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Sharing Lessons Learned from Water Governance

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Rialtas na hÉireann
Government of Ireland

ENVIRONMENTAL PROTECTION AGENCY

The Environmental Protection Agency (EPA) is responsible for protecting and improving the environment as a valuable asset for the people of Ireland. We are committed to protecting people and the environment from the harmful effects of radiation and pollution.

The work of the EPA can be divided into three main areas:

Regulation: *We implement effective regulation and environmental compliance systems to deliver good environmental outcomes and target those who don't comply.*

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Advocacy: *We work with others to advocate for a clean, productive and well protected environment and for sustainable environmental behaviour.*

Our Responsibilities

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We regulate the following activities so that they do not endanger human health or harm the environment:

- waste facilities *(e.g. landfills, incinerators, waste transfer stations)*;
- large scale industrial activities (*e.g. pharmaceutical, cement manufacturing, power plants)*;
- intensive agriculture *(e.g. pigs, poultry)*;
- the contained use and controlled release of Genetically Modified Organisms *(GMOs)*;
- sources of ionising radiation *(e.g. x-ray and radiotherapy equipment, industrial sources)*;
- large petrol storage facilities;
- waste water discharges;
- dumping at sea activities.

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- Monitoring and reporting on Bathing Water Quality.

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- Monitoring radiation levels, assessing exposure of people in Ireland to ionising radiation.
- Assisting in developing national plans for emergencies arising from nuclear accidents.
- Monitoring developments abroad relating to nuclear installations and radiological safety.
- Providing, or overseeing the provision of, specialist radiation protection services.

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- Providing advice and guidance to industry and the public on environmental and radiological protection topics.
- Providing timely and easily accessible environmental information to encourage public participation in environmental decision-making *(e.g. My Local Environment, Radon Maps)*.
- Advising Government on matters relating to radiological safety and emergency response.
- Developing a National Hazardous Waste Management Plan to prevent and manage hazardous waste.

Awareness Raising and Behavioural Change

- Generating greater environmental awareness and influencing positive behavioural change by supporting businesses, communities and householders to become more resource efficient.
- Promoting radon testing in homes and workplaces and encouraging remediation where necessary.

Management and structure of the EPA

The EPA is managed by a full time Board, consisting of a Director General and five Directors. The work is carried out across five Offices:

- Office of Environmental Sustainability
- Office of Environmental Enforcement
- Office of Evidence and Assessment
- Office of Radiation Protection and Environmental Monitoring
- Office of Communications and Corporate Services

The EPA is assisted by an Advisory Committee of twelve members who meet regularly to discuss issues of concern and provide advice to the Board.

Sharing Lessons Learned from Water Governance

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EPA Research Report

Prepared for the Environmental Protection Agency

by

Institute of Public Administration

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DISCLAIMER

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Executive Summary

Ireland's water resources are an important natural asset. Clean, healthy water is essential for our economy, our aquatic wildlife and our health and wellbeing. However, as noted in the foreword to the draft third-cycle River Basin Management Plan (RBMP) (Department of Housing, Local Government and Heritage, 2021, p. 3), there are mounting environmental pressures on Ireland's waters, with the situation described as "urgent". The decline in water quality is being driven primarily by nutrient pollution coming from agriculture and waste water systems. A complex array of stakeholders are involved in water quality. Like many other environmental challenges, water is often described as a "wicked problem", with "wicked" denoting resistance to resolution. It is a problem for which there is no single solution and no determinable stopping point (Australian Public Service Commission, 2007).

In early 2020, the Environmental Protection Agency agreed on a 2-year research programme with the Institute of Public Administration to review water governance arrangements in Ireland, with particular regard to changes made under the second-cycle RBMP, 2018–2021 (Government of Ireland, 2018). The research programme has encompassed a number of reports to date, including:

- a report reviewing water governance arrangements in Ireland using the Organisation for Economic Co-operation and Development (OECD) Water Governance Indicator Framework;
- a report examining water governance in Ireland using an experimental governance lens;
- a report reviewing case studies on local catchment groups in Ireland (River Moy Trust and the Inishowen Rivers Trust);
- a paper reviewing the Water Forum (An Fóram Uisce) as a vehicle for stakeholder engagement in respect of policy.

The reports listed above sought to inform thinking in the Department of Housing, Local Government and Heritage regarding the third-cycle RBMP, which was being prepared by the department during the first half of 2021. Section 5.3.1 of the draft RBMP 2022–2027, published for consultation in September 2021, makes extensive reference to the findings and recommendations of the research programme.

This final report comes at the end of the 2-year research programme and aims to draw out wider learning from the study of water governance. Many of our findings on water governance can be generalised, and the objective of this research paper, which concludes the research programme, is to share this learning with the wider public service to support governance arrangements for other complex policy issues.

A central element of the research programme has been to review water governance using experimental governance as a framework. Experimental governance is a governance model developed by academics (Sabel and Zeitlin, 2012) to support the governance of "wicked problems". These are challenging policy issues that require a cross-government response. The complexity of these issues means that, while the ultimate goal (e.g. clean water) is clear, there is no obvious solution or pathway to achieve this goal. Rather, the solution is arrived at incrementally through an iterative process that, crucially, involves frontline and local-level stakeholders. There is some evidence that an experimental governance approach is beneficial in addressing "wicked problems" and, while the water governance structures established under the second-cycle RBMP were not set up deliberately with an experimental governance approach in mind, many tenets of experimental governance are evident in the approach.

The main findings from the research programme are discussed in this paper under six headings, based on the lessons learned:

1. clearly assign roles and take ownership of responsibilities;

2. encourage experimentation, a willingness to engage with varying perspectives and responsiveness to local contexts;

3. make data central: its generation, monitoring, reporting and review;

4. focus on building capacity and sharing learning;

5. ensure a targeted and diverse approach to regulation;

6. carefully manage stakeholder engagement.

Ultimately, the effectiveness of any policy can be seen in the outcomes. Do the RBMP and associated governance arrangements demonstrably improve the quality of water or, to take some other current government challenges, does policy in housing, mental health or climate improve outcomes for citizens? In a paper reflecting on public service reform, Boyle (2020, p. 16) commented that structures and processes are not sufficient on their own to achieve better outcomes, but that rather "the capability and competence of public servants is at the heart of good public administration". The conclusions in this report seek to marry better structures and processes with better capacity among the public servants involved to ensure better governance. The overarching aim is of course to continuously improve policy and ultimately ensure better policy outcomes.

1   Introduction and Background

This is the final report from a research programme funded by the Environmental Protection Agency (EPA) and carried out by the Institute of Public Administration reviewing water governance arrangements in Ireland using an experimental governance approach. Sabel and Zeitlin (2012) developed the experimental governance model as a governance approach for the resolution of "wicked problems". Wicked problems are complex policy challenges that require a coordinated, cross-government response and where there is no obvious solution.

The research programme had two main objectives. The first objective was to review the water governance arrangements put in place in Ireland under the second-cycle River Basin Management Plan (RBMP), 2018–2021 (Government of Ireland, 2018), with a view to informing thinking on the development of the third-cycle RBMP, 2022–2027, which is ongoing at the Department of Housing, Local Government and Heritage (DHLGH). The second objective was to share learning from water governance with the wider public service, in particular regarding the governance of wicked problems (Head and Alford, 2015).

The first of these objectives has been addressed in a series of outputs published during 2021:

- a report reviewing water governance arrangements in Ireland using the Organisation for Economic Co-operation and Development (OECD) Water Governance Indicator Framework (O'Riordan *et al*., 2021);
- a report examining water governance in Ireland using an experimental governance lens (Boyle *et al*., 2021a);
- a report reviewing case studies on local catchment groups in Ireland (River Moy Trust and Inishowen Rivers Trust) (O Cinnéide *et al*., 2021a);
- a paper reviewing the Water Forum (An Fóram Uisce) as a vehicle for stakeholder engagement in respect of policy (Boyle *et al*., 2021b);
- a paper reviewing proceedings of two workshops held in May 2021 with water governance stakeholders (Institute of Public Administration, 2021).

Section 5.3.1 of the draft RBMP 2022–2027 published in September 2021 makes extensive reference to the findings and recommendations of the research programme. Consequently, this final report seeks to address the second main research objective, namely to share lessons learned from water governance regarding the governance of other complex, public service challenges.

1.1   Ireland's Water Governance System

The Water Framework Directive (WFD) (2000/60/EC) is an EU directive that seeks to protect and improve water bodies including rivers, lakes, groundwater and coastal water. The WFD objectives are implemented in Member States through RBMPs, which are reviewed and updated every 6 years, and which include a series of programmes of measures (POMs). Ireland's first-cycle RBMP was published in 2009 and covered seven separate river basin districts. The second-cycle RBMP, encompassing a single national river basin district, was delayed somewhat because of the impact of the global financial crisis. It was published in 2018 and ran to the end of 2021. This plan encompasses 46 catchments, 583 sub-catchments and 4832 water bodies. The plan aims to deliver water quality improvements in 726 water bodies located within 190 Priority Areas for Action. For 152 of these, it aims to improve quality sufficiently to achieve good or high ecological status. The third-cycle RBMP is due to be published in 2022 and will run until 2027.

The second-cycle RBMP, 2018–2021, highlighted a number of limitations with the governance arrangements put in place for the first-cycle RBMP:

> Governance and delivery structures in place for the first cycle were not as effective as expected. Due in part to the number of RBDs, the delivery arrangements were overly complex. In particular, the level of oversight of programme delivery and ongoing review was weak … one could argue that the importance of local delivery for many measures was not

well understood when the first-cycle Plans were being developed, or more importantly, when the implementation of the Plans was being considered. (Government of Ireland, 2018, p. 2)

The European Commission, in its assessment of the first-cycle RBMP, observed that "there was no single body having ultimate responsibility" and that "fragmented institutional structures, poor intra and inter-institutional relationships and capacity" undermined the ability to both develop and implement the plans (cited in Government of Ireland, 2018, p. 117).

In response to the criticisms of the governance system, Ireland created new structures and processes for water governance for the second-cycle RMBP (2018–2021) (Figure 1.1). These include a new three-tier structure: (1) the Water Policy Advisory Committee (WPAC) and the Water Forum advise the Minister for Housing, Local Government and Heritage; (2) technical support is provided by the National Coordination and Management Committee (NCMC), the National Technical Implementation Group (NTIG) and the EPA; and (3) local authorities, supported by regional committees and a local government shared service, the Local Authority Waters Programme (LAWPRO), are involved in implementation at the local level. As well as enhancing central direction, the new arrangements aim to facilitate better engagement with

local communities and enhance collaboration across a range of public bodies.

