Innovation in freshwater policy implementation

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LINK Seminar

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Ministry for the Environment

Wellington

Introduction

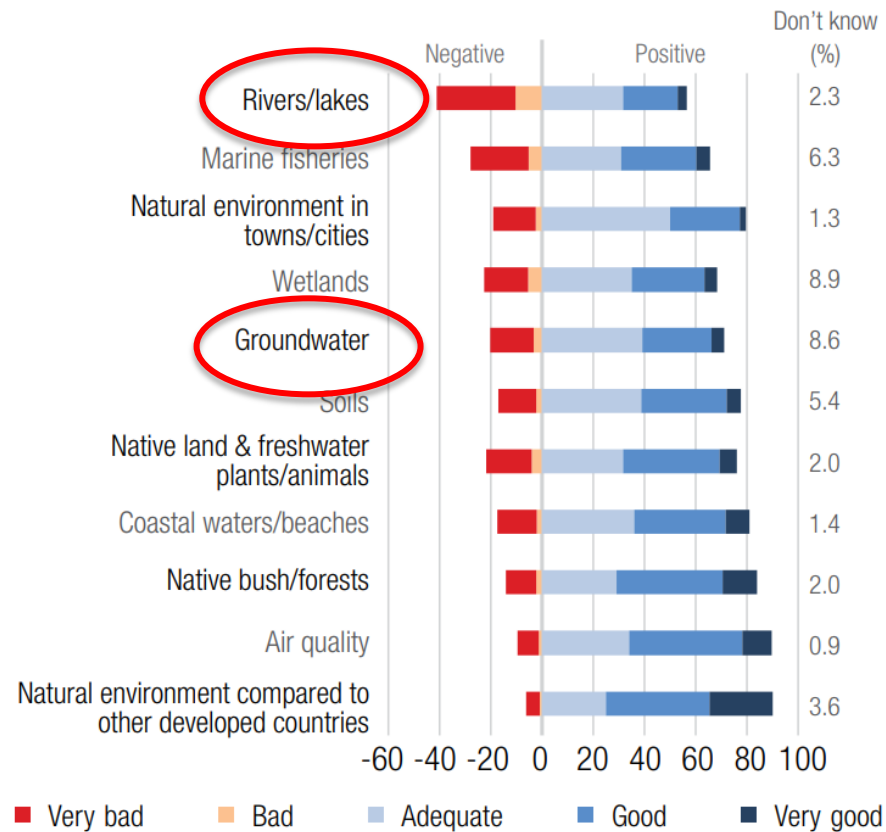New Zealanders perceive freshwater quality to be declining (Hughey *et al.* 2013, p.11).

**Figure 3.5.** Perceived state of the environment.

Introduction

- Environment Aotearoa 2019 concluded that "in farming areas, water pollution affects almost all rivers and many aquifers" and that "urban waterways contain many of the same pollutants found in farming areas…but their levels are typically even higher in our cities and towns" (MfE, 2019).

- Some of the consequences of this pollution are that waterways become toxic to aquatic life and present risks to human health, algal blooms become more frequent, groundwater becomes unsafe to drink, and the mauri of the wai is diminished.

- Creating and implementing freshwater policy is challenging because freshwater ecosystems "are complex, adaptive systems that are characterized by historical dependency, nonlinear dynamics, multiple basins of attraction and limited predictability" (Folke, 2003, p.2028).

Introduction

- In response, New Zealand has innovated a number of new policies to respond to freshwater quality and quantity issues.

