

Proactive Adaptation – Pathways to Resilience

The purpose of this final chapter is to provide the author's perspective on 'where to next?' This is an individual view shaped by 20 years of thinking and working on climate change and sustainable land use and from interacting with farmers over the last few years and hearing their views on adaptation. It begins with a brief historical review of New Zealand's unique situation. This provides the context for drawing on information shared in preceding chapters and outlining some specific measures aimed at developing a coordinated and focused approach to adaptation. The emphasis is on eastern New Zealand, but is of wider relevance.

In the Introduction reference was made to the compressed timeframe of land development in New Zealand. Both Maori and Pakeha New Zealanders have been through phases of colonisation (see Michael King's 'The Penguin History of New Zealand'). Both Maori and Pakeha colonisers learned by trial and error and made some major mistakes along the way in developing the land. Pakeha settlement occurred in the midst of the Industrial Revolution which marked the beginning of a phase of rapid change throughout the world. The environmental issues that have emerged in New Zealand over the last 150 years have paralleled many of the global changes identified by the International Geosphere Biosphere Programme. All of the indicators show that we are in an era of accelerated change, including global climate change. Our unique challenge in adapting to both climate change and other changes is that, unlike long-established societies, we have had no time to stop and reflect. Our unique advantage is our capacity to innovate and adapt quickly.

Over the last two decades we have made a rapid transition from the last stages of a pioneering culture to a more structured and organised approach to our relationship with the environment. For farmers this transition has been experienced through the removal of Supplementary Minimum Prices in the 1980s, the impact of drought in eastern regions in the 1980s and 1990s, the increased and increasing regulatory environment, and the decline of rural communities. The face of rural life has changed along with an increased urban population that is increasingly less connected to farmers and farming. Rapid change and development, in both urban and rural areas, has led to increased pressure on resources and the potential for increased vulnerability to climatic extremes. Significant resources are allocated, both nation-

ally and regionally, to address the mistakes of our forebears and consequences of urban and rural land development. This includes funding for biosecurity, erosion control, flood protection, and protection and enhancement of indigenous biodiversity. Climate change will pose further challenges for all of these.

These are the consequences of rapid development by humans of the New Zealand landscape. The challenge is that we need to find positive pathways that both continue to address the mistakes of the past and prepare ourselves for the future, and soon. The good news is that there are a lot of positive things happening.

One of the most important positives is the knowledge and wisdom of our proactive and innovative farmers. We need to be working with this a lot more. Farmers manage nearly 40 percent of New Zealand's land surface. This includes the bulk of the land in many of our river catchments. Urban dwellers may be socially more removed from farmers than in the past but economically and ecologically are still strongly dependent on what farmers are doing. Increasing numbers of farmers are adapting and creating resilient farm systems. Some, such as the Branns (see farmer case study 2), have become very influential on their neighbours and wider community. Our economic wealth, urban and rural, depends in multiple ways on the ecological health of our environment. Farmers are increasingly aware of this and are acting. This is not to negate trends associated with farm intensification and pressures resulting from globalisation of markets. However, there is an increasing acknowledgement by farmers that economy and ecology go hand in hand and they are working to find the right balance. It is important to be aware that economy and ecology do belong together. The 'eco' in both



words is derived from the Greek Oikos which means 'house'. We can look back over human history and find many examples to support this common origin of meaning and interdependence.

As Kevin Loe (see farmer case study 9) says 'people and land are our capital'. This applies to the farm, to river catchments, to regions, to our nation. An important outcome from the adaptation project that has culminated in this publication was the recognition that the real adaptation issues are not related to technical or research needs or lack of information. The real issues that have emerged relate to people and how we interact with each other and our environment. This is consistent with 'research from social scientists and others who study environment-society interactions [which] clearly indicates that the dominant factors shaping the impacts of climate on society are societal' (see Pielke Jr., R.A. and Sarewitz, D., 2005. Bringing Society Back into the Climate Debate. *Population and Environment*, 26(3), p. 255-268).

This leads to a brief outline of some interactions that could be developed and actions that could be taken, building on what has been shared by farmers through this publication.

As individuals

We need to challenge ourselves and others to think about the future more. At the same time we need to also shift our thinking towards developing greater flexibility and celebrating our successes more. Whether you be a farmer, council employee, developer, politician, teacher:

Are you thinking about climate change, adaptation, developing resilience?

What are you doing?

What's your timeframe?

The Micro Adaptation chapter provides a valuable starting point for building farm-level resilience. Useful contacts are included for more information. The thinking contained here, rather than specifics, can be readily extended to lifestyle blocks and urban situations.

As a community

There is a need for communities and relevant agencies within catchment areas to be working together on adaptation.