These governance innovations have occurred in the context of the ongoing efforts across the EU to achieve the goals of the WFD and international engagement with the OECD's principles of water governance (Hering *et al*., 2010; OECD, 2015; Voulvoulis *et al*., 2016; Giakoumis and Voulvoulis, 2018).

1.2   Organisational Structures

Ireland's RBMPs are the action plans for achieving the objectives of the EU WFD. In developing the current plan (the second-cycle RBMP, 2018–2021), considerable importance was given to putting in place implementation structures that would ensure an effective and coordinated delivery of measures. These structures are set out in Figure 1.1. The DHLGH has overall responsibility for water policy, while the EPA has statutory responsibility for reporting to the European Commission on Ireland's progress in respect of the WFD. Other elements of the governance structure are:

● The WPAC. This committee is chaired by a representative of the Minister for Housing, Local Government and Heritage and has responsibility for high-level policy direction and oversight of the implementation of the RBMP. It is charged with advising the minister with regard to progress in
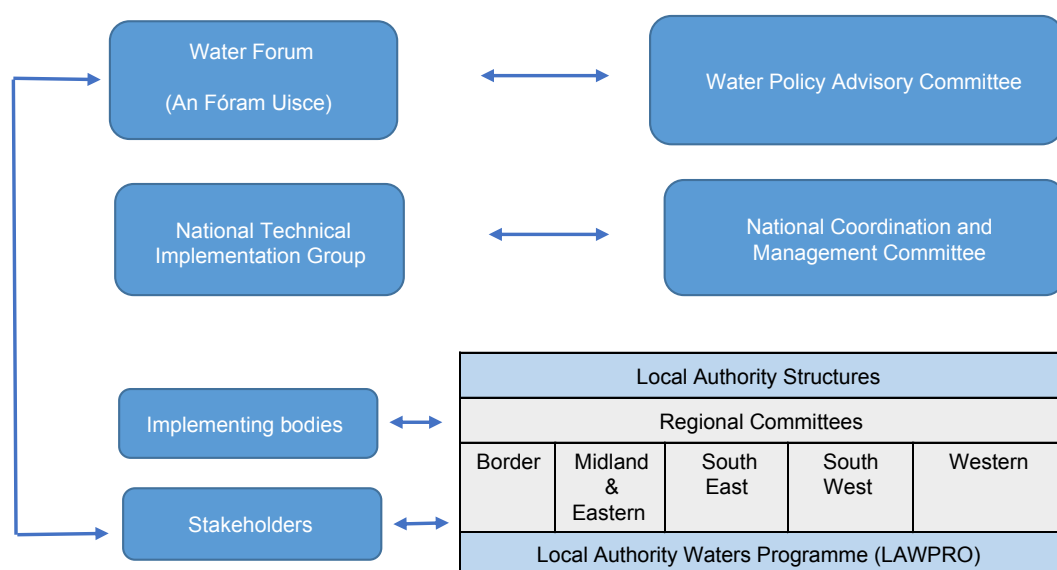

Figure 1.1. Water governance arrangements under the second-cycle RBMP.

delivering on the objectives contained in the plan. Its membership encompasses a wide range of government bodies with an involvement in water policy.

- The Water Forum (An Fóram Uisce). The Water Forum was formally established in 2018 under the Water Services Act 2017. It is an independent entity and currently has 26 members representing organisations and sectors, such as the agricultural and environmental sectors, with an interest in water issues. The Forum's functions are broad and include advising the WPAC in relation to the RBMP. More details about the Water Forum are provided in a research vignette that was developed as part of the water governance research programme (Boyle *et al.*, 2021b).
- The NCMC. This committee provides the necessary interface between science, policy and programme delivery. It agrees and oversees the overall work programmes and reports to the WPAC on progress. The NCMC is tasked with addressing potential obstacles to implementation and advising the WPAC on future policy needs. The NCMC is chaired by the DHLGH and comprises representatives of the DHLGH and the EPA, and the chairs of the regional management committees.
- The NTIG. This group oversees the technical implementation of the RBMP at the national level and provides a forum to ensure coordinated actions among all those involved. It also addresses any operational barriers to implementation that may arise. The group is chaired by the EPA, and members include the local authorities and other state bodies with a role in water quality. The NTIG reviews progress of the RBMP and provides the NCMC with updates on the implementation and effectiveness of measures. The NTIG is also a forum for information exchange and for promoting the consistency of regional implementation.
- Regional local authority structures. There are five local authority regional management committees, which have responsibility for coordinating the delivery of water improvement measures at regional and local levels. They are supported by LAWPRO, a local authorities shared service initiative that is responsible for coordinating the local authority approach to water. The five regional committees are chaired at chief executive

level, with active participation and technical advice from the EPA. Within each region there are also regional operational committees with members from all the implementing bodies and chaired at director of service level. These operational committees are the main drivers of implementation, seeking to coordinate the actions of 23 different agencies. Technical issues concerning implementation of the plan are raised with the regional management committees and the NTIG.

1.3 Research Approach

Given the nature of water governance, and because the governance arrangements for the RBMP are still evolving, a primarily qualitative approach was considered most appropriate for data gathering and analysis (Bluhm *et al.*, 2011). Qualitative data, as Ospina *et al.* (2017, p. 596) note, "at their best, are words that emerge from observations … interviews … or documents … are collected (or accessed) in a naturalistic way … and are processed through several iterations of systematic analysis".

A number of complementary research methods shaped the gathering of the evidence presented in this report:

- Key informant interviews. Interviews with stakeholders were particularly important in collecting information on the issues addressed in the evaluation. Fifty-four people were interviewed. Interviewees were selected from each of the elements and three tiers of the governance structure (the list of interviewed organisations is provided in Appendix 1).
- Case vignettes. Particular governance aspects were examined and highlighted in some detail to illustrate what contributed to their successes or failures. Short vignettes were subsequently produced on the Water Forum and LAWPRO, as were two case studies of aspects of experimental governance and practice in two catchment settings, the River Moy Trust and Inishowen Rivers Trust.
- Documentary analysis. Careful review of relevant documentation (reports, background documentation, government policy papers, academic literature, etc.) provided supportive evidence of the contribution made by the governance arrangements. For example,

submissions made to the DHLGH as part of the public consultation process for the third-cycle RBMP, 2022–2027, were examined to identify where governance issues were raised and the nature of those issues.

- Stakeholder workshops. Two facilitated workshops were held in May 2021 with government stakeholders and members of the Water Forum to review recommendations and ensure further validation of research findings.

By using this range of methods, triangulation of the data was possible (Salkind, 2010). Investigator triangulation, through members of the research team sharing their individual understanding and perspectives, also provided a further check on data quality and emerging findings (Flick, 2004). This approach helped to validate the emerging findings and illustrate where consistent or divergent messages were emerging.

1.4   Report Structure

Following this introductory chapter, Chapter 2 of this report reviews the lessons learned from water governance in relation to addressing other wicked problems. This is followed in Chapter 3 by an overview of conclusions on the experimental governance model, which is a particular focus of this research programme. Chapter 4 provides overall conclusions for policymakers in relation to the learning emerging from water governance.

2 Lessons Learned from Water Governance

The governance structures and processes put in place under the second-cycle RBMP were designed as a new approach to the challenge of improving water quality in Ireland. All key stakeholders were involved. The RBMP is centred on continued, targeted action at the local water catchment level and is based on evidence. This report aims to share lessons learned from water governance with the wider public service. The discussion is based on six important lessons identified in our research as being critical to robust governance.

2.1 Clearly Assign Roles and Take Ownership of Responsibilities

Roles and responsibilities concerning water governance are defined in the second-cycle RBMP. Our research to date (Boyle *et al.*, 2021a; O Cinnéide *et al.*, 2021b; O'Riordan *et al.*, 2021) has shown that the new structures put in place under the RBMP are constructive. All relevant government bodies are involved and the structures facilitate cross-government engagement in water governance. The establishment of the Water Forum as a statutory body in parallel with the RBMP is a further significant development. It affords stakeholder engagement a status and gives stakeholders access to government documents and, as specified in the RBMP, a means of having input into policy development.

The structures put in place to better facilitate water governance have been well received by those involved. The dominant finding in our research is the need to improve elements of the arrangements rather than to make significant changes; consequently, recommendations centre on supporting the different elements of the structures to more fully act on the roles and responsibilities identified in the second-cycle RBMP. Strategic planning, policy advice, operational management and monitoring of progress are all delineated within the RBMP. However, our research has indicated that there are challenges and gaps in relation to each of these areas. Addressing an often mentioned challenge in relation to the implementation of policy requires, firstly, roles and responsibilities to be thoughtfully and clearly assigned

and, secondly, that these roles and responsibilities be fully acted on by those involved. In line with feedback received in the course of our research, we believe that establishing a programme management office within the DHLGH to manage and coordinate the implementation of the RBMP would go some way towards addressing these issues. This approach has been used to support governance in other policy areas and has proven beneficial (DPER, 2015).

Fundamental to good governance is the need to have the right organisations involved to facilitate a coordinated response. However, in addition to the right organisations, it is also important that the right members of those organisations participate. This means not only that those involved need to be senior enough to have influence and respect within their own organisation, but also that the right areas of the organisation need to be represented. In the case of the WPAC, it was suggested by some members of the committee that, although the Department of Agriculture, Food and the Marine (DAFM) is ably represented, it would be desirable to also have involvement from senior representatives of the Common Agricultural Policy/Farm Payments Division, as this might yield a better mutual understanding and better coordination of policy.

The OECD Water Governance Principles (OECD, 2015) highlight the vital importance of what is termed "policy coherence" to achieving water quality objectives. While the DHLGH has overall responsibility for water quality, any organisation whose policies have an impact on water quality, availability and demand should be involved. Prominent sectors in this regard include agriculture, forestry, mining, energy, fisheries, transport, recreation and navigation. However, while involving people in committees and governance structures facilitates information exchange and can help build trust, it may not be enough on its own to ensure coherent and consistent policies on challenging issues. In the case of water, the OECD (2018) also recommends the use of a cost–benefit analysis to determine the costs of poor water-related coherence and, similarly, the benefits of a good approach. In addition, the OECD suggests conflict mitigation and

resolution mechanisms, including water courts, to manage trade-offs.