- Example 1 – The National Policy Statements for Freshwater Management and the National Objectives Framework.
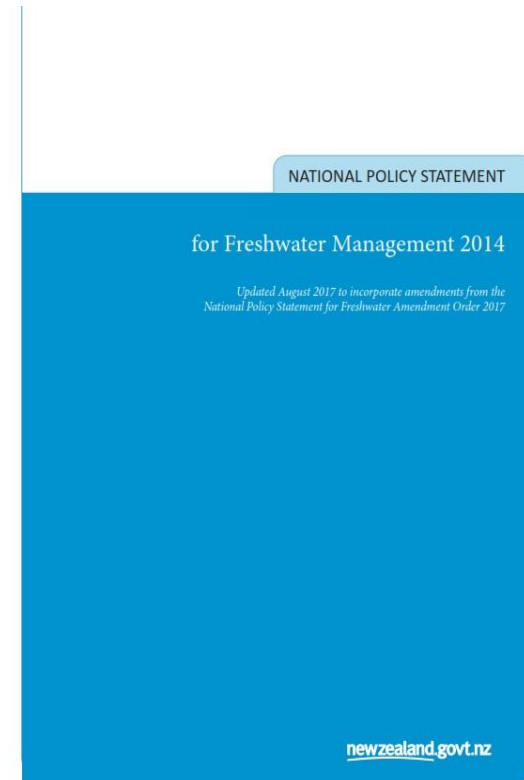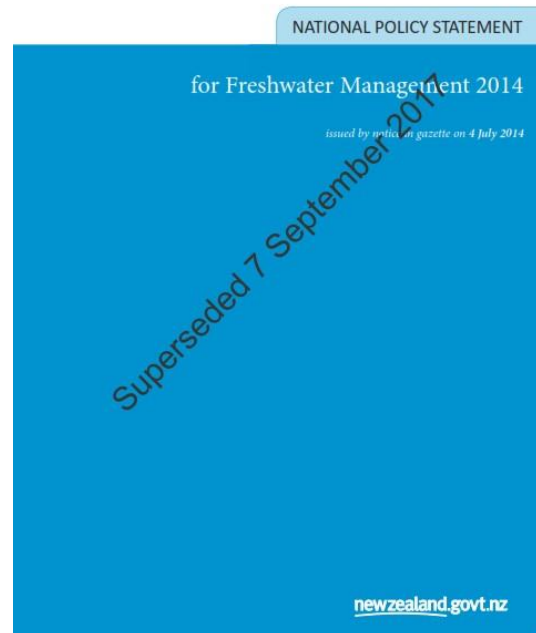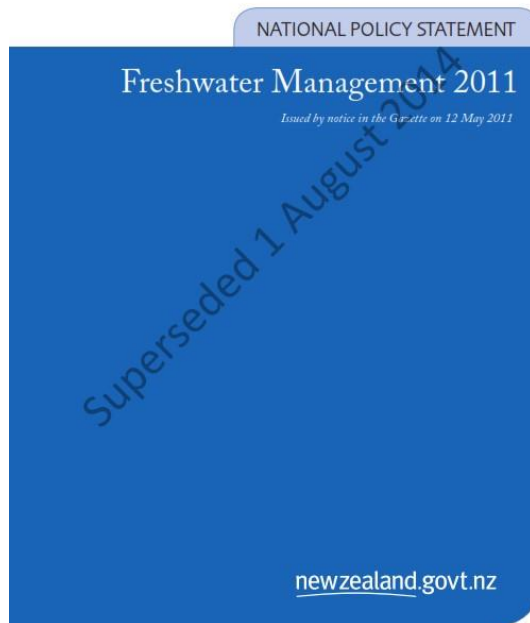
Introduction

- Example 2 – Community-based catchment-scaled collaborations (adapted from Duncan and Robson-Williams, 2018).

Council	Collaborative processes
Northland Regional Council	Five priority catchments (Mangere, Waitangi, Whāngarei, Doubtless Bay, Poutō).
Waikato Regional Council	Healthy Rivers Wai Ora.
BOP Regional Council	Regional water advisory group and nine community reference groups.
Hawke's Bay Regional Council	TANK collaboration.
Greater Wellington Regional Council	Five Whaitua committees.
Tasman District Council	Two FLAGs (Freshwater and Land Advisory Groups).
Canterbury Regional Council	Ten zone committees and a regional committee
Southland Regional Council	Southland Regional Forum.

Introduction

- Other examples of innovation include managed aquifer recharge (Painter, 2018), audited self-management (Holley, 2015), and nutrient modelling for diffuse farm pollution (PCE, 2018).

Sustain. Water Resour. Manag. (2018) 4:291–300
https://doi.org/10.1007/s40899-017-0188-2

ORIGINAL ARTICLE

Protection of groundwater dependent ecosystems in Canterbury, New Zealand: the Targeted Stream Augmentation Project

Brett Painter[1]

Crafting Collaborative Governance: Water Resources, California's Delta Plan, and Audited Self-Management in New Zealand

Environmental Law Reporter, Vol. 45, No. 4, 2015
UNSW Law Research Paper No. 2015-15

14 Pages · Posted: 4 Apr 2015 · Last revised: 10 Apr 2015

Cameron Holley
UNSW Sydney, Faculty of Law, Connected Waters Initiative Research Centre, Global Water Institute; University of New South Wales (UNSW) - Faculty of Law

Date Written: August 1, 2014

Overseer and regulatory oversight:
Models, uncertainty and cleaning up our waterways

December 2018

Introduction

- This research began following the observation that there has been significant innovation globally in the development of freshwater policy, but similar innovation has not occurred in freshwater policy implementation (Kirschke *et al.,* 2017; Barbosa *et al.,* 2016; Rouillard *et al.,* 2015; Bracken and Oughten 2013; Mitchell 2011).

Water policy implementation in the state of São Paulo, Brazil: Key challenges and opportunities

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ABSTRACT

Challenges in implementing water planning and management are common, and the effective implementation of integrated water policies is yet to occur. In Brazil, the state of São Paulo enacted a Water Act in 1991 to ensure water availability for current and future generations based on the principles of decentralization, participation and integration. This research addresses water policy implementation issues by conducting an exploratory case study in the state of São Paulo. Factors affecting the water policy implementation process were analyzed, together with some water resources management practices. The findings indicate four dimensions of key challenges: institutional and governance, political, financial and technical. The stakeholders believe the political and the institutional and governance challenges are more important than the technical and financial ones. Additionally, the results show different levels of involvement in the areas of water policy strategy, the planning and decision-making process, and implementation by the different stakeholders groups. Stakeholders external to the water sector and from local government were considered to be less involved in water-related issues, when compared with stakeholders from the water sector. The study recommends a change in current institutional and governance arrangements in order to influence decisions and investments in different levels and sectors.
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1. Introduction

