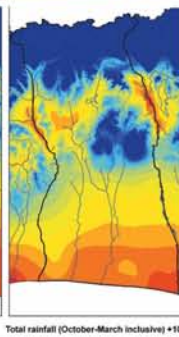
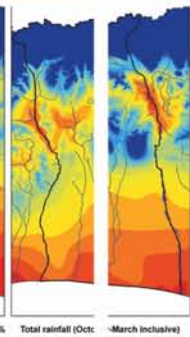
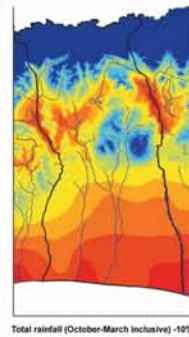


# The Meso Adaptation Picture

- Developing Regional Resilience



## **Introduction**

The focus of the previous chapter is on actions that individual farmers have taken, and are taking, to develop the resilience of their farms. It is a very positive picture of adaptive capacity. An important question, and challenge, is how their good work can be supported, spread and communicated more widely. Farm-level adaptation is, for the most part, in the hands of the farmer. It is action based. Adaptation becomes a much greater challenge beyond the farm gate. Regional resilience requires effective social interactions leading to on the ground actions. Often this combination of social interaction and action doesn't come about until a crisis arrives. For example, barriers between farmers and regional council staff were removed as people worked together in the aftermath the Rangitaiki Plains flooding in 2004 (see farmer case study 1). What are the issues at the regional scale, and how do we address them? Do we have the capacity to work together on proactive change, rather than wait for a future that will bring more climate-related crises? These questions were addressed through workshops with farmers in October/November 2003 and with more focused workshops involving farmers, regional and district council staff and others held in November 2004.

The first section of this chapter provides a summary of key ingredients for developing a resilient region as shared by farmers. A key message is the need for a shift in approach towards greater support for, and empowerment of, the micro (farm) picture as the basis for developing a unified and resilient meso (regional, community interaction) picture. With greater education, understanding and working together there would be a reduced need for regulation over time. The role of the individual is vital to the resilience of the community as a whole. However, it is vital that both the individual and community are sharing and working towards a common vision.

The second section presents three brief case studies, with a focus on issues and adaptation needs in specific catchment areas. In each case a brief background to the case study area is provided, followed by a summary of possible impacts and opportunities arising from climate change. In workshops people were challenged to work in teams to develop a future vision of resilience based on their knowledge of local issues and information shared on climate change. These visions, which in some cases contain different points of view, form the final part of each case study.

## **Key ingredients for developing a resilient region**

Changes in the economic and regulatory environment have been very strong drivers of change in rural areas. There have been social impacts in terms of school closures, loss of communities, bigger farms, higher rates, higher land costs, higher regulatory costs. There is also environmental pressure from expansion of urban areas, increased subdivision for lifestyle blocks and land use change. These changes are placing increasing demands on resources such as water and infrastructure. Climate change will provide further challenges, particularly in situations where resources have already become stretched.

Some key things to consider for the development of regional resilience are:

- Crisis provides a learning opportunity.
- Innovation requires a change of thinking.
- Everyone has a point of view – we need to be listening to each other more.

Economics has been a strong driver of many changes. Making a living is a necessity but long-term resilience requires a more integrated approach involving communities and care for the environment. There needs to be more support for bottom-up approaches, focused on empowerment of individuals and communities.

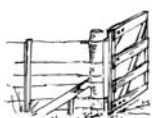
### **Social**

- Social changes need to be addressed through community interaction. Involving people and working together develops mutual respect. Anything is possible with goodwill and respect for other points of view.
- More eye-to-eye talking is needed. Communication and honest, open, consultation.
- We need to look at doing things differently, with sharing of information and consultation, delegating and giving ownership and responsibility.

### **Environment**

- There needs to be forward planning that takes into account 'what-if' scenarios of climate change. Decisions need to be made on what proactive adaptations are needed. What are the priorities for protection and enhancement of the environment?
- Interaction and innovation of science and planning are needed.