In addition to ensuring senior management engagement, the water governance structures are also notable for ensuring engagement at local levels. Research (Sabel and Zeitlin, 2008) has indicated that both are necessary to address wicked problems. Senior management involvement and their communication of support for an issue throughout their organisation is critical for encouraging cooperation at lower levels. However, learning lessons "on the ground" and having the scope to feed this back into policy and practice are also critical. Both of these elements are evident in water governance: the WPAC is tasked with providing leadership and determining policy, while, at the local level, LAWPRO has considerable autonomy in the area of stakeholder engagement and improving knowledge of individual catchments.

The importance of participative government, when stakeholders are given an opportunity to engage on policy issues, is increasingly recognised (DPER, 2020). The Water Forum recognises the important contribution that can be made by stakeholders to complex policy issues and the value in affording such engagement due status. However, for all stakeholder forums, including the Water Forum, the challenge is moving from making representations to influencing policy. The Water Forum reported that, although it has good relations with the DHLGH, its engagement with other government organisations is more varied.

LAWPRO, the local government shared service for water, is a very positive and highly regarded initiative. The shared service approach has been very helpful in coordinating the identification of measures to improve water quality and ensure a consistent approach across the country. LAWPRO has also played a critical role in stakeholder engagement and building capacity in respect of water. See Box 2.1 for more details on LAWPRO.

A further key aspect of LAWPRO's stakeholder engagement role is working with the agriculture sector, in particular by supporting the work of the Agricultural Sustainability Support and Advisory Programme (ASSAP). ASSAP is a government–industry collaboration that commenced in 2018. The aim is to improve water quality by working on a one-to-one basis with farmers in Priority Areas for Action.

Box 2.1. LAWPRO – a local authority shared service response to the issue of water quality

LAWPRO was established in 2016 as a local government shared service working on behalf of all 31 local authorities in Ireland. LAWPRO is managed jointly by Tipperary and Kilkenny County Councils. LAWPRO's objective is to coordinate efforts in the 190 Priority Areas for Action on behalf of the local government sector to achieve good water quality.

LAWPRO is working to identify the issues affecting water quality in Ireland. When LAWPRO identifies issues, it collaborates with the relevant local authority, public body and stakeholder to find a solution. Community engagement is the cornerstone of the LAWPRO approach, with a former director commenting that "we do our best work over a cup of tea" (O'Riordan *et al.*, 2021). However, local knowledge is supported by a highly sophisticated scientific approach and expert knowledge. These two factors combined contribute to a better understanding of what is happening in a local catchment and water body.

LAWPRO also seeks to enhance knowledge and capacity in relation to water in the local government sector. "Mainstreaming" water within local government is critical to improving water quality. In other words, water quality should be a priority not only for the environmental division, but also for the roads, planning and heritage divisions, for example. On occasion, the relationship can be challenging, as some local authorities, under pressure from a resource perspective, can regard LAWPRO as a one-stop shop for water issues, thereby relieving themselves of the necessity to engage on the topic, which is very far from the case.

The relationship between LAWPRO and the local authority sector that established the shared service is complex. Local authorities, like all public service organisations, were greatly affected by the years of austerity following the global financial crisis. They have wide-ranging responsibilities and the COVID-19 pandemic has placed further pressure on already stretched resources. It was suggested in the course of

our research by many working at the tier-three level of the governance structure that the notion of co-benefits is critical to engaging local authorities and achieving their full "buy-in" and commitment to water quality. In other words, local authorities need to be supported to identify linkages, i.e. to identify how delivering on water quality measures and ultimately achieving the goal of better water quality can help them to achieve goals and objectives in other areas, for example in areas of health and wellbeing, climate action, biodiversity, tourism, recreation and heritage. Achieving synergies and identifying win–win opportunities appears to be very constructive in achieving broader engagement and support from those stakeholders or organisations that you need to "bring with you" to effectively address complex policy challenges.

The importance of multiple benefits is prominent in the conclusions of an external evaluation of LAWPRO. According to Crowe (2021, p. 4), while achieving the water quality objectives of the WFD is "paramount, there is a much bigger prize available to Ireland in adopting an approach aimed at delivering multiple benefits. Such an approach is consistent with the overall objectives of the European Green Deal and the sustainability objectives of the current [2020] Programme for Government".

Lastly, within water governance, committees have suffered from a degree of lost momentum due to changes in personnel. Staff turnover is inevitable in a public service context, but, to ensure a consistent governance approach, care should be taken to ensure a smooth transfer of responsibilities and knowledge. There can be too much reliance on good relationships between the personnel involved. This makes the system fragile when people, as is inevitable, move on. Similarly, good communication between those involved and with the wider public service cannot be dependent on good relations and the overlap of personnel on committees; instead, a more formal communication mechanism is desirable.

2.2 Encourage Experimentation, a Willingness to Engage with Varying Perspectives and Responsiveness to Local Contexts

Scientific and technical experts, and policymakers in central government, who have a lot of knowledge and experience, can sometimes have a tendency to assume that their viewpoint on wicked policy issues is the correct one. Furthermore, differing scientific disciplines, such as the social and natural sciences, can have diverging perspectives and values, and each can be equally convinced that they are correct. Such perspectives can, at times, contribute to a hierarchical "command and control" attitude to policy and the development of a one-size-fits-all approach to policy innovations.

Lessons from water governance suggest that governance arrangements for addressing wicked problems should encourage a willingness to engage with varying perspectives and be responsive to the local context. This reflects one of the central tenets of experimental governance, namely that entities close to the problem should have the freedom to pursue the desired policy goals in a manner that is adapted to suit local circumstances. Rittel and Webber (1973) caution that an important condition of dealing satisfactorily with wicked problems is "the art of not knowing too early which type of solution to apply" (p. 164). In this context, a general contribution that the water governance experience makes to improving policy formulation and implementation in the face of complexity is to encourage patient, detailed and multifaceted examination of the problem at the local level, rather than promoting universal solutions and truth.

This patient examination requires the development of open innovation networks where different stakeholders – such as state agencies, local authorities, private companies, civil society groups and third-level research units – get together to collaborate and innovate jointly (Jarvenpaa and Wernick, 2012). One example of this approach is the way that LAWPRO, ASSAP, farmers and the local community cooperate to arrive at local solutions to water quality problems when the challenges relate to agriculture (see Box 2.2). LAWPRO and ASSAP provide examples of collaborative arrangements operating at the local level: LAWPRO is a shared service of the local authorities and ASSAP is a joint initiative between the government and the dairy industry.

This local collaborative process results in means of social learning and knowledge management being established at the local level (Gertler and Wolfe, 2004). There is recognition that standardised solutions are

Box 2.2. Developing collaborative solutions locally to complex problems

The collaboration between LAWPRO, ASSAP, farmers and the local community involves a number of steps:

Desk study → Meetings → Fieldwork → Referrals → Action

- Desk study. The LAWPRO catchment scientist examines ecological status and monitoring data for the catchment area, and also the pressures in the area. This data is shared with the ASSAP advisor so they get a good understanding of the issues.
- Meetings. LAWPRO arranges public meetings for the local community and the ASSAP advisor arranges a meeting with farmers, at which issues identified from the desk study are discussed and local knowledge tapped into. All the farmers in the area are invited to the farmers meeting, which is often held on-site at a monitoring point on a river, where kick sampling may be demonstrated. Many farmers have welcomed this, as it gives them a better feel for the issues. A key emphasis of these meetings is building trust and dispelling any fears.
- Fieldwork. The LAWPRO catchment scientist carries out environmental assessments on-site, targeted and informed by the previous steps. Sites where impacts such as sediment or nutrient issues are adversely affecting water quality are identified.
- Referrals. The LAWPRO catchment scientist refers issues identified from the previous steps to the ASSAP advisor. The advisor then conducts targeted visits with farmers to identify the causes of the problems identified and discusses ways of addressing the problems identified. Farmers contribute suggestions for improvement.
- Action. A plan of action, co-produced by the advisor and the farmer, is agreed on. This recognises that, at the farm level, a variety of issues, such as farm intensity, soil type, climatic conditions and farm practice, affect water quality. Measures that are specific to the soils and risks on the farm need to be targeted.

For further information see the Signpost series on combining catchment science and agricultural advice to improve local water quality (https://www.teagasc.ie/news--events/daily/environment/the-signpost-series---combining-catchment-science--agricultural-advice-to-improve-local-water-quality.php).

not applicable and that experimentation is needed to identify initiatives that work in local contexts. This supports Schorr's contention that:

> communities will be able to act most effectively when they can combine local wisdom and their understanding of local circumstances with accumulated knowledge, drawn from research, theory, and practice, about what has worked elsewhere, what is working now, and what appears promising. (Schorr, 2003, p. 10)

In this case, LAWPRO and ASSAP staff draw on the wealth of monitoring data generated by the EPA and other organisations, and contextualise this through their own examinations. They also use their expertise to develop possible solutions. This scientific knowledge is then applied alongside the knowledge generated by the local community and farmers, so that the solutions identified are based on both craft and experiential knowledge. The process recognises that connecting different viewpoints cannot be achieved by some rational appeal to simple policy solutions. Rather, there is a need for the exploration and negotiation of different viewpoints on what insights are to be gained from practice. Inevitably, this takes time, but it is needed to ensure that the wicked problem is examined in detail and from different perspectives. Governance structures influence the process, with groups learning to solve problems. As noted by O Cinnéide (2014), "By learning how to tackle issues

and to design solutions around shared issues such as pollution in a river catchment, these structures can build positive outcomes and social capital".

The Smarter_BufferZ project (see Box 2.3) further illustrates the importance of local context; it also illustrates how better local targeting can inform national standard setting.

The general point made, through the examples provided here, is that good governance of wicked

problems requires processes, mechanisms, instruments and platforms that promote and ensure multi-sectoral and multi-stakeholder cooperation among all stakeholders at the local level. It also requires that there is wider learning from the local solutions arising and that this learning informs national standard setting so that good practices are promoted and disseminated. This latter point is addressed in more detail in section 2.3, on monitoring and assessment.