Water management represents one of the key challenges facing

Research evidence suggests that implementation challenges are common in water resources planning and management. The effective implementation of integrated water policies is not

Policy implementation of catchment-scale flood risk management: Learning from Scotland and England

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ABSTRACT

Recent years have seen a gradual adoption of a "catchment-scale" approach to flood risk management into European policy-making which, amongst other objectives, promotes rural land use change to reduce flood risk. While some exploratory studies of land managers' attitudes exist, research is lacking on how public policies can be mobilised locally to implement these ideas. Two local initiatives were analysed in the transboundary River Tweed basin in Scotland and England during which public authorities negotiated with land managers. A combination of documents (N = 21) and interviews (N = 63) forms the basis of the data analysed. The results showed that implementation is highly dependent on the local policy framework, the activities of implementers, and land managers' responses to (combination of) policy instruments. Several factors were identified influencing implementation

Making sense of policy implementation: The construction and uses of expertise and evidence in managing freshwater environments

Louise J. Bracken [a], Elizabeth A. Oughton [b]
Show more

Abstract

This paper explores how environmental policy is implemented and enacted through the management of technical and institutional knowledge at the local level. We use the conservation of the freshwater pearl mussel in the River Esk, North Yorkshire, UK, as an empirical case study to examine the interaction that takes place between professionals from different institutional and disciplinary backgrounds as they come together to work on a common problem. We focus on two aspects: the way in which an institutional context was created; and the interaction between the professionals involved. Our analysis demonstrates that the strategic intermediary role of professionals is vital to policy implementation. The intermediary uses their strategic vision and undertakes political manoeuvring following the presentation and interaction of different knowledges and evidence to ensure a certain course of action. This is different from a knowledge broker. The role of the professional is to draw on expertise, both formal and tacit, to interpret and judge data in relation to decision making. Those individuals participating in decision making of this nature

Research Questions

- This seminar reports on research conducted in Manaaki Whenua over the past two years examining freshwater policy implementation in New Zealand.

- Our guiding questions were "what are the barriers to implementation of innovative freshwater policy in New Zealand", and subsequently "how can these barriers be overcome?".

- This seminar will report on two outputs created to answer these questions:
  1) a paper on the barriers to freshwater policy implementation in New Zealand (Kirk, N., Robson-Williams, M., Fenemor, A., and N. Heath. Exploring the barriers to freshwater policy implementation in New Zealand) and
  2) a draft policy implementation framework to assist in the implementation of freshwater policy in New Zealand.

Context

• OECD Environmental Performance Reviews: New Zealand 2017 (p.42)

"Review implementation of the NPS-FM to ensure that water quantity and quality limits set locally are ambitious and comprehensive enough to achieve national ecosystem and human health objectives and public expectations;

Establish performance indicators to track and evaluate implementation of the NPS-FM by regional councils, and strengthen compliance monitoring and enforcement of resource consent conditions;

Ensure the revision or development of new water quality parameters is expedited to minimize the need for repeated community consultation and updates of regional plans".

OECD Environmental Performance Reviews

NEW ZEALAND

2017

OECD

Context

Cabinet paper on the proposed review of New Zealand's resource management system

- "While much of the RMA remains sound, it is underperforming in the management of key environmental issues such as freshwater", and that "successive amendments have added complexity to the RMA...and there have been significant problems with its implementation".

In Confidence

Office of the Minister for the Environment

Chair, Cabinet Environment, Energy and Climate Committee

Comprehensive review of the resource management system: scope and process

Proposal

1. This paper seeks agreement to the scope and process for a comprehensive review of the resource management system, focused on the Resource Management Act 1991 (RMA). I propose to consult on the scope with a targeted group, including Māori, before reporting back to Cabinet to agree the final terms of reference. I am also seeking approval to establish an expert advisory group to carry out the review.

Executive summary

2. A two-stage approach is proposed for improving the resource management system, particularly the RMA. Cabinet has already agreed to Stage 1. A Stage 1 Bill will address problems that are relatively straightforward to correct, or where there is a clear need to act in advance of decisions on a more comprehensive review. This Bill is being drafted.

3. Stage 2, which is the subject of this paper, will be a more comprehensive review of the resource management system focused on the RMA. The review will build on current work across freshwater, climate change and urban development, and address a wide range of concerns with the RMA.

4. The RMA is the principal statute for managing New Zealand's built and natural environments, including the coastal marine area out to the 12 nautical mile limit. It radically reformed New Zealand's environmental law by integrating land, water and air planning under the common purpose of sustainable management of natural and physical resources, focused on the effects of activities.

5. The RMA was a major step forward for resource management in New Zealand, and was a product of rising environmental awareness. While much of the RMA remains sound, it is underperforming in the management of key environmental issues such as freshwater, and in delivering affordable housing and well-designed urban communities. Also, ecosystems and biodiversity are being degraded by poorly managed cumulative effects; and there are doubts that the RMA can respond effectively to future challenges such as climate change.

