

Tapping into a tradition of adaptation in a warming world

Climate has long been the wellspring of our primary industries, supporting mostly reliable levels of crop, animal and tree production for well over a century. New Zealand's surrounding ocean meanwhile provides a dependable "water bank".

Fickle weather, however, has always tended to keep primary producers on their toes: seasonal drought and extreme weather events remain regular occurrences. Out on the land, a tradition of adapting to change has emerged.

But the global climate we know is changing, becoming history before our eyes. Greenhouse gas emissions caused by human activities are already shaking up our weather at a speed and scale scientists cannot quite pin down.

What the experts do know is that planning for the future means planning – adapting as ever, in the case of the land-based sectors – for a different, more volatile climate.

As a nation, New Zealand has many adaptation options at its fingertips. These range from practical, familiar ways of adjusting the way production systems respond through to more transformational changes through innovation and the emergence of bold new industries.

In 2009, SLMACC supported a comprehensive technical evaluation of climate change, with a major focus on adaptation options for the land-based sectors.

The motivation was twofold. First was the expectation that, in a warming world, New Zealand will enter new territory in the coming 30 years, that is, a warmer and more variable climate than experienced now or in the immediate past.

Second, climate variability over the past decade has challenged current levels of resilience. This includes intense regional droughts during the main growing seasons, damaging floods and out of season winter growth in many regions.

Carried out by a range of experts from the National

Institute of Water and Atmospheric Research, DairyNZ, Plant and Food Research, AgResearch, Scion and Maanaki Whenua Landcare Research, this wide-ranging study pulled together existing information across land-based sectors. It also deepened existing knowledge about climate change adaptation.

Published in 2012, the resulting report, *Impacts of Climate Change on Land-based Sectors and Adaptation Options*, provided a reference document for land management professionals, describing which factors should be considered when implementing adaptation options in their sectors.

Importantly, the report examined ways to build resilience and how to work to reduce vulnerabilities to both current and future climate variability.

Across nine comprehensive chapters, the report set out practical steps for primary producers to investigate as ways to "future proof" their respective sectors.

The chapter on hill country sheep and beef, for example, addressed changes such as altering the timing of production and lamb growth rates. The horticulture sector chapter discussed transformational shifts such as expanding irrigation infrastructure and shifting locations.

Overall, the report explored various practical ways in which sectors could reduce their exposure to climate change as well as capture opportunities that might arise.

As climate change is necessarily "future focused", uncertainty featured prominently in the document. Robust approaches to decision making were therefore needed.

Despite these challenges, this report showed that a variety of practical actions can be undertaken, particularly with uncertainty in future climate change projections.

Land managers make decisions today in the absence of perfect information to manage current climate variability.

Impacts of Climate Change on Land-based Sectors and Adaptation Options confirmed New Zealand has a good knowledge base with which to shape adaptive capacity in the land-based sectors. It not only brought this knowledge together but recorded important progress toward building upon it, to enhance farmer adaptive capacity in the future.

Following its release in 2012, the document has gone on to have a significant impact on the land-based sectors in their response to tackling climate change, playing an instrumental role in building further capability and capacity.