2.3 Make Data Central: Its Generation, Monitoring, Reporting and Review

Fundamental to the governance of wicked issues is the core idea that ways of working together towards a common goal are developed. Those involved need to try to foster and promote practices that achieve the desired goal through a range of local and national collaborative initiatives. This process requires the generation of data, to provide evidence of what is happening on the ground. This data must be validated and stakeholders must accept its validity if the data is to be influential. This evidence must then inform the monitoring and review process. We outline the implications of each of these steps for governance structures and processes here.

2.3.1 *Generation of data – Use of specialist expertise and identifying and addressing data gaps*

In addressing wicked problems such as water quality and climate change, solutions are rarely true or false, but are usually better or worse to varying degrees (Rittel and Webber, 1973, pp. 162–163). There is a need for data to inform judgements as to which of a wide range of potential solutions are worth pursuing and worth persisting with.

In developing governance structures and processes, attention needs to be given to ensuring that appropriate structures and resources are in place for the generation of trusted and reliable data. In the case of water governance, the EPA has a central role in the monitoring of water quality and has well-established means of monitoring the ecological quality of water, developed over many years (see Box 2.4). Recognising the need to pay further attention to the

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Box 2.3. Using local knowledge to promote better-targeted measures nationally

Riparian buffer zones are well established as one of the tools available to improve water quality. Riparian buffer zones are patches of land adjacent to rivers, streams and drains, removed from intensive production and containing permanent vegetation. The intention is that the zone slows flows and reduces sediment, nutrient and pesticide loads entering the water body. Studies have shown that numerous factors influence the effectiveness of buffer zones. For example, the topography of the surrounding landscape can channel flow into areas of converging or diverging flow. This can result in large areas of a traditional linear buffer zone rarely experiencing significant overland flow, rendering them obsolete in their effectiveness. By contrast, smaller areas can be subjected to significant overland flow and become overwhelmed. Targeting zones to key locations can be more cost-effective than a one-size-fits-all approach. The project team of the Smarter_BufferZ project is working closely with that of the EPA-funded DIFFUSE_Tools project (on catchment models and tools that can be used by stakeholders to inform catchment management and water management policy) to improve the targeting of riparian buffer zones to areas that would benefit most from them. The intention is that the lessons learned from these projects will ultimately inform policy and guidance.

For further information see the Smarter_BufferZ project website (http://www.smarterbufferz.ie/) and Thomas *et al*. (2021).

Box 2.4. Generating trusted data

The EPA works with LAWPRO, local authorities, other public authorities, government agencies and local communities to establish effective integrated catchment management in Ireland. The work focuses on integrating existing knowledge from a range of disciplines with data on the pressures that affect water bodies in catchments; this data is from sources such as urban waste water treatment, septic tanks, farming, forestry and landfills. Within the EPA, the Office of Evidence and Assessment combines the Catchment Science and Management Unit, the Ecological Monitoring and Assessment Unit and the Hydrometrics and Groundwater Unit. These three units work together and collaborate with other water-related units in other offices.

The relationship between the EPA and the LAWPRO catchment teams filled a gap in the governance landscape and, as noted in a review of LAWPRO, "has driven the improvements in the evidence base underpinning the work of LAWPRO catchment teams and other Implementing Bodies" (Crowe, 2021, p. 27). It is only through having this detailed information that local actions tailored to addressing specific needs can be identified and developed.

issue of catchment science, however, the EPA further developed its data gathering and analysis capability within the Office of Evidence and Assessment, particularly through the creation of the Catchment Science and Monitoring Unit. Working alongside the catchment teams in LAWPRO, EPA catchment scientists have enhanced the evidence base at the river catchment level.

One aspect of data gathering in relation to which the water governance experience has been relatively weak but has developed over time, and therefore from which other governance efforts could learn, is the need for intermediate outcome indicators to track progress from activities to final outcomes (Boyle, 2005). The 3-year biological monitoring cycle that has been in place for over 40 years, while crucial as an overall monitoring tool for picking up trends, does not evaluate outcomes in the short to medium term. There is a need for more

indicators of progress towards the goal of water quality improvement, such as the number and type of actions that farmers actually implemented as part of a plan agreed on with ASSAP compared with the number of actions initially agreed on. Such interim indicators serve a role in demonstrating short- and medium-term achievements and can suggest the need for mid-course corrections (Schorr, 2003, p. 15). A general lesson for those involved in the governance of wicked problems is the need for those elements of the governance structure concerned with monitoring and evaluation to ensure that monitoring responsibilities are clearly defined and that intermediate outcome indicators are developed and used to assess means of tracking progress towards the desired goal.

2.3.2 *Validation of data*

From a governance perspective, it is important that, as new craft knowledge emerges from experts engaging in monitoring and evaluation to provide signals on how to address some of the challenges of wicked problems, there are forums in place to help determine the validity and usefulness of this information. It is also important that these forums address the interests of both experts themselves and wider stakeholders to help ensure learning across organisations and across interest groups. This is one way of mitigating the possibility that individuals or groups will dominate the policy agenda with their own view of the situation.

One such forum that is particularly important in water governance in Ireland is the NTIG. The NTIG brings together experts to validate evaluative information and ensure that evidence feeds through to inform policymaking at the national level. The NTIG is seen to be working well (Boyle *et al.*, 2021a). While in the initial stages it tended to focus more on updates and briefings, it has evolved so that people are now tabling more substantive issues for discussion and debate. One note of caution though is that, while the NTIG has provided the opportunity for more substantive engagement and collaboration, the outcome of that collaboration depends on subsequent discussion and actions agreed on among stakeholders. However, having the contacts and the informal relationships provided through the NTIG is seen as very important.

While the NTIG acts as a means of data validation and dissemination for experts, the Water Forum provides a means of engaging wider stakeholder groups with data

and facilitating a shared understanding of the benefits and limitations of data. This can help stakeholders to review their own position and value preferences and the weight given to different evidence fragments. An important governance lesson is that working with and making the best use of such deliberative forums to validate craft knowledge is an important part of the policymakers' toolkit for generating evidence that can help to address wicked problems.

2.3.3   *Monitoring and review*

Once data pertaining to the wicked problem has been generated and validated, it must be used in the monitoring and review process. A central tenet of experimental governance is that continuous feedback is provided from local contexts, to enable reporting and monitoring across a range of situations, with outcomes subject to peer review. This process should ensure that goals and practices are periodically and routinely re-evaluated and, where appropriate, revised in light of the results of the peer review (De Búrca *et al.*, 2014, p. 2).

While some aspects of monitoring and review have worked well in the water governance example (see Box 2.2), this has also been an area of relative weakness for water governance. Farmers working with ASSAP were given assurances on confidentiality and therefore the sharing of data with other public bodies on measures adopted by farmers has been restricted. This means that LAWPRO and the EPA cannot assess the effect of ASSAP-related measures taken by farmers on water quality. While the DHLGH has responsibility for water policy and the EPA has a statutory role to report to the European Commission on the WFD, there is a lack of clarity on whose responsibility it is to monitor the implementation of the RBMP. Boyle *et al.* (2021a) found that to date the WPAC has not meaningfully developed its role for monitoring the implementation of the RBMP. There were no interim or progress reports on the implementation of the RBMP. This is a serious omission, as it means that delays, challenges and key lessons learned are not being formally documented. It is necessary to be clear about who is responsible for which aspects of monitoring and review in a complex environment with many participants.

Governance arrangements also need to support the identification of ways of promoting monitoring

and review. With regard to water quality, a number of pilot initiatives are looking at results-based payments for achieving agreed outputs and outcomes. Payment for results in the pilots, such as the BurrenLIFE project and the Pearl Mussel project, promotes the use of public money to achieve environmental outcomes, including improved water quality. These pilots have a clear auditing process, with quantifiable and outcomes-based results. These results, such as improvements to habitat quality, are intermediate outcomes on the road to improved water quality. Payment for results is therefore one way of incentivising the development of output and intermediate outcome indicators and ensuring their use. However, payment for results is not a panacea. The results will be at the farm level, and the link to ultimate changes in catchment water quality must also be determined if their effectiveness in this regard is to be assessed. The long-term security of environmental payments can be a concern to farmers, as environmental schemes are usually time specific and there is often a delay between the ending of one scheme and the start of the next. The farmer bears the costs of delays or ongoing costs if a scheme is not replaced, and this may influence their views on participation.

2.4   Focus on Building Capacity and Sharing Learning

The United Nations has defined capacity as "the ability of individuals, institutions, and societies to perform functions, solve problems and set and achieve objectives in a sustainable manner" (United Nations Development Programme, 2010, p. 2). Building capacity is therefore central to the approach to resolving wicked problems. Ultimately, determining capacity involves assessing whether or not the governance structures and the individuals and organisations that make them up are fit for purpose and can deliver on the goals that they have been asked to achieve (Boyle, 2020).

The evidence from water governance is that the new structures and processes have had a positive impact on capacity when considered from a resourcing perspective. Since 2014, approximately 100 new public sector posts, primarily focused on water, have been added across the EPA, local government and Teagasc (O'Riordan *et al.*, 2021). The new structures have also had a positive impact on capacity-building

among the individuals and organisations involved. There is a culture of cooperation and knowledge-sharing across the tiers, which is encouraged and facilitated by the EPA. The EPA has always had strong capacity in respect of water, but under the current RBMP, knowledge and know-how has been strengthened in other areas of the public service. One noteworthy development is the strengthening of capacity in the DHLGH, with officials with considerable water expertise being appointed at principal officer level to support the work of the departmental generalists. The importance of having skilled and competent people in key roles has been widely highlighted as critical to delivering reform. As noted by Boyle (2020, p. 16), "the capability and competence of public servants is at the heart of good public administration".

While structures and processes in themselves do not guarantee a positive outcome, the evidence from water is that they can facilitate knowledge creation and knowledge-sharing. This is evident through, for example, the ongoing work of the NTIG. Many of those consulted as part of this research programme referred to the growing capacity within the NTIG in developing an agenda of issues concerning water quality and advising the NCMC and consequently the WPAC on the issues. The more formal approach that the group has put in place for participants to bring forward issues has also helped with knowledge management. Similarly, members of the Water Forum highlighted that the skills and expertise of members of the stakeholder body and their organisations is improving as a result of the interactions across the committee. In addition, their understanding of other perspectives has been facilitated.