6. The RMA works in conjunction with other important statutes, including the Local

Context

Essential Freshwater: Healthy Water, Fairly Allocated (MfE, 2018)

- "We will support council RMA implementation by identifying exemplary councils across varying aspects of good practice in water regulation and management, using those exemplars as a guide, and considering what further national direction on implementation may be appropriate" (p.41).

- "A key issue is the pace, consistency and practice that councils are applying when implementing the Freshwater NPS. We are concerned that implementation is highly variable across councils and timeframes are too long in many cases" (p.44).

- "We would like to see a regulatory framework that accelerates timeframes for getting plans and regulatory controls in place, especially those relating to water quality" (p.44).

What is policy implementation?

- The policy process is where problems are conceptualised and brought to governments for a solution. Government institutions then formulate alternative policy solutions. These solutions then get implemented, evaluated, and revised (Sabatier, 2007).

- Policy often attempts to constrain or encourage behaviour and practice in certain directions through regulative, normative, or cognitive means (Coburn, 2016).

- Policy implementation is the interaction between the setting of regulation to achieve behaviour and practice change and the subsequent actions taken by organisations or individuals to achieve behaviour change (Pressman and Wildavsky, 1984).

Methods

- Data were collected through ten semi-structured interviews with local governments in New Zealand. Nineteen staff in total were interviewed.

Regional Councils	Unitary Authorities
Canterbury Regional Council (1 employee interviewed)	Auckland Council (3 employees interviewed)
Greater Wellington Regional Council (2 employees interviewed)	Gisborne District Council (1 employee interviewed)
Hawke's Bay Regional Council (2 employees interviewed)	Nelson City Council (2 employees interviewed)
Northland Regional Council (1 employee interviewed)	Tasman District Council (4 employees interviewed)
Southland Regional Council (3 employees interviewed)	
Taranaki Regional Council (written response)	

- Key informant sampling used to identify interviewees.
- Data coded through a thematic analysis (Braun and Clarke 2006).

Barriers to Freshwater Policy Implementation

Alignment with national policy

• Council staff we interviewed struggled to align local plans with updates to the NPSFM.

"The challenge we have faced is…the National Policy Statement for Freshwater Management has changed on a regular basis. So, our current [plan is] based on the 2014 NPS, but of course now we have the 2017 version and the 2019 version as well. So, there has been some shifting of the goal posts which has proved challenging for us, especially when playing catch up [RC4]."

"Constant changes to the NPSFM are really hard to incorporate quickly [UA2]."

"Additional changes to the National Policy Statement might actually create a few speed bumps there [UA4]."

"…one of my takeaways is the constantly shifting national space which causes me grief in terms of delivery because we are moving the goalposts every time, and certainly our public seem to be clamouring for certainty – 'we will do whatever you ask us'… [RC6]."

Barriers to Freshwater Policy Implementation

Alignment with national policy

• Councils also reported it was difficult aligning plans with the NPSFM while also meeting other national standards and objectives.

"…most other regions as far as the NPSFM goes, they don't have an enormous amount of conflicting high-level policy guidance to implement …[By contrast] we have the NPS for [urban] development [and] the NPS for freshwater management. We've looked at both and know that these high-level documents do not sit well with each other, and we are one of a handful of authorities that have to figure out the misalignments and the frictions and barriers that they create to the other's implementation [UA1]."

"…we are going to be forced to make a decision unless we are given direction from central government about what the priorities are. We can't do everything so we're going to have to make a call about what we prioritise: do we prioritise freshwater over planning standards, or do we prioritise planning standards over biodiversity, for arguments sake? Part of what we're doing in trying to integrate the freshwater NPS is juggling all those other things as well – trying to work out what are all the priorities [UA4]."

Barriers to Freshwater Policy Implementation

Local government resourcing

- Many of our interviewees acknowledged resourcing as an important constraint on freshwater policy implementation.

"Our huge barrier is money. Our problems are greater than our community's ability to pay, which means we have to prioritise and don't achieve as much as we would like in the timeframes we would like [UA2]."

"The Council is never going to have enough to do its job. And the reason why we will never have enough is because we are always striving for environmental improvement over time. And we also try to balance that environmental improvement along with economic, social, and cultural wellbeing for our communities [RC5]."

"Whenever we talk to the community about water quality, they say 'we want the best water quality' and then you tell them how much it is going to cost, they go 'ok there are different views on that now' [UA1]."

Barriers to Freshwater Policy Implementation

Local government staffing

- Some of the local governments we interviewed were so small that the tasks of planning, monitoring, implementation, and compliance were done by two or three staff.

"We are a small council – we have one water quality scientist and one water quantity scientist. And that's it [UA3]."

"[named employee] is pretty much the freshwater team. So that kind of puts it into perspective in comparison to other bigger councils [UA4]."

- But even if the governments we interviewed had unlimited monetary resources, there would still be a shortage of people who can do the job.

"…even if we had the money who do we employ? If you multiply our money ten times we couldn't get ten times the amount of people to do the job anyway… the lag in developing the human capability around what we need to get the job done is a real issue [RC2]."

