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Governing Sustainable Agriculture: A case study of the farming of highly erodible hill country in the Manawatu-Whanganui region of New Zealand

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Abstract

The sustainability of agriculture and what constitutes sustainable agriculture is the focus of ongoing challenge and debate in New Zealand. In particular, the sustainability of current farming practices are targeted for criticism and demands made for fundamental changes in farming. This research adds to the debate by providing insights into how an aspect of farming that has environmental implications is governed. The farming of highly erodible hill country (HEHC) in the Manawatu-Whanganui region is the single qualitative case studied and how the farming of HEHC is governed and the reasons why it is governed in this way are the research questions answered. Foucault's governmentality theory is the basis of the theoretical framework which is expanded to include the concept of farming knowledge-culture to recognise and capture farming as a form of government. Results are structured into a national, regional and farm level phase and are based on data drawn from semi structured interviews and documents.

This research provides an example of the difficulties farmers face, in balancing the diverse and conflicting demands placed on them to farm sustainably. This research illustrates the complex contradictory and inconsistent demands brought to bear on farmers' management of HEHC through the governing by central government and the regional council of HEHC specifically, but of farming generally, also. Farmers are encouraged to be, both, competitively-productive and financially profitable, and socially responsible in managing the impact of farming on the environment. Accepted farming practices maintain and enhance, as well as constrain and compromise, the environmental sustainability of natural resources.

The farming of HEHC in the Manawatu-Whanganui region is governed by an interwoven multi-scale of governing by central government, the regional council and farming. There is no coherent or deliberate governing of the farming of HEHC or sustainable agriculture. However, aspects of sustainable agriculture are governed across central government programmes but the sustainability outcomes are incidental to broader economic and trade outcomes sought by central government. The main agenda for agriculture advanced by central government is one of competitive productivism through the facilitation of market-led governing.

The significant role that regional level government in New Zealand can, and do have in governing farmers use and impact on natural resources is revealed in this research. The regional council are advancing competitive productivism in farming moderated by sustainability objectives.

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Over the time it has taken to complete this PhD, life has instilled perspective. People significant in my life died, relationships formed, strengthened and changed, and as a consequence of a difficult employment review colleagues no longer work at the University. I am not a youthful PhD candidate. At the point I began this doctoral study a senior manager and academic in the College of Sciences told me I was too old to do a PhD. I now acknowledge he is probably right.

Finally, I acknowledge Sir Winston Churchill, whose words have bolstered me:

Never give in, never, never, never...

If you are going through hell, keep going.

Come Meg.... walk.

¹ The Institute of Natural Resources became the Institute of Agriculture and Environment on 1 January 2013.

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Abbreviations

AES	Agri-environmental scheme
AGS	Afforestation Grant Scheme
ARGOS	Agriculture Research Group on Sustainability
BSE	Bovine spongiform encephalopathy
CAP	Common Agricultural Policy
CE	Chief Executive
DPMC	Department of Prime Minister and Cabinet
ECFP	East Coast Forestry Programme
EMA	Environmental management area
EMO	Environmental Management Officer
ETS	Emissions Trading Scheme
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GNS	Institute of Geological & Nuclear Sciences Limited
Ha	hectares
HEHC	Highly erodible hill country
HEL	Highly Erodible Land
LEP	Land Environment Plan
LUC	Land Use Capability
MAF	Ministry of Agriculture and Forestry
MfE	Ministry for the Environment
MPI	Ministry Primary Industries
MWRC	Manawatu Whanganui Regional Council
NIWA	National Institute of Water and Atmospheric Research
NRAC	National Research Advisory Council
NZLRI	New Zealand Land Resource Inventory
NWASCA	National Water and Soil Conservation Authority
PCE	Parliamentary Commissioner for the Environment
PFSI	Permanent Forestry Sinks Initiative
PM	Prime Minister
RMA	Resource Management Act
SCRC Act	Soil Conservation and River Control Act
SCRCC	Soil Conservation and River Control Council
SFF	Sustainable Farming Fund
SLM	Sustainable land management
SLMCC	Sustainable Land Management and Climate Change
SLM-HCE	Sustainable Land Management – Hill Country Erosion
SLUI	Sustainable Land Use Initiative
SLURI	Sustainable Land Use Research Initiative
UAC	Uniform Annual Charge

CHAPTER ONE

The Challenge of Sustainable Agriculture

The Research Context

The sustainability of agriculture and what constitutes sustainable agriculture is the focus of ongoing challenge and debate in New Zealand. This is a debate that is not unique to New Zealand. Sustainable agriculture is broadly defined as being ‘environmentally sound, productive, economically viable and socially desirable agriculture’ (Schaller, 1993, p. 89). However, it is in reality a much-disputed concept because all definitions are context specific (Gatzweiler, Sipilainen, Backman, & Zellei, 2001) and value laden (MacMillan cited in Fish, Seymour, & Watkins, 2006). Sustainable agriculture is a social construct and its meaning is particular to the context to which it is applied as it implicitly reflects the socio-cultural, political, economic and ecological conditions of that context (Gatzweiler, et al., 2001).

The outcomes of the on-going sustainable agriculture debate in New Zealand have important implications for farmers, the agricultural sector, and the country as a whole because agriculture remains fundamental to the economic, social and environmental character of New Zealand. The economic well-being of New Zealand is, and will remain in the foreseeable future, heavily reliant on farming and the agricultural sector. Agriculture is New Zealand’s largest export earner. In 2010 agriculture (including forestry) contributed 48% of the value of manufacturing exports, which make up over 96% of the country’s total exports by value (Statistics New Zealand, 2011a, 2011b).

New Zealand’s social character is also shaped both by its farming history and by its contemporary farming culture, although this influence is declining. Urban population growth has dramatically shifted the balance between urban and rural people in New Zealand. Between 1881 and 2006 the urban population increased by over 3.26 million, whereas the rural population stayed reasonably static increasing over the same period by only 273 500 (Mulet-Marquis & Fairweather, 2008, p. 6). In 2008, 13.8% of the population were reported as living in a rural area, although not all were involved in farming (Statistics New Zealand, 2009). Despite this imbalance, in a survey completed in 2008 most of the non-rural respondents acknowledged the importance of the primary sector to New Zealand (UMR Research, 2008).

Farming defines New Zealand's physical landscape and natural environment. Although the total area of pasture land in New Zealand has been declining since 1972, in 2004 over 37% of New Zealand's total land area was used for pastoral farming (Ministry for the Environment, 2007a, p. 231). The population of New Zealand at around 4.4 million in 2010 is still outnumbered by the national sheep flock of 32.6 million sheep and the national dairy herd at 5.9 million dairy livestock (Statistics New Zealand, 2011a).

In New Zealand, as in many parts of the world, agriculture contributes directly and indirectly to the degradation of the environment (Parliamentary Commissioner for the Environment, 2004; Rudd, 2000; Young, 2002). Serious concerns about the impact of New Zealand agriculture on the environment and the sustainability of farming in the longer term were highlighted in a landmark report published in 2004 by the Parliamentary Commissioner for the Environment (Parliamentary Commissioner for the Environment, 2004). The report, *Growing for Good* (2004), presented evidence of intensive agriculture's mounting impact on the environment. Increasing use per hectare of fertiliser and the expansion of irrigation by farmers were highlighted as contributing to a decline in both water quality and ground water reserves. Agriculture's impact on the atmosphere was significant also, with farming contributing over half the country's greenhouse gas emissions, including an estimated 90% of the country's total methane emissions and more than 90% of nitrous oxide emissions.

Growing disquiet at the environmental impact of intensive farming has led to the increasing presence of entities with primarily environmental agendas in the sustainable agriculture debate. Fish & Game's 'Dirty Dairying' campaign is now well recognised as raising public awareness of dairying's impact on water quality (Sharpe, 2012; TVNZ, 2001). The Environmental Defence Society an environmental lobby group was a catalyst for and are a key player in the Land and Water Forum (Ministry for the Environment, 2012a). The Forum is a multi-stakeholder group that advises the Minister for the Environment and the Minister of Agriculture on issues particularly relating to water. Regional councils, and to a lesser extent central government, are also developing formal rules and restrictions for farming in an attempt to reduce the impact of on-farm practices on the environment.

The demands being made of farmers in the name of sustainable agriculture are diverse and often seemingly contradictory. International and domestic consumers of products grown on New Zealand farms want food they can trust is safe to eat and free of contaminants, and is produced on farms where animals and humans are treated ethically and where farming practices do not impact adversely on the environment. Farmers also are being challenged to improve the profitability and productivity of their production systems. A key outcome sought by the New Zealand Dairy Industry Strategy 2009 (DairyNZ, 2009) is an increase in per hectare farm profit

through increased productivity. Likewise, the New Zealand Red Meat Sector Strategy commissioned by Beef + Lamb New Zealand and the Meat Industry Association seeks greater innovation on-farm that will contribute to ‘the long term profitability of all participants in the sector and enhance the investment in and sustainability of the sector’ (Deloitte, 2011, p. 12). Both strategies are publicly supported by the New Zealand National-led Government (Carter, 2011; Key, 2009).

New Zealand farming is also being increasingly scrutinised and challenged by researchers beyond those traditionally associated with agricultural-related research. Social scientists argue that the ‘uncontested hegemony’ of pastoral farming in New Zealand has declined (Campbell, Burton, Cooper, Henry, Le Heron, Le Heron, Lewis, Pawson, Perkins, & Roche, 2009, p. 94). These scholars demand that:

agricultural productivity [be] removed from the centre of discussions of how New Zealand can make a living from biological activity... [and that there is a need] to answer the looming question of how New Zealand can and should make a living out of new biological economies² framed by relationships and priorities which place less emphasis on productivity and more on the environmental and social impacts of production (Campbell, et al., 2009, p. 95).

Further, the scholars argue that this ‘looming question’ will not be answered by a knowledge system in which agricultural science dominates and ‘ecology and social science is granted consequential but subordinate voices’ (Campbell, et al., 2009, p. 95).

The legitimacy of the clean green image, used extensively to market New Zealand farmed products internationally, and the sustainability of farming sectors in New Zealand are increasingly contested by ecologists (e.g. Joy, 2011). At the same time, agricultural science is funded by central government and agricultural industries to develop technologies that will mitigate the impact of agriculture on green house gas emissions while at least maintaining on-farm productivity (Pastoral Greenhouse Gas Research Consortium, 2007). Likewise, innovations are being developed to allow the environmentally responsible intensification of farming (e.g. Christensen, Hanly, Hedley, & Horne, 2010; Dairy Exporter, 2009).

Farmer organisations and individual farmers also contribute to the sustainable agriculture debate. In 2006, at the beginning of this doctoral research, the president of Federated Farmers New Zealand³ made provocative public speeches that attempted to debunk reports about the

² The term biological economies, as used by these scholars, is explained by them as: ‘the unique constellation of land- and water-based resources, social values and ecological change within production landscapes [that] the development of New Zealand as a people, a blend of cultures, a nation and an economy owes much to’ (Campbell, et al., 2009, p. 91).

³ Federated Farmers of New Zealand (Inc.) is the national farmer advocacy organisation funded through voluntary membership (Federated Farmers of New Zealand (Inc), 2008, p. 29).

contribution of agriculture to environmental degradation. In one speech he publicly criticised environmentalists:

I say shame on the people who elevate environmentalism to a religious status, shame on you for your arrogance, shame on all of us for allowing the environmentalists' war against the human race to begin, and take hold (Pedersen, 2006, n.p.).

The same farmer organisation in its general election manifesto to the incoming government prior to the general elections in 2008, demanded that research, science and technology investment be ring fenced 'to prevent its access by social scientists and related practitioners' (Federated Farmers of New Zealand (Inc), 2008, p. 29). The call by some social scientists for the increasing need for social science and ecology rather than agricultural science referenced earlier (Campbell, et al., 2009) was in part a response to this demand by Federated Farmers.

The challenges and claims being directed at farmers have resulted for some in distress and feelings of alienation. In a recent situation in which dairy farmers are being blamed for contributing to the near collapse⁴ of the Waituna Lagoon⁵ in Southland, media reports indicated that 'farmers in the catchment were feeling victimised, singled out and under attack' (Devlin, 2011, n.p.). A farming spokesperson did not refute that there is a problem, but identified as an issue the way farmers had been engaged by some parties concerned about the lagoon:

we are working people...when these suits [scientists and environmental staff] pull us into a room we feel out of our depth and say nothing, but they take this as a sign we agree (Devlin, 2011, n.p.).

The unresolved tensions surrounding farmers' impact on the environment was a concern central to the instigation of this doctoral research.

Farmers' farming practices and their impact on the environment are an emphasis of the sustainable agriculture debate in New Zealand, as highlighted above. What is a significant concern in the debate is when there is a failure to recognise that farmers do not farm in isolation. Farm management is an outcome of not only the decisions of individual farmers but a reflection also of the social, economic and environmental context within which they farm and live.

⁴ A collapse in a lake refers to the point when the macrophyte population in a shallow lake declines and there is a resultant change from a clear water state to a de-vegetated, turbid water state (Hamill, 2011).

⁵ The Waituna Lagoon is recognised as a wetland of international significance under the RAMSAR Convention.

Research Aim and Research Question

The aim of this doctoral research is to add constructively to the sustainable agriculture debate in New Zealand by providing insights into the drivers that are shaping the management by farmers of an aspect of farming that has environmental implications.

Concepts from the government and governing literature emerged as being particularly useful in capturing, structuring and enabling the articulation of the complex mix of direct and indirect, formal and informal pressures and rules shaping the on-farm management of New Zealand farmers. These concepts therefore also define the research question. The New Zealand agricultural sector is one of the least regulated in the world, with the lowest total level of support to agriculture and its primary producers in all the OECD countries (OECD, 2007). The economic reforms implemented by the then Labour Government in the mid to late 1980s established New Zealand as an international example of neoliberalism (Kelsey, 1996). After the reforms the governing of agriculture by central government changed (Le Heron & Roche, 1999), to a form of governing referred to in the governance literature as a shift from government to governance (Rhodes, 1996; Stoker, 1998). This change in governing is recognised in the governing of agriculture in New Zealand (Le Heron & Roche, 1999) and Australia (Higgins & Lawrence, 2005a) and is the result of actors and institutions that include but also go beyond the state.

Governance theory provides a theoretical framework that argues, as in this research, that governing is the outcome of structures and processes that include but are not limited in the nation state to central government (Rhodes, 1996). Governing, as defined by Kooiman (2003, p. 4), is taken to be the ‘totality of interactions in which public and private actors participate’. The structures of governance also are not imposed but rather emerge as a ‘result of the interaction of a multiplicity of governing’ (Kooiman & Van Vliet 1993, cited in Stoker, 1998, p. 17).

In the words of Judge, Stoker and Wolman (1995 cited in Stoker, 1998, p. 18) the value of the governing and governance concepts and ideas, is that they

provide a language and frame of reference through which reality can be examined and lead theorists to ask questions that might not otherwise occur. The result, if successful, is new and fresh insights that other frameworks or perspectives might not have yielded.

This thesis examines governance in the context of hill country farming and the issue of accelerated soil erosion on highly erodible hill country (HEHC) was chosen. As is explained in the next section, soil erosion is recognised as threatening the sustainability of hill country farms and in the Manawatu-Wanganui region, in particular, has wider environmental implications.

Framed by the concept of governance the question that this research explores is:

How is the farming of highly erodible hill country in the Manawatu-Whanganui region governed and what are the reasons for this governing?

Accelerated hill country soil erosion

Soil erosion is a recognised issue of sustainability internationally, nationally and sub-nationally, with hill country erosion being of particular concern in New Zealand and in the Manawatu-Whanganui region. Soil degradation, including soil erosion, is identified by the Food and Agriculture Organization of the United Nations (FAO) as an issue for sustainable development and sustainable land management is promoted as the appropriate way forward to ensure land resources are managed sustainably (FAO Land and Water Development Division, 1995). A definition for sustainable land management (SLM) was published by the FAO in 1993 as a basis for developing an international framework for evaluating SLM. The definition is as follows:

Sustainable land management combines technologies, policies and activities aimed at integrating socio-economic principles with environmental concerns so as to simultaneously:

- maintain or enhance production/services (Productivity)
- reduce the level of production risk (Security)
- protect the potential of natural resources and prevent degradation of soil and water quality (Protection)
- be economically viable (Viability)
- and socially acceptable (Acceptability) (Smyth & Dumanski, 1993, p. 7).