Urban and rural communities are interdependent.

Everyone has a role and a responsibility in resolving local water issues.

We have a lot of knowledge and information.

It's what we do with it that matters.

Communication and education are of paramount importance.

The Meso Adaptation chapter provides a model for how catchment communities could be engaged in thinking about climate change and adaptation. An outline for facilitation of community workshops on adaptation is provided in the Appendix. Some additional graphics and a Powerpoint presentation are included on the enclosed CD. The focus is on encouraging participants to share a positive vision for the future and how it can be achieved. This can be used as a starting point for communities.

To support community-level responses some specific actions are recommended:

- 1) A coordinated national approach to adaptation aimed at supporting regional responses. There are three principal activities that could be supported:
 - a. Strengthen regional capacity to develop adaptation programmes which could include support for regional climate change coordinators.
 - b. Facilitate data and information flows. Barriers to data flows need to be removed as much as possible.
 - c. Work to remove perceived barriers between key agencies and communities. For example, in some situations there are quite strong barriers between the Department of Conservation (DoC) and farming communities. We need to look to successful interactions between DoC and farmers and support this more widely.
- 2) A coordinated regional approach to adaptation aimed at supporting community-level responses. There are a number of activities that could be developed and supported:
 - a. Draw together relevant knowledge and information and use it to develop a better understanding of climate change and likely impacts. This needs to be done on a whole-catchment basis for all water catchments in a region. It involves participation of regional councils, local authorities and all other relevant agencies and industry groups.
 - b. Work with existing Geographical Information System expertise in regional councils, as demonstrated through the climate maps in the Meso Adaptation chapter. Make relevant climate data available, with cost barriers removed. Use these data along with the extensive environmental databases and in-house



knowledge held by regional councils and others.

- c. Make information available through regional council web sites.
- 3) A well-funded and coordinated communication and education programme on adaptation. A fundamental component is valuing of the knowledge, wisdom and good ideas of our farmers. We need to be celebrating their successes and communicating these more widely.
- a. Educate the next generation. An excellent foundation has been established by Enviroschools (www.enviroschools.org.nz). A climate change and adaptation component to their resource kit would be a valuable starting point.
 - b. Support greater communication and education of the community on climate change and adaptation through regional councils.



Educate the next generation.

Our New Zealand environment and society are unique. Accordingly climate change will require uniquely New Zealand responses. As a people there is much that we share in common. Perhaps the most important is our overriding pride in and care for New Zealand's environment. Our ancestors made mistakes and had differences and we continue to do so. But we have much to celebrate. We need to focus on celebrating our successes to meet the challenges that will come with climate change.

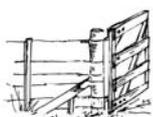
'An oak tree lives in a four-hundred-year time-frame. Human time-frames are always too short. So we get it wrong, and we don't really understand the natural processes half the time.'

'So what's your rule for the Forest?'

'Look for a balance. But know that nature will find a better one.'

• From 'The Forest', by Edward Rutherford





Appendix – a workshop outline

The following workshop outline is a compilation of the main sessions from workshops held with farmers and others between 2002 and 2004. These workshops provided information presented in the publication 'The view from the ground' (a copy is on the enclosed CD) and information that provided the foundation for this publication. The workshop components are presented sequentially from an introductory session on local climate influences and possible impacts of climate change to a session on community responses. Each of the main components takes from one and a half to two hours to complete. In combination with presentations, which could include input from local or national experts, and lunch breaks it would take a minimum of two days to complete all sessions. A Powerpoint presentation and some additional graphics are included on the enclosed CD. You can tailor this to your needs using information from this publication and other sources as appropriate.

A recommended timeframe is to begin at 9.30 am, with tea and coffee provided. Start the workshop no later than 10am. Aim to finish by 3.30pm at the latest. Afternoon sessions are generally harder and more tiring than morning sessions, particularly after a good lunch.

The intent of group work is to encourage everyone to participate and share their ideas and visions. This is best achieved with small groups. The ideal size for group work is four people, but you can go up to a maximum of six depending on numbers. With a smaller turnout you may need to work with two or three people to a group.

Resources for each session are listed below. Main resources to run a workshop are a suitable venue with tables and chairs, a screen, a laptop with projector for presentations, a white board, a board to hold a flip chart, white board pens, a flip chart, bulldog clips and/or blu-tack for group presentations, spare pens and paper, felts, boxes of large pastels, a copy of the 'Adapting to climate change in eastern New Zealand' Resource Kit.

Beginning

Provide tea and coffee on arrival. As people arrive ask them to locate themselves on a map and register their names and contact details.