Barriers to Freshwater Policy Implementation

Community expertise

- Some of our interviewees stated it was difficult to implement freshwater policy in remote parts of the country due to a lack of research institutes, universities, or consultants who could help with technical tasks.

    "We are in a place where we need to develop the capacity within [the region] to help answer some of the technical questions that our community - whether farmers or industry groups – want answered [RC6]."

- Some Councils also noted that Māori struggle to participate in policy processes, due to a lack of human and resource capacity.

    "I think one of the issues for us, particularly in a post-settlement environment, is our engagement with iwi. There is no lack of willingness or intention on our part, but the issue is capacity within iwi. We have eight iwi in [the region] … But they are stretched always and so it's very demanding on them when we want to interact with them on some of the planning issues [UA4]."

Barriers to Freshwater Policy Implementation

Local context different from national context

- The NPSFM sets national priorities for freshwater management. Although the NOF offers flexibility in regard to eleven of thirteen attributes, interviewed councils still perceived national priorities and attributes as a barrier to policy implementation when they are not relevant in the local context.

"A simple one-size-fits-all approach to national direction on water quality management has created problems and extra cost for the Council and the community with no added benefit [RC 3]."

"What we are saying is just that every part of the country is different, and while I totally get and support having national standards and national level things, there needs to be sufficient flexibility to recognize that different areas are different [UA2]."

"There is also seems to be a bit of a – conflict is not the right word – tension between the national goals of looking for what the 'average' is, versus the regional focus on what the worst cases are. We don't focus on monitoring the reference sites very often, we want to know - where are the worst places [UA4]?"

Barriers to Freshwater Policy Implementation

Differences between regional councils and unitary authorities

- Unitary authority employees, in particular, argued their structure is a barrier to effective policy implementation.

"This is a barrier to council implementing freshwater policy through its capital projects. Sometimes, it is much easier to get CapEx, sometimes what needs to happen – increasingly what needs to happen – is not a piece of concrete. Or a pipe. Those things, whole financial systems, are setup for CapEx for those things…. To implement freshwater policy increasingly we need monitoring regimes which require checking on all the time, or they have a living component to them. And they are all OpEx. The problem with OpEx is that it has a hit on rates. So there is a reluctance to put anything in that will have an OpEx component to it [UA3]."

"I think it hinders it. Because, in the end the most important thing to councillors is the roads, pretty much. Maybe number two is the wastewater. Unitary councils I think, particularly when you don't have much money, get driven by infrastructure. So, your district council eats your regional council. We've given it a pretty good go to implement the NPS for freshwater, and we've tried really hard to do our best to be a good regional council, but when the ratepayers are facing these massive rates increases just to pay for roads and waste water, there is nothing left for great non-regulatory incentives [UA2]."

Barriers to Freshwater Policy Implementation

So, why has New Zealand struggled to implement innovative freshwater policy?

• The authors argue there has not been innovation in policy implementation because, when problems are identified in New Zealand's freshwater management, policy is developed through local plans to address these problems; however, before policy is implemented, new problems are identified, national policy changes, and local governments are required to rewrite and update plans.

• Local government planning is currently not agile enough to respond to new problems and new national policy directions simultaneously.

• To resolve these issues, planning is often given extra resources, which diminishes the resources available for on-the-ground policy implementation and other critical tasks such as monitoring and compliance.

Barriers to Freshwater Policy Implementation

- Recommendations to overcome the barriers to freshwater implementation reported by regional council and unitary authority employees.

- 1 – We propose local governments shift from developing policy first to achieving on-the-ground practice change first. This can be achieved through employment of innovation intermediaries.

- 2 – The work of innovation intermediaries or other practice change focused brokers ought to be funded by core operational expenditure.

- 3 – Guidance should be provided to local governments on how to prioritise national policy statements and environmental standards.

- 4 – The way central and local government approach change could be more sophisticated.

- 5 – Begin exploring if alternative governance models are more able to drive practice change than the current territorial authority, regional council, and unitary authority system.

Freshwater Policy Implementation Framework

FRAMEWORK FOR IMPLEMENTATION OF FRESHWATER POLICY

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Framework for Implementation of Freshwater Policy – how to use the framework?

This framework has been devised to help with the task of translating high-level policy objectives into actions on-the-ground. The framework is written so that land managers, catchment managers, and community groups have access to the knowledge, tools, and resources necessary to implement freshwater policy in a number of different contexts in New Zealand.

What is the framework?

The framework presents a series of questions – informed by both theory and practice – which we believe are important to answer when implementing freshwater policy. The questions were tested in draft versions of the framework and were validated through a series of case study investigations in the Hawke's Bay region and Northland. These questions are split into eight different sections: the situation, building a systems view, purpose and outcomes, engagement, practice change, prototyping actions and monitoring, project organisation learning and evaluation.

Our intention was to create a non-linear and non-prescriptive framework. What does this mean? The framework is non-linear because it does not present a step-by-step guide to policy implementation. The framework is non-prescriptive in that it does not impose rules and methods, rather it provides a range of different methods which might be helpful in certain contexts.