Sustainability within the evaluation framework was taken to be

a measure of the extent to which the overall objective can be met by a defined land use on a specific area of land over a stated period of time (Smyth & Dumanski, 1993, p. 8).

Despite a history of soil conservation in New Zealand since the 1930s, soil erosion remains a significant issue. Estimates of soil loss from erosion to the sea per year in New Zealand are 200–300 million tonnes, with over half the country's land area estimated to be affected by moderate to slight erosion and 10% by severe or extreme erosion (Parliamentary Commissioner for the Environment, 2004). The total cost of this annual erosion is estimated to be between \$100 million and \$150 million per year (Parliamentary Commissioner for the Environment, 2004). Soil erosion, in New Zealand as in other parts of the world, is a process that occurs naturally but also at an accelerated rate as a direct consequence of agricultural and other land use practices, although the direct contribution of agriculture to soil erosion in New Zealand is not clear (Parliamentary Commissioner for the Environment, 2004).

Hill country erosion is a defining aspect of New Zealand's soil erosion. In the second national state of the environment report published in 2007, hill country erosion in particular is highlighted as an issue (Ministry for the Environment, 2007a). Accelerated levels of hill country erosion are attributed to the 'mismatch between land cover and land use' resulting from human activity on hill country land (Ministry for the Environment, 2007a, p. 241). The Manawatu-Whanganui region is acknowledged as having the highest total area of erosion-prone hill country pasture land, with an estimated 223 535 hectares in 2002, or 10% of the region's total land area (Ministry for the Environment, 2007a, p. 245). The hill country's geological instability and extent of pastoral land cover contribute to the vulnerability of this land in the region.

Soil conservation and/or sustainable land management directed at mitigating and reducing the risk of erosion has occurred at a regional, catchment and farm level in this region as in other parts of New Zealand since the 1940s. However, soil erosion continues to be a problem within the region. In the winter of 1992 higher than normal rainfall resulted in extensive erosion in the region's hill country (Hicks, Fletcher, Eyles, McPhail, & Watson, 1993). In a report commissioned by Federated Farmers at the time, the level of erosion resulting from the storm was described as 'low, consistent with other events that can be expected to recur on a regular basis in the hill country' (Hicks, et al., 1993, p. 70). Analysis of the erosion that had occurred indicated that the average percentage of land area disturbed by fresh erosion in districts in the region varied from 4.8% to 8.5% (Hicks, et al., 1993, p. 19). The report concludes that although the cumulative effects of these events do not threaten the sustainability of pastoral farming on all but the steepest hill country, the 'sustainability of pastoral farming on hill country could be 'improved'' if there is wider adoption of sustainable land management practices (Hicks, et al., 1993, p. 71).

In February 2004, hill country erosion was brought into sharp relief in the Manawatu-Whanganui region following an extreme rainfall event that resulted in widespread damage to community infrastructure, homes, farms and livestock. A significant and very visual aspect of the storm was the number and scale of landslides that occurred in the region's hill country as is illustrated in the satellite photograph reproduced on the next page (Figure 1).

An estimated 62 000 landslides were reported to have resulted from the extreme rain (Todd, 2004) with around 8000 km² of hill country estimated as being affected (Hancox & Wright, 2005b). The region wide level of landsliding is illustrated in the landslide map developed by Landcare Research (2004) and reproduced on the next page (Figure 2). Although detailed analysis of a sample of aerial photographs taken after the storm show that only 6.3% of the regions hill country suffered storm damage (Hicks & Crippen, 2004) the event was a catalyst for changes in the Manawatu-Whanganui regional council and central government's involvement in

the management by farmers of vulnerable hill country land in the region. Many different actors, acting at national, regional and farm levels, played a role in shaping the decisions that were made and the resultant policies that were developed and continue to be developed and implemented.

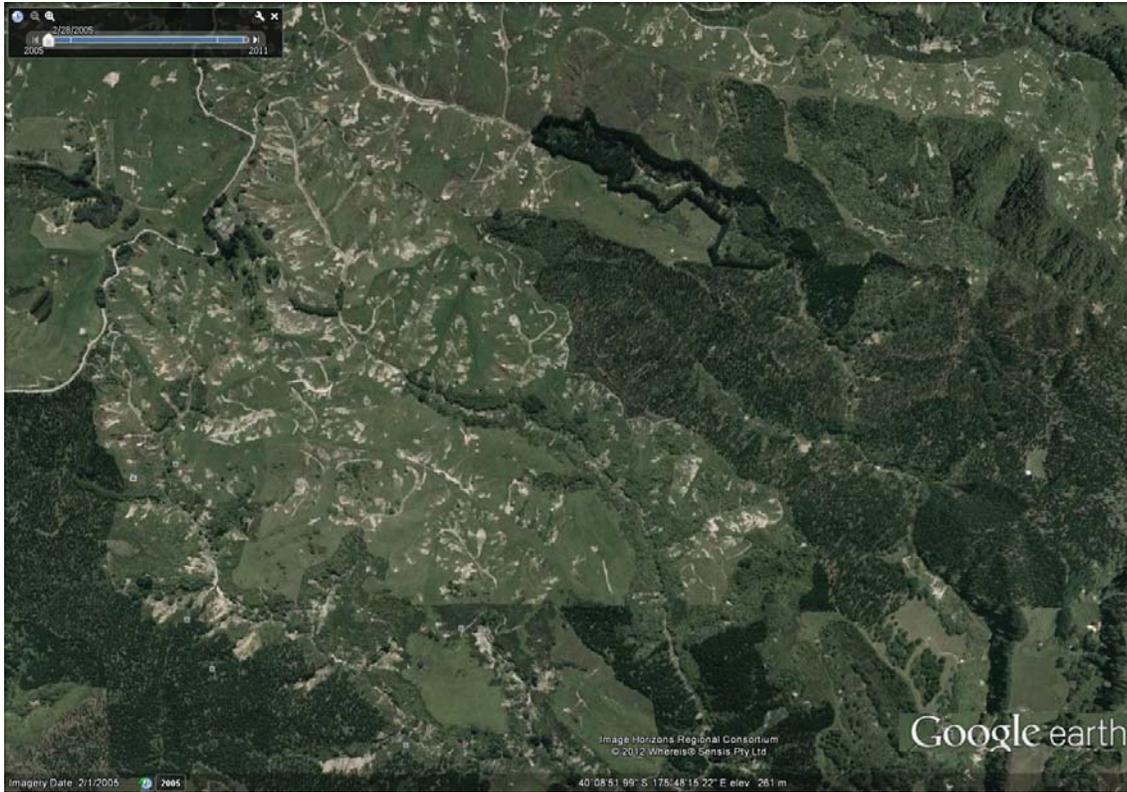


Figure 1: Satellite photograph of landslide damage in the Ridge Road area Pohangina Valley, Manawatu taken 2/1/2005 (Source: Google Earth, Ridge Road, Pohangina, New Zealand: 40°08'51.99" S 175°48'15.22" E elev 261m, 2/01/2005. Retrieved 15/11/2012).

Positioning the researcher

All research bears the mark of the researcher. For this reason attention is given briefly here to an explanation that positions the researcher with regard to the research. I am currently and have for the vast majority of my professional and working life been actively involved in or associated with farming and agriculture in New Zealand. An undergraduate degree in agricultural science, experience in agricultural extension prior to and during the central government reforms in the mid to late 1980s preceded a more recent career in academia in the agricultural field.

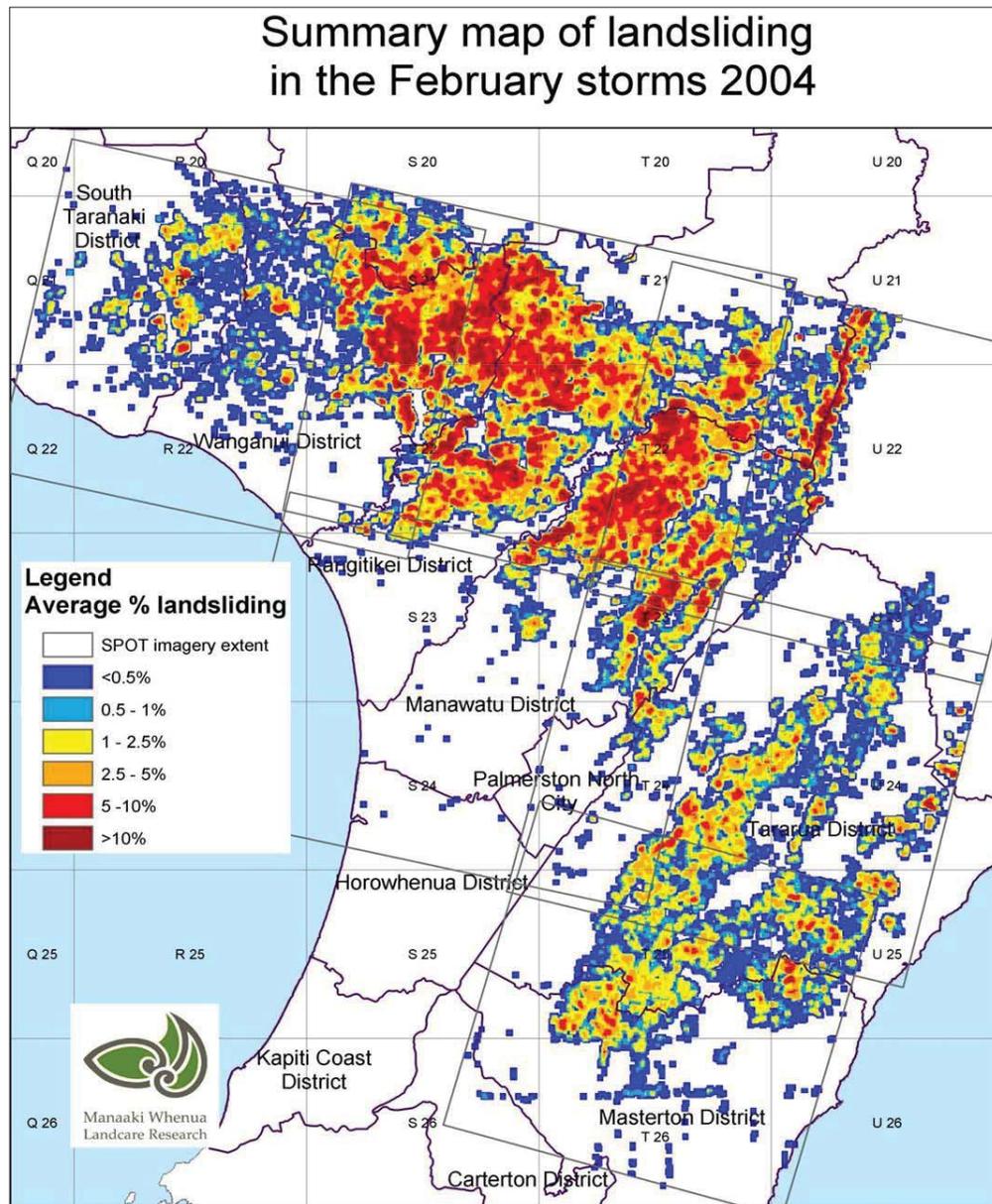


Figure 2: Summary map of landsliding in storm 2004 (Landcare Research, 2004).

Central to the academic and research interests I have pursued has been the teaching and application of systems thinking, in particular soft systems thinking, to complex, intractable and messy issues in agriculture. Farming and its impact on and place in the natural environment has and continues to attract a significant amount of my and others' attention with a growing sense of unease as to the level of uninformed and contentious exchanges being directed at farming but also coming from farmers. It was this situation that was the catalyst for this research. My research background is not in the social sciences, although I have undertaken qualitative research prior to this thesis.

Thesis structure

The thesis is structured in three parts. Chapters One, Two, Three and Four comprise part one and establish the rationale for the research, outline the theoretical framework, review of literature and describe the research design. Part two contains the results and comprises Chapter Five through to Eight. Firstly Chapter Five is a background and results chapter that gives an account of the historical context to the issue of accelerated soil erosion in New Zealand and details the development of soil conservation within central government policy. This chapter draws from historical accounts of soil conservation in New Zealand, official documents and also from interviews undertaken as part of this research. The main data chapters cover the national-, regional- and farm-level governing of HEHC in the Manawatu-Whanganui region and consecutively comprise Chapters Six, Seven and Eight. The third and final part of the thesis includes the discussion and conclusions chapters of the thesis - Chapters Nine and Ten.

The governing of the farming of HEHC in the Manawatu-Whanganui region is explored using a theoretical framework centred on Foucault's governmentality theory. This theory is expanded on and explained in the next chapter.

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CHAPTER TWO

Theoretical Framework

Introduction

The theoretical framework used in this research is outlined and explained in this chapter. The theory presented in this chapter framed the research as a whole including the literature reviewed in Chapter Three, and for this reason this chapter precedes the review of literature. Sustainable agriculture, it is argued by some, will be delivered through the fine-tuning of existing farming practices and the application of science and technology. Others present a stronger challenge for current agriculture and argue that a fundamental overhaul of farming practices, principles and philosophy is required (e.g. Campbell, et al., 2009; Schaller, 1993). This level of challenge of current farming in New Zealand requires a response that explores not just who or what is shaping farming but a deeper analysis of the thoughts, beliefs and assumptions that underpin the governing of New Zealand farming. This deep analysis is enabled in this doctoral research through the use of Foucault's concepts of government and governing and the analytic⁶ of government drawn from his governmentality work. Governmentality as a form of critical analysis of political rationality is described in the following sections of this chapter and the dimensions of the analytic of government employed as a theoretical framework for this doctoral research are expanded. To answer the research questions the governmentality framework is extended and enriched to include the concept of knowledge culture. This concept is described and its incorporation explained.

An overview of the theoretical framework: governmentality and beyond

Governmentality is a form of critical analysis that is concerned with exposing and exploring the political rationalities that are brought to bear in governing (Dean, 2010b; Miller & Rose, 2008b). For Foucault (1991b, p. 84) criticism was not undertaken with the aim of deducing 'this then is what needs to be done'. The analytic of government is not driven by a desire to identify the best or ideal form of government but rather to explore how, not why, governing occurs (Dean, 1999; Gordon, 1991), and thus help make criticism possible (Rose, O'Malley, & Valverde, 2006).

⁶ The term 'analytic' is used by Dean (2010a, p. 30) to highlight the attention in governmentality given to how governing occurs rather than identifying ideal types and instances of governing.

Foucault sought to open up a space in which a criticism of government and the rationalities of government could be undertaken, and, in so doing, to stimulate thinking as to how it could be done differently (Dean, 1999; Foucault, 1991b; Gordon, 1991). In a similar vein, this research utilises the analytic of government to make explicit how the farming of HEHC in the Manawatu-Whanganui region is governed and the rationalities that underpin this governing. The aim, following Foucault, is not to prescribe how this can be done better, but to stimulate thinking among academics and practitioners as to how the governing of the farming of this land and farming more generally can be done differently. Consequently, as farming is integral to sustainable agriculture, the opportunity for criticism of sustainable agriculture is also made possible.

Inherent in governmentality are Foucault's ideas on power, knowledge, truth, and language:

In a society such as ours... there are manifold relations of power which permeate, characterise and constitute the social body, and these relations of power cannot themselves be established, consolidated nor implemented without the production, accumulation, circulation and functioning of a discourse (Foucault, 1980c, p. 93).

Power is seen as an inherent part of every aspect of the social world and it is intimately interlinked with knowledge and language, as are rationality and reason: 'truth *isn't outside power, or lacking in power*' (Foucault, 1977b, p. 207, italics as in original). What is accepted as truth cannot exist as anything other than a reflection of power, which is associated with a particular knowledge and a particular linked rationality. Although power is not a specific focus of this doctoral research, in using governmentality it is an unavoidable aspect of the analysis. Power relations are made explicit in the rationalities of government that define how the farming of HEHC in the region is governed, which reflects the expertise, knowledge, and language that are privileged.