Resources: A large laminated map of the catchment (Which you can obtain from your regional council. You may have to have it laminated yourself), dot labels for people to locate themselves on the map, pen and paper.



Workshop introduction

Welcome people, briefly introduce yourself and then ask others to do so.

Give a brief presentation on climate change and adaptation.

Resources: Use the Powerpoint presentation on the CD with this Resource Kit and modify it to suit your needs.

Present and future climate impacts

Present impacts

If your catchment covers a large area, group people according to location within the catchment as much as you can. Ask each group to draw a map of their area/locality. The map should include:

N-S orientation

The location of each participant

On the map, and a separate sheet of paper if necessary, ask them to record:

Main climatic features

Challenges and issues associated with climate



Resources: A1 sheets of paper, felt pens, pastels, pens and paper.

Impacts of climate change

Present a future climate scenario. Use the information provided in the Macro Change chapter. For eastern New Zealand, from Bay of Plenty to Canterbury, it is reasonable to use the following 2050 scenario:

By 2050 conditions could be up to 1°C warmer on average in the east of New Zealand and possibly of the order of 10 percent drier on average. With a possible increased frequency of westerlies there could be a combination of more rainfall in the axial ranges of the North Island and in the Southern Alps, with drier average conditions further east. Drier average conditions and the possibility of more intense rainfall events could lead to increased drought and flood risk.

Move people back to groups. Ask them to identify positive and negative effects that might arise in their area as a result of this change in climate.

Have a feedback session on present and future impacts. Ask each group to present their map and the impacts they have identified.

to another group's picture. Ask them to look at what the other group has done and adapt themselves to their resilience picture – what can they add to what others have done?

Have a feedback session on adapting to climate change at the micro (farm) level. Ask each group to present their resilience picture and then have a closing discussion.

The meso adaptation picture – developing catchment resilience

Socialising/group organising activity. This is a useful exercise for people who haven't met before. It also moves people out of their comfort zone a bit and requires them to work in a different way.

Give each participant a blank sheet of art paper (A3 size) and ask them to draw a picture with five main elements: sun, water, trees, people, infrastructure. Give them 10-15 minutes to complete their picture and then lay all of the pictures on the floor. Group the pictures as well as you can according to dominant features. For example, group pictures with a large sun, or lots of water. Then create new groups, for example with a sun, water, tree, infrastructure picture in each. Ask people to move to the groups where



The micro adaptation picture – developing farm resilience

Work in small groups with the resources provided. Record ideas on the cards or paper provided and use this information to change the farm picture. Use the topic headings from the section 'Key ingredients to developing a resilient farm system' in the Micro Adaptation chapter to stimulate thinking and the flow of ideas.

Resources: A1 farm picture, a set of cards (use A4 card cut into four quarters or buy similar sized card), felt pens, pastels, pens.

Once they've got well on their way ask each group to leave what they've done and move

their pictures are. This exercise is quite subjective but it is a creative way of organising people into groups.

Ask people to then work in their groups to create a catchment picture. Allow 20-30 minutes then spend some time with everyone walking around to view and briefly discuss each group's picture.

Resources: Blank A3 and A1 sheets of paper, felts and pastels.



Developing the catchment resilience picture

Work with the same groups. Ask them to record their resilience picture on the provided A1 catchment map. They may want to record ideas on paper before translating them onto the map. You need to make clear what you want from the groups. There are three main goals:

A positive social interaction in the group. Allow for differences of opinion. There is room for everyone.

Development of a realistic, future, resilience picture that clearly addresses future risks associated with climate change.

Effective communication of this and how it can be achieved.

Have a feedback session on adapting to climate change at the meso (catchment) level. Ask each group to present their picture. Have a final session where you record on two separate flip chart sheets:

Good ideas shared by all for a resilient catchment.

What needs to be done to make it happen.

Resources: A1 copies of catchment maps (obtained from your regional council), felts, pastels, pens and paper.

Give a final presentation, summarising some outcomes from the case studies in the Meso Adaptation chapter.

Recommended session combinations for workshops

A two-day workshop:

Day one – Arrival and locate on maps, Introduction, Present and future climate impacts, The micro adaptation picture.

Day two – The meso adaptation picture, with the socialising/group organising activity included.

A one-day workshop:

Option one – Facilitate sessions on the micro adaptation picture (morning) and the meso adaptation picture (late morning to afternoon). Give a more comprehensive introductory presentation, with a summary of local climate features and impacts. Invite one or two additional speakers to give 20 minute presentations.

Option two – Focus on the meso adaptation picture only. Extend the introductory presentation to also include a brief summary of the micro adaptation picture. Focus on socialising activities in the morning and developing, presenting and discussing the meso adaptation picture in the afternoon.