The big issues that need to be addressed are



urban/rural development and water. Also of importance are biosecurity, biodiversity, infrastructure, energy and waste management. There is an overriding need for education, particularly of the next generation, and more effective communication.

## Urban/rural development

**'There is a need for better understanding of rural issues by an urban population that is more removed from country life than in the past.'**

**'An integrated land management approach is needed.'**



## Issues

### Rural subdivision

- Uncontrolled urban sprawl on to farmland creates tensions and increasing pressure on resources (particularly water) and rates. There needs to be more control of urban sprawl.
- Rural subdivision appears to be encouraged by current planning. Better land-use planning is needed.
- There are apparent tensions between the roles of district and regional councils.
- Protection of the coastal environment is needed.

Lack of understanding and perceptions

- There is a need for a more balanced view of pollution by agriculture vs pollution by the urban population.
- Social changes such as closure of rural schools.
- Lack of communication is a problem, with an increasing influence of the urban population (which is increasingly removed from rural life) on rural activities.

## Solutions

### Planning

- An integrated land management approach is needed. Focus on higher density urban areas and control their spread, but at the same time encourage a more integrated approach in rural areas with controls on subdivision. Protect highly productive land,

support agroforestry or native plantings on poor land, develop forest park concepts, focus on creation of diversification and opportunities.

- Get everyone thinking about the big picture and the future, 'smart growth' plans are needed with everyone involved.
- Depopulation of some rural areas and repopulation of others needs to be managed. Encourage rural drift (supported by good planning), rather than urban sprawl.
- Economic and environmental goals balanced for mutual benefit (eg, economics presently drives subdivision, need to balance this against long-term environmental and social goals).
- More understanding and smarter planning from councils, with less regulation – sensible regulation with users as drivers.
- Well-planned diversification to enhance resilience, by way of ecotourism, agroforestry, and many other options.
- A flexible approach is needed.

### Education and communication

- Work to level the playing field with education and understanding (what is the ecological footprint of urban people vs rural?).
- Sharing and celebrating successes together – community interaction.
- Promotion of the rural economy and environment and valuing farmers and the rural environment for the services they provide.
- Education and communication involve a two-way process.
- Educate urbanites through real TV on farms, model farms visited by children (on-farm living), influencing the gate to plate process, events for experiencing and eating farm food on farm, the role of the media is very important, educate urbanites about their impact and dependence on the rural landscape.

## Water

**'Regional water security and quality issues need to be addressed for the future.'**



## Issues

- Water harvesting, storage, efficiency of use, quality, and allocation.
- Present and future water rights need to be clearly defined for all sources of water including surface water, groundwater, rain-water and runoff.
- Drought, flood and erosion risk.
- Design and management of drainage systems.
- Better warning systems.
- How to enhance opportunities for the micro (farm or household) to increase storage.
- Dissemination of information.

## Solutions

Develop the big picture together

- A whole-catchment approach is needed for the management of water. Develop a vision that incorporates social, economic, environmental and cultural aspects.
- The community working in together and sharing costs and benefits, such as grape growers paying farmers to improve the capacity of their land (improve soil porosity) to absorb rainfall and replenish aquifers.
- Consider multiple uses and benefits including power generation, irrigation, urban usage, recreational and aesthetic values.
- Develop a combination of community schemes and micro harvesting systems (dams, protected waterways, improved soil absorption of water) across the region that help buffer flooding and provide storage for times of shortage.
- Develop clear rules for efficient use and reticulation.
- Make decisions and act on them. Maintain flexibility.

## Support for farmer initiatives

- Develop more flexible farming systems and sharefarming, for example dryland and irrigated systems working together.
- Water and soil conservation by retirement of erosion prone land and riparian areas and planting for catchment protection.
- Enhance opportunities for increased on-farm storage, efficient use and reticulation.
- Consider mini-desalination plants for coastal areas.
- Clear rules and easier consent pathways; encourage self-management.
- Support from central Government for

regional water security.