Governmentality analysis includes what Foucault refers to as a 'breach of self-evidence' (Foucault, 1991b, p. 76). The aim of the analysis is not only to question and establish the basis for what is universally accepted as the right course of action, but also to challenge the legitimacy of describing, in the usual way, a form of governing. Foucault emphasises the importance of divorcing the analysis of how governing is occurring from preconceived and accepted institutional facts or ideology (Foucault, 1991b). Instead, he proposes 'making visible a singularity': that is, the breaking down and challenging of what would conveniently fit within a term or concept to highlight those things that 'weren't as necessary as all that' (Foucault, 1991b, p. 76). Foucault provides an illustration of what he means by this with reference to his exploration of the treatment of people identified as mad, criminal and ill:

It wasn't as a matter of course that mad people came to be regarded as mentally ill; it wasn't self-evident that the only thing to be done with a criminal was to lock him up, it wasn't self-evident that the causes of illness were to be sought through the individual examination of bodies; and so on (Foucault, 1991b, p. 76).

The emphasis then is not on the structures through which governing occurs, but on the thinking and the particular knowledge that shape the practices of those who govern – on the mentalities of governing (Dean, 1999; Rose & Miller, 1992). Significantly, and of strong appeal in this research, the analysis interrogates the rationalities of governing that are embedded in more than just the policies developed by governing authorities like central government. The analytic of government also explores the rationalities embedded in the micro-level mechanisms through which governing occurs and the knowledge and expertise on which these mechanisms and broader policies are based and defined (Dean, 2006). Therefore, in this research not only are the policies and discourse of central government and the Manawatu-Whanganui regional council explored, so too are the methods and techniques used by the regional council to shape farmers' management of HEHC.

As this indicates, governmentality theory accepts that in any situation multiple authorities with varied objectives govern (Dean, 1999; Rose & Miller, 2010). These aspects of the analysis are attractive because they reflect the nature of the governing of farming evident in the case studied in this research and, more broadly, in farming in New Zealand. Central government governs the farming of HEHC in the Manawatu-Whanganui region through direct and indirect means. As already mentioned, regional councils (sub-national governing authorities), including the Manawatu-Whanganui regional council, are also increasingly important in defining how farmers can farm in New Zealand. Recognising that farmers' practices are shaped by a broader farming culture is a priority in this research. Although governmentality theory accepts that multiple authorities govern, the theory did not enable farming as a culture to be recognised in this way. However, one strength of governmentality as a form of analysis is that it can be used in conjunction with other theoretical concepts and tools (see for example Bulkeley, Watson, & Hudson, 2007; Larner & Le Heron, 2002b; Lockie, 2002). In this research the governmentality framework is therefore extended to include the concept of farming knowledge-culture to account for and acknowledge the distinct and legitimate knowledge and expertise of farmers as a form of government in the governing of how farmers farm.

Governing is therefore explored here not only in terms of policies that directly target and indirectly influence the farming of HEHC in the region but also in terms of the mechanisms and networks of a variety of governing authorities that connect with and shape farming. This research also extends beyond the simple exploration of how governing of farming occurs. As the research developed the story of the politics, events and personalities that led to the current form of governing of farming of HEHC in the region also emerged as having strong interest and holding

insights relevant to the broader aims of the research. A desire to capture these insights is reflected in the extension of the research question beyond simply the how of governing to include also the reasons leading to this governing. The results presented in Chapters six, seven and eight are consequently an exploration not only of how governing of the farming HEHC in the region is occurring but also what has led to and shaped this governing and also ultimately the rationalities and technologies of government.

The utility of Foucault's governmentality theory and the concepts of governance in exploring governing in agriculture are illustrated in a limited but growing body of work in agri-food and agricultural governance (Higgins, 2001a; Higgins, 2001b, 2004; Larner & Walters, 2004; Lockie, 2006b; Murdoch & Ward, 1997). Implications of the globalisation of agri-food markets on the governing of agriculture, in addition to the mechanisms by which this is achieved at national and farm level, have been recognised and explored both in relation to New Zealand (Campbell & Stuart, 2005; Larner & Le Heron, 2002a; Le Heron, Roche, & Anderson, 1989; Rosin, 2008) and internationally (Higgins & Lawrence, 2005b). The governing of agriculture, as an activity dependent on and impacting on the environment and sustainability, has also been the focus of this body of literature (Dibden & Cocklin, 2005; Lockie, 2006b; Lockie & Higgins, 2007). This research will extend this body of work, which is explored and reviewed in more depth in the next chapter.

Governmentality has two broad meanings in the literature that combine to inform each other in Foucault's writing and analysis. One is related to the concepts and mode of analysis and the other is the contemporary form of government rule that is recognised within the analysis. The form of rule implicit within governmentality is outlined below along with an expansion of the meaning of government as it is constituted within governmentality and how it is extended for this research by the concept of farmer knowledge-culture. The governmentality analysis that informed this doctoral research is then explained and expanded.

Governmentality: a form of rule and government

Governing in governmentality is not the domain of the state alone.⁷ Multiple governing authorities, including but not limited to the state, govern. The form that governing takes is indicative of a shift referred to as from '*government*' to '*governance*' (Rhodes, 1996, p. 658 italics as in original) and reflects a neo-liberal form of rule (Larner, 2000; Lemke, 2001, 2002; Rose, et al., 2006). This form of rule is recognised as existing in the New Zealand agricultural

⁷ The term 'state' in this thesis is taken to be the centralised authority of central government in New Zealand and other unitary states (federal government in federal systems) that includes the government of the day and the administrative entities of central government.

sector, the result of major reforms imposed by the Labour Government in the mid-1980s (Le Heron & Roche, 1999; Sandrey & Reynolds, 1990).

Governmentality theory holds that governing is a complex network of alliances between a diverse range of governing authorities that ‘govern a multitude of facets of economic activity, social life and individual conduct’ (Rose & Miller, 1992, p. 174). This form of governing, referred to as governance by some, is not indicative of less government (Rhodes, 1996; Stoker, 1998) or simply the ‘roll-back’⁸ of the state from governing (Peck & Tickell, 2002). Rather, it refers to a form of governing that is ‘a set of institutions and actors that are drawn from but also beyond the state’ (Stoker, 1998, p. 18). This does not mean that the power of the state is assumed to have diminished, however; what it means is that governing by the state and other governing authorities is being achieved in new and varied ways. With reference to the reforms that were undertaken by the New Zealand Government in the mid-1980s, the changes implemented by central government involved the deregulation of agriculture, and the removal over time of almost all forms of market intervention and assistance by central government (Sandrey & Reynolds, 1990). However, a new more complex ‘reregulation’ of agriculture has emerged with the market now a significant authority of government for New Zealand farmers (Le Heron & Roche, 1999, p. 204). The New Zealand Government is not inactive in this space, however, as it is through central government’s governing of the domestic economic and political context that the governing of farming by the market is, in part, facilitated.

Government, as described by Foucault, is concerned with the ‘conduct of conduct’ (Dean, 1999; Gordon, 1991; Lemke, 2002), ‘the more or less deliberate attempt to shape the actions of others or oneself’ (Dean, 2010a, p. 250). This means that self-government, as seen in the decisions and management of farms by farmers, does not occur in isolation of the influence of other authorities. However, governing in this new form of rule is achieved through less direct forms of rule by ‘acting on people’s will, their circumstances or their environment’ (Miller & Rose, 1990, p. 54). Individuals are free to act according to their will under this new liberal form of government. However, the forms of government recognised by governmentality govern by shaping this freedom (Dean, 1999). As Miller and Rose (2008a, p. 51) argue, ‘in advanced liberal democracies [the governing authority] ...seeks to act upon and instrumentalize the self-regulating propensities of individuals to ally them with socio-political objectives’. The free will of the subjects of rule is governed through rationalities of rule that are embedded in the programmes and the technologies of government through the inclusion of specific forms of knowledge and expertise.

⁸ The ‘roll-back’ and ‘roll-out’ of governing are terms used by Peck & Tickell (2002). The roll-back of governing by the state refers to the reduction in direct forms of government intervention characteristic of neo-liberal forms of rule. The roll-out of neo-liberal rule represents the new but continued involvement of the state in governing through institutional arrangements such as partnerships and networks.

Government as representation and intervention

The emergent qualities of rationality, power, knowledge, and language in Foucault's governmentality are realised in the meaning of government in governmentality. Government is a matter of both representation and intervention (Miller & Rose, 1990). Lemke refers to these qualities as the 'two sides' of governmentality (Lemke, 2001, p. 191). All government is dependent on the representation of reality, through the use of language and other means to make it visible, so that it is amenable to governing through the exercise of power, in accordance with a particular rationality. Through the liberal reforms of the 1980s in New Zealand central government moved to represent farming as a competitively efficient business responsive to the demands of international consumers and the market. A discourse that became evident through the period of the reforms, and still prevalent today, conveys 'farming as a lifestyle' as outmoded and 'farming as a business', (market led and consumer driven) as the contemporary model for farming. In a similar way, Higgins (2001a, p. 313) explored the emergence of the 'enterprising farmer' in Australian agri-political discourse in the mid-1980s. This term emerged in parallel with an agenda for the restructuring of the farming sector, a redefinition of what constituted a viable farm and government programmes that were

implemented from 1970 to encourage so-called 'unviable' farmers to exit the industry, while providing incentives for remaining producers to improve their productivity (Higgins, 2001b, p. 358).

Lemke's articulation of this side of governmentality is particularly lucid: 'government defines a discursive field in which exercising power is 'rationalized'' (Lemke, 2001, p. 191). The representation of crisis in the Australian economy in the mid-1980s is argued by Higgins (2001a) to enable and hence 'rationalize' farm reform and restructuring by central government. The reforms sought to transform farmers into 'enterprising farmers'. The representation from the late 1980s of the New Zealand farm as a market-led business can similarly be construed as rationalising the lesser involvement of central government in governing farming directly and the privileging of the market as a form of government of farming.

The representation of the problem that is the target of governing is defined by the tools and techniques of government. This is because the problem will have to be 'susceptible' (Miller & Rose, 2008c, p. 15) to intervention by government and these tools and techniques will also be shaped by governmental rationality. For this reason in the governmentality literature the term 'problem' is rejected in favour of the term 'problematic' to emphasise that problems are constructed; and they are dependent on a process through which they are deemed problematic. The process is 'problemati[s]ing' and the investigation of the process is a component of the analysis in governmentality (Miller & Rose, 2008c, p. 14). A situation, a set of circumstances or

the conduct of someone, is problematised through a certain form of linked knowledge, expertise, and calculation. A problematic is constructed and made visible because, based on a particular belief system that is aligned with certain knowledge and with a certain understanding of what is right, good or healthy, people perceive it as such (Miller & Rose, 1990). Economists aligned with a neoliberal commitment to market rule have classified the adverse impact of intensive agriculture on the environment as a form of ‘market failure’ (Buttel, 2003; Pahl, 2007).

The construction and making visible of a problematic ‘can occur in different ways, in different sites and by different agents’ (Miller & Rose, 2008c, p. 14). The problem will be made visible using certain calculations and it will be framed within a language that reflects certain knowledge. The solution (the change in conduct sought) will similarly contribute to the construction, through the way in which the problem is made visible (Dean, 2010a; Miller & Rose, 2008b), because it is a necessity that the conduct, which is problematic, is ‘amenable to intervention’ (Miller & Rose, 2008b, p. 15). Improving farm business management capabilities among farmers was afforded heightened status in Australia in the late 1980s (Higgins, 2001a). The field of farm business management gave form to an articulation of the problems of the farming sector at the time which included an uncertain financial environment, a need for technical and market knowledge, and a need for more efficient production systems (Higgins, 2001a).

A rationality of government ‘constitutes the intellectual processing of the reality which political technologies can then tackle’ (Lemke, 2001, p. 191). Put another way, it is through ‘technologies that [governmental] rationalities and the programmes of government they articulate become capable of deployment’ (Miller & Rose, 2008a, p. 33). The rationality of government frames reality in a way that then shapes the intervention. Programmes of government are defined by Foucault as the explicit ‘sets of calculated, reasoned prescriptions’ which set out ‘which institutions are to be reorganized, spaces arranged, [and] behaviours regulated’ (Foucault, 1991b, p. 80).

The mentalities of government, implicit in the word governmentality itself, is what Foucault referred to as the ‘rationalities of government’ and the ‘art of government’ (Foucault, 1991a), and is used interchangeably in the literature with the term mentalities of rule. This is the ‘system of thinking about the nature of the practice of government’ with an emphasis on practice (Gordon, 1991, p. 3). A rationality of government is expressed in the practices of governing and the technologies through which government governs. These practices are often taken for granted and ‘not readily amenable to be comprehended’ by those for whom it is a mentality (Dean, 1999, p. 16; Miller & Rose, 2008b). It is the rationalities of government relevant to the governing of the farming of HEHC in the Manawatu-Whanganui region that are the focus of this research.

Resistance in government

Governing is not the simple application of rationalities through programmes and technologies to the subjects of governing: it is much more complex (Lemke, 2002; O'Malley, 1996; Weir, O'Malley, & Clifford, 1997). Governing also is constituted through what is referred to in the literature as resistance, and reflects Foucault's relational view of power (Higgins, Lockie, & Lawrence, 2001). Government is said to be constituted through 'relations of contest or struggle' (Weir, et al., 1997, p. 505). This understanding of resistance as a part of government is highlighted by Foucault when he states:

where there is power, there is resistance, and ... consequently, this resistance is never in a position of exteriority in relation to power (Foucault, 1978, p. 95).

Although resistance is recognised by Foucault, the work of researchers who have used governmentality theory are criticised for failing to acknowledge and explore the complex nature of governing that involves the active involvement and choices of the subjects of governing (Herbert-Cheshire, 2003; Higgins, et al., 2001). Governmentality literature tends to focus on a top-down form of governing and does not tend to frame with equal effectiveness 'government from below' that is argued to occur through resistance (Herbert-Cheshire, 2003; O'Malley, 1996). The need to recognise government from below became apparent as this research unfolded. An important aspect of the case is the influence of the regional council on central government's involvement in the governing of the farming of HEHC in the region. Similarly, members of the farming community and Federated Farmers of New Zealand (a farmers' advocacy organisation) shaped how the regional council governed the farming of HEHC, through direct and indirect political action and personal choice.

Resistance with rule, although articulated by some as 'contest and struggle' (e.g. Weir, et al., 1997, p. 505), is taken by other authors (Herbert-Cheshire, 2003; Higgins, et al., 2001; O'Malley, 1996) to be a productive and positive element in governing, leading to the ultimate success of programmes of government. This more constructive view of resistance is evident in Foucault's description of governing:

...governing people is not a way to force people to do what the governor wants; it is always a versatile equilibrium, with complementarity and conflicts between techniques which assure coercion and processes through which the self is constructed or modified by himself (Foucault 1993, cited in Lemke, 2002, p. 53).

In this sense, resistance is not the 'obstruction of rule' by others but something that 'enables the operation of governmental programmes by making such strategies 'knowable' to those whom it seeks to govern'(Higgins, et al., 2001, p. 216). Resistance is the interaction that occurs between

the governing and the governed, which shapes and ultimately leads to the enactment of the programmes of government.

Foucault's concept of resistance went some way to capturing the influence of farmers in shaping both the programmes of central government and the regional council directed at the farming of HEHC in this research. However, resistance failed to fully capture the significant role of farming as a culture and body of knowledge and expertise in shaping farmers' decisions as to how they farm HEHC as part of an integrated farm system. The concept of farming knowledge culture is used here in conjunction with the governmentality framework and is explained in the next section.

Farming knowledge culture as a form of government

In the course of the research, it became clear that an important aspect of the case which required recognition was how the farming of HEHC by farmers is shaped by what is deemed 'acceptable' by the farming community of which the farmers are part. The theoretical framework of governmentality did not adequately enable this aspect of the case to be analysed or articulated as a form of government with characteristics of representation and intervention specific to farming practice. Resistance within Foucault's work allows for the influence of the subjects of government authority to shape how they are governed. However, this research argues that resistance does not adequately capture the influence of farming as a cultural phenomenon in shaping how farmers farm.

Higgins (2005, p. 130, italics as in original) recognises the need for a review of the significance of farmers' capacities in governing and based on his research into the role of calculation in the governing of Australian dairy farmers argues that:

Farmers' capacities can no longer be examined as just a response to global forms of regulation, or as a form of resistance...the capacities of farmers form a key *vehicle* through which agriculture is governed.

This research accepts Higgins (2005) stance but seeks also to advance the status of farming even further and suggest that farming is a form of government in its own right that can be meaningfully captured through the concept of knowledge culture.