Within the water governance structures, the development of capacity is also strongly connected with LAWPRO, a core objective of which is to generate and share knowledge on water quality. LAWPRO was established as a shared service to coordinate the local government response to water quality. This approach has been commended in two external reviews (O Cinnéide and Bullock, 2020; Crowe, 2021). As a new organisation, it has had the ability to mould its own approach and a huge emphasis has been placed on capacity-building in all its dealings across the structures. On the sides of both the catchments and the communities, LAWPRO research has generated new knowledge on water.

However, LAWPRO's role has expanded over the life cycle of the plan and its resources are particularly stretched. LAWPRO has made representation to the DHLGH for increased staffing. It is also working towards putting in place a more flexible staffing response that would allow temporary additions and quicker replacement of departing staff. However, the organisation recognises that it will always be vulnerable to losing its highly qualified and experienced staff, particularly on the catchment side. This is not helped by the lack of security afforded to staff, who, with the exception of those who are on secondment from other public bodies, are all on contracts. The impact of this on LAWPRO and more generally on water governance is significant.

A key lesson from this research is that developing capacity is connected with resources. Throughout this research it was frequently mentioned that collaboration, knowledge management and capacity-building are heavily resource dependent and, in a context where resources are tight, training and development and other initiatives aimed at capacity-building may be sidelined in organisations. While sanction for new posts cannot be given without a sound business case and evidence of good workforce planning, where these are in place, it is highly desirable that decisions are made in a prompt and efficient manner.

Within LAWPRO there is a strong emphasis on internal training, whereby internal experts are used to upskill colleagues across the organisation. LAWPRO also sees a role for the organisation in developing much needed capacity in respect of water within local authorities. A similar approach to internal training is evident in Teagasc, where ASSAP advisers have begun sharing their knowledge on sustainable farming with colleagues across the wider agricultural advisory service. The contribution of stakeholder networks to supporting knowledge-sharing and capacity-building is evident through events organised by the Network for Ireland's Environmental Compliance and Enforcement (NIECE), a network of organisations involved in environmental enforcement, coordinated by the EPA.

Finally, in addition to capacity of the substantive area, good governance requires capacity in ancillary areas, such as project management, data management and communications. In the course of our research on water governance, it was suggested that capacity

in these areas is weaker than it should be. This is particularly evident in the challenges faced in managing implementation and ensuring that sufficient progress is being made, in other words keeping the programme "on track" and also reporting and monitoring in relation to the RBMP.

2.5   Ensure a Targeted and Diverse Approach to Regulation

Regulation is an important tool in the governance of wicked problems. Smart regulation is a term that has become more common in recent years, encompassing the use of a range of regulatory instruments tailored to specific policy circumstances, including information, self-regulation, co-regulation, economic instruments, and command and control regulation. Gunningham and Sinclair (2017, p. 133) describe the underlying rationale: "in the majority of circumstances, the use of multiple rather than single policy instruments, and a broader range of regulatory actors, will produce better regulation. As such, it envisages the implementation of complementary combinations of instruments and participants tailored to meet the imperatives of specific environmental issues". With regard to the broad range of regulatory stakeholders, it is important to note that regulation occurs within regulatory regimes "characterised by diffuse populations of actors and considerable diversity in the norms and mechanisms of control" (Brown and Scott, 2010). The exercise of power within regulatory regimes is therefore typically widely dispersed, with diverse means of control, and harnessing the capacity of both state and non-state stakeholders, such as communities, networks and firms.

One of the OECD's 12 water governance principles concerns regulatory frameworks, with the aim of ensuring the effective implementation and enforcement of regulatory frameworks for sound water management in pursuit of the public interest (OECD, 2015). There is an emphasis within this principle on ensuring a comprehensive, transparent and easy-to-understand regulatory environment. The second-cycle RBMP emphasised the need for a mix of regulatory instruments, noting that, despite significant increased regulation in recent years, water quality was still getting worse. As noted in O'Riordan *et al.* (2021), regulation under the WFD is somewhat complicated because no enforcement happens directly under the WFD or under the RBMP. Instead, enforcement happens under other EU and Irish legislation. The absence of Irish primary legislation to implement the WFD represents a major challenge and contributes to the complexity of the regulatory framework.

A lack of policy coherence in most arenas in which wicked problems exist sets a challenging context for developing an appropriate regulatory regime and mix of instruments. There is a need to review policies to assess their implications for regulation and enforcement; this is an important part of policy coherence. The point here is that when policies are pushing people in differing directions (e.g. intensification of land use vs lower greenhouse gas emission levels) it makes regulation more challenging. In a similar vein, the lack of a consistent regulatory and enforcement approach in relation to national bodies is also a source of concern. There are a large number of agencies in the regulatory space with regard to water quality, and having so many bodies involved can make it difficult to achieve a coherent approach (Boyle *et al.*, 2021a; O'Riordan *et al.*, 2021).

One issue on which there is a fair degree of consensus is that formal initiatives, such as rules and regulations, and their enforcement are insufficient on their own. The number of "harder" regulatory initiatives in areas such as nitrates, agricultural practice and waste water has been increasing but, on their own, these have not had the desired impact. There are few, if any, circumstances in which a single regulatory instrument is likely to be the most efficient or effective means of addressing a particular wicked problem. A range of instruments with, where possible, an initial emphasis on less interventionist measures is desirable. The academic literature often presents the range of regulatory instruments available as a pyramid (Ayres and Braithwaite, 1992). Towards the bottom of the regulatory enforcement pyramid are frequently used strategies of first choice, based on persuasion and being less coercive, less interventionist and cheaper, such as education and self-regulation. Towards the apex are more interventionist and costlier interventions, such as enforcement orders and prosecution.

LAWPRO and ASSAP represent examples of initiatives with a greater focus on the use of informal approaches such as the building of culture-supporting required practices, based on trust and cooperation.

In this role, such organisations may act as what Gunningham and Sinclair (2017) refer to as surrogate or quasi regulators. That LAWPRO and ASSAP have no enforcement powers themselves leaves the responsibility to the local authorities, which have the necessary experience and expertise (see Box 2.5). It allows LAWPRO and ASSAP to focus on educating and informing.

Ultimately, there is a need for a balance between "soft" and "hard" approaches (the use of both carrot and stick). A general lesson for the governance of wicked problems is that there needs to be the ability to escalate regulatory enforcement up the pyramid to the extent necessary to achieve policy goals. This point emphasises the role of and need for evidence on the regulatory mix to help determine when measures that are more informal are failing and when more interventionist measures are needed.

2.6 Carefully Manage Stakeholder Engagement

Considering how to involve stakeholders to help determine and implement policy is an important element of governance (Bingham *et al*., 2005). Stakeholder engagement is a subset of wider participatory initiatives that aim to involve people in decision-making regarding public policies and their implementation (Wehn *et al*., 2017; Shannon and O'Leary, 2020). Involving stakeholders can be particularly important when addressing wicked policy problems, where "the definition of the problem is clear, but the solution is not … and therefore learning and discussion are required by both the governmental managers and the stakeholders they lead" (Head and Alford, 2015, p. 717).

Specifically in the case of policy forums, such as the Water Forum, it has been found that these can be seen as a means of securing a better decision because of "the contribution of expert and stakeholder knowledge that is otherwise inaccessible to decision makers" (Fischer and Leifeld, 2015, p. 3). However, on the negative side, policy forums have been accused of being ineffective. One contention is that deliberation in policy forums can lead to a scenario whereby the views of experts that may not be widely shared dominate and bias policymaking. Another issue, raised by Wagner and Ylä-Anttila (2020), is that in practice participants tend not to accept the policy advice of those that they encounter at policy forums and remain within their own "echo chamber" of like-minded individuals and groups, suggesting that forums do not

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Box 2.5. The strengths and limitations of encouragement as a regulatory intervention

LAWPRO and ASSAP both operate by working with stakeholders (farmers, foresters, public bodies, industries, etc.) to identify water quality problems and how best to address them. As noted in a review of LAWPRO:

> A key issue though is that if the problem owner does not follow through and rectify the situation then the most important step – the right action in the right place at the right time – may never happen. Under the current arrangements, neither LAWPRO nor ASSAP can force the problem owner, be they another public body, a body corporate or a private citizen, to take the right action in the right place at the right time but are relying on the goodwill and cooperation of the problem owner to take the necessary action.

> The credibility of the entire process heavily depends on the actions of the problem owner once the right action and place have been identified through the other steps. ASSAP is carrying out some useful work on evaluating the willingness of farmers to undertake the mitigation actions identified and the barriers to taking action, and also have a programme of follow up visits to track implementation of measures. This final step of converting all of the other steps into the "right action in the right place at the right time" and having this actually undertaken by the problem owner with follow up checks is crucially important as this is the action that will ultimately either improve or protect water quality. (Crowe, 2021)

suggesting that forums do not enable policy learning. There is also a danger that too great an emphasis on consensus-building in policy forums can lead to a sense of exclusion among groups that disagree with the framing of the debate.

One of the primary objectives behind the development of new governance structures for water was the need to achieve greater stakeholder engagement. The importance of public participation had already been recognised by the local government sector, with the establishment of the Local Authority Waters and Communities Office (LAWCO) in 2017 and the creation of 12 Community Water Officer posts around the country, with responsibility for engaging and working with environmental and voluntary groups and with the wider public. Since then, LAWCO has evolved into LAWPRO. O Cinnéide and Bullock (2020) note that, up to spring 2020, LAWPRO team members had taken part in 1183 events over 3 years and in each of the 26 counties.

Recognition of the importance of stakeholder engagement within water governance further resulted in the establishment of the Water Forum in 2017. In establishing the Water Forum, a concerted effort was made to map and include all stakeholders, something that is recommended by the OECD (2018). This is evidenced in the Water Forum's broad membership.

In addition, the need to reach the general public, who are also stakeholders, is recognised by those involved in water governance. It was suggested that much work needs to be done to make the issue of water quality resonate more strongly with the general public. This conclusion is supported by LAWPRO staff members, who noted that engaging recognised stakeholders is not the challenge, but engaging the general public is. In this regard, a coordinated approach to all environmental issues, but in particular water, biodiversity and climate action, is regarded as vital by many of the research participants, because the general public does not distinguish between various environmental issues. LAWPRO has had to be very flexible in this regard, often fielding enquiries at meetings on other environmental concerns, for example waste water treatment plants and invasive species. A review of LAWPRO (O Cinnéide and Bullock, 2020, p. 38) recommended that the organisation build a framework or methodology for its public participation work. This suggestion

was supported in our findings, with it being noted (O'Riordan *et al.*, 2021) that there is a need for more in-depth research on what types of public participation structures are appropriate for Ireland. This suggestion has applicability across a wide range of policy areas.