This document contains all the different sections of the framework, including questions, sub-questions, tools, and lessons from case studies. The framework creators hope that in the future funding can be obtained to develop the framework into a computer programme or mobile phone application.

How does it work?

If you are currently implementing freshwater policy, feel free to enter into any part of the framework where you feel you need help or assistance. If you are struggling to know how to engage the local community, start at the engagement section and see the different tools and concepts involved in public engagement. If you are the start of an implementation process, feel free to begin at the situation section, which asks question about the local context of policy implementation.

The questions are designed as prompts to get you thinking about what needs to be done. Not all

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FRAMEWORK FOR IMPLEMENTATION OF FRESHWATER POLICY

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Project Organisation

Depending on the scope and scale of the implementation project, you might need greater or lesser structure around your project management. This section asks questions which guides the management of the implementation project.

Questions

- Who are the members of the project team?
- What is the internal governance structure of the project team?
  - Should a project steering group be formed?
  - Are there any constraints or advantages caused by the governance structure
- How is the implementation to be resourced?
  - Are there constraints to this resourcing?
  - Are there any other avenues for additional resources or resourcing (volunteering, community willingness, grants)?   LESSON

Resourcing Implementation

In our five case studies, funding was critical to what sort of practice change could be achieved. In our cases, the most successful examples were in catchments which sought funding from multiple sources. However, we recognize for projects and groups established by regional councils they might not be able to apply for certain community conservation or environmental funds.

- How and by whom will decisions about this implementation process be made?
- Where does the mandate for this project come from?
  - Do you need to obtain mandate, legitimacy, or authorization for the decision you are making?
- Do you have a way of identifying and trying to mitigate process risks?
  - Are their key individuals that you can identify that, by including them, might help to manage these risks?   RESOURCE

FRAMEWORK FOR IMPLEMENTATION OF FRESHWATER POLICY

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Practice Change

Practice change requires an understanding of what actions are influencing the situation, while also articulating how to change actions for the better. It is critical to articulate how practice will change, and how that practice change will help lead to desired outcomes.

Questions

- What or who influences each outcome?
  - What needs to change in order for the desired outcome to become a reality?
- What is possible in terms of practice change?   LESSON

Lessons for Practice Change

Our case studies illustrated that access to authoritative biophysical data and using this data to model or predict effects of practice change on ecosystems is the key to knowing 'what is possible'. In one case study, decision-making stalled because there was a lack of biophysical data and decision-makers wanted certainty before making any decisions. Larger scale catchments have more variables, which increase uncertainty, often leading to delays in decision-making.

- Whose practice needs to change? For example, landholders, local government, industry?
- Why would people change?
  - What are the barriers to them changing?
- Who can assist in influencing change? For example, primary sector programs, resources, tools, practitioners with skills, the Landcare Trust?
- What are the most effective mechanisms for promoting practice change?
  - What has worked elsewhere with others?
- Are you actively promoting practice change or are you simply providing information to encourage practice change?
- What mechanisms are available to influence change?
  - Who are the 'delivery agents'?
- Is there synergy and interactions across outcomes and between mechanisms and

Freshwater Policy Implementation Framework

- This framework has been devised to help with the task of translating high-level policy objectives into actions on-the-ground. The framework is written so that land managers, catchment managers, and community groups have access to the knowledge, tools, and resources necessary to implement freshwater policy in a number of different contexts in New Zealand.

- The framework presents a series of questions – informed by both theory and practice – which we believe are important to answer when implementing freshwater policy. The questions were tested for relevancy through a series of case studies in the Hawke's Bay and Northland.

- Our intention was to create a non-linear and non-prescriptive framework. The framework is non-linear because it does not present a step-by-step guide to policy implementation. The framework is non-prescriptive in that it does not impose rules and methods, rather it poses different questions and methods which might be helpful in answering those questions.

Implementation Framework – Methods

- A workshop was held on the 24th May 2017 with staff from the Bay of Plenty Regional Council, Greater Wellington Regional Council, Hawke's Bay Regional Council, Southland Regional Council, Waikato Regional Council, and the Canterbury Regional Council. At this workshop these individuals were presented with a draft implementation framework and a set of questions. Workshop participants were asked to reflect on the salience of the framework topics and questions.

- In November and December 2017 Manaaki Whenua researchers travelled to the Hawke's Bay and Northland to test the framework and collect case study data.

- Data for four case studies were collected in Hawke's Bay (Whangawehi, Papanui, Tukituki, and Taharua) with one case study in Northland (Hātea).

Implementation Framework – Case Studies

Whangawehi Stream

- Wairoa District Council proposed the building of a waste treatment plant at the headwaters of the Whangawehi Stream. Tangata whenua objected. This issue brought land owners, the district council, the regional council, and tangata whenua together. They started an informal non-statutory collaboration to resolve the issue.

- The group persisted beyond the original waste treatment plant issue, and now collaborate over riparian weeding and planting, creating walking tracks, etc.

THE COUNTRY | Environment

Guardians of river in Mahia win international award

18 Oct, 2018 4:05pm   2 minutes to read

Pat O'Brien (right) accepting the prize. Photo / Supplied

Hawkes Bay Today

A group charged with protecting a river on the Mahia Peninsula has won a prestigious award.

