Integrated Catchment Management (ICM) Among New Zealand Regional and Unitary Councils

Christine Daly & Andrew Fenemor[1]
Landcare Research, Nelson

Introduction

The Integrated Catchment Management (ICM) programme is a large-scale, long-term, multidisciplinary research programme funded by the Foundation for Research, Science and Technology (http://icm.landcareresearch.co.nz/). This research is being carried out in the Motueka catchment and Tasman Bay into which it drains. The programme is a partnership between Landcare Research, Cawthron Institute and Tasman District Council, with contributions from NIWA, IGNS, Forest Research, Common Ground Ltd., the New Zealand Landcare Trust and Motueka iwi (ICM Research Programme 2005). The Motueka research programme focuses on integrating knowledge and management at large catchment scale. The primary audiences for this research are Council policy and their environmental monitoring processes, and resource users such as the farming, forestry and marine farming sectors (ICM Research Programme 2005).

As part of the ICM programme, ICM practice and policy were researched among New Zealand's regional councils. The purpose was to collate information on ICM definitions, practice and management among New Zealand's regional councils. Furthermore, we wanted to identify common ICM issues across the regions so as to make our Motueka-based research more transferable over the next 3 years of research.

A similar study was conducted by the Capital Regional District in Victoria, British Columbia, Canada. The Capital Regional District researched Integrated Watershed Management (IWM) practice and policy in other jurisdictions, so as to work toward more effective watershed management in their region. The Canadian IWM study inspired this current study which was carried out as part of the ICM programme.

This report summarises responses to the survey under the following headings:

- ICM definitions;
- ICM issues among New Zealand regional and district councils;
- Indicators of ICM success;
- Council ICM activities;
- ICM evaluation and looking forward; and
- A summary.

[1] Contact details: fenemora@landcareresearch.co.nz ph +64 3 545 7710

Method

Twelve staff were interviewed from ten regional and unitary councils (Appendix 1). Council interviewees were identified on a "Client Contact Database" on the Landcare Research staff network. Between 2 and 8 staff were initially selected from each council based on their job description and put onto a "potential interviewee list". Starting with the most important criterion, staff were selected if: (1) the individual was in a management position; and either (2) their job title contained "integrated catchment management"; (3) their job title contained "catchment management"; or (4) their job title contained "resource management" or a related phrase. In some councils staff did not fit these criteria. In those cases an individual in management was selected that most closely resembled the above categories. Within a council the most appropriate person to be interviewed was chosen according to the selection criteria from the "potential interviewee list".

The most appropriate person for each regional and unitary council was contacted by email or telephone, informed of the purpose of the ICM survey, and asked to participate in the survey or to indicate a more appropriate person for interview.

Some regional and unitary councils were unable to participate in this study. A number of attempts were made to interview personnel from each regional and unitary council. If staff from one council did not respond and/or were unable to participate in the ICM survey the second most appropriate person from that council, according to the above selection criteria, was selected from the "potential interviewee list" and contacted. Unfortunately, not every council was able to participate. Six unitary and regional councils did not respond to interview requests.

Interview questions (Appendix 2) were developed based on (1) input from ICM project leaders who identified areas that they believed lacked information on ICM practice and policy among councils; and (2) questions developed from the IWN interview questions used by Capital Regional District Council in Victoria, Canada. Interview questions were sent to the interviewee prior to the interview allowing them time, a few days to a few weeks, to prepare for the survey.

Telephone interviews were held between November 2006 and February 2007. Interviews were recorded. They lasted between 15 and 30 minutes. A summary of the results for each question is reported below.

Integrated Catchment Management Definitions

Regional and district council staff were asked to describe their understanding of Integrated Catchment Management. Most councils defined ICM as the management of natural resources in a catchment or watershed in a holistic manner. Councils focused their management plans and policies mainly on water issues, although land issues were sometimes included. Some considered the partnership with community and government

an integral part of an ICM definition. Management on a long-term basis was another key criterion.