The concept of a knowledge culture and the work of scholars who have applied this in a farming context (Morris, 2006; Riley, 2008; Tsouvalis, Seymour, & Watkins, 2000) is here drawn on and expanded in a theoretical sense. The idea that 'local knowledge systems' in farming are 'cultural phenomena' is proposed by Morris and Evans (1999, p. 354). In reviewing the potential contribution of research on rural change, the authors make a case for future research, which

recognizes that farmers are bearers of locally specific knowledge, who actively shape the policy context, rather than simply being receivers of information from policy-makers as is commonly assumed (Morris & Evans, 1999, p. 354).

In arguing for this type of research they recognise that the farming ‘community’ comprises different ‘agri-cultures’, a point they emphasise because in their view the farming ‘community’

is all too frequently assumed by investigations of non-farming people in rural locales to be homogenous (Morris & Evans, 2004, p. 354).

The notion of knowledge culture recognises the status given to ‘local knowledge systems’ by Morris and Evans (1999). The knowledge culture concept used by Tsouvalis et al.(2000) is based on the form of knowledge defined by Shotter (1993, p. 19) in the following way:

It is not theoretical knowledge...for it is knowledge-in-practice, nor is it merely knowledge or a craft or skill (‘knowing-how’), for it is joint knowledge, knowledge-held-in-common with others.

The knowledge referred to is a ‘knowing-from-within’ (Tsouvalis, et al., 2000, p. 912) described by Shotter (1993, p. 31) as ‘knowledge that one has from within oneself as a human being and as a socially competent member of a culture’. Knowledge cultures are ‘socially negotiated structures of meaning that enable and constrain social actions’ (Tsouvalis, et al., 2000, p. 912). The farming community are recognised as having knowledge cultures that are specific to a particular time and locality (Clark & Murdoch, 1997; Tsouvalis, et al., 2000). But it is also importantly illustrated as being different to the knowledge culture of scientists (see for e.g. Burgess, Clark, & Harrison, 2000; Clark & Murdoch, 1997). In this research the knowledge culture of farmers of HEHC is conceptualised as knowledge that is the product of a negotiated knowledge that has been derived over time by hill country farmers to define accepted rules, norms, and values for farming.

The analytic of government

Foucault did not explicitly articulate a method for analysing government. His analysis is implicit in his descriptions of the era of governmentality and in his other work on prisons (Foucault, 1977a), health (Foucault, 1980b), and sexuality (Foucault, 1978, 1980a). Scholars have extracted Foucault’s analysis from his work and also drawn from others’ work, in order to develop a coherent description of what constitutes Foucault’s analytic of government. Sources drawn on in this research are social scientists from a range of fields including but not limited to political science and sociology (Dean, 1994, 1999, 2006; Gordon, 1991; Hindess, 1997; Lemke, 2001, 2002; Rose, 1996a, 1996b; Rose & Miller, 1992).

An analytic of government in essence makes explicit the ‘how’ of governing through an analysis of the representation and intervention of government. Four linked dimensions of analysis are

outlined by Dean (1999); all four dimensions reflect the two sides of government articulated by Lemke (2001): representation and intervention. One dimension is an analysis of how aspects of the situation are represented and made visible (represented). The second dimension involves demonstrating by what technologies of government the authority is constituted and governing accomplished (intervention). The third dimension analyses what forms of rational and thoughtful activity (for example, thought, knowledge, expertise, means of calculation) shape governing. The fourth is the analysis of the individual and collective identity governing operates through and also seeks in the subjects of governing.

The dimensions of the analysis are evident within regimes of practice, the programmes of government and the technologies of government through which governing occurs. These are now explained and explored.

Regimes of practice and programmes of government

An analytic of government involves an analysis of the regimes of practice through which governing occurs (Dean, 1999; Rose & Miller, 1992). Regimes of practice are described by Dean (1999) as the routine ways we go about doing things in certain places and at certain times. Regimes of practice possess ‘their own specific regularities, logic, strategy, self-evidence and ‘reason’’ (Foucault, 1991b, p. 75). Each regime of practice is driven by calculations and technologies that are based on knowledge supported and advocated by experts, together with their associated knowledge, who then construct and make visible the problematic and, hence, how it is managed and the outcomes that are sought.

Knowledge is central to governing (Rose & Miller, 1992). Knowledge, including the basis of that knowledge, and shape are constituted by regimes of practice. Similarly, regimes of practice are shaped and informed by various bodies of knowledge and expertise. Foucault described this aspect of the analysis as:

To analyze regimes of practice is to analyze programmes of conduct which have both prescriptive effects regarding what is to be done (effects of ‘jurisdiction’) [what is right] and codifying effects regarding what is to be known (effects of ‘veridiction’) [what is true] (Foucault, 1991b, p. 75).

Programmes of government are purposeful and explicit forms of thought directed at transforming an aspect of the regimes of practice that is problematic or questionable (Dean, 1999). A common starting point for an analytic of government is ‘examining the way aspects of regimes of practices are called in to question (or problematised) by such programmes’ (Dean, 1999).

Technologies of government

Technologies of government are the ‘complex of mundane’ programmes, calculations, inscriptions, language, techniques, apparatus, documents, and procedures, through which authorities govern (Rose & Miller, 1992, p. 175). Technologies of government are not neutral. (Rose & Miller, 1992). The political rationalities of government are embodied and articulated in the programmes and practices of government: and it is through these technologies of government that programmes are deployed (Dean, 1999; Rose & Miller, 1992). The analysis of the micro-practices of government is, in Foucault’s words, undertaken to ‘examin[e] how forms of rationality inscribe themselves in systems of practices, and what role they play within them, because it’s true that “practices” don’t exist without a certain regime of rationality’ (Foucault, 1991b, p. 79). However, the purpose of the examination is not to assess if the practices align with certain rationalities but to discover the rationalities being used (Lemke, 2002).

Calculations and inscriptions are information and language that shape and legitimise the problematic, and hence, the programmes and outcome sought by governing authorities and individuals. The statistics and figures that are gathered and the tools and language used to combine these figures and statistics in order to represent a particular domain (such as North Island hill country sheep and beef farms), give the domain a form that enables it to be debated, compared, and analysed at different times and in different places. Reality is constructed into a visible form that renders it able to be governed through these calculations and inscriptions (Rose, et al., 2006).

Dean (2010a) identifies two types of technologies through which, he argues, advanced liberal rule can shape conduct: technologies of agency, and technologies of performance. Technologies of agency are those that are designed to provide expertise and capabilities to individuals to assist them to take a ‘calculative and prudent’ approach to self-government (Lockie & Higgins, 2007). Within a farming context, workshops that seek to build the managerial capacity of farmers in Australia, through training in a farm business management computer package, are also examples of technologies of agency (Higgins, 2005; Higgins & Kitto, 2004).

Technologies of performance are techniques and methods whereby the performance of those involved in programmes can be monitored and hence shaped in accordance with government. These technologies include the seemingly mundane and neutral devices such as audits, accounts, measures of best practice and statistics (Dean, 2010a; Miller & Rose, 2008b). Lockie and Higgins (2007) cite, as examples, Europ-GAP, the international standards scheme implemented by retailers in Europe for food producers; and the best management practices of the Cotton Industry in Australia.

Through representation; calculations, language, and inscriptions transform the domain to which government is applied. In enabling events to be aggregated across space and time, they reveal and construct norms and processes to which evaluations can be attached and on which interventions can be targeted. The calculations themselves are mechanisms that enable relations to be established between different phenomena, thus rendering, for example, ‘the population’, the ‘economy’, ‘public opinion’, the ‘divorce rate’, into ‘calculable entities with a solidity and a density that appears all their own’ (Rose & Miller, 1992, p. 186).

Agricultural statistics have been illustrated by Murdoch and Ward (1997) to be central to the post-war emergence of the ‘national’ farm sector in the United Kingdom, and the work of collating the statistics was central to the constitution of that sector. Similarly, Higgins (2001b) showed how economic expertise was also central in constituting, within a knowable and visible form, the existence of low-income farms in Australia, during the late 1960s and early 1970s, and also in establishing the characteristics and hence the identity of the viable and non-viable farmer.

In order to generate a representation of reality in a calculable form, governing authorities rely on the inscription of information into such items as written reports, maps, diagrams, and statistics (Rose & Miller, 1992). Through the process of inscription, representations of reality, which are the focus for government, are made stable, mobile, and combinable. This is important when government is reliant on shaping the conduct of others beyond the governing authority that is seeking ‘governing at a distance’⁹⁹ (Rose & Miller, 1992; Rose, et al., 2006). Strategies formulated by an authority, at a particular place and time, need to be able to be ‘translated’ into action, at a different location and at a different time. Government of this form depends on a central location where inscriptions are accumulated and used for calculation (Rose & Miller, 1992).

A level of power is conferred upon those entities that are able to accumulate calculations and control them, and thereby provide a representation of what is to be governed. Calculations legitimise and add weight to the plans, strategies, and practices of these authorities (Dean, 1999; Rose & Miller, 1992). Expertise (and those ascribed the status of an expert) shape the rationalities for which programmes, calculations, and technologies are developed and seen as legitimate. Benchmarking, budgets, and the setting of performance indicators are examples of technologies of performance for shaping conduct, in order to gain ‘optim[um] performance’ (Dean, 2010a, p. 197).

⁹⁹ Miller & Rose’s (1990) ‘government at a distance’ has been adapted from Bruno Latour’s 1986 notion of ‘action at a distance’. It refers to the ‘acting from a [centre] of calculation ... on the desires and activities of others who [are] spatially and organizationally distinct’ (Rose, et al., 2006, p. 89). Networks are mechanisms that make this possible.

The visible, and hence governable, form of an object, which is the focus of government, can (it is argued) influence governing in multiple ways (Hacking cited in Murdoch & Ward, 1997; Rose & Miller, 1992). Not only can statistics shape policy, statistics relating to, for example, individual farm businesses, can also act to create categories of what is constituted as top or bottom or ‘normal’. This categorisation, in turn, can influence individual farmers to seek to conform with the norm, which in turn influences what is considered ‘normal’ (Murdoch & Ward, 1997).

Similarly, requiring people to document things in a particular way is in itself a type of government (Rose & Miller, 1992). In documenting certain aspects of their farming operation, farmers will think about their farm in a particular way and, in doing so, they may then perceive their activities and their farm according to a different set of norms, or a different rationality.

Identity, both individual and collective, is defined by and associated with regimes of practice and government programmes. Governing will operate through these identities and the programmes of government will seek to form them (Dean, 1999), as illustrated earlier by the example from Australia of the ‘enterprising farmer’ (Higgins, 2001a). The question that this raises within the analytics of government is, as Dean (1999, p. 32) states, ‘what forms of person, self and identity are presupposed by different practices of government and what sorts of transformations do they seek?’ Technologies of government in the form of incentives and grants are also often linked to certain categories of farm types or farm circumstances (Murdoch & Ward, 1997) and/or certain types of behaviour (Herbert-Cheshire & Higgins, 2004). These incentives and grants can also act to shape people’s behaviour, if people seek to conform, but they can also shape behaviour through the reinforcement of these behaviours, through confirmation given by the incentive structures that are in place.

Conclusion

A theoretical framework drawn from the governmentality theory of Foucault is employed in this research. Governmentality is a form of critical analysis that will expose the political rationalities that are brought to bear in governing the farming of HEHC in the Manawatu-Whanganui region. The framework recognises a multiplicity of government and makes explicit how through representation and intervention authorities of government govern. In a departure from most other governmentality literature based on Foucault’s work, the concept of resistance is emphasised in the theoretical framework. The active involvement of farmers and their advocates in shaping how they are governed through central government and regional council programmes directed at the farming of HEHC provided the impetus for accentuating this aspect of the framework. The concept of farmer knowledge-culture enriches the theoretical framework by enabling farming as a form of government to be accounted for in the research.

Governmentality has been used to a limited extent to date in exploring aspects of the governing of agriculture. More prevalent is literature in agri-food governance as well as the literature that explores the forms of governing of agriculture that prevail under a neoliberal form of rule. This literature and other empirical literature related to the governing of agriculture and sustainable agriculture are reviewed in the next chapter.

CHAPTER THREE

Literature Review

Introduction

This thesis explores an aspect of the governing of sustainable agriculture in New Zealand. Specifically, it will inquire into the farming of HEHC in the Manawatu-Whanganui region and provide insights and explanations as to how this farming is governed, and the reasons for this governing.

To inform and frame the research design, this chapter draws together a mix of literature from, but not limited to, the disciplines of geography, sociology, political science, and agricultural extension. Foucault's governmentality theory emphasises the need when critiquing government to resist the tendency to assume that a particular rationality of rule prevails. In contradiction to this, neo-liberalism is argued to be a rationality of rule that is as relevant to the governing of agriculture in New Zealand since the mid 1980s, as it is in Australia and the United Kingdom. Neo-liberal forms of rule are not limited to neo-liberalism alone, but are rather hybrid, contradictory and varied forms of rule that are specific to a particular context (Dibden, Potter, & Cocklin, 2009; Peck & Tickell, 2002). The particular variant of neo-liberal rule specific to the governing of farming of HEHC in the Manawatu-Whanganui region is of interest in this research and for this reason neo-liberalism is explored at the start of this chapter.

Neo-liberal rule is argued by some to have contributed to the intensification of agricultural production and the adverse impact of agriculture on the environment in New Zealand (Jay, 2007) and Australia (Dibden & Cocklin, 2005). Awareness of the impact of agriculture on the environment has shaped agricultural development and the governing of agriculture in these countries and in Europe. Limited social science research into the governing of agriculture and its link to the environment has been published in New Zealand in the last decade. New Zealand and Australia are recognised as having characteristics that differentiate and define as distinct the two countries' agriculture, the governing of agriculture, and the relevant construction and conceptualisations of agriculture (Burton & Wilson, 2012; Dibden, et al., 2009). The more extensive body of research by Australian based scholars into agricultural governance and the changing nature of agriculture has been drawn on in this literature review in addition to that from New Zealand. Although the European context is very different from that of Australasia, research into agriculture and rural areas in the United Kingdom is reviewed in this chapter. In particular

the different conceptualisations of agricultural change and development along the continuum from productivity through post-productivity and multi-functionality and relatively recent neo-productivism are reviewed. The potential relevance of these constructions of agriculture to New Zealand is explored.

Agricultural impact on the environment has led to new forms of governing of agriculture internationally and the technologies of government used, are reviewed. The literature that attempts to find causal links between characteristics of farms and farmers and their adoption of technologies, including in particular those associated with agri-environmental schemes¹⁰, is critiqued and rejected. The more integrated approach that includes research on farmers' knowledge culture is then introduced and literature reviewed to conclude the chapter.

Neo-liberalism: a rationality of rule in New Zealand agriculture

New Zealand is recognised as a 'virulent example of neo-liberalism' (Larner & Le Heron, 2002b, p. 754) and the so-called 'New Zealand experiment' in neo-liberal rule has received extensive attention by scholars from a range of fields including (but not limited to) agriculture (e.g. Kelsey, 1996; Larner, 2000; Le Heron & Roche, 1999; Le Heron, et al., 1989; Sandrey & Reynolds, 1990). Radical policy reforms initiated by the newly elected 1984 Labour Government mark the beginning of the New Zealand neo-liberal era. In the face of an economic crisis, the Labour Government implemented wide ranging reforms, with the agricultural sector bearing the brunt of some of the most abrupt and aggressive policy changes (Cloke, 1996; Le Heron & Roche, 1999; Sandrey & Reynolds, 1990). These agricultural reforms resulted in the removal of almost all state assistance for agriculture, while broader monetary (Le Heron, et al., 1989) and economic reforms also impacted significantly on agriculture (Cloke, 1996; Sandrey & Reynolds, 1990). The impact on farmers and the agricultural sector was, in the short term, traumatic (Sandrey & Reynolds, 1990; Smith & Saunders, 1995; Walker & Bell, 1994) and in the longer term defining (Campbell & Lawrence, 2002).

Neo-liberalism is accepted in this research as a rationality of rule that shapes the governing of agriculture (and hence sustainable agriculture) in New Zealand. As a rationality of rule, neo-liberalism is both a discursive field and a set of practices of rule (Larner, 2000). The purpose of the next section is to review the 'discursive field' reflected in the neo-liberal literature to ascertain the dimensions of neo-liberal rule and how it is represented. The aim is also to explore and review

¹⁰ Agri-environmental schemes and technologies refer to policy mechanisms that incorporate agricultural and environmental outcomes.

the way in which this rationality of rule is enacted in practice – in other words the forms of representation and intervention characteristic of a neo-liberal rationality of rule.

