectives.

4.2. Connected Governance Levels in Water Co-Governance Processes

A central assumption of the WaterCoG project is that the successful implementation of EU Directives requires all relevant governance levels to be connected with each other. Furthermore, that to connect the top level (national bodies) and the bottom level (local actors) in a governance system, the middle level (regional bodies) needs to be responsible for the implementation of measures. This section reflects on the experiences of those involved in water co-governance processes in relation to connecting with other governance levels.

In the UK, the catchment-based approach has an increasing emphasis on engaging local people and organizations in understanding, valuing, caring for, and enjoying their environment [9]. In the Wharfe and CamEO catchment partnerships, significant investment has been made in engaging many people and organizations across all sectors in the catchment partnership activities and projects, including central Government bodies, local authorities, NGOs, private companies, and individuals. In this sense, the responsibility for implementing measures to improve the water environment is shared across all members in the catchment partnerships. In practice, however, the responsibility to deliver activities sits with the person or organization leading a project, which is most often a charitable organization.

In the Wharfe and CamEO catchments, all interviewees recognized benefits from working together with others in their catchment partnership at a personal and/or organizational level. However, at the same time, they also observed that progress to deliver measures is impeded by policies and institutions (e.g., laws, norms, rules) that are not conducive to partnership working. They perceived that the top and bottom levels are not aligned in practice. Catchment partnership members are expected to work together to plan and deliver projects with multiple benefits at catchment scale, whereas UK Government bodies remain siloed in their own organizational practices. Consequently, national policies cannot be reconciled at catchment level (there must be trade-offs) and funding criteria (which specify the types of organization that can apply for funding, as well as the types

of activities and project that can be funded) often do not allow for multi-organization bids or for multi-benefit projects. In most cases, funding cannot be granted directly to the catchment partnerships because they have no formal status; and thus, it is granted to the lead organization for a specific project, which is perceived by those involved to result in a power-over rather than power-sharing situation. As such, one of the catchment partnerships has registered as a charitable incorporated organization (CIO) partly to obtain access to funding. However, in doing so, it was recognized by the sub-catchment partnership host that future activities and projects may be constrained by the obligation to set out and adhere to strict charitable aims. In addition, there were also concerns that some projects fail against funding criteria because cost-benefit analysis does not always take into account multiple benefits.

In addition, the top-level siloes have resulted in many (different types of) local partnerships (e.g., catchment partnerships, local enterprise partnerships and local nature partnerships) and statutory bodies (e.g., regional flood and coastal committees, local authorities, national parks authorities). Many people and organizations, particularly those operating at regional level, are members of multiple partnerships and/or committees. For example, the Yorkshire Dales National Park Authority is a member of the seven catchment partnerships which lie wholly or partly within the national park boundary, as well as a member of other types of partnerships too, which each have their own meetings. Some of the interviewees stated that the situation has reached an unsustainable level in terms of the number of meetings that they are invited to attend; and thus, they are now having to be more strategic about where to invest time and resources. Thus, looking forward, it will be necessary for catchment partnerships to work together with other types of partnerships to ensure that human and other resources are used more efficiently and effectively.

4.3. Process Design and Implementation

Research suggests that effective responses to complex environmental issues, such as catchment management, seem to require co-learning for systemic governance transformations. However, this process generally remains poorly understood [8]. Thus, the WaterCoG project seeks to better understand water co-governance process design and implementation, and particularly, the difference between the intended objective(s) of the process and its performance in practice, as well as the strengths and weaknesses in process facilitation. This section reflects on the experiences of those involved water co-governance processes in the Wharfe and CamEO catchments.

While each of the catchment partnerships has its own specific catchment plan, they operate under the same policy framework set out by the UK Government [18]. At the outset, the catchment-based approach was intended by the UK Government to *contribute* to the implementation of the Water Framework Directive through ‘more action’ by the Environment Agency and other stakeholders at catchment scale [17]. In this context, it can be conceptualized from a UK Government perspective as ‘a process to deliver improvements in water quality, by mobilizing local players in 100+ catchment partnerships across England, in order to meet the Water Framework Directive requirements to achieve ‘good’ status for all water bodies within agreed timescales’.