Some councils do not refer to their projects as ICM projects. Instead, some councils refer to their projects as "river schemes and catchment schemes", "riparian management", "farm plan projects", and "catchment control schemes".

ICM Issues among New Zealand Regional and Unitary Councils

Participants were asked what the main ICM issues were in their area. There is a large array of ICM issues among regional councils (Table 1); however, a few concerns were common among most councils. The issues most frequently mentioned were related to water quality and community concerns about water allocation requirements. Land management practices were often cited as a major issue, highlighting the interconnectedness between land and water whereby many land practices degrade water quality. Finally, another key concern for councils was in getting the community to understand 'big picture' ICM issues and become involved in addressing them. Overall, ICM concerns among regional councils mainly depend on the environment of each particular catchment, highlighting that an ICM approach needs to identify those specific issues for the catchment in question.

Table 1 – ICM-related areas of concern among New Zealand Regional and Unitary Councils

Number of Responses	Areas of Concern
7	Managing land practices (e.g. earthworks, dairy farm runoff, septic tanks, sewage discharges, erosion) to improve water quality in waterways
6	Water quality and allocation demands
3	Biosecurity and integrating pest control into management plans
2	Community concerns about accessing water
1	Managing nutrient-enriched waterways, derived predominantly from agriculture in surrounding areas, and related community concerns (e.g. health issues from elevated E. coli levels)
1	Managing rapidly growing communities and their demands
1	Lack of understanding about the linkages in natural resource management by the greater community (e.g. water quality is a function of land use)
1	Getting people to discuss/debate potential resolutions
1	Getting community "buy-in" - they are the ones that actually implement ICM although councils help facilitate actions
1	Changing land use (e.g. residential development in rural areas and the associated effects; land use intensification or forestry development in rural areas)
1	Flood work
1	Councils' ability to provide the science backing for resource management is limited and can inhibit progress in resource management.

Key Performance Indicators of ICM Success

Councils were asked what indicators would indicate that an ICM approach is being successful. The key performance indicators focused on were (1) biophysical parameters and (2) increased community participation. Eight out of ten councils stated that improvements in biophysical parameters, mainly water quality and water quantity and related topics such as nutrient, faecal levels and temperature of receiving waters would indicate that ICM is successful. Otago Regional Council reported that reducing land use issues, such as erosion problems, is an ICM success indicator. Community participation and acceptance were also recognized as fundamental in ICM policy/research formation and implementation by 4 out of 10 councils. Also, Otago Regional Council acknowledged that information sharing between groups, such as between policy makers and community stakeholders or even between divisional groups within a council, was necessary to indicate progress.

Council ICM Activities

Is There a Value for ICM Among Regional and Unitary Councils?

Unanimously, councils believed that ICM was essential for their regions and they could not look at resource management issues in isolation. They see the benefits of managing on a catchment basis and getting all involved parties, such as public, government, and research organizations, debating potential resolution so everyone understands the issues and proceeds in one direction.

How are councils implementing ICM?

Five of the ten councils reported that in principle they are implementing ICM by coordinating multiple issues and activities together. The majority of councils, eight out of ten, reported that they are applying ICM by focusing mainly on land use issues among catchments in an attempt to improve water quality and water quantity issues.

Otago Regional Council stated that ICM implementation is done in a regulatory, educational and planning manner. During the initial stages of implementation Environment Bay of Plenty prepares action plans with the community for catchments that are a concern in their region. Action plans look in detail about what should be done in each catchment, for example, to improve water quality. Two councils reported that reviews are often done for areas of concern in their regions. Reviews help determine how similar issues are managed in other regions to help guide project design at home. Council staff, such as land resource teams and resource science teams in the Otago Regional Council, collate information and bring it together within their organization.