Characteristics of neo-liberalism

Neo-liberalism is referred to as a new advanced form of liberal rule (Dean, 2010a; Herbert-Cheshire, 2000; Lemke, 2007; Rose, 1996b). This form of rule is often depicted as representing ‘a hollowing-out of the state’, and reflects a perspective that ‘to govern better, the state must govern less’ (Rose, 1999, cited in Higgins & Lockie, 2002, p. 421). The implication of this hollowing out, it is argued, is not simply a roll-back or reduction in governing by the state, but a roll-out of a new advanced form of governing (Herbert-Cheshire, 2001; Peck & Tickell, 2002). This form of governing is evident in the descriptions of the changes in New Zealand agriculture following the initiation of reforms in the mid 1980s (e.g. Le Heron & Roche, 1999; Tyler & Lattimore, 1990). Rather than marking a liberation from regulations and direct involvement of the state, neo-liberalism is recognised, as stated by Rose (1996b, p. 61), as a ‘re-regulation in new ways involving different and multiple actors’. Partnerships and networks are identified as important institutional arrangements in these new forms of governing, the market is emphasised as an authority of government and there is a focus on individual responsibility in governing rather than deference to the state as protector and sovereign (Dean, 2010a; Larner, 2003; Rose, 1996b).

Larner (2005, p. 17) refers to neo-liberalism as encompassing two dimensions: ‘marketisation and individualisation’ and these are explored in more depth in the following sections.

Neo-liberalism as ‘marketisation’

The superiority of the market over central government involvement is identified as a core element of neo-liberalism (Dean, 2010a; Larner, 2000) and this is evident in the analysis and descriptions of New Zealand and Australian central/federal-government governing of agriculture (e.g. Cheshire & Lawrence, 2005; Le Heron & Roche, 1999; Le Heron, et al., 1989). Australian farmers undergoing similar reforms to those undertaken in New Zealand were encouraged to pursue what Dibden & Cocklin (2005, p. 137) refer to as ‘competitive productivism’ in an environment that made the farming sector ‘peculiarly susceptible’ to the vagaries of the international market place.

The neo-liberal reforms in New Zealand, it is argued, demanded a ‘re-conceptualisation of the social relations of agricultural production and consumption’ (Le Heron & Roche, 1999, p. 212). An element of the re-conceptualisation identified is a shift from an agricultural perspective with a focus on land-based activities and agricultural production, to one that places New Zealand within a global food economy (Le Heron, 2003; Le Heron, et al., 1989). Supply-chain relationships and the linkages between farmers in New Zealand and consumers on the other side of the world are

highlighted as features of these new relations. A consequence of this, in particular in the sheep and beef sector, is argued to be a shift in the balance of power in the relationship away from farmers to international supermarkets that dictate (through market-based technologies of government such as supply contracts) the quality standards of the products produced on farm (Le Heron, 2003; Le Heron & Roche, 1999).

Market driven food standards, grading, quality contracts and audit cultures in agri-food systems are examples of technologies of government that are accepted to have replaced those made redundant¹¹ with the shift to neo-liberal rule of agriculture (e.g Campbell & Stuart, 2005; Higgins, Dibden, & Cocklin, 2010a; Le Heron, 2003, 2005; Lockie & Higgins, 2007). Findings to date, however, suggest that the significance attributed to these types of technologies in governing mainstream farming in New Zealand and Australia may have been misplaced. Audit schemes have not been whole-heartedly accepted by sheep and beef farmers in New Zealand and evidence indicates that many farmers find them an imposition and of limited practical value, and such schemes have not had a discernible influence on the on-farm practice of conventional agricultural producers (Haggerty, Campbell, & Morris, 2009; Rosin, Hunt, Campbell, & Fairweather, 2007). In addition, with specific reference to environmental standards schemes, Higgins et al. (2010a, p. 181) suggest that in Australia there is ‘only limited pressure [on farmers] for demonstrating responsible environmental performance from overseas markets, governments and consumers’. Some authors still consider standards imposed by food retailers most likely to influence New Zealand farmers’ animal welfare practices (Haggerty, et al., 2009) and New Zealand and Australian farming’s impact on the environment (Lockie & Higgins, 2007; Rosin, 2008). However, a question that this raises is if these market driven technologies of government are not significantly shaping farmers’ management (including sheep and beef farmers), what types of technologies of government are defining how farmers farm. It is this question that this research seeks, in part, to address by exploring the types of technologies that are shaping how farmers farm HEHC in the Manawatu-Whanganui region.

New Zealand agriculture is articulated as being governed under a form of rule described as a type of global agri-food governance (Campbell, 2009; Larner & Le Heron, 2002b). Globalised production-consumption relations, it is argued, have introduced into countries like New Zealand and Australia ‘a new set of hierarchical power relations’ that may not align with those of the country itself (Lockie, 2006b, p. 35). Multilateral trade agreements and other supranational regulatory regimes have resulted in a rise in the influence in the agricultural market place of international bodies such as the World Trade Organisation (WTO) (Frame & Newton, 2007) and

¹¹ Central government assistance for agriculture and the central government policies directed at encouraging increases in on-farm productivity that were in place prior to the reforms initiated in the mid 1980s are examples of the technologies of government made redundant in the neo-liberal era (see Le Heron, 1989) .

the International Monetary Fund (IMF) (Cheshire & Lawrence, 2005). This shift in power has implications for agriculture in countries like Australia as a whole but also it is claimed for national and sub-national level agri-environmental governance and hence the governing of sustainable agriculture in Australia (Dibden & Cocklin, 2005; Dibden, et al., 2009; Lockie, 2006b). Central/federal governments in New Zealand and Australia are reluctant to intervene directly in agri-environmental governance because of their stance on free trade. However, the acceptance within the WTO that ‘*Green Box*’ policies (that include ‘agri-environmental payments and subsidies under rural development schemes’ (Dibden, et al., 2009, p. 301, italics as in original)) have minimal trade-distorting effects is believed to be encouraging a shift in approach by the Australian Government (Dibden & Cocklin, 2009; Dibden, et al., 2009). No evidence, as yet exists, of a similar shift in the New Zealand Government’s approach.

Neo-liberalism as individualisation

Neo-liberalism is said to embody a shift away from a ‘welfarist’ form of rule (Dean, 2010a; Rose & Miller, 2010). This shift emphasises individual self-reliance, which as stated by Dean (2010a, p. 201) implies ‘rather than depend on society people must rely on themselves’. Agricultural policies that provided direct support for farming were prevalent in New Zealand in the 1970s and up until the 1980 reforms¹² (Tyler & Lattimore, 1990) and in Australia in the 1950s and 1960s (Higgins & Lockie, 2002). Reflecting closely the situation in New Zealand, the Australian protectionist policies are reported to have:

collectivised the economic risks of farmers through the state, and ensured that producers’ productive capacities were protected from the adverse impacts of market fluctuations and natural disasters (Higgins & Lockie, 2002, p. 420).

Whereas protectionist policies are described as being a form of governing ‘*through society*’, neo-liberal forms of rule are described as governing through the ‘regulated and accountable choices of autonomous agents’ (Rose, 1996b, p. 61, italics as in original). A useful example of how this form of governing is achieved by central/federal government is provided by Higgins (2005). He argues that a neo-liberal form of rule is evident in the governing at a distance of Australian farming practices and this form of rule is illustrated in the Australian Government’s programmes for agriculture, the explicit aim of which he states:

is to provide a platform through which the planning and managerial capacities of farmers may be enhanced to improve agricultural efficiency and sustainability (Higgins, 2005, p. 121).

¹² State intervention in New Zealand agriculture existed prior to the 1970s; however, ‘through to the 1960s [it was] minimal’ (Le Heron, 1989, p. 20). It was in the late 1960s, 1970s and early 1980s that the more significant input and output subsidies and price support mechanisms for agricultural production were put in place (Le Heron, 1989).

Higgins (2005) illustrates how a dairy planning course for Australian dairy farmers, that ‘aim[ed] to provide farmers with the capabilities to set up an annual dairy profit plan’ is an example of a mechanism of agricultural governing. As stated by Higgins (2005, p. 129):

the computer software deployed as part of this course problematised farmers’ existing capabilities and encouraged them to act on their managerial conduct in new ways.

Researchers have explored in some depth how, so-called, market based technologies of government including audits and standards have shaped the farming of livestock producers and kiwifruit growers in New Zealand (Campbell & Stuart, 2005; Le Heron, 2003; Rosin, 2008; Rosin, et al., 2007) and farming elsewhere (Herzfeld & Jongeneel, 2012; Higgins, et al., 2010a). However, a neglected area of research identified by Higgins (2005), is that which explores how the governing of agriculture is being achieved by mechanisms other than those driven by the market but which also reflects a neo-liberal form of rule. This doctoral research explores not only the role of market based technologies in governing the farming of HEHC, but it explores also through what mechanisms central government and the regional council are governing agriculture including those that target through neo-liberal forms of rule, the capabilities of farmers.

Neo-liberalism: inconsistent and hybrid¹³ forms of rule

Although neo-liberalism encompasses some core ideas including ‘marketisation and individualisation’, it is not a ‘unified top down ideological project’ (Larner, 2005, pp. 17, 12) of government (Peck & Tickell, 2002). Instead, it is widely recognised as being characterised by complexity, contestation and contradictions (Dibden & Cocklin, 2010; Higgins, Dibden, & Cocklin, 2012; Larner, 2005), which are revealed according to Larner (2005, p. 17) in ‘diverse imaginaries, governmental techniques and political strategies’ imposed both from above and from below.

‘Imaginaries’ is a term Larner and Le Heron (2002b) have borrowed from the work of Massey. The term reflects Foucault’s idea that the form a concept or logic of rule takes, such as neo-liberalism or globalisation, is affected by the way it is imagined, and the way it is imagined is itself shaped by ‘the material and the discursive interlock[ing]’ (Massey, 1999, cited in Larner & Le Heron, 2002b, p. 758). Peck and Tickell (2002, p. 382) similarly argue that discourses on neo-liberalism and globalisation are so compelling ‘their prescriptions have a self-actualizing quality’. But the discourses of neo-liberalism are also argued to be compelling because they match the principal characteristics evident in ‘the primary contours of contemporary political-economic power’ (Peck & Tickell, 2002, p. 382).

¹³ Hybrid refers to a mix of logics of government not limited solely to a neo-liberal logic (Stenson & Watt, 1999).

The extremely varied forms of neo-liberal rule are attributed, in part, to the previously existing rationalities, practices and programmes from which they evolve (Stenson & Watt 1999 cited in Lockwood & Davidson, 2010). Similar to Larner's (2005) analysis of a diverse neoliberalism, O'Neill and Argent (2005, pp. 7, 8) contend that neoliberalism is presented as a varied form of rule because:

neoliberalism, as policy, rhetoric and discourse, confronts the complex and multi-layered spaces and places of our lives not as a unitary or omnipotent force but as a bundle of tendencies. These tendencies manifest themselves unevenly, as hybrids of 'pure' neo-liberalism, reflecting the processes of command and resistance or acquiescence that occur between scales and between different actors and agencies.

Neo-liberalism (if accepted as the predominant rationality of rule) is expressed therefore in many different variants of rule (Larner, 2003; O'Neill & Argent, 2005) that are contingent on history and geography (Lockwood & Davidson, 2010; Peck & Tickell, 2002), and scale (Larner, 2001) as well as the political and institutional context, and 'as a response to crises' (Dibden, et al., 2009, p. 299). Extended and severe droughts in Australia have led to central government support for farmers and rural communities, a move argued to be supported by broader Australian society (Dibden, et al., 2009). The variance in neo-liberal rule also is evident in the academic accounts of the advanced liberal rule of agriculture in Australia (e.g. Dibden & Cocklin, 2005), New Zealand (e.g. Jay, 2004; Le Heron, 2003) and Europe (e.g. Dibden, et al., 2009; Potter, 2006). These variants are reflected in different and neo-liberal hybrid policies and programmes and also in the 'multiple and contradictory aspects of neo-liberal spaces, techniques, and subjects' (Larner, 2003, p. 509). In addition, accounts of advanced liberal rule of agriculture map out the global (e.g. Le Heron, 2007), local (e.g. Higgins, 2005) and horizontal forms of rule (e.g. Dibden & Cocklin, 2007). Neo-liberal government is characterised as tending to sustain and generate hybrid practice (Larner, 2003; Lockwood & Davidson, 2010) and the neo-liberal governing of the interface between the environment and agriculture in Australia is illustrated as no exception (e.g. Higgins & Lockie, 2002; Lockie & Higgins, 2007).

Little attention has been given to the variety of forms of neo-liberal rule of agriculture in New Zealand that have evolved since the initiation of the neo-liberal era. In particular an aspect of research that is lacking is the study as to how, in the words of O'Neill and Argent (2005, p. 8): 'processes of command and resistance or acquiescence ... occur between scales and between different actors and agencies'. This research makes a contribution in this area by exploring how national and sub-national level governing interconnect and resist to shape farmers practice, but also how this governing interconnects and resists farmers governing of HEHC, also.

Conceptualisations of agricultural and rural change: ideals and reality

Neo-liberalism is recognised as a rationality of rule of agriculture expressed in a variety of hybrid and distinct forms in different countries including Australia and the United Kingdom (Dibden, et al., 2009). This research explores the neo-liberal variant of rule evident in the governing of the farming of HEHC in the Manawatu-Wanganui region. New Zealand and Australia differ distinctly from the United Kingdom in central government's involvement in the governing of farming and agriculture. Whereas New Zealand and Australia, as members of the Cairns Group, are strongly committed to free trade and a neo-liberal commitment to market rule without intervention of central government, the United Kingdom has taken a different approach, in particular in relation to governing agriculture and rural spaces.

A similar distinction is evident between the social science literature in the United Kingdom and that of New Zealand and Australian scholars in relation to agriculture and the governing of agriculture. Conceptualisations of changes in agriculture and in the governing of agriculture have attracted significant attention in the United Kingdom from a range of social science scholars. This literature illustrates a level of engagement by social scientists in challenging and informing change in central government policy for agriculture in the United Kingdom that is not evident in New Zealand. Although there is a distinct scarcity of similar literature engaging with the changing dimensions in New Zealand agriculture, a limited but expanding body of work is appearing in Australia (e.g. Argent, 2002, 2011; Cocklin, Dibden, & Mautner, 2006; Dibden & Cocklin, 2009; Dibden, et al., 2009; Holmes, 2002, 2006).

Agriculture and the governing of agriculture in the United Kingdom have been explored and represented as occurring along a continuum of change from productivist to post-productivist and multi-functionality, and, more recently as different forms of neo-productivism. In essence, the continuum from productivist to multi-functional recognises the expansion of the use of rural areas from a singular productive use to a more 'complex and contested mix' of production, consumption, and protection (Holmes, 2006, pp. 142,143). Consumption refers to the use and valuing of rural areas for uses other than production, such as recreation, lifestyle, and tourism with value attributed to aesthetic elements of the landscape. Protection is taken to encompass sustainability concerns for both environmental and social protection (Holmes, 2006). Mather et al. (2006, p. 454) articulate the shift as representing a 'de-emphasising of material production relative to other objectives', and argue that the shift can refer not only to a shift in policy but also to a linked change in public opinion and apparent socio-cultural change as well as actual land use.

The productivist/post-productivist and multi-functionality conceptualisations are considered to have limited relevance to New Zealand (Roche, 2005) and have been paid little specific attention by researchers outside of the United Kingdom, including in New Zealand (an exception is Jay, 2004) and Australia (Holmes, 2006). However, this literature has relevance because it explores the governing of agriculture and rural areas in the United Kingdom, predominantly by national-level government. It provides a discourse and framework through which aspects of the case of the governing of HEHC in the Manawatu-Whanganui region can be explored. As is evident in the work of Australian scholars, whether arguing for (e.g. Dibden, et al., 2009) or against (e.g. Argent, 2002) the relevance of these conceptualisations to Australian agricultural reforms and change, the concepts have been catalysts for an exploration of these aspects in policy and on the ground change.

Significantly, this literature also illustrates the context-specific nature of neo-liberalism as a form of rule, and in particular it highlights the role competing discourses specific to particular contexts play in shaping forms of rule through resistance and accommodation. The conceptualisations of productivism/post-productivism and multi-functionality in the United Kingdom and Europe by social scientists have introduced and emphasised a challenge to singularly neo-liberal discourses, a challenge only relatively recently evident in the social science literature in New Zealand (e.g. Campbell, et al., 2009; Haggerty, et al., 2009).