However, evidence from past and current research suggests that the situation is gradually evolving such that implementation of the Water Framework Directive is now only a part of the catchment-based approach, rather than vice versa [15]. Thus, there is a noticeable difference between the intended objective of the process by the UK Government and its performance in practice, i.e., the catchment partnerships are going above and beyond (in excess of) expectations and demands. The difference in performance is apparent in both the Wharfe catchment and the CamEO catchment, as evidenced in the catchment plans and the projects delivered by the partnership members. As noted by Foster et al. [9], this situation reflects the diverse interests and aims of the various people and organizations involved in the catchment partnerships, as well as the legacy of past decisions and actions across all scales and levels which influence and affect the current situation. It is also

consistent with the ability of the catchment partnerships to meet the needs and expectations of the partnership members that keeps them ‘around the table’.

In the evaluation interviews for the WaterCoG project, many interviewees talked about the role of the catchment partnership host. As noted in the CamEO Catchment Partnership Action Plan 2018-19, the primary role of a catchment partnership host is to *facilitate* and enable the development of an inclusive, cross-sector partnership operating at catchment scale, in order to deliver the vision and objectives set out in the catchment plan [8]. Some of the interviewees raised concerns about potential conflicts of interest between the objectives of the catchment host organization(s) and the catchment partnership. Some interviewees perceived that a water company is not desirable as a catchment host because they can only support (and fund) activities and projects that fall with the remit set out by the water regulator (OFWAT) rather than the broader range of objectives of the catchment partnership. Another interviewee also questioned the desirability of a Rivers Trust to host the catchment partnership, mainly due to their explicit focus on specific environmental interests above others. Nonetheless, the same interviewees also recognized and valued the significant capacity and capability of these organizations to host the catchment partnerships. In the context of feasibility and desirability of a person/organization to host a catchment partnership, there was consensus among the interviewees that the ability of the host person and/or organization to represent the needs and interests of all catchment partnership members (rather than just their personal and/or organizational needs and interests) was more important than the type of person or organization per se.

5. Recommendations

The following recommendations emerge from the evaluation of the WaterCoG pilots in the UK. They are based on judgements made by the researcher throughout the evaluation process, which have been informed by interviews with stakeholders in the Wharfe and CamEO catchments.

In making these recommendations, it is helpful to be guided by the framework shown in Figure 3, which was developed by Ison et al. [30] as part of the Social Learning for the Integrated Management (SLIM) and Sustainable Use of Water at Catchment Scale project. It sets out—and draws attention to—four key areas to consider when organizing analysis and action in situations of complexity, connectedness, controversy, multiple perspectives and uncertainty, such as water catchments. These key areas have been used to structure the following recommendations.

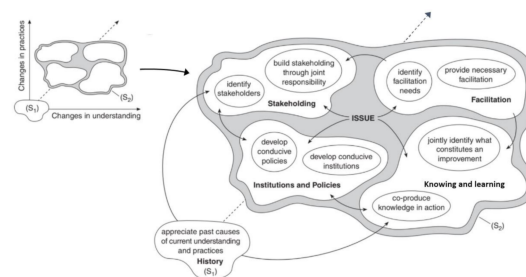


Figure 3. A framework for Social Learning for the Integrated Management and Sustainable Use of Water at Catchment Scale, adapted from Ison et al. [30].

5.1. Identifying Facilitation Needs and Providing Facilitation

In the context of facilitation, this evaluation reveals new insights into (and raises questions about) who could and/or should host a catchment partnership from the perspectives of those involved. These insights demonstrate the importance of inclusivity and impartiality when identifying facilitation needs and providing facilitation. Furthermore, they also serve as a reminder for catchment partnerships to not take as given—nor take for granted—the current facilitation process, but rather to review it regularly to ensure that it continues to be relevant to the needs and expectations of partnership members.

- **Recommendation:** To (re-)explore with catchment partnership members the feasibility and desirability of the catchment host; and in doing so, to make explicit how any potential or perceived conflicts of interest will be resolved.
- **Recommendation:** To re-conceptualize the catchment plan as a *process* rather than an outcome; and in doing so, to facilitate and enable the development of shared understandings, shared goals and shared responsibilities, leading to concerted actions to improve the situation.

5.2. Identifying Stakeholders and Building Stakeholding Through Joint Responsibility

The catchment partnerships have been generally successful in engaging many people and organizations in their activities and projects. The key issue, therefore, is not necessarily to engage increasingly more people and organizations, but rather to ensure that the right people are involved in the right way at the right time.