According to nine out of ten councils, dealing with public concerns is a major focus for ICM implementation. Council communicates with the community and attempts to get them involved in the resolution process. Councils set targets with the communities, for

example, setting water quality targets that should work with farm systems. Environment Waikato reported that they may prepare catchment models to determine if the targets are achievable. At Taranaki Regional Council ICM is often implemented through voluntary programmes. Environment Waikato reported that incentives can be brought in to increase public participation.

Otago Regional Council is trialling how groups of consent holders can manage water resources locally. They can advise on water allocation, control discharge of contaminants in the waterways and manage in accordance with the policies developed in ORC plans.

Three councils reported that they have implemented their ICM programmes in small catchments and thus on a small scale.

There was a variety of responses, mentioned above, to the question, "how is your council implementing ICM?" Clearly there is a need to define a robust approach to ICM consistent with the Resource Management Act 1991 and Local Government Act 2002.

Do Councils take the lead with ICM?

Nine regional and unitary councils reported that they were primarily responsible for taking the lead in ICM in their region. Gisborne District Council stated that councils are the only organization with mandated responsibilities and thus the coordinating organization. Greater Wellington Regional Council found that ICM was a good decision-making tool for management. It was recognized by five councils that although they are predominantly responsible for taking the lead, sometimes community members and stakeholders (e.g. Landcare groups and property owners) and research partners (e.g. Landcare Research) can contribute to driving ICM.

Who are the key people working on ICM within councils?

There is a whole range of people working on ICM related issues among council. Interviewees named planning teams, resource science teams, council chairmen, chief executives, resource care officers, scientists, rural liaison advisors, consent staff, land resources staff (formerly known as soil conservation officers), resource information groups, regulatory staff, and compliance staff.

A few regional councils are just beginning to develop an ICM programme and have not yet organized an ICM project team. These councils expect their ICM team to consist of members from different areas in council. According to these councils, members of an ICM project team will likely include flood, land management, policy, and biodiversity staff. Some won't form an ICM team as such but loose project groups may be formed.

The message here is that there are many different groups within the council with different responsibilities who are or could be working together on an ICM programme.

What type of groups has council formed partnerships with to implement ICM?

In developing and implementing ICM councils have formed partnerships with other groups. Councils work in collaboration with research institutions such as Landcare Research, NIWA, and Cawthron Institute. They work with academic institutions, such as Massey University and collaborate with other councils. They have formed partnerships with many community stakeholders including: Ministry of Agriculture and Forestry (MAF), Department of Conservation (DOC), the Ministry for the Environment, Landcare Trust, Fish & Game, Fonterra, formal water user groups, forestry groups, Federated Farmers, the Dairy Company, irrigation companies, pig farmers, Dexcell, Meat & Wool, rural supply stores, the Ecologic Foundation, Nutrilink, and Maori. Councils are associated with specific landholder groups such as Waipaoa River Flood Control Scheme Group (Gisborne), Wakapuaka Monitoring Group (Nelson), and Te Arawa Maori Trust Board (Bay of Plenty).

Groups have also been formed within councils. For example, a biodiversity group was developed at the Greater Wellington Regional Council. Staff from different departments within the council examine different biodiversity issues together, rather than on an individual basis.

Does the council engage the public in ICM? How?

Councils' engagements are very extensive and include publication materials, organized public meetings, working groups, field days or hands-on workshops although these may not be labelled as ICM. Council land management officers give land owners advice. Projects have been developed in small catchments where council work with land owners to find solutions that address water quality or bacterial issues. All of these activities encourage land owners, interest groups, and politicians to work with the councils collaboratively towards sustainability.

ICM is underpinned by the Local Government Act and the Resource Management Act. The Local Government Act 2002 (a) enables democratic decision-making and action to be made by, and on behalf of, communities, and (b) promotes the social, economic, environmental, and cultural well-being of communities, in the present and in the future. The Resource Management Act 1991 aims to promote sustainable resource management.