The productivist/post-productivist dualism

The productivist/post-productivist dualism gained currency in the United Kingdom in the 1990s (Evans, Morris, & Winter, 2002). This literature is critical of productivist agriculture and represents a counter-discourse and form of resistance to neo-liberalism. Productivism is characterised as being a period when agriculture was ‘king’ (Cloke & Goodwin, 1992; Wilson, 2002), the property rights of farmers were secure and unchallenged institutions (Marsden, Murdoch, Lowe, Munton, & Flynn, 1993) and the farming sector had the ‘ear of government’ and was supported and favoured in government policy. The productivist era is characterised also as a time when farming was focussed on maximising production, and central government policies supported this through subsidies, incentives, and protectionist policies (Bjørkhaug & Richards, 2008).

The post-productivist period presents a normative construction of United Kingdom agriculture, no longer focussed solely on production, but also on environmental conservation and food quality: the indicators of this shift being the so-called greening of agricultural policy, and more environmentally focussed farming practices (Ward, 1993; Wilson, 2002, 2004). Although the term ‘sustainability’ is not generally used in this literature, what is described reflects a move towards a more environmentally sustainable form of agricultural development.

At the farm level, the shift from productivism to post-productivism was described normatively as being a shift from intensification, concentration and specialisation to extensification, dispersion and diversification (Ilbery & Bowler, 1998). Intensification is akin to productivity, with a focus on the efficiency of production per unit of resource; concentration refers to the accumulation by a few of large areas of farmland; and specialisation limits the number of products produced (Ilbery & Bowler, 1998).

Post-productivism is said to have signified a decline in the importance of agriculture, socially, economically, and politically (Ward, 1993). The shift in power, according to Wilson (2004, p. 462), allowed former ‘political marginal actors’ (such as environmental groups or local grassroots organisations) into the agricultural decision-making and policy formulation networks. Post-productivist ideas, as articulated in the United Kingdom literature in the 1990 and early 2000s, marginalised productivist agriculture. As Marsden (2003, p. 93) argued, within this conceptualisation ‘the farm bec[ame] a criminalised space, a place where the ‘dirty business’ of intensive agriculture occurred, usually behind closed doors and gates’. Likewise Wilson argues, based on a review of the literature, that the idealised concept of post-productivism was associated with a shift in the power dynamics in the countryside away from farmers and what he identified as ‘changing attitudes towards destructive environmental management practices on farmland at the grassroots level’ (Wilson, 2004, p. 462). Reflecting this change in attitude it is argued that farmers were no longer viewed as stewards of the land, but as ‘destroyers’ (Potter, 1998, cited in Wilson, 2002, p. 80). No mention is made in this literature of the practices of farmers to avoid environmental damage or the social and economic contribution of farming in the United Kingdom, nor the environmental services provided through farming.

The simplistic dualism of productivism/post-productivism to capture the ‘reality’ of the reforms in agriculture and the changes in perspective that shaped the governance of rural land, attracted critique in the 2000s (e.g. Burton & Wilson, 2006; Evans, et al., 2002; Lobley & Potter, 2004; Walford, 2003; Wilson, 2002). In particular what the critiques argued was that the normative ideas and conceptualisations of agricultural change failed to reflect the complexity of the actual situation at a national and farm level. One of few empirical studies undertaken in Britain found that, although farmers surveyed had adopted agri-environmental schemes and responded to the evolving policy and economic direction, they continued to farm in accordance with a productivist agricultural regime (Walford, 2003); that is, they continued to illustrate characteristics of intensification, concentration and specialisation. A strong impetus for continued productivism among farmers and government policies is argued as continuing to exist in the United Kingdom. However, an understanding of the diverse and heterogeneous nature of productivism at the farm level began to emerge (Walford, 2003; Wilson, 2002). Productivist and post-productivist agriculture was not confined to any particular time frame or location (as Wilson (2002) argues)

but, rather, as Walford (2003) found, farmers were likely to be farming in accordance with both regimes at the same time on different parts of their land. Similarly, more intensive agriculture is more likely to be occurring on more fertile flat land, than on less fertile extensive farmland (Walford, 2003). In another study, Lobley and Potter (2004) found that in contrast to the rhetoric at the time, there was a resilience and commitment among farming families to remain in mainstream agriculture. These findings contradicted the publicised ‘crisis’ in United Kingdom agriculture and the demise of family farm, a situation supposedly linked to the ‘cost price squeeze...compounded by the Foot and Mouth Disease outbreak of 2001’ (Lobley & Potter, 2004, p. 500).

The ability of one term, ‘post-productivism’, to accurately conceptualise the empirical reality of the complexities of contemporary agricultural restructuring was comprehensively critiqued by Evans et al. (2002). The empirical evidence for conditions identified in the literature as constituting post-productivist agriculture in the United Kingdom was refuted, and the need for an understanding of the deeper process of rural change argued (Evans, et al., 2002). Although not contesting these conclusions, the empirical basis for Evans et al.’s (2002) criticism was challenged by Mather et al. (2006). The basis of their challenge was that ‘few results of systematic and national-scale analyses of trends in dimensions’ attributed to a shift to post-productivism existed and because ‘a full quantitative basis for the conclusions of Evans et al. (2002) [had] not been presented’ (Mather, et al., 2006, p. 443). From a governmentality perspective the lack of statistics and empirical data representing the changes inherent in post-productivism would suggest a lack of commitment by the United Kingdom central government to a post-productivist regime at the time. This may suggest that, rather than documenting a shift in central government policy for agriculture, the productivist/post-productivist literature in the United Kingdom (as evident in the examples provided) was intended more as a form of resistance to neo-liberal policy development for agriculture than as a means of making visible real change. The relative independence of conceptualisations of agricultural and rural change from empirical data is characteristic of many of the critiques of agriculture included within this literature.

Consistent with the critiques in United Kingdom literature, the failure of the productivist/post-productivist dichotomy to capture the complex diversity of changes in Australia at a regional and farm level ‘because farm level dynamics do not fit neatly into a productivist; post-productivist divide’ is acknowledged by Argent (2002, p. 111). The utility, if any, of the dichotomy, as it is used in many articles in United Kingdom, Argent (2002) argues, is to articulate the macro-structural policies of national and transnational governments for agriculture. However, he also recognises that farming is not divorced from broader changes in society and the impact of policies and changes within the economy and society (Argent, 2002).

A New Zealand exception argues for the relevance of productivism and post-productivism to New Zealand. Jay (2004) suggests, in a similar vein to Argent (2002) for Australia, that post-productivist elements vary internationally and reflect a shift in attitude and increased environmental awareness among broader society, that includes farmers. The argument is made for a post-productivist form of agriculture existing in parallel with mainstream productivist agriculture. Significantly, post-productivist agriculture in New Zealand is argued by Jay (2004) to be the result, not of central government or market governing of farming and agriculture, but, rather, an outcome of structural and value changes in wider New Zealand society.

Multi-functionality

The concept of multi-functionality gained favour as being a potentially more accurate conceptualisation of the situation in agriculture and rural land use than post-productivism (Bjørkhaug & Richards, 2008; Cocklin, et al., 2006; Marsden & Sonnino, 2008; Wilson, 2002, 2008). However, the value of multi-functionality, as with the previous two concepts, is also debated (Burton & Wilson, 2006).

Multi-functionality of agriculture recognises that outputs from agriculture include not just marketable products, such as food and fibre, but also outputs that currently may not be able to be marketed; they are, however, valued by society. The exact nature of these outputs reflect societal values, but according to Marsden and Sonnino (2008, p. 422) include: ‘environmental amenities, agritourism, food quality, landscape management, preservation of biodiversity.’ Wilson (2002, p. 96) proposes that multi-functionality captures the ‘diversity, non-linearity and spatial heterogeneity’ of the nature of the changes that are implied by a move away from productivism in the United Kingdom. However, it is also acknowledged that the concept is not clearly understood and inconsistently conceptualised (Marsden & Sonnino, 2008).

In Australia, multi-functionality has found favour as a descriptor of broad rural changes in land use and ownership, including according to Holmes (2006) peri-metropolitan land use, conservation estates, and indigenous land. It has also been claimed as useful for analysing the changing tendencies of the Australian Government to interventions in the governing of farming through agri-environmental schemes and ongoing support for farmers suffering the extremes of continual droughts (Dibden & Cocklin, 2009).

Multi-functionality has received attention during World Trade Organisation negotiations (Dibden & Cocklin, 2009; Frame & Newton, 2007). The incorporation of multi-functionality into the discourse of trade negotiations at this level has no doubt contributed to its use and exploration in the academic literature. European countries (including the United Kingdom) argue strongly for the need to retain domestic protectionist policies for agriculture, to ensure that non-marketable

outputs are captured by the concept of multifunctional agriculture and are not diminished (Burrell, 2001; Potter & Tilzey, 2007). In the case of the European Union, these non-marketable outputs are considered to contribute to sustainable development, protection of the environment, the sustained vitality of rural areas, poverty alleviation, and food safety (Potter & Tilzey, 2007). This stand by the United Kingdom and other European countries is strongly argued against by members of the Cairns Group of countries, which include New Zealand, Australia, and the United States of America (Burrell, 2001). The basis of their challenge is the assumption that land needs to be farmed, in order to ensure these outputs; hence, farming needs to be protected (Dibden, et al., 2009; Potter & Tilzey, 2007). The use of the term ‘multi-functionality’ within this international context has clearly been politicised for the purpose not solely of ensuring the sustainable development of agriculture within and across national boundaries, but also to satisfy the complex agendas of different countries and their farming sectors.

Multi-functional agriculture was re-conceptualised in the 2000s as part of a broader agenda for sustainable rural development in the United Kingdom. A reason for the shift in perspective for agriculture in the United Kingdom is attributed, in part, to the Foot and Mouth and the BSE¹⁴ crises in the early 2000s (Marsden & Sonnino, 2008). Not only did these crises undermine consumers’ trust and adversely impact farmers’ incomes, according to Marsden and Sonnino (2008), these crises, along with swine fever, profoundly illustrated to the government and broader society the contribution farming and agriculture made to the broader well-being of those service and recreational sectors that also rely on and use the countryside. As an example, by the time the Foot and Mount Disease outbreak in 2001 had been eradicated, it was reported that:

more than six million farm animals had been slaughtered. The direct cost to the public sector has been estimated at over £3 billion, with the cost to the private sector estimated at over £5 billion (National Audit Office, 2002, cited by Ward, Donaldson, & Lowe, 2004, p. 291).

A condition of the revised multi-functionality was therefore defined as being an activity that provided income and employment opportunities to the agricultural sector, that created an agricultural sector that met the broader needs of society, and that also saw a ‘redefinition and reconfiguration of rural resources in and beyond the farm enterprise’ (Marsden & Sonnino, 2008, p. 423).

Multi-functional agriculture is primarily presented as a normative model for sustainable agriculture and sustainable rural development. As with post-productivism, this concept has attracted criticism, principally because it fails to reflect the complex restructuring that has occurred in agriculture and the ‘reality’ of agriculture today in different countries (Bjørkhaug &

¹⁴ BSE is Bovine spongiform encephalopathy also commonly referred to as mad cow disease.

Richards, 2008; Burton & Wilson, 2006). But, as shown above, the concept is also critiqued because it is claimed that the multi-functional discourse has not been translated into technologies of government or ‘real’ change on farm.

In spite of the criticism of the concepts, the lack of accord between the macro-level depictions of agricultural change captured by the productivist/post-productivist and multi-functionality conceptualisations and that of farmers have received little attention from scholars.

Neo-productivism: a new conceptualisation for agriculture

Neo-productivism is a relatively recent term coined to capture a form of agricultural production that is moderated and more sustainable (Burton & Wilson, 2012; Evans, et al., 2002; Marsden & Sonnino, 2008). The notion of ‘neo-productivism’ in 2002 is argued by Evans et al. (2002, p. 321) to enable

the possibility of developing environmentally sensitive farming through the extension of productivist principles. Recent trends strongly suggest that various forms of ... ‘neoproductivism’ might make important contributions to the development of sustainable farming systems.

It is a term with potential utility for this research because, unlike post-productivism and multi-functionality, it limits its differentiation to forms of farming and does not attempt to account for multiple uses of rural areas that go beyond mainstream farming. The term is applied by Evans et al. (2002) to organic agriculture and integrated farming system’ approaches, forms of farming that are described as favouring production but moderated by environmental and social concerns. Neo-productivism is also applied by Marsden and Sonnino (2008) to the Welsh Agri-Food Strategy, which is described as continuing to focus on securing market access for agricultural products while enhancing the sustainability and multi-functionality of Welsh farming.

Burton and Wilson (2012, p. 67) identify four types of neo-productivism: repositioned; market; competitive; and cooperative productivism. The forms are differentiated by the role of the state, the market and farmers in governing, but also the extent to which a productivist agenda is ‘moderated’ by broader objectives (Burton & Wilson, 2012, p. 67). Repositioned productivism is productive farming, moderated by multifunctional and/ or sustainability objectives. Market productivism is driven by market forces that coexist with, but are not moderated by, multi-functionality. A mix of repositioned productivism and market productivism is considered a relevant conceptualisation of agriculture in Europe (Burton & Wilson, 2012). Competitive productivism is facilitated by neo-liberal governance and market driven. Competitive productivism is stated as distinct from market productivism in that central government (the state) encourages market-led productivism by allowing the consumption of environmental capital and clearing trade barriers. Competitive productivism is productivism argued to exist in Australia

(Dibden & Cocklin, 2005) and accepted in this research as evident also in New Zealand agriculture. Finally, cooperative productivism is defined as being facilitated by the state, as part of a neo-liberal rationality of rule, but, unlike competitive productivism, it is driven by a ‘grassroots ideology of the farmers’ (Burton & Wilson, 2012, p. 67). The cooperative New Zealand dairy industry is explored as an example of cooperative productivism by Burton and Wilson (2012) and is described as distinct in explicitly acknowledging farmers as a form of influence on macro-level governing of this sector. Competitive and cooperative productivism is argued to be relevant to New Zealand and Australia because of ‘the pioneering mentality of the population, the nations’ reliance on export agriculture, a lack of embedded non-agricultural rural communities, and the availability of considerable levels of environmental capital to exploit’ (Burton & Wilson, 2012, p. 67).

Productivism/post-productivism, multi-functionality and neo-productivism represent agriculture in varying ways that are relevant to the New Zealand context and the governing of agriculture and the farming of HEHC. This research focuses on the farming of HEHC and its governing as a form of sustainable agriculture. The impact of farming on the environment is the dimension of sustainability that is central in this research, and literature that explores in a more focussed way the governing of agriculture’s interplay with the environment is the focus of the next section of this literature review.

Governing sustainable agriculture

The competitive productivist agenda for agriculture advanced by neo-liberalism and globalisation in New Zealand and Australia has had undeniable implications for the natural environment (Jay, 2007). Agri-environmental governance has emerged as a policy area where the seemingly competing domains are the focus (Dibden & Cocklin, 2005). This policy area has also attracted a significant body of research both in New Zealand and internationally (e.g. Beckmann, Eggers, & Mettepenningen, 2009; Burton & Paragahawewa, 2011; Dibden & Cocklin, 2005; Higgins, Dibden, & Cocklin, 2007; Lockie & Higgins, 2007; Manderson, Mackay, & Palmer, 2007; Potter, 2006; Wilson, 2004). The management of HEHC by farmers, which reduces the actual and potential levels of accelerated soil erosion, are recognised by central government as having public benefit (Office of the Minister of Agriculture, 2007). There is a long history in New Zealand of central and local government’s accepted responsibility for assisting farmers in the provision of this off-farm benefit. The programmes in place to govern the farming of HEHC in the Manawatu-Whanganui region are examples of agri-environmental governing.

Research that has attempted to explain farmers’ adoption and participation in agri-environmental schemes by seeking cause-and-effect relationships between factors internal and external to the

farm business is reviewed in this chapter and rejected. Instead, the thesis draws upon research that constructively sheds light on the complex relations between expertise, knowledge, governing mentalities and the cultural dimension of farming.

Agri-environmental policy gained prominence in the United Kingdom from the early to mid 1980s, according to Potter (1988), as a result of the Environmentally Sensitive Area programme. The programme was significant because it was funded as an agricultural policy scheme by the United Kingdom Ministry of Agriculture, Fisheries and Food and was ‘both an environmental and an agricultural policy instrument’ (Potter, 1988, p. 301). The inclusion of agri-environmental policy within the Common Agricultural Policy¹⁵ (CAP) around the same time is argued also to have contributed to the broader use and acceptance of this term (Hodge, 2001; Potter, 1988).