- **Recommendation:** To consider working together with other types of voluntary partnerships and statutory bodies to ensure that human and other resources are used more efficiently and effectively across the catchment area.
- **Recommendation:** To conduct (and regularly review) a stakeholder analysis to ensure that there is a better balance between social, economic and environmental interests in decision making within the catchment partnership.

5.3. Co-Producing Knowledge in Action and Jointly Identifying What Constitutes Improvement

The interviews in the Wharfe and CamEO catchments demonstrate that the participatory process for co-producing knowledge in action and jointly identifying what constitutes an improvement has been valued by the partnership members. However, there are also opportunities for improvement, particularly in terms of developing systemic awareness, i.e., an awareness of the catchment situation as a whole.

- **Recommendation:** To engage in, and provide opportunities for, developing skills in systems thinking, social learning and collaborative actions among partnership members.

5.4. Developing Conducive Policies and Institutions

In the Wharfe and CamEO catchments, the experiences of the interviewees expose the extent to which current policy and institutional frameworks constrain (rather than enable) progress to deliver actions-to-improve, particularly in relation to accessing funding.

- **Recommendation:** To work with the UK Government to develop place-based policies and plans which meet the needs, interests and expectations of stakeholders across all governance scales and levels.
- **Recommendation:** To engage in dialogue with the UK Government and the CaBA National Support Group to review access to funding or other types of resources.

6. Conclusions

As part of the international WaterCoG project, the research presented in this paper evaluated two catchment pilots in the UK via a series of semi-structured interviews in order to better understand the role of knowledge and tools in water co-governance processes, the connection of governance levels in water co-governance processes, and water co-governance process design and implementation. Furthermore, to make recommendations to improve water co-governance.

The findings demonstrate that the participatory process used by the catchment partnerships to co-produce knowledge in action enabled them to bring together different types of knowledge and experiences; and in doing so, to jointly identify improvements that are more meaningful to those involved or affected by the situation. However, there are also some concerns about the balance of social, economic and environmental interests in decision making, as well as a lack of systemic awareness to some extent about the situation in the catchment as a whole, evidenced by perceived misunderstandings between

some catchment partnership members. All interviewees recognized benefits from working together with others in their catchment partnership at a personal and/or organizational level. At the same time, they also observed that progress to deliver measures is impeded by policies and institutions (e.g., laws, norms, rules) that are not conducive to partnership working, particularly in relation to meeting funding criteria as well as resource implications for attending meetings for multiple (different types of) partnerships and/or committees. The catchment partnerships are going above and beyond (in excess of) expectations and demands set out by the UK Government, which reflects the diverse interests and aims of the partnership members. The interviewees recognized and valued the significant capacity and capability of host organization(s) to facilitate and enable the development of the catchment partnership. However, they also raised important questions about the host's ability to represent the needs and interests of all catchment partnership members.

The recommendations emerging from this research suggest some possible ways to improve water co-governance, including explicitly considering the feasibility and desirability of the catchment partnership host; reconceptualizing catchment management plans as a process rather than an outcome; conducting and regularly reviewing a stakeholder analysis of catchment partnership members, considering working more closely together with other types of partnerships and committees; engaging in and providing opportunities for developing skills in systems thinking, social learning and collaborative actions among partnership members; working with the UK Government to develop place-based policies and plans which meet the needs, interests and expectations of stakeholders across all governance scales and level; and engaging in dialogue with the UK Government and other bodies to review access to funding and other types of resources.

As a next step, we invite the WaterCoG partners and others in the UK and elsewhere to reflect on the findings and recommendations in this report in their own situations, and to work together with others to implement improvements ('doing things better') and transformations ('doing better things') in their own situations accordingly. Future research could evaluate the impacts of such changes on water governance; and thereby provide evidence to illustrate and support the implementation of the recommendations in practice.

Supplementary Materials: The following are available online at <https://www.mdpi.com/article/10.3390/w13131737/s1>, information sheet, consent form, and interview questions.