Success varies among councils as to the amount of community involvement. Some councils have had limited success in getting the public to attend meetings. One reason for the lack of public attendance at meetings, according to West Coast Regional Council, is that some groups, such as farmers, feel they get picked on at meetings.

A big focus is on getting community buy-in into a council project. Workshops are usually held to give information about what a project involves, why a catchment has been chosen and what the environmental issues are being addressed. Targets for environmental improvement in the catchment are set and community concerns and feedback is sought. For example, Environment Waikato stated that if they hadn't thought

of protecting significant beaches in a catchment and the community brought it to their attention then council could include it into the action plan. Many councils have found that informing the public about issues in their region and seeking resolutions in collaboration with the community can help increase buy-in and thus improved catchment conditions.

ICM Evaluation and Looking Forward

ICM Evolution

The state of the environment and community interest appears to be driving the implementation of an ICM approach. The public's desire to access safe and high quality water bodies had initiated the use of an integrated approach in the Wairarapa region of the Greater Wellington Regional Council where land use activities were affecting this region's water quality. In Environment Canterbury interest in ICM grew out of issues in the Waitaki River which involved a community-based approach. It was recognized that since ICM worked well on a small scale it could perhaps be transferred into larger rivers systems and that community facilitation could be extended to larger scales. Degradation of water quality in the Waikato hydro lakes catchment in Environment Waikato had driven the change to ICM in that region. Environment Bay of Plenty reported that ICM application is driven by a problem or problems in their region and the need to address those issues.

Environment Waikato commented that ICM practice and policy among regional councils may have evolved from a research movement at Landcare Research. It is more likely that Landcare Research has emphasized the phrase ICM and that it is being picked up on by other organizations.

Gisborne District Council recognizes the need for non-regulatory approaches to resource management. The ICM approach seems to initiate action.

Environment Bay of Plenty stated that they have always had a catchment management approach, but that it came to the forefront with regional water and land plans. The plan implemented water quality classifications and standards for each river and streams. These plans made the council focus on improving water quality and achieving their targets. It was understood that this was not possible without addressing land use and its effects with the community.

ICM does not appear to be a new concept for councils. Two councils referred to catchment boards which were responsible for water quantity/quality management prior to 1989. Catchment boards were amalgamated into regional councils. Taranaki Regional Council stated that ICM had been used for many years and that it evolved from the catchment board days and catchment management plans from the 1980's. Catchment-based land and water planning was common under the Water and Soil Conservation Act 1967. 1989 reforms and the 1991 RMA broadened the environmental mandate for

regional councils. The RMA talks about integration but the catchment focus has diminished. However, the LGA and RMA provide councils with tools to implement ICM.

Objectives and policies are developed to mitigate environmental issues once issues are recognized in a region. Policies do not necessarily state that resource management should be integrated; however, existing policies among councils often refer to environmental resolutions, especially of water quantity/quality issues, on a catchment basis. Generally, council policy provides an overview of resource management issues on the way to achieving integrated management of its natural, physical resources.

How can Councils Improve with Respect to ICM?

New Zealand regional and unitary councils recognized that they still approach some issues on an individual basis and need to incorporate a more holistic approach. Some suggested incorporating a wider range of issues, such as biodiversity and pest management.

There could be improvements in balancing the size and number of catchments requiring aid with community needs and achievable goals. Some councils believed they should extend their ICM approach into other catchments in their regions. Some considered they need better ways to get landowners and communities involved and recognizing the big picture of the landscape that they live and work within.

Challenges in Implementing ICM

A common challenge throughout New Zealand regional and unitary councils was funding. It is especially a large issue for smaller councils because they have fewer rate payers and a limited budget. Some councils would like to fund certain projects or scientific methodologies; however, they find that their desired approaches are expensive. Another challenge is thus finding cost-effective tools.

Scale is a challenge. Some catchments cover large areas and implementing an ICM approach across so many communities and land areas is a major challenge. Prioritisation based on severity of the issues and likely buy-in for a collaborative approach to addressing them are important considerations.