Rationalities of rule and environmental impacts

The adverse impacts of the intensification of agricultural production are now well documented in New Zealand, Australia, and internationally (e.g. Argent, 2002; Dibden & Cocklin, 2005; MacLeod & Moller, 2006; Parliamentary Commissioner for the Environment, 2004), and include accelerated soil erosion on farmed hill country in New Zealand (Mackay, 2008b; MacLeod & Moller, 2006).

Unlike some environmental issues linked to the intensification of agriculture, accelerated soil erosion, as a result of pastoral farming on highly erodible land, has been a recognised issue in New Zealand since the 1880s (McCaskill, 1973; Roche, 1994). In contrast to more recently identified issues, such as fertiliser and effluent contamination of waterways, there is a history of central government, scientist, and farmer involvement in governing HEHC. This history and the policies and events that define it are expanded upon in Chapter Five.

Historically, in New Zealand and elsewhere, major changes to the way governments and agricultural sectors have approached the governing of agricultural lands has occurred in the aftermath of environmental devastation (Barr & Cary 1992 cited in Lockie, 2006b; Mather, 1982; Roche, 1994). Policies established by the United States Government in response to the ‘Dustbowl era’ were a template for the policies established by the New Zealand Government in the 1930s, following widespread land erosion and flooding (Mather, 1982; McCaskill, 1973; Roche, 1994). Similarly, Cyclone Bola’s damage to land on the East Coast of the North Island in 1988 led to the establishment, by the then government, of the East Coast Forestry Programme (Ministry of

¹⁵ CAP is a policy of the European Union that came into operation in 1962. ‘It is the framework under which European farmers operate. It sets out a range of farming, environmental and rural development activities as well as controlling EU agricultural markets. It is the single largest common policy across the EU’ (Department for Environment Food and Rural Affairs, 2012, n.p.).

Agriculture and Forestry, 2005a). This programme, similar to those established by the Australian Government to assist farmers suffering the effects of long-term drought (Dibden, et al., 2009), represents a departure by central government from neo-liberal rule. A devastating storm was also a catalyst for the way farming of HEHC in the Manawatu-Whanganui region is governed by both central government and the regional council, and will be described in more detail in the results chapters of this thesis.

The environment and sustainability are a focus of a significant body of scholarly work that explores aspects of New Zealand and Australian agriculture in the neo-liberal and globalised era (e.g. Campbell, 2009; Dibden & Cocklin, 2005; Higgins, et al., 2007; Higgins, Dibden, & Cocklin, 2008; Le Heron & Roche, 1996; MacLeod & Moller, 2006; Rosin, 2008). In 2002, Campbell and Lawrence (2002, pp. 98, 99) assessed the impact of neoliberal reforms on Australian and New Zealand agriculture and concluded:

attempts to form an environmental policy for agriculture have been truncated and subordinated to the overall drive towards neoliberalism, while any vestiges of a rural policy by both countries has been largely abandoned.

Sustainable agriculture this suggests was not an agenda of either the New Zealand or Australian Governments at the time. Scholars imply interconnections between neo-liberalism, globalisation, intensification of agricultural production and environmental degradation (e.g. Campbell & Lawrence, 2002). However, analysis of trends in intensification and diversification in New Zealand agriculture do not support the claim that intensification of agricultural production accelerated after the introduction of neo-liberal reforms in New Zealand (MacLeod & Moller, 2006). The analysis of historical statistics and national indicators by MacLeod and Moller (2006) show accelerated intensification of agriculture was already underway in the 1960s. The complex changes in agricultural production patterns after the reforms are argued by MacLeod and Moller (2006) to be the result of a complex of drivers; however, from the statistics and indicators available the specifics of the drivers were unable to be discerned.

A causal link between neo-liberal forms of rule, the intensification of agriculture and environmental degradation has been now also rejected by New Zealand researchers (Campbell, Rosin, Hunt, & Fairweather, 2012; Haggerty, et al., 2009; Jay, 2004). With reference to their own study of intensive sheep production in Southland, and those of others who have explored the New Zealand case of neo-liberal reforms Haggerty et al. (2009, p. 776, italics as in original) conclude:

What has become grudgingly accepted is that there is no simple causal relationship running from neo-liberal reform to increased intensification of agriculture to generally negative environmental outcomes. Clearly there is a range of other complex relationships *co-producing* particular environmental outcomes on farms.

The market, nature and farmers' own subjectivities are recognised as components of the 'complex of relationships' co-producing environmental outcomes in New Zealand agriculture (Campbell, et al., 2012; Haggerty, et al., 2009). Also argued by Jay (2004) is the influence of changes in broader society's attitudes towards the environment on farming practices of New Zealand farmers.

The involvement of national/federal government in governing the impact of agriculture on the environment varies across countries and has resulted, Lockie (2006b) contends, in a range of approaches, and new and novel arrangements between the state, farmers and non-government actors. This variation is identified as contingent, among other factors, on the country's agricultural trading policies and neo-liberal agenda commitment (Aerni, 2009; Aerni, Rae, & Lehmann, 2009). In New Zealand, it is argued, central government facilitates sustainable agriculture through 'the promotion of technological innovation and rural entrepreneurship, strict biosecurity control as well as incentives to adopt sustainable farming practices' (Aerni, 2009, p. 1874).

The underlying premise of the agri-environmental policies included in the CAP, Hodge (2001, p. 101) argued, is 'that farmers hold the property rights to alter the environment and thus should be given incentives to change practices'. However, Lockie (2006b) argues that these policies assume that agricultural and environmental production are in opposition to each other and that farmers are not inherently involved in environmental practice; and therefore, governments need to subsidise farmers' practices in this area. He describes the Australian approach as distinct from the European:

In contrast with European measures, the assumption [in Australia] is not that agricultural and environmental production stand in necessary opposition but, quite the opposite, that environmental degradation occurs because of the failure of markets to recognise the fundamental dependence of agriculture on environmental protection. The emphasis of policy, consequently, shifts from the payment of subsidies for the preservation of environmental and social values to the provision of information, planning assistance, capacity-building opportunities and market-based incentives to assist in the internalisation of environmental and social costs (Lockie, 2006b, p. 24).

As illustrated by Lockie (2006b), agriculture's impact on the environment is referred to by some scholars as (using discourse consistent with a neo-liberal perspective) a failure by the market (and the technologies of government utilised by the market) to adequately manage the externalities¹⁶ of agricultural production (e.g. Buttel, 2003; Pahl, 2007). With a focus on Australian meat and wool producers, Pahl (2007) concludes that the international market failed because consumers were not willing to pay enough for environmentally assured meat and wool products, in order to cover the full costs to the producer of producing environmentally assured produce. The failure of this

¹⁶ Externalities are 'reductions in the welfare of others that are not accounted for in the price system or through compensation' (Buttel, 2003, p. 1656).

simplistic assessment becomes clear when consideration is given to how the market could be made not to fail. As Pahl points out, it is unreasonable to expect all other nations in the market — with such a vast diversity of living standards, agricultural practices, costs and supports — to ‘fall into line with Australia’s expectations for Australian agriculture’ (Pahl, 2007, p. 243). Although Pahl’s (2007) research perspective differs from Lockie’s (2006b), both their findings reinforce the complex (within country context) that is created by the exposure of national agricultural industries and farmers to the international market place. This complexity according to Higgins et al. (2008, p. 1778) poses ‘intractable dilemmas’ for central/federal governments in ‘meeting the contradictory demands of market and public pressures to tackle environmental problems’.

The provision of agri-environmental schemes (an example of a technology of government) has been obligatory for member states of the European Union since 1992 (Beckmann, et al., 2009), and agri-environmental schemes have also been part of the rural governance landscape in Australia. A characteristic of agri-environmental governance in Australia, identified by Higgins and Lockie (2002), is the hybrid nature of rule. Agri-environmental schemes are hybrid, according to the authors, because the schemes encourage competitive productivism and entrepreneurship among farmers, while also seeking social responsibility in terms of environmental management (Higgins & Lockie, 2002; Lockie & Higgins, 2007). What this means is that while on the one hand, individual farmers are encouraged to act independently of government intervention, in order to improve their productivity and profitability and compete in the world market place, on the other hand, they are expected to make decisions based on the broader social and environmental costs and benefits of their actions (Lockie & Higgins, 2007). The hybrid nature of these programmes are argued by Lockie and Higgins (2007) to contribute to the lack of success of agri-environmental programmes in Australia. Even when farming is profitable the authors argue that there remains:

a fundamental contradiction between the definition of sustainability as an outcome of the economically efficient allocation of resources, and the attribution of responsibility to address environmental degradation to individuals with limited scope to capture sufficient benefits from environmental works to justify expenditure on them (Lockie & Higgins, 2007, p. 5).

Expertise defining the governing of agriculture

The expertise of economists and their calculations and metrics for reporting agriculture were shown to have influenced the construction of the problematic and hence, government policies in the United Kingdom during the 19th and 20th centuries (Murdoch & Ward, 1997) and in Australia during the 1960s and 1970s (Higgins, 2001b). As an illustration of this, an example is drawn from Murdoch and Ward’s (1997) paper. In the 1940s, for the purpose of the National Farm Survey, a ‘farm’ was defined as distinct from a ‘holding’. At that time it was not uncommon for a small

holding of a few paddocks to be owned and used for ‘grazing purposes in connection with businesses other than farming’ (Ministry of Agriculture, Fisheries and Food, 1946, cited in Murdoch & Ward, 1997, p. 316). However, holdings were considered to be a farm only when

[the holding] provides the main employment of and a chief source of livelihood to the occupier and conversely, holdings which are not capable of doing so are not farms (Ministry of Agriculture, Fisheries and Food, 1946, cited in Murdoch & Ward, 1997, p. 316).

As argued by Murdoch and Ward (1997, p. 316) this definition of a farm has had long term implications for how agriculture is represented and governed in the United Kingdom (and it is likely also more broadly) because the definition

severed agriculture from the rural economy more generally; agricultural businesses were both classified as, and expected to be, discrete economic units involved only in agriculture.

The agri-environmental literature does not specifically highlight the role of expertise in governing but certain favoured expertise is evident in how the issues concerning the environment are represented. The reference in the earlier sections to ‘market failure’ as the reason for the impact of agriculture on the environment reflects economic expertise.

Expertise alone, however, does not define how agriculture is governed. Particular expertise is afforded authority within agricultural policy, depending on the rationality of government in a country. Research and development were found to dominate public debate, shaping domestic agricultural policy in New Zealand (Aerni, et al., 2009). In contrast, in Switzerland, which has more protectionist and less competitive agricultural policies than New Zealand, the agricultural debate was found to be influenced by advocacy groups, retailers, and regulatory agencies (Aerni, et al., 2009). A multi-functional perspective is evident in the findings from Switzerland, whereas it could be argued the results from New Zealand reinforce the predominance of a competitive-productivist rationality.

In addition to the national-level mentality of rule empowering expertise, governing is also illustrated as being the outcome of a combination of planned and unplanned events and circumstances. Higgins (2001b, p. 358) found that the expertise of economists was not enough to influence the governing of the ‘Low-Income Farming Problem’ in Australia, during the 1960s and 1970s. Higgins (2001b, p. 372) explains:

the authority accorded to economic forms of knowledge neither developed in a vacuum, nor was pre-given. A number of events and political changes enabled the practices of economists to assume increased prominence in providing solutions to the problems seen to beset agricultural industries.

In a similar example, reducing soil erosion in the Flanders region of Belgium became a priority for the Flemish government in the late 1990s, this is attributed in part to the role scientists played in ‘the development of the problem perception and control’ (Verstraeten, Poesen, Govers, Gillijns, Van Rompaey, & Van Oost, 2003, p. 97). However, as with the previous example, the decision to prioritise soil erosion is reported as being the result also of a change in the ruling coalition parties, lobbying by a few dynamic people from the lower administration of the government, and the growing environmental awareness of the Belgium public (Verspecht, Vandermeulen, De Bolle, Moeskops, Vermang, Van den Bossche, Van Huylenbroeck, & De Neve, 2011; Verstraeten, et al., 2003).

The historical governing of soil erosion in New Zealand also illustrates this type of genealogy. Mather (1982) explains on how adverse events led to changes in the governing of land in New Zealand. He illustrates how, over time, events like the United States ‘dust bowl’ and large soil degradation events in New Zealand created a context in which scientists were able to influence government policy (Mather, 1982). The significant role soil conservation advocates played in the late 1930s and early 1940s in the enactment of the Soil Conservation and River Control Act is made clear by Mather (1982) and in historical accounts of soil conservation in New Zealand (McCaskill, 1973; Roche, 1994).

Resistance as government in agriculture

Forms of resistance that define the governing of Australian agriculture are identified by Dibden and Cocklin (2007). Political action both overt and covert, and non-political resistance, which is resistance by way of choosing to follow an alternative form of farming to that of the mainstream neo-liberal agenda, are identified as constituting forms of resistance in agriculture (Dibden & Cocklin, 2007). The demise in Australia of farmer resistance to the current structures of governance and agricultural restructuring, has been explored by Dibden and Cocklin (2007). They suggest two possible reasons for the demise: one, farmers have bought into and ‘internalized [sic] discourses of self-sufficiency and self-responsibility’, which have been promoted as part of the neo-liberal project and therefore, farmers take personal responsibility for their situation rather than placing blame on government policies; two, the policies being implemented favour farmers with larger farms, farmers who are also more likely to be office bearers in farming organisations and who are politically active and supportive of current policies (Dibden & Cocklin, 2007, p. 179).

In a similar vein, Murdoch (1995) relates how when the National Farmers Union was brought into the British government policy process, the strong resistance of the Welsh Farmers Union to government interventions in agriculture was neutralised. The national union’s enrolment into the

central government's rationality resulted in the dissipation of active resistance at the local level (Murdoch, 1995).

In another example of resistance, the role of farmers in shaping the neo-liberal agenda of agriculture in Australia is evident, according to Dibden and Cocklin (2007), in farmers' opposition to the deregulation of the dairy industry in Gippsland, Victoria in Australia. Australian farmers' strong commitment to cooperative norms, considered traditional within farming communities, is also argued to be a form of resistance to the pursuit of competitive productivism (Dibden & Cocklin, 2007). This argument, in part, supports Burton and Wilson's (2012) construction of cooperative productivism as distinct from competitive productivism within the neo-productive typology referred to earlier in this chapter.

Farmer resistance and the governing of sustainable agriculture

The focus of current initiatives involving both central government and the Manawatu-Wanganui regional council is to attempt to change farmers' management of HEHC. The regional sustainable land use initiative (SLUI) is an example of an agri-environmental scheme that uses whole farm planning as a technology to govern the on-farm practice of farmers. Internationally, the participation of farmers in similar schemes and the reasons for farmers' non-adoption or adoption of agri-environmental technologies have not resulted in the level of on-farm change anticipated (Burton, 2004a). Finding explanations as to why farmers do not adopt agri-environmental technologies, nor act in accordance with agri-environmental expertise, has been the focus of a vast amount of research, internationally.

With the aim of better informing agri-environmental policy, studies have sought explanations by correlating multiple factors internal to the farm business (e.g. Atari, Yiridoe, Smale, & Duinker, 2009; Roth & Botha, 2009), external to the farm business (e.g. Beckmann, et al., 2009), and both internal and external to the farm business (e.g. Barr & Cary, 2000; Pannell, Marshall, Barr, Curtis, Vanclay, & Wilkinson, 2006). Other studies have focussed more on attempting to understand the motivation of farmers and their responses to agri-environmental schemes and technologies (e.g. Cary & Wilkinson, 1997; Farmar-Bowers & Lane, 2009; Greiner & Gregg, 2011; Roth & Botha, 2009).

With specific relevance to SLUI and whole farm plans used by the Manawatu-Wanganui regional council, using decision tree modelling, Roth & Botha (2009) surveyed farmers to ascertain how the regional council could increase the uptake of the whole farm plan programme. A complex mix of five criteria, covering both on- and off-farm considerations, are reported as influencing hill country farmers' decisions to participate in the SLUI programme:

1. Farmers' awareness and concern for the issue posed by soil erosion in the region and on their farm;
2. The degree to which the soil conservation measures included in the programme would address the issue;
3. The degree to which additional soil conservation work was possible on their farms;
4. The perceived benefits of the plan;
5. The perceived practical limitations of implementing the plan (Roth & Botha, 2009, Discussion section, para. 1).