The Whangawehi Catchment Management Group were the only finalists from New Zealand at the Asia Pacific International River Prize Awards, held in Sydney on Tuesday, and won the Pacific category.

Implementation Framework – Case Studies

HAWKE'S BAY
REGIONAL COUNCIL

Plan Change 6 to Hawke's Bay
Regional Resource Management Plan
Tukituki River Catchment

Operative – 1 October 2015

HBRC Report No.   SD 15-08 – 4767
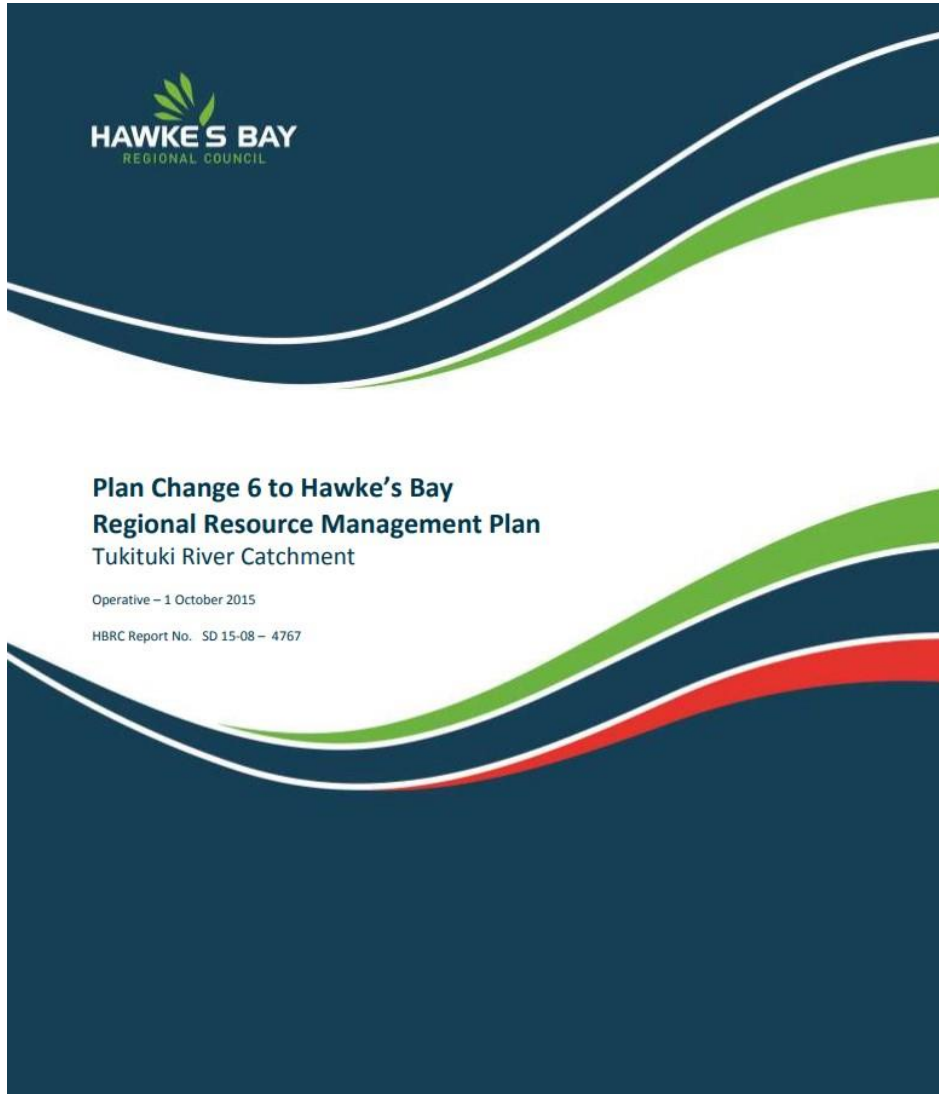
Papanui Catchment

- Identified as a priority sub-catchment by the Hawke's Bay Regional Council due to phosphorous losses.

- A catchment stakeholder group was established who co-developed a strategy for implementation of Plan Change 6 rules, as well as incorporating local values and aspirations.

Implementation Framework – Case Studies

Tukituki Catchment Plan

- Tukituki is a large catchment dominated by sheep and beef farming. Tukituki River had elevated levels of dissolved inorganic nitrogen and dissolve reactive phosphorous.

- The catchment plan process merged with the Ruataniwha Dam assessment undertaken by the Environmental Protection Authority.

- Environmental Protection Authority had mandate for deciding the fate of the Ruataniwha Dam while simultaneously the Hawke's Bay Regional Council had mandate for a plan change. Was difficult to tell who was responsible for what.

- Community valued the lower stem of the river for recreational uses. Significant community engagement occurred through the Ruataniwha Water Storage Scheme process.

Implementation Framework – Case Studies

Taharua River

- Located in the hill country bordering the Kaimanawa Forest Park in the central North Island. Known for its fly fishing.