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References

1. United Nations. Transforming our World: The 2030 Agenda for Sustainable Development. Available online: <https://sdgs.un.org/2030agenda> (accessed on 23 March 2021).
2. Borowski-Maaser, I.; Graversgaard, M.; Foster, N.; Prutzer, M.; Roest, A.H.; Boogaard, F. WaterCoG: Evidence on How the Use of Tools, Knowledge, and Process Design Can Improve Water Co-Governance. *Water* **2021**, *13*, 1206. [CrossRef]
3. Graversgaard, M.; Jacobsen, B.H.; Kjeldsen, C.; Dalgaard, T. Stakeholder engagement and knowledge co-creation in water planning: Can public participation increase cost-effectiveness? *Water* **2017**, *3*, 191. [CrossRef]

4. Graversgaard, M.; Thorsøe, M.H.; Kjeldsen, C.; Dalgaard, T. Evaluating public participation in Denmark's water councils: How policy design and boundary judgements affect water governance. *Outlook Agric.* **2016**, *45*, 225–230. [CrossRef]
5. Kochskämper, E.; Jager, N.W.; Newig, J.; Challies, C. Participation and effective governance. Causal mechanisms and beyond. In *Participation for Effective Environmental Governance. Evidence from European Water Framework Directive Implementation*; Kochskämper, E., Challies, E., Jager, N.W., Newig, J., Eds.; Routledge: London, UK, 2018; pp. 149–160.
6. Senecah, S.L. The trinity of voice: The role of practical theory in planning and evaluating the effectiveness of environmental participatory processes. In *Communication and Public Participation in Environmental Decision Making*; Depoe, S.P., Delicath, J.W., Aepli Elsenbeer, M.F., Eds.; State University of New York Press: Albany, NY, USA, 2004; pp. 13–33.
7. Blackmore, C.; van Bommel, S.; de Bruin, A.; de Vries, J.; Westberg, L.; Powell, N.; Foster, N.; Collins, K.; Roggero, P.; Seddaiu, G. Learning for transformation of water governance: Reflections on design from climate change adaptation and water governance (CADWAGO) Project. *Water* **2016**, *8*, 510. [CrossRef]
8. van Bommel, S.; Blackmore, C.; Foster, N.; de Vries, J. Performing and orchestrating governance learning for systemic transformation in practice for climate change adaptation. *Outlook Agric.* **2016**, *45*, 231–237. [CrossRef]
9. Foster, N.; Ison, R.; Blackmore, C.; Collins, K. *Partnerships for Action in River Catchment Governance. A Case Study in the Irwell, UK*; The Open University: Milton Keynes, UK, 2018. Available online: <http://oro.open.ac.uk/54030/> (accessed on 26 April 2021).
10. Collins, K.; Ison, R. Dare we jump off Arnstein's ladder? Social Learning as a New Policy Paradigm. In Proceedings of the PATH Conference, Edinburgh, UK, 4–7 June 2006. Available online: <http://oro.open.ac.uk/8589/> (accessed on 26 April 2021).
11. Collins, K.; Blackmore, C.; Morris, D.; Watson, D. A systemic approach to managing multiple perspectives and stakeholding in water catchments: Some findings from three UK case studies. *Environ. Sci. Policy* **2007**, *10*, 564–574. [CrossRef]
12. Mostert, E.; Pahl-Wostl, C.; Rees, Y.; Searle, B.; Tabara, D.; Tippett, J. Social learning in European river-basin management: Barriers and fostering mechanisms from 10 river basins. *Ecol. Soc.* **2007**, *12*, 19. Available online: <http://www.ecologyandsociety.org/vol12/iss1/art19/> (accessed on 26 April 2021).
13. Howes, M. Transforming climate change policymaking: From informing to empowering the local community. In *Communicating Climate Change Information for Decision-Making*; Serrao-Neumann, S., Coudrain, A., Coulter, L., Eds.; Springer: Basel, Switzerland, 2018; pp. 139–148.
14. European Commission. *Guidance Common Implementation Strategy for the Water Framework Directive (2000/60/EC) Document No. 8; Public Participation in Relation to the Water Framework Directive*; European Commission: Brussels, Belgium, 2003.
15. Foster, N.M.; Ison, R.L.; Blackmore, C.P.; Collins, K.B. Revisiting deliberative policy analysis through systemic co-inquiry: Some experiences from the implementation of the Water Framework Directive in England. *Policy Stud.* **2019**, *40*, 510–533. [CrossRef]
16. Angling Trust. Government in the Dock Over 'Illegal' River Basin Plans. Available online: <http://www.anglingtrust.net/news.asp?section=29&from=2010/3/01&to=2010/04/01&itemid=524> (accessed on 21 February 2018).
17. Defra. *Defra Statement on the Principles of River Basin Planning Guidance and the Future Direction of Water Framework Directive Implementation*; Department for Environment, Food and Rural Affairs: London, UK, 2011. Available online: http://www.wwf.org.uk/wwf_articles.cfm?unewsid=5791 (accessed on 8 May 2019).
18. Defra. *Catchment Based Approach: Improving the Quality of Our Water Environment: A Policy Framework to Encourage the Wider Adoption of an Integrated Catchment Based Approach to Improving the Quality of Our Water Environment*; Department for Environment, Food and Rural Affairs: London, UK, 2013. Available online: <https://www.gov.uk/government/publications/catchment-based-approach-improving-the-quality-of-our-water-environment> (accessed on 8 May 2019).
19. Environment Agency. *A Summary of Information about the Water Environment in the Cam and Ely Ouse Management Catchment*; Environment Agency: Bristol, UK, 2014. Available online: https://circabc.europa.eu/webdav/CircaBC/env/wfd/Library/framework_directive/implementation_documents_1/2012-2014%20WFD%20public%20information%20and%20consultation%20documents/UK/UK05%20Anglian/Cam%20and%20Ely%20Ouse.pdf (accessed on 8 May 2019).
20. Vivid Economics. *A Valuation of the Natural Capital of the Cam and Ely Ouse Catchment*; Vivid Economics: London, UK, 2017. Available online: <http://www.vivideconomics.com/wp-content/uploads/2018/03/Natural-Capital-in-Cam-and-Ely-Ouse-catchment-report.pdf> (accessed on 8 May 2019).
21. CamEO. CamEO Catchment Map. Cambridge and Ely Ouse Catchment Partnership. 2021. Available online: <http://www.cameopartnership.org> (accessed on 22 June 2021).
22. Environment Agency. *A Summary of Information about the Water Environment in the Wharfe and Lower Ouse Management Catchment*; Environment Agency: Bristol, UK, 2014. Available online: https://circabc.europa.eu/webdav/CircaBC/env/wfd/Library/framework_directive/implementation_documents_1/2012-2014%20WFD%20public%20information%20and%20consultation%20documents/UK/UK04%20Humber/Wharfe%20and%20Lower%20Ouse.pdf (accessed on 8 May 2019).
23. YDRT. Issues Affecting our Rivers. Yorkshire Dales Rivers Trust. 2021. Available online: <https://www.ydrt.org.uk/issues/> (accessed on 24 March 2021).
24. Yorkshire Evening Post. Remembering the Leeds Boxing Day Floods Two Years on. Available online: <https://www.yorkshireeveningpost.co.uk/news/latest/remembering-the-leeds-boxing-day-floods-two-years-on-1-8925310> (accessed on 8 May 2019).
25. YDRT. DVRN Map. Working to Enhance and Protect the Rivers of the Yorkshire Dales for the Benefit of Everyone. Yorkshire Dales Rivers Trust. 2020. Available online: <http://www.yorkshiredalesrivertrust.com/> (accessed on 24 March 2021).