The establishment of LAWPRO in 2017 was in part a recognition by local authorities that stakeholder engagement with water quality had not been done well in the past. As an organisation, LAWPRO has put a huge amount of reflection into the way in which it approaches stakeholder engagement. This is consistent with good practice, with the OECD (2018) referring to the value of assessing the process and outcomes of stakeholder engagement to learn, adjust and improve accordingly. The need to keep the process of stakeholder engagement flexible and capable of adapting to changing circumstances has particular relevance to the Water Forum (see Box 2.6).

The outreach work of LAWPRO undoubtedly enhances the knowledge and awareness of those it meets. In this regard, it resonates with one of the objectives of stakeholder engagement contained in the OECD

Box 2.6. The importance of keeping stakeholder engagement flexible and capable of adapting – evidence from the Water Forum

The time commitment required of members, particularly those with limited support or who do not work full-time in the area, was referenced by several interviewees as a limitation to their participation. It was felt that this could lead to disadvantages for lesser resourced stakeholders in determining the direction of work. It was acknowledged that the chair is conscious of this and will attempt to ensure equity in this regard to the extent possible. In addition, the wide-ranging brief of the Water Forum was referenced by several interviewees as posing challenges in terms of possibly having too diverse an agenda, and hence failing to address selected issues in a thorough and comprehensive manner. Finally, it was noted that not everyone in the Water Forum is interested in all aspects of the RBMP or in all water bodies. In respect of all of these points, it was suggested that there will need to be ongoing flexibility in how the Water Forum is supported and in how it operates.

Water Governance Indicator Framework (2018) on the importance of building capacity among stakeholders. There appears to be a very genuine appreciation of the value of developing relationships, both with the organisations it needs to work with and with non-governmental organisations and citizens. The comment of LAWPRO's first director that "we do our best work over a cup of tea" (O'Riordan *et al.*, 2021) seems particularly apt for the style of engagement and its own assessment that "(building relationships) can never be seen as wasted time, but it does take time to get right" is important to highlight.

In addition, it was noted that there is little opportunity for individuals or non-governmental organisations to input into the work of the catchment teams, who actively explore the reasons for pollution in the Priority Areas for Action and explore how such areas are selected and how much progress has been made with the measures adopted. Furthermore, very little feedback is provided in these areas. O Cinnéide and Bullock (2020, p. 15) refer to the "boundaries" of public engagement. LAWPRO interviewees are aware of these concerns, highlighting the need to improve data availability and the user-friendliness of the website. One interviewee commented that "we're getting better at upward feedback but we're not so good at downward feedback".

The Water Forum is also perceived to be a positive vehicle for capacity-building among stakeholders, with the members interviewed commenting that they feel more informed, that their knowledge of water issues has increased and that capacity-building has strengthened relationships with others in the group. Most interviewees emphasised the positive role of the chair, with the chair being given as one of the reasons for the successes of the Water Forum to date. Having an independent chair not linked to any particular interest group was seen as an important element in the process. The fact that the chair operates in a respectful and inclusive manner, allowing for diverging views to be articulated, was emphasised as a significant factor in the generation of trust among members.

Ultimately, all water stakeholders are anxious to see how their submissions will have an impact on policy and they would welcome greater feedback in this regard. This point is of particular relevance for policymakers, to ward off any perception, as noted in the academic literature, that policy forums are used by politicians or bureaucrats to only legitimise their policies and give a veneer of credibility to stakeholder engagement. In the case of the Water Forum, its status as a statutory body does enhance the level of access afforded to it and it was reported that the Water Forum does have credibility with some government organisations, in particular with DHLGH; however, it was noted that forum members felt that some other departments are more reluctant to engage with them. More generally, it was suggested that, when organisations ask for stakeholder contributions, they should publish the points raised by consultees and the decisions made in respect of points raised. While it was accepted that the outcome might not necessarily be to agree with the submission, interviewees thought that it was important to show that representations had been read and considered.

3 Governance through an Experimental Governance Lens: Some Lessons Learned

This chapter looks to move beyond water governance to consider the wider potential benefits and lessons from applying an experimental governance approach to complex, wicked policy issues. Experimental governance has emerged in response to the limits of both top-down and bottom-up governance arrangements when dealing with wicked problems. The National Economic and Social Council (NESC), since its 2002 strategy report, has argued that many of the profound organisational challenges in the Irish public policy domain require elements of experimental governance to find an appropriate solution (see, for example, NESC, 2002, 2005, 2010, 2019). The water governance experience is consistent with this NESC contention.

While those designing the governance arrangements put in place for the second-cycle RBMP, 2018–2021, did not explicitly follow any particular model, the approach taken displays a number of characteristics of experimental governance. Sabel and Zeitlin (2012) coined the original term and concept of experimentalist governance (used interchangeably in the literature with the term experimental governance, which is used here). Experimental governance is one way in which collaborative governance arrangements have evolved in the face of wicked problems, fragmentation of political authority, and the complexity and uncertainty of technological, market and social conditions. Four elements of an experimental governance approach can be identified by drawing from Sabel and Zeitlin's original work and from research by Overdevest and Zeitlin (2014) and NESC (2010):

1. The framework goals must first be established, followed by agreement on initial indicators for gauging their achievement by some combination of central and local units (e.g. government departments, regulatory agencies, local government), in consultation with relevant stakeholders.

2. Entities close to the problem must then be given the freedom to pursue these goals as they see fit.

These local units can be public, private or hybrid partnerships.

3. In return for this autonomy, the entities must regularly report on their performance, as measured by agreed indicators, and participate in a peer review, comparing their results with others pursuing the same general goals. If they are not making good progress against the agreed indicators, the local units must show that they are taking appropriate corrective measures, informed by the experience of their peers.

4. Learning from this, the framework goals, metrics and procedures are themselves periodically revised by the stakeholders who initially established them, often augmented by new participants, who share their knowledge and cooperate with stakeholders to come up with solutions to the problems and new possibilities, and then the cycle repeats.

In the case of Irish water governance, the WFD provides a high-level framework goal of achieving a good ecological status for water by 2027, with sanctions for non-achievement. The new governance arrangements in Ireland aim to combine enhanced central steering (through the WPAC, the NCMC and the NTIG) with new forms of local discretion and engagement with local stakeholders and communities (e.g. regional committees, LAWPRO and river catchment groups). The monitoring and reviewing of actions taken aims to inform future standards and plans.

Experimental governance is seen as applicable in turbulent environments operating in conditions of uncertainty, where desired outcomes may be clear to some degree at a high level (e.g. good water status), but where goals and the means of getting there are less clear at a lower level. As a result, solutions can be determined only through trying them out. As Monkelbaan (2019, p. 40) notes, experimental governance is a way of accommodating "diversity in

adapting general goals to varied local contexts, rather than imposing uniform, one-size-fits-all solutions". Applying an experimental governance lens to Irish water governance arrangements provides emerging lessons for those in other policy domains interested in the governance of wicked problems. Three important lessons are set out in this chapter.

3.1 Encourage the Use of Novel Inter-organisational Collaborative Structures and Processes

Morgan (2018, p. 8) notes that experimental governance can be seen as a response "to the perceived failure of 'command and control' regulation in a rapidly changing world where fixed rules written by a hierarchical authority are quickly rendered obsolete on the ground, where frontline actors need to find joint solutions to common problems through experimental trial and error processes". The contention is that collaborative governance structures, networks and processes can foster the setting of priorities and encourage experimentation with innovative practice, and subsequently help mainstream successful practices. At the local level, there is some evidence that initiatives such as LAWPRO and ASSAP are doing just that, taking an innovative approach to engaging with stakeholders to identify and promote solutions based on local knowledge and experience.

The WPAC, the NCMC and the NTIG provide examples of emerging forms of central steering. The WPAC and the NCMC bring together the main government bodies involved in water quality. This provides a means by which, informed by evidence fed through from practice at the local level, the minister is informed of any required changes to standards or practices. The NTIG helps to accumulate and assess the technical evidence gathered at the local level, identify issues and practices that suggest the need for new priorities or actions, and feed this information through to the WPAC and the NCMC.

However, innovative structures and processes at the local level and new central steering arrangements must still operate alongside traditional hierarchical structures and processes. As Morgan (2018, p. 10) notes, "[w]hile the rhetoric of networked governance has certainly become de rigueur in both private and public sectors in recent years … serious questions remain about how much real authority has been devolved to the local level and how far hierarchical structures have been superseded by networked forms of multilevel governance". Furthermore, challenges of policy coherence remain, with individual departmental or agency policies taking priority (O'Riordan *et al.*, 2021).

3.2 Combine Local Discretion with Reporting, Correction and Sanction

Voß and Kemp (2006, p. 19), commenting on experimental governance, note that, "[w]here done well, effects are thoroughly monitored" and "strategies, policy programmes and the respective institutions can be adapted according to experience and learning". A central component of experimental governance is that participants regularly report on their performance, using agreed metrics. Local experimentation and comparison of different approaches taken to advance framework goals is encouraged. The intention is that this takes place within a context of reporting centrally on progress made and the taking of corrective measures if progress is shown to be off course, with the possibility of sanctions for failure to adapt.

The design of water governance arrangements aims to facilitate local discretion. Regional committees composed of local-level representatives of public bodies with an interest in water quality coordinate the implementation of measures on the ground. LAWPRO and ASSAP work with local stakeholders to identify appropriate measures in priority areas. Underpinning this local focus are the catchment assessments carried out by the EPA. Work carried out by LAWPRO and ASSAP in priority areas, and the ongoing monitoring carried out by local authorities and the EPA, enhances this evidence base. For example, the catchment assessments carried out to inform the third-cycle RBMP draw on additional local evidence gathered during the second-cycle RBMP, in turn informing a new national approach to river basin management planning.