- Native vegetation burnt in the 1980s. First dairy farm in the catchment in 1989, with two more added in 1999.

- In 2009 a newspaper article on the river was titled 'the Death of a Waterway'. This prompted a collaborative planning process to resolve the pollution issues in the river.

- High nitrogen losses from wintering dairy stock, but remediation activities led to chemical improvements within five years.

Implementation Framework – Case Studies

Hātea River

- The Whangarei District Council sent a letter to the Northland Regional Council in 2015, prompted by a Maori liaison group who were concerned about water quality and loss of cultural values at Whangarei Waterfall.

- Collaborative 'Hātea River Group' established by the regional council.

- Group identified lifestyle farm stock as the major cause for deterioration of water quality. Fencing subsidies offered to help reduce stock access to the River.

Freshwater Policy Implementation Framework

- The framework contains eight sections. Because it is non-linear, you do not have to start at the first section, you just use what you need to get the job done.

- 1) Understanding the situation; 2) building a systems view; 3) purpose and outcomes; 4) engagement; 5) practice change; 6) prototyping actions and monitoring; 7) project organisation; 8) learning and evaluation.

- Each section contains a series of questions which are designed to provoke reflection about the freshwater policy implementation process.

- For example, the engagement section asks: "What do you think you need to engage the community?"; "What are you seeking to get out of the process [of engagement]?" "Based on the network, who appears to be involved in the implementation process?"; "Does the level of participation stay the same throughout the whole process", etc.

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Situation

Understanding all the factors that are influencing the situation you are trying to manage or address is the key first-step in building an accurate picture of what implementation approach has the greatest chance of success.

Trigger

- Why is the implementation happening here now?
- What are the driving forces?

LESSON

In the case studies we examined, there were a diverse range of triggers behind the implementation effort. In one case, a District Council CEO sent a letter to the Regional Council CEO with concerns about water quality at a local tourist attraction. In another, the trigger was a newspaper article proclaiming 'the death of a waterway' due to pollution from dairy farms. In another case, the trigger was a proposal to build a waste water treatment plant at the headwaters of a stream. In two other cases, the trigger was Regional Council long-term planning processes.

Context

- What is the human and social capacity?
- Who are the local iwi/hapu?
- Who are the leaders in the area and how are they emerging?
- Who are the influencers, organisations, and intermediaries?
- What are the demographics?
- What is the biophysical and ecological characteristics of the area?

RESOURCE

Tools to understand the biophysical and ecological characteristics of an area

- The New Zealand Land Cover Database
- The Land Use Resource Inventory can be used to find Land Use Capability ratings
- The New Zealand Digital Soil Map (S-Map)
- Macro-Invertebrate Community Index
- Stream Health Monitoring and Assessment Kit (SHMAK)

- How can we synthesise this information to make it more accessible to people?
- Are there any other resource management issues to consider (for example, biodiversity, weeds, pests)?
- What infrastructure exists in the area (for example, dams, drainage, irrigation, roading, broadband?)
- How do people interact with the landscape?

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Building a systems view

Building a systems view is about looking at the system in its entirety, enabling consideration of the different drivers and their relationships and influences across scales and timeframes. Building a systems view will highlight the complexity of the problem.

Questions

- What is influencing the issue?
    - Biophysical factors?
    - Social factors?
    - Institutional or organisational factors?
    - Cultural factors?
    - Inter- or intra-organisational factors?
- Who are the affected stakeholders?
    - What networks are these stakeholders a part of?
    - How many different networks of affected stakeholders exist?

RESOURCE

Tools to understand the community and networks

Social Network Analysis

Participatory Modelling

Participatory Mapping

A combination of Participatory Mapping and Q-Methodology

- What are the different spatial and temporal scales that you are likely to work at?
- Which part of the problem does your organisation have mandate or influence over?
- What is the community's adaptive capacity?
- Who is involved in bringing together information (integration and translation role)?

RESOURCE

Tools to understand community adaptive capacity

Local Adaptive Capacity Framework

The Adaptive Capacity Wheel

Next steps

Implementation framework

- Intention to adapt framework into a phone application. Funding required to achieve this.

- Desire to test framework in different statutory and non-statutory freshwater management contexts.

- In statutory contexts, potential to embed with a Council to see how they use and interact with the framework. This can help with the development of new versions which are clearer and more suited for purpose.

Paper

- Submitted to the journal *Water Alternatives*

- Plan to write another paper before December on agile planning and adaptive management in New Zealand's freshwater management.

Conclusions

- Local government planning is currently not agile enough to respond to emergent freshwater problems and new national policy direction simultaneously.

- The paper co-authors argue the closed loop of identifying problems and responding to these problems through planning is the primary barrier to freshwater policy implementation in New Zealand.

- We suggest that during the comprehensive review of New Zealand's resource management, that a practice change led approach ought to be investigated, along with rationalization of policy statements and standards, and the exploration of alternative governance models.

- Freshwater Policy Implementation Framework designed to help resolve these issues within the current system.

- Work still needs to be done to test and validate the Policy Implementation Framework, and funding is required in order to create a usable and flexible framework.

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