- Involve the community and work to overcome complacency and apathy through stream-care groups, education on water use through schools, effective communication.
- Who pays? 'You can't eat 'feel good'.

## Shared responsibility

- Cities will have to play their part through storing water (roof-water collection) and more efficient use of water.

## Biosecurity

'Increased biosecurity threats will have local, regional and national costs.'



## Issues

- Spread of existing or new pests, weeds and diseases.
- Reduced productivity which will have local, regional and national costs.
- Weeds in retired land areas (public and private), such as blackberry.

## Solutions

- No patch protection between agencies. There is a need for partnerships between communities and statutory organisations (Regional Councils, Department of Conservation, Federated Farmers all working together).
- More funding for border control.
- Farmers' expressed concerns need to be validated. If there is a wider sense of community cooperation then farmers will be encouraged more to look after their own weeds.
- Sharing of knowledge and information between regions. For example, Bay of Plenty may need to look to Northland for an indication of some future biosecurity threats and how to deal with them.
- Communication and education.



## Biodiversity

'Well-planned biodiversity protection and enhancement will contribute to the development of resilience.'



### Issues

- Protection of forest remnants, wildlife corridors, riparian areas.
- Retirement and planting of unproductive, erosion-prone land.
- Greater recognition of the benefits of non-indigenous biodiversity (consistent with the view that resilience can be supported and enhanced through well-planned diversity).

### Solutions

- Environmental enhancement funds.
- Raise public awareness, educate, celebrate.
- Highlight the economic benefits of biodiversity.
- Cooperation between the community, all local authorities, Department of Conservation.

## Infrastructure

Infrastructure needs and capacity will increasingly need to be considered with the combined issues of urban spread/rural subdivision, pressures of economic development and potential for more climatic extremes. This will need smart forward planning for flood protection, roading, power, water reticulation, coastal erosion protection, transportation.

## Energy

'Changes in rainfall patterns could impact on hydro systems that are already under stress from increasing demand. Power costs are increasing.'



### Solutions

- Focus on renewable energy/increased efficiency.

- Develop regional energy plans.
- Support on-farm/local power generation through wind farms, solar power, micro hydro systems.

## Waste management

'A change of thinking is needed with waste management.'

- There needs to be more recycling of water and rubbish. Water needs to be used more efficiently and innovative treatment systems are needed. For example, biological waste from cities could be used on farm forestry, biological treatment systems exist that convert sewerage to water suitable for irrigation. Disposal of sewage in coastal or other environmentally sensitive areas should be prohibited.

## Education for sustainability

'The overriding need is for education, particularly of the next generation, and effective communication.'



### Issues

- The message is not being taken up by the masses. The information is there but it isn't being absorbed.
- How do we change perceptions to have urbanites recognising the importance of agriculture?
- Economic pressures – the need for all, rural and urban, to make a living.

### Solutions

Information sharing on sustainable land management

- Use influential local farmers to discuss the wider issues with other farmers.
- Invitations to visit farms and view initiatives and actions (see farmer case study 2).
- Engage urban people on monitor farms showing environmentally sustainable farming practices through field days and workshops.
- Small block field days such as that run by Hawke's Bay Regional Council.
- Balance farm awards and environmental awards.



- The ECAN 'Living Streams' programme.
- Demonstration homes showing water conservation, energy efficiency, and eco-building materials.
- Find catalysts to bring people together and create partnerships.

#### Environmental education

- Target school children and tertiary education with environmental education.
- Communicate the need for a balanced approach to development.
- Use all forms of media, including pamphlets, publications, internet services.
- Employ farm/urban aware and environmentally educated people as education officers.
- Make the process and information easy to understand and accessible (visual rather than written).

### Some good examples

There are some excellent examples of community or regional government initiatives that are consistent with the development of regional resilience. None of these are presently linked to a coordinated long-term adaptation programme. Some examples of successful initiatives are described briefly below. A common ingredient in their success is the sense of ownership by people on the ground.