A combination of sanctions and rewards promotes good practice and tackles bad practices. The EU has penalty defaults that apply if directives such as the WFD and Nitrates Directive (91/676/EEC) are not applied. Nationally, bodies such as the EPA and local authorities have regulatory sanctions that they can apply. These are complemented by support or rewards

for good practice, such as the support provided by ASSAP and LAWPRO staff to farmers and other stakeholders, and payment for results schemes. This regulatory regime aims to encourage stakeholders to self-regulate and adopt and adapt good practices with regard to water quality in the context of local circumstances. At the same time, on an ongoing basis, local learning feeds through to inform national standards, with the scope for external sanctions for failure to comply with standards when necessary. However, this balance between encouraging enlightened self-appraisal in applying good practice standards and the use of external sanctions is a difficult one to achieve, and it requires constant examination (Boyle *et al*., 2021a).

3.3 Emphasise Capacity-building, Reflection, Learning and Adaptation

An emphasis on learning is an important element of experimental governance. Sabel and Zeitlin (2012) refer to experimental governance as "a machine for learning from diversity". Attention is given to debate, mutual clarification and action "in order to create meaning through discussion and joint interpretation" (Dewulf *et al*., 2005, p. 118). Weick (1995, p. 99) emphasises this point, noting that means of communication such as meetings and direct contact become more important than formal information systems and reports.

Farmer discussion group meetings organised by ASSAP advisers in local catchments have been found to be an important part of the process of encouraging farmers to accept the need for measures to improve water quality. The process encourages engagement and builds up trust. LAWPRO similarly hosts local community meetings, often in a community hall, and meetings with river catchment groups and other interested parties to try to build wider community engagement. Preliminary results from an Economic and Social Research Institute (ESRI) study of community engagement initiatives undertaken by LAWPRO show that "water engagement event participants are more likely to adopt sustainable behaviours, however attendees only represent a small cohort of the wider population, which possibly hinders a wider adoption of good practices" (Grilli and Curtis, 2021, p. 1). The study also finds that pro-environmental behaviours lapse after a while, suggesting the need for regular re-engagement.

Even when learning takes place locally, there is no guarantee of its transfer across the system. The ability to scale up the good practices identified is a challenge for many administrations, and assumes both a certain level of capacity and capability to ensure adaptation and change, and the presence of penalty defaults in the case of resistance to change. The Teagasc Signpost series, a series of weekly sustainable agriculture webinars aimed at the Irish agriculture industry, is one example of an attempt to promote knowledge transfer and learning.

4 Conclusions

This research programme has reviewed the water governance arrangements put in place under the second-cycle RBMP using an experimental governance lens. Experimental governance was developed as a model of collaborative governance specifically to address wicked problems. The model is particularly useful when there is complexity and uncertainty as to how to achieve desired outcomes and when it is not possible to know the local impact of centralised rules and procedures in advance. Problem-solving in these situations involves experimentation and innovation by public, private and civil society organisations at the local level, using a collaborative approach. Initial goals and measures are set, but those closest to the problem – local-level or frontline staff – are given autonomy regarding how those goals are pursued, with the key proviso that their performance will be measured and corrective actions imposed if necessary.

Monitoring of achievements is central, as is a process that encourages revision of standards and practices based on the emerging evidence. Combining local experimentation with monitoring and deliberative review of what works and what does not work increases the capacity for learning, both locally and centrally. The learning emerging "on the ground" is then used to amend the original goals and measures for assessing their achievement. Ultimately, and over time, even if not a full solution, an appropriate way forward emerges.

In terms of learning for the wider public service, the complex approach to governance evident in water governance is consistent with an experimental governance approach. There needs to be a network of senior policymakers, national and local stakeholders, those with technical and professional expertise, and programme managers. However, as Termeer *et al*. (2019, p. 167) note, no governance model should be seen as a panacea: "new and existing governance approaches have often been unproblematically proposed as ways to solve wicked problems, while only imperfect solutions, partial solutions or small wins are achievable in practice".

4.1 Summary of Conclusions

Considerable learning on the governance of complex policy issues has emerged over the duration of the second-cycle RBMP (2018–2021). This learning has been distilled into six key areas, as summarised below.

4.1.1 Clearly assign roles and take ownership of responsibilities

The second-cycle RBMP sets out government policy in respect of achieving the water quality goals in the WFD. Particular attention was given to the governance approach, with roles and responsibilities being thoughtfully and clearly assigned. However, fully acting on these commitments has, to varying degrees, proven to be a challenge. While it perhaps appears to be stating the obvious to say that the WPAC should more fully act on its responsibility to provide high-level policy direction and that the NCMC should more effectively monitor the work programme, in practice these tasks are highly complex. Firstly, issues of policy coherence dominate water governance. In other words, the policy priorities of the organisations represented by the WPAC are varied, meaning that negotiations are complex and time-consuming. Secondly, the culture of the public service, whereby agencies tend to defer to their policy-setting and the civil service "parent" department and each government department can to a large degree be an independent entity answerable to its minister, makes fulfilling the roles and responsibilities associated with delivering on policy goals challenging, whether they be water policy goals or the goals of another comparably complex policy area.

4.1.2 Encourage experimentation, a willingness to engage with varying perspectives and responsiveness to local contexts

Addressing wicked problems requires continuous work and effort on an ongoing basis, and much of this has to happen at local or frontline level. A key lesson from water governance is that learning emerges not

from promoting universal truths but through patient, detailed and thorough examination of the problem at the local level, taking into consideration local issues and context. Furthermore, there is no one response; instead, many processes, mechanisms, instruments and platforms involving multi-stakeholder cooperation are required. However, knowledge cannot stay at the local level, and learning needs to be shared and to ultimately have an impact on policy. This requires governance structures and processes that facilitate the sharing of knowledge and communication channels that work up, down and across governance structures.

4.1.3 Make data central: its generation, monitoring, reporting and review

Data is at the heart of the governance of wicked problems. Data provides evidence of what has been done to address the problem. This data then informs the monitoring and review process. In the case of water, the EPA of course produces excellent data on water quality; however, one of the findings from our research, which we believe is generalisable, is that there is a need for intermediate outcome indicators to track progress from activities to final outcomes. Such intermediate indicators serve a role in demonstrating short- and medium-term achievements, and also in indicating the need for mid-course corrections. This can be especially important when engaging with stakeholders and the wider community, who demand updates. A further general lesson is that there is a need to ensure that the implementation of policy is monitored and reported on regularly. A programme management office or designated secretariat could be helpful in this regard.

4.1.4 Focus on building capacity and sharing learning

Capacity relates to the people, structures and institutions tasked with resolving wicked problems. Ultimately, determining capacity involves assessing whether or not the governance structures and the individuals and organisations that constitute them are fit for purpose and can deliver on the goals that they have been asked to achieve. It is necessary to have skilled and competent people, not only those with the right technical and professional skills, but also generalists, well versed in good public management.

A robust approach within organisations to workforce planning and knowledge management can help prevent implementation efforts from regressing when key individuals, as is inevitable, change roles.

Building capacity, whereby learning and knowledge are shared, also matters greatly. There is a strong culture of cooperation and knowledge-sharing in the area of water governance. However, throughout our research it was frequently mentioned that capacity-building, collaboration and knowledge management are heavily resource dependent. This is true to an extent; however, it cannot be used as an excuse for not addressing these issues to a sufficient degree.

4.1.5 Ensure a targeted and diverse approach to regulation

A comprehensive, transparent, consistent and easy-to-understand regulatory environment is essential to the governance of wicked problems. Guidelines developed by the OECD (2018) on water governance particularly emphasise this point. However, a prerequisite of good regulation is good policy. An important lesson from our research is the need to review policy, with a particular emphasis on policy coherence across government departments, in conjunction with any assessment of regulation and its enforcement.

In addressing wicked problems, it is likely that a range of responses, beginning with education and persuasion, but with the possibility of escalating regulatory enforcement up the pyramid to high-level sanctions, is necessary to achieve policy goals.

4.1.6 Carefully manage stakeholder engagement

Stakeholder engagement is a subset of wider participatory initiatives that aim to involve people in decision-making regarding public policies and their implementation. The fact that stakeholder engagement is very resource intensive is noteworthy, but it is also worth noting the comment of one LAWPRO staff member in the course of our research: "yes, it does take time, but it can never be seen as wasted time".

Considerable learning has emerged from the Water Forum for other policy areas. Its status as a statutory body and the fact that it is explicitly referenced as part of water governance structures ensure that

the forum is afforded recognition by policymakers. Further learning includes the importance of keeping the process of stakeholder engagement flexible and adapting to changing circumstances. Typically, stakeholders, even those who are employed by a relevant organisation, will have far fewer resources than their government partners. Lastly, showing how the suggestions of stakeholders have been considered and providing feedback are critical for the integrity of the process.

4.2   Concluding Comments

Water quality in Ireland remains an urgent area of concern. Half of all water bodies are failing to meet legally binding water quality standards (EPA, 2020a,b). Those involved in the area are very aware of the challenges and the distinct possibility that Ireland will not meet the 2027 targets identified in the WFD.

However, there is some cause for optimism in that water quality has improved in the Priority Areas for Action identified in the second-cycle RBMP. The approach of identifying Priority Areas for Action is likely to be significantly expanded in the third-cycle RBMP, which is available for comment until 31 March 2022.

Governance is of course only one aspect of the challenges faced by those tasked with developing and implementing policy to address wicked problems. However, the findings emerging from water governance indicate that, while robust governance may not be sufficient, it is absolutely essential in tackling wicked problems. Finally, the research also points to the considerable value in reviewing and reflecting on governance arrangements, with a view to building on strengths and addressing shortcomings, to support public managers in the complex task of addressing wicked problems.

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Abbreviations

ASSAP	Agricultural Sustainability Support and Advisory Programme
DHLGH	Department of Housing, Local Government and Heritage
EPA	Environmental Protection Agency
LAWPRO	Local Authority Waters Programme
NCMC	National Coordination and Management Committee
NESC	National Economic and Social Council
NTIG	National Technical Implementation Group
OECD	Organisation for Economic Co-operation and Development
RBMP	River Basin Management Plan
WFD	Water Framework Directive
WPAC	Water Policy Advisory Committee

Appendix 1 List of Organisations of Interviewees

27

Cork County Council

Cork Environmental Forum

Department of Agriculture, Food and the Marine (DAFM)

Department of the Environment, Climate and Communications (DECC)

Department of Housing, Local Government and Heritage (DHLGH)

Dublin City County Council

Dundalk Institute of Technology

Environmental Protection Agency (EPA)

Galway City Council

Geological Survey Ireland (GSI)

Health Service Executive (HSE)

Inishowen Rivers Trust

Inland Fisheries Ireland

Irish Creamery Milk Suppliers Association (ICMSA)

Irish Farmers' Association (IFA)

Irish Rural Link

Irish Underwater Council

Irish Water

Kerry County Council

Kilkenny County Council

Local Authorities Water Programme (LAWPRO)

Longford County Council

National Federation of Group Water Schemes (NFGWS)

Office of Public Works (OPW)

River Moy Trust

Sustainable Water Network (SWAN)

Teagasc

Waterford City and County Council

Zero Waste Alliance

AN GHNÍOMHAIREACHT UM CHAOMHNÚ COMHSHAOIL

Tá an Ghníomhaireacht um Chaomhnú Comhshaoil (GCC) freagrach as an gcomhshaol a chaomhnú agus a fheabhsú mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaol a chosaint ó éifeachtaí díobhálacha na radaíochta agus an truaillithe.

Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

Rialú: *Déanaimid córais éifeachtacha rialaithe agus comhlíonta comhshaoil a chur i bhfeidhm chun torthaí maithe comhshaoil a sholáthar agus chun díriú orthu siúd nach gcloíonn leis na córais sin.*

Eolas: *Soláthraímid sonraí, faisnéis agus measúnú comhshaoil atá ar ardchaighdeán, spriocdhírithe agus tráthúil chun bonn eolais a chur faoin gcinnteoireacht ar gach leibhéal.*

Tacaíocht: *Bímid ag saothrú i gcomhar le grúpaí eile chun tacú le comhshaol atá glan, táirgiúil agus cosanta go maith, agus le hiompar a chuirfidh le comhshaol inbhuanaithe.*

Ár bhFreagrachtaí

Ceadúnú

Déanaimid na gníomhaíochtaí seo a leanas a rialú ionas nach ndéanann siad dochar do shláinte an phobail ná don chomhshaol:

- saoráidí dramhaíola *(m.sh. láithreáin líonta talún, loisceoirí, stáisiúin aistrithe dramhaíola)*;
- gníomhaíochtaí tionsclaíocha ar scála mór *(m.sh. déantúsaíocht cógaisíochta, déantúsaíocht stroighne, stáisiúin chumhachta)*;
- an diantalmhaíocht *(m.sh. muca, éanlaith)*;
- úsáid shrianta agus scaoileadh rialaithe Orgánach Géinmhodhnaithe *(OGM)*;
- foinsí radaíochta ianúcháin *(m.sh. trealamh x-gha agus radaiteiripe, foinsí tionsclaíocha)*;
- áiseanna móra stórála peitril;
- scardadh dramhuisce;
- gníomhaíochtaí dumpála ar farraige.

Forfheidhmiú Náisiúnta i leith Cúrsaí Comhshaoil

- Clár náisiúnta iniúchtaí agus cigireachtaí a dhéanamh gach bliain ar shaoráidí a bhfuil ceadúnas ón nGníomhaireacht acu.
- Maoirseacht a dhéanamh ar fhreagrachtaí cosanta comhshaoil na n-údarás áitiúil.
- Caighdeán an uisce óil, arna sholáthar ag soláthraithe uisce phoiblí, a mhaoirsiú.
- Obair le húdaráis áitiúla agus le gníomhaireachtaí eile chun dul i ngleic le coireanna comhshaoil trí chomhordú a dhéanamh ar líonra forfheidhmiúcháin náisiúnta, trí dhíriú ar chiontóirí, agus trí mhaoirsiú a dhéanamh ar leasúchán.
- Cur i bhfeidhm rialachán ar nós na Rialachán um Dhramhthrealamh Leictreach agus Leictreonach (DTLL), um Shrian ar Shubstaintí Guaiseacha agus na Rialachán um rialú ar shubstaintí a ídíonn an ciseal ózóin.
- An dlí a chur orthu siúd a bhriseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaol.

Bainistíocht Uisce

- Monatóireacht agus tuairisciú a dhéanamh ar cháilíocht aibhneacha, lochanna, uiscí idirchriosacha agus cósta na hÉireann, agus screamhuiscí; leibhéil uisce agus sruthanna aibhneacha a thomhas.
- Comhordú náisiúnta agus maoirsiú a dhéanamh ar an gCreat-Treoir Uisce.
- Monatóireacht agus tuairisciú a dhéanamh ar Cháilíocht an Uisce Snámha.

Monatóireacht, Anailís agus Tuairisciú ar an gComhshaol

- Monatóireacht a dhéanamh ar cháilíocht an aeir agus Treoir an AE maidir le hAer Glan don Eoraip (CAFÉ) a chur chun feidhme.
- Tuairisciú neamhspleách le cabhrú le cinnteoireacht an rialtais náisiúnta agus na n-údarás áitiúil *(m.sh. tuairisciú tréimhsiúil ar staid Chomhshaol na hÉireann agus Tuarascálacha ar Tháscairí)*.

Rialú Astaíochtaí na nGás Ceaptha Teasa in Éirinn

- Fardail agus réamh-mheastacháin na hÉireann maidir le gáis cheaptha teasa a ullmhú.
- An Treoir maidir le Trádáil Astaíochtaí a chur chun feidhme i gcomhair breis agus 100 de na táirgeoirí dé-ocsaíde carbóin is mó in Éirinn.

Taighde agus Forbairt Comhshaoil

- Taighde comhshaoil a chistiú chun brúnna a shainaithint, bonn eolais a chur faoi bheartais, agus réitigh a sholáthar i réimsí na haeráide, an uisce agus na hinbhuanaitheachta.

Measúnacht Straitéiseach Timpeallachta

- Measúnacht a dhéanamh ar thionchar pleananna agus clár beartaithe ar an gcomhshaol in Éirinn *(m.sh. mórphleananna forbartha)*.

Cosaint Raideolaíoch

- Monatóireacht a dhéanamh ar leibhéil radaíochta, measúnacht a dhéanamh ar nochtadh mhuintir na hÉireann don radaíocht ianúcháin.
- Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as taismí núicléacha.
- Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíoch.
- Sainseirbhísí cosanta ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

Treoir, Faisnéis Inrochtana agus Oideachas

- Comhairle agus treoir a chur ar fáil d'earnáil na tionsclaíochta agus don phobal maidir le hábhair a bhaineann le caomhnú an chomhshaoil agus leis an gcosaint raideolaíoch.
- Faisnéis thráthúil ar an gcomhshaol ar a bhfuil fáil éasca a chur ar fáil chun rannpháirtíocht an phobail a spreagadh sa chinnteoireacht i ndáil leis an gcomhshaol *(m.sh. Timpeall an Tí, léarscáileanna radóin)*.
- Comhairle a chur ar fáil don Rialtas maidir le hábhair a bhaineann leis an tsábháilteacht raideolaíoch agus le cúrsaí práinnfhreagartha.
- Plean Náisiúnta Bainistíochta Dramhaíola Guaisí a fhorbairt chun dramhaíl ghuaiseach a chosc agus a bhainistiú.

Múscailt Feasachta agus Athrú Iompraíochta

- Feasacht chomhshaoil níos fearr a ghiniúint agus dul i bhfeidhm ar athrú iompraíochta dearfach trí thacú le gnóthais, le pobail agus le teaghlaigh a bheith níos éifeachtúla ar acmhainní.
- Tástáil le haghaidh radóin a chur chun cinn i dtithe agus in ionaid oibre, agus gníomhartha leasúcháin a spreagadh nuair is gá.

Bainistíocht agus struchtúr na Gníomhaireachta um Chaomhnú Comhshaoil

Tá an ghníomhaíocht á bainistiú ag Bord lánaimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóirí. Déantar an obair ar fud cúig cinn d'Oifigí:

- An Oifig um Inmharthanacht Comhshaoil
- An Oifig Forfheidhmithe i leith cúrsaí Comhshaoil
- An Oifig um Fianaise is Measúnú
- Oifig um Chosaint Radaíochta agus Monatóireachta Comhshaoil
- An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tá Coiste Comhairleach ag an nGníomhaireacht le cabhrú léi. Tá dáréag comhaltaí air agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair imní agus le comhairle a chur ar an mBord.

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Sharing Lessons Learned from Water Governance

epaResearch

Authors: Joanna O'Riordan, Richard Boyle, John O'Neill, Fergal O'Leary and Laura Shannon

Identifying Pressures

Clean, healthy water is essential for our economy, our aquatic wildlife and our health and wellbeing. However, as noted in the foreword to the draft third-cycle River Basin Management Plan (Department of Housing, Local Government and Heritage, 2021), there are mounting environmental pressures on Ireland's waters with the situation described as ''urgent''.

A complex array of stakeholders are involved in water quality. Like many other environmental challenges, water is often described as a "wicked problem", with "wicked" denoting resistance to resolution. It is a problem for which there is no single solution and no determinable stopping point.

Informing Policy

The objective of the research carried out by the Institute of Public Administration, as part of a 2-year research programme funded by the Environmental Protection Agency, was to review changes in structures and processes made under the second-cycle River Basin Management Plan, 2018–2021, to inform thinking regarding the third-cycle River Basin Management Plan, 2022–2027. Measures on implementation and governance, which are included in Section 5 of the draft third-cycle Plan, published in September 2021, are informed by findings of the research programme. Draft governance measures proposed for the third-cycle River Basin Management Plan encompass actions with respect to the roles and responsibilities of the various implementing bodies, an enhanced programme of monitoring and reporting of progress, a greater emphasis on compliance within the full mix of regulatory approaches, a capacity-building programme to ensure the transfer of learning and knowledge, and the further activation, development and support of local-level initiatives.

Developing Solutions

A central element of the research programme has been to review water governance using experimental governance as a framework. Experimental governance is a governance model developed by academics Chuck Sabel and Jonathan Zeitlin (2012) to support the governance of so-called "wicked" problems. These are challenging policy issues that require a cross-government response. The complexity of these issues means that, while the ultimate goal (e.g. clean water) is clear, there is no obvious solution or pathway to achieve this goal. Rather, the solution is arrived at incrementally through an iterative process that, crucially, involves frontline and local-level stakeholders. While the water governance structures established under the second-cycle River Basin Management Plan were not set up deliberately with an experimental governance approach in mind, many tenets of experimental governance are evident in the approach. The conclusions of the research programme highlight that better structures and processes do matter, but the capacity of the public servants involved is also vital in ensuring better governance.

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