There are major environmental challenges councils must deal with, such as water quality, water allocation, flooding, erosion, river stabilization, biodiversity, and invasive pest problems.

There is a challenge to engage the community and land owners. Particularly, there are issues in getting rural land owners to improve some of their land management practices. Initiating problem solving dialogue with farmers is sometimes difficult without them feeling attacked and becoming defensive. Councils also identified that there is a challenge in balancing regulatory and voluntary approaches. For example, farmers may

not be aware that their effluent systems are not meeting minimum standards and are in breach of regulations. It is difficult to force resource users to upgrade their systems and still maintain a healthy relationship.

Areas in Need of ICM Research

More research is required among most councils. This research includes increased monitoring among catchments, such as water quality and quantity monitoring and improving understanding and management of land practices (e.g. dairy farms, septic tanks, sewage discharge, examining earthworks, and riparian zones). There is a need to collate scientific research from scientific journals, reports and council sources, so as to know how to design ICM processes and provide good practice guidance to that. Also, there is a need to have good land and water management practices documented.

Environment Waikato sees a need to incorporate social scientists into their ICM programmes. They see a need for social scientists to evaluate their ICM policy and methodology and indicate where change may be required.

According to some councils, more guidance on ICM practice and policy would be helpful. Greater Wellington Regional Council has found that there is a challenge in understanding the social dynamics of ICM, how to go about starting an ICM programme, and seeing the economic benefit of the ICM approach.

Summary

1) New Zealand regional and unitary councils have a mandate to manage catchments in a holistic manner but their ability to do this is limited by funding, planning constraints and other council priorities. Local issues such as land use impacts on water drive most existing ICM approaches.
2) Some councils expressed a need for more guidance on ICM practice and policy. Landcare Research could produce an annotated bibliography or report on ICM practice and policy nationally and internationally which could be accessible online for regional and unitary councils and other interested organizations. The aim would be to help increase understanding of the social dynamic of ICM, how to go about starting an ICM programme, and examples of ICM studies which have procured an economic benefit.
3) There is a need to define a robust approach to ICM consistent with the Resource Management Act 1991 and Local Government Act 2002.

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References

The Integrated Catchment Management (ICM) Research Programme, 2005. Landcare Research, Cawthron Institute and Tasman District Council. Nelson, New Zealand. http://icm.landcareresearch.co.nz/

Appendix 1 – New Zealand Regional Councils participating

Regional Council
Environment Bay of Plenty
Environment Canterbury
Environment Waikato
Gisborne District Council
Greater Wellington Regional Council
Nelson City Council
Otago Regional Council
Taranaki Regional Council
Tasman District Council
West Coast Regional Council

Appendix 2 – Survey Questions

Regional and District Council survey participants were asked the following questions during a telephone interview regarding the use and implementation of ICM in their area.

What's ICM to you?

1) How would you describe "Integrated Catchment Management"?
2) What are some of the main ICM issues as you see them in your area?

ICM Activities in your council

3) How are you implementing ICM in your organization?
4) Do you see your council as responsible for ICM or are there other agencies or groups taking the lead?
5) Who are some of the key people working in ICM in your council and what are their responsibilities?
6) What type of groups has your organization formed partnerships with?
7) Does your council engage the public in ICM? If yes, then how?

ICM Monitoring

8) What indicators would show that ICM has been successful?

ICM Evaluation

9) Do you see value for an ICM approach in your region? How and where?
10) If ICM has increased/expanded in your region, what initiated a change to this approach to resource management?
11) What could your agency be doing better with respect to ICM?
12) What are the big challenges in your region for ICM?
13) What area(s) of ICM research are most needed in your region?
14) Are there particular research issues or a particular catchment you would like help with?
15) Would an ICM workshop be of value to your council?
16) Any final comments you'd like to make?