#### The Coast Care BOP Programme

The vision of the Coast Care BOP programme is 'working with communities to protect and enhance the natural coastal environment'. This programme involves active partnership between coastal communities and local management agencies. The latter includes Environment Bay of Plenty, all four coastal District Councils in the region and the Department of Conservation. Their partnership model has been hugely successful in reversing the consequences of 100 years of dune abuse.

Information on the Coast Care BOP Programme can be found at [www.envbop.govt.nz](http://www.envbop.govt.nz) (look under Coast) or phone 0800 368 267.

#### The Hawke's Bay Regional Council Land Management Group

The focus of the Land Management Group is working with the community to assist the development of more sustainable land use practices. There is a very strong commitment to education through working with individual farmers and farmer groups. To encourage more sustainable practices they

also administer the Regional Council's Regional Landcare Scheme. The scheme provides financial assistance to Hawke's Bay landholders to control soil erosion and land degradation and to develop more sustainable land-use systems.

Information on the Land Management Group and Landcare Scheme can be found at [www.hbrc.govt.nz](http://www.hbrc.govt.nz) (look under Land) or phone 0800-108-838.

#### Living Streams

Living Streams is an Environment Canterbury initiative with a focus on improving and maintaining surface water quality throughout Canterbury. The approach is to build working partnerships with local communities, landowners and organisations. This is an extension of Environment Canterbury's community-based resource care approach and is supported by an Environmental Enhancement Fund.

Information on Living Streams can be found at [www.ecan.govt.nz/Our+Environment/Land](http://www.ecan.govt.nz/Our+Environment/Land) or phone 800 324 636.

#### Enviroschools

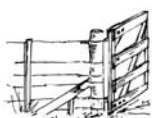
The vision of Enviroschools is 'a generation of innovative and motivated young people, who instinctively think and act sustainably'. They are working towards this vision through a whole school approach to environmental education. Community partnerships are at the heart of the Enviroschools approach, with many organisations throughout New Zealand supporting schools to participate.

Information on Enviroschools can be found at [www.enviroschools.org.nz](http://www.enviroschools.org.nz) or phone 07 839 5605.

#### Integrated Catchment Management Project

This is a Ministry for the Environment Sustainable Management Fund project aimed at sharing community level best practice in Integrated Catchment Management (ICM) nationally. The purpose of the project is to establish a network of Integrated Catchment Management practitioners and participants involved at the community level, and to provide opportunities for these people to share experiences, tools and approaches throughout New Zealand.

Information on the Integrated Catchment Management Project can be found at [www.landcare.org.nz](http://www.landcare.org.nz) or phone 0508 526 322.



The meso adaptation picture - everyone needs to be working together for the benefit of all.



## Regional case studies

The basis for the following three case studies was developed through three workshops held in November/December 2004. These were focused on real catchments and involved a mix of people with participation from farmers, regional and district council staff and others. The approach was to challenge people outside their normal comfort zone and facilitate creative responses and thinking on adaptation.

Participants worked in teams with a focus on:

- 1) Developing a positive social interaction in their group.
- 2) Developing a realistic future resilience picture for their case study area that clearly addresses future risks associated with climate change.
- 3) Effectively communicating this resilience picture and how it can be achieved.

Information shared from these workshops is preceded by some background information on the case study areas and a summary of possible impacts of climate change in each.

Views shared on adaptation are unique depending on both the environmental, social and economic mix of the area and the scale. However, there are common themes that reinforce the general information shared in the previous section.

The studies cover a sample of eastern New Zealand environments and farming types and are presented in a north-south geographic sequence.

### Case study 1

Rerewhakaaitu, Bay of Plenty  
(left).

### Case study 2

Ahuriri Catchment,  
Hawke's Bay (below).

### Case study 3

Ashburton  
District,  
Canterbury  
(right).