26. Baxter, P.; Jack, S. Qualitative case study methodology: Study design and implementation for novice researchers. *Qual. Rep.* **2008**, *13*, 544–559. Available online: [http://refhub.elsevier.com/S1462-9011\(13\)00221-9/sbref0055](http://refhub.elsevier.com/S1462-9011(13)00221-9/sbref0055) (accessed on 8 May 2019).
27. Yin, R. *Case Study Research: Design and Methods*, 4th ed.; SAGE: London, UK, 2009; Available online: [http://refhub.elsevier.com/S1462-9011\(13\)00221-9/sbref0425](http://refhub.elsevier.com/S1462-9011(13)00221-9/sbref0425) (accessed on 8 May 2019).
28. Gibbons, M.; Limoges, C.; Nowotny, H.; Schwartzman, S.; Scott, P.; Trow, M. *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*; Sage: London, UK, 1994. [[CrossRef](#)]
29. Bulkeley, H.; Mol, A.P. Participation and environmental governance: Consensus, ambivalence and debate. *Environ. Values* **2003**, *12*, 143–154. Available online: <https://www.jstor.org/stable/30301925> (accessed on 8 May 2019). [[CrossRef](#)]
30. Ison, R.L.; Steyaert, P.; Roggero, P.P.; Hubert, B.; Jiggins, J. *Social Learning for the Integrated Management and Sustainable Use of Water at Catchment Scale*; The Open University: Milton Keynes, UK, 2004. Available online: <http://oro.open.ac.uk/2839/> (accessed on 8 May 2019).