Based on their findings Roth and Botha (2009, Discussion section, para. 4) suggest 'Significant selling points' for the programme that are linked with non-financial, on-farm benefits provided by the soil conservation work completed, and aspects associated with the programme's implementation by the regional council, which included the technical and financial support they provided.

The failure of farm planning to achieve the sustainability outcome hoped for in Australia has been attributed to the 'agri-science' expertise on which whole farm planning is built (Lockie, 2006b). This expertise, Lockie (2006b, p. 33) argues, is 'committed to a high input model of sustainability based on existing farming practices'. Although farm planning supposedly provided an opportunity to 'reorient farm management' in a way that incorporated the farmer's personal goals as well as issues at the level of the farm, immediate area and region, the outcomes of planning across farm properties were 'remarkably similar' (Lockie, 2006b, p. 33). In another study, farmers who had used whole farm planning spent two to three time more on fertiliser and chemicals than farmers who did not (Lockie, 1999; Lockie, 2001 cited in Lockie 2006). This finding inferred for the researchers a failing in whole farm planning as on the farms surveyed there was no difference across all farms in farming practices that had less direct production benefits than the applications of fertiliser and chemicals. However, what this study did not reveal is whether or not those farmers who chose to use whole farm planning were simply more motivated to achieve high levels of production in the farming operation.

What has emerged across studies of farmers and agri-environmental scheme is that simple cause and effect correlations between factors and farmers' behaviour and the binary classification of farmers (for example into conventional and organic) cannot capture the complexity of motivation and factors that come to bear in farmers' decisions and practice. Little of value, it is argued in this doctoral research, is offered by studies that conclude farmers' adoption of agri-environmental technologies can be meaningfully accounted for by a motivation for financial rewards (e.g. Gunningham, 2007; Stobbelaar, Groot, Bishop, Hall, & Pretty, 2009), or because the farmer's

attitude is, or is not, aligned with the change sought (e.g. Wauters, Biolders, Poesen, Govers, & Mathijs, 2010). As highlighted in New Zealand studies, little is gained also from studies that seek a meaningful explanation, by categorising farmers as conventional and organic, or alternative (Fairweather, Rosin, Hunt, & Campbell, 2009; Lockie, 2006a; Rosin & Campbell, 2009), or conservationists and non-conservationists (Burton & Wilson, 2006).

Farmers' decisions and practice relating to agri-environmental schemes (and specifically farm plans) have been shown to be shaped at a minimum by a multiplicity of financial and non-financial dimensions (Atari, et al., 2009; Robinson, 2006). Environmental values were found to be similarly held by conventional and non-conventional farmers surveyed in a New Zealand study (Fairweather, et al., 2009), differences between farmers in different agricultural sectors, such as those between sheep, beef and dairying, have been identified (Campbell, et al., 2012) both in New Zealand and in the United Kingdom's regionally specific farming cultures (Burton, 2004b). Other studies now also confirm the heterogeneity of farmers (Campbell, et al., 2012; Fairweather, et al., 2009), a finding that would come as no surprise to anyone who has been involved for any length of time in the New Zealand farming sector.

In contrast with those studies that relate farmers motivations for undertaking environmental management with financial rewards, evidence from New Zealand and Australia supports the idea that farmers value social rewards. These studies suggest that greater social recognition of farmers positive roles in environmental management would constitute a motivational incentive for improved land management by farmers (Cocklin, et al., 2006; Fairweather, et al., 2009; Rhodes, Willis, Smith, & McCann, 2003).

Farmers are reported by Morris (2006, p. 117) to 'constitute their identities as farmers in contrasting ways to those constructed by the policy knowledge culture of agri-environmental scheme' a point highlighted by other authors also (e.g. Burgess, et al., 2000; Burton, 2004b). The mismatch between the conception of farmers that informs agricultural and agri-environmental policy and farmers self-concepts and attitudes is illustrated by Burton and Wilson (2006). They challenge the accuracy of the conceptualisation of farmers moving from a post-productivist mind set and practice to a multifunctional one, as being useful for informing policy initiatives in the United Kingdom. Instead, they argue that post-productivism describes patterns at the macro-structural level but does not capture the multiple dimensions of farmers' practice and thinking on-farm (Burton & Wilson, 2006).

The lack of effectiveness of voluntary agri-environmental schemes has been attributed, in some studies, to the prescriptive and means-based nature of the schemes (Burton, Kuczera, & Schwarz, 2008; Burton & Wilson, 2006; Hodge, 2001; Riley, 2008; Ward, Lowe, Seymour, & Clark, 1995). The schemes outline the specifications farmers are required to undertake, and rely on subsidies to

encourage the uptake of particular practices, such as fencing off conservation areas, or harvesting on a particular date (Burton, et al., 2008). As a result, it is argued that farmers have not fully engaged with (or internalised) the principles and ethos of the schemes and that real change has not taken place. This is argued to be because the schemes and associated subsidies do not require farmers to bring to bear their farming expertise or knowledge to this aspect of on-farm practice (Burton & Wilson, 2006) and ‘there is no incentive to act entrepreneurially, to introduce original ideas, to innovate or to be willing to take risks’ (Hodge, 2001, p. 101).

Burton (2004b, p. 196) presents a rationale for considering how technologies contribute to farmers social/cultural rewards:

The reasons for the general failure of voluntary attempts to change the role of the farmer are often presented as either economic factors such as anticipated low returns or high establishment costs, structural factors such as the location of the farm relative to markets, or a perceived lack of skill on the part of the farmer to adopt the new practices. It is becoming increasingly evident that farmers may also resist change on the basis of an anticipated loss of identity or social/cultural rewards traditionally conferred through existing commercial agricultural behaviour. Clear examples of this challenge to the ‘good farmer’ identity are emerging from empirical studies of farmer response to government schemes.

Farming activities that contribute to a farmer’s identity and social/cultural rewards are argued to be those that require a level of farming skill and expertise that can be observed by other farmers in the outcome of the activity (Burton, et al., 2008; Burton & Paragahawewa, 2011). The link between what farmers value and the visual dimension of productive farming is expanded upon by Burton (2012, p. 66):

‘farmers’ aesthetic landscape preference is closely tied with their understanding and practice of production activities, and...this connection has deep cultural and historical roots .. the cultural meaning of being a farmer is heavily embedded in the landscape itself.

‘Tidy’ farming and ‘straight lines’ are a widely recognised example of a farming convention associated with ‘good farming’ that is the source of resistance among farmers of the less ‘tidy’ organic production systems (Burton, 2004b; Burton & Paragahawewa, 2011), including those in New Zealand (Egoz, Bowring, & Perkins, 2001).

Farmers in Australia have a strong preference for voluntary and education-based tools ahead of regulation, in relation to supporting sustainable land management (Cocklin, Mautner, & Dibden, 2007). This preference, it is argued, is aligned with farmers’ strong desire for independence and for being in control of their own destiny (Cocklin, et al., 2007; Higgins, et al., 2012; Leviston, Price, & Bates, 2011; Robinson, 2006). There is evidence also that New Zealand farmers are similarly opposed to regulation. The strongest opposition to Environmental Management Systems

and Quality Assurance schemes expressed by the farmers surveyed as part of the ARGOS¹⁷ project in New Zealand, came from farmers who considered the schemes as a form of regulation of their autonomous practice and (as such) a challenge to their standing as farmers (Rosin, et al., 2007).

This perspective is strongly supported by research that shows the relative success of schemes in which farmers have been actively involved in the instigation and ongoing management of the scheme, and where the specifics of the scheme's application were worked through at the individual farm level (e.g. Robinson, 2006). The advantage of governing mechanisms, tailored to individual farm circumstances were highlighted in a study in Canada. A growing interest from farmers to the Environmental Farm Plan scheme was attributed to a 'renewed interest in generating ecological goods and services' by farmers but also because

the effectiveness of uniform beneficial management practices in mitigating the negative environmental impacts from agriculture is limited by inherent heterogeneities in agricultural production systems (Yiridoe, Atari, Gordon, & Smale, 2010, p. 1104)

The importance of the relationship between farmers and the officials promoting and overseeing the scheme is also highlighted (Robinson, 2006). Morris (2006) argues that experts, who are outsiders to farmers' knowledge-cultures, may not be the best people to be designing agri-environmental schemes or working with farmers to adopt these schemes. Improved environmental outcomes on farms, it is argued, rest on achieving improved communication and negotiation between farmers and people from outside farming (Burgess, et al., 2000; Tsouvalis, et al., 2000). Confirming this, credible intermediaries were identified as important in translating and assisting farmers to interpret and span the boundary between their tacit farming knowledge and expert farmer decision support systems in Australia (Eastwood, Chapman, & Paine, 2012). The authors concluded:

Linkages between users and retailers were impeded by the limited ability of each party to step outside their domain of expertise. The network of practice required translators to act as boundary spanners in bridging explicit and tacit knowledge domains. These individuals can prove effective not only because they can translate between farming practice and [decision support systems] knowledge, but because they also have a high degree of credibility with farmers (Eastwood, et al., 2012, p. 17).

The large body of literature that has focussed on understanding why farmers do not act in accordance with scientific knowledge-based technologies has been criticised for its failure to value or recognise the legitimate status of farmers' knowledge (Morris, 2006; Riley, 2008; Tsouvalis, et al., 2000). As argued in Chapter Two, a line of research accepted as constructive in

¹⁷ ARGOS: Agricultural Research Group on Sustainability is a New Zealand research consortium with a mandate to examine the environmental, social and economic sustainability of New Zealand farming systems (ARGOS, 2012).

this thesis is that which recognises and gives legitimate status to the experiential-based tacit knowledge of farmers as a knowledge-culture (e.g. Riley, 2008; Tsouvalis, et al., 2000).

Farmers were shown to resist the policy knowledge culture of agri-environmental scheme with reference to their practical and experiential knowledge of managing the land (Morris, 2006; Riley, 2008). However, the farmers, in contesting agri-environmental schemes, Morris (2006) reports, drew on other knowledge, including that anchored in the productivity agenda of the neo-liberal project. Farmers' scepticism about scientists and policy-makers, Riley (2008, p. 1291) concludes, is because their knowledge (compared with the farmers' 'longstanding, durable and certain') is considered by farmers to be 'uncertain and transient'. However, although there was evidence of a contest between farmers knowledge culture and that of those outside of farming, exchange (porosity) and a re-negotiation of knowledge-culture through interaction was evident, also (Morris, 2006).

Conclusion

The governing of sustainable agriculture in New Zealand is a limited but emerging body of theory to which this research will contribute. This chapter has reviewed and brought together a mix of literature that will inform the critical analysis of how the farming of HEHC in the Manawatu-Whanganui region is governed and the reasons it is governed in this way.

In this research it is taken as given that New Zealand agriculture is governed, in part, through a neo-liberal and globalised form of rule that literature suggests is embedded in complex ways within New Zealand agriculture, through the expertise and knowledge cultures that inform agriculture and government policy, and the identities and rationalities of central government and farmers. The literature reviewed suggests that the implications of this form of rule on agri-environmental governance will be evident in the different mentalities and hybrid variants of rule and technologies of government, which reflect (but are not limited to) neo-liberal and globalised rule. The specific form of rule will reflect the history, geography, politics, and institutions that characterise the context in which the governing occurs. The diversity of types of rule of agriculture that have evolved following the initiation of neo-liberal reforms has received some limited attention. Although, market driven technologies of government of agriculture have been researched in New Zealand, little research has explored how agriculture is governed beyond these mechanisms. By focussing on the governing of an aspect of farming this research directs attention to technologies of governing that include but are not limited to those that are market driven. This aspect has particular pertinence given the studies that have been completed illustrate that market driven mechanisms have had minimal impact on shaping farmers' practices in New Zealand.

A criticism directed at the governmentality literature (as outlined in Chapter Two) is the focus on top–down governing and macro-level constructions of government. This failing is also evident in the normative and empirical literature reviewed in this chapter with its focus on the governing of agriculture by the state and the market. However, a number of authors emphasise the place farmer subjectivities, public opinion, and broader societal change have in shaping farming. The failure of conceptualisations of macro-level agricultural reforms and change to capture accurately the diverse and dynamic character of the micro-level changes that are occurring in farming is a consistent theme that emerges in this literature. The relative scarcity of empirical studies that attempt to acknowledge and incorporate farming practices and rationalities of rule that shape farming practice define this literature.

Conceptualisations of the macro-level rationalities of rule for farming inherent in policies of government have been articulated and explored extensively in relation to the United Kingdom, to a lesser extent in relation to Australia, and even less in relation to New Zealand. The policy developments reflect a mainly normative discourse that represents agriculture as moving from a productivist to a multifunctional form. The conceptualisations relevant to the United Kingdom inform but do not completely accord with the types of reforms and change evident in Australian and New Zealand agricultural change. As yet the application and exploration of these conceptualisations to New Zealand agriculture is limited. However, the literature would suggest that the macro-level governing of farming in the Manawatu-Whanganui by central government and, potentially, by the regional council can be meaningfully considered with reference to these conceptualisations. Neo-productivism also is proposed as having potential relevance to the forms of rule for agriculture in New Zealand.

As will become apparent in this research the role of sub-national government (in this case the regional council) is of increasing importance in governing agriculture in New Zealand. Research and theory relevant to this dimension of governing is scarce in the literature reviewed in this chapter. This research should therefore contribute to extending the development of governing theory in this area.

A feature of the literature reviewed is the limited extent to which empirical research on farm level change has been considered and compared with the conceptualisations of agricultural policy and macro-level change. Empirical research on how government policy is reflected in real change has been undertaken but only to a limited extent. Resistance, however, is acknowledged as an integral aspect of governing and is evident in the discourses and conceptualisations of agricultural policy and rural change as well as in the responses (or not) of farmers to macro-level policy and technologies of government such as agri-environmental schemes and market standards and audits.

The agricultural extension literature that attempts to convey the dynamic and complex dimensions that come to bear on farmers' decisions as simple cause and effect relationships between factors and farmer behaviour and motivation is rejected. Instead, this chapter contends that farmer knowledge-cultures and the idea of resistance, expertise and identity, are meaningful ways to articulate how farming, as a stable entity of government, governs sustainable agriculture in New Zealand. The knowledge-culture concept is advanced in this chapter as being a constructive and meaningful way to account for and articulate the legitimate and stable knowledge of farmers as a constitutive entity of government shaping the farming of HEHC in the Manawatu-Whanganui region.

This thesis now moves to outline the research design used in this research. A single qualitative case study was completed of the farming of HEHC in the Manawatu-Whanganui region. The question the case seeks to answer is how and for what reason is the farming of this land governed. The literature reviewed in this chapter will be returned to again in Chapter Eight when the findings from the case will be discussed and the implications of this research directed at answering the research question posed.

CHAPTER FOUR

Research Design

Introduction

This research comprises a single qualitative case study that is underpinned by a constructivist-interpretive theoretical perspective, inspired by post-modernist ideas. The selected case holds intrinsic and instrumental value that, through ‘the force of example’ (Flyvbjerg, 2006, p. 228), is intended to provide insights not only into the governing of the farming of HEHC in the Manawatu-Whanganui region but also more broadly into the governing of sustainable agriculture in New Zealand. As stated in Chapter One the research seeks to address the question:

How is the farming of highly erodible hill country in the Manawatu-Whanganui region governed and what are the reasons for this governing?

Following this introduction, the research paradigm that defines and is evident throughout the research design is outlined along with the rationale for a case-study of inquiry. The reasons for selecting the case are followed by a description of the data collection and analysis methods that were structured into three levels: national, regional and farm. Finally, the strategies for ensuring integrity of the research are outlined.

A departure in writing style is adopted in this chapter from that used in the rest of the thesis. This chapter refers to the researcher in the first person to acknowledge that this social inquiry is not only context dependent but also researcher dependent. It is a style of writing that accords with the theoretical perspective of this research, which recognises the importance of my responsibility in interpreting and constructing knowledge about the case and sustainable agriculture in New Zealand through the writing of this thesis.

The research paradigm

A constructivist-interpretive paradigm shaped by post-modernist sympathies guides the research. The research design was developed from an iterative relationship between the research paradigm, the issue central to the research, the research context, theory, and methods. The research paradigm is the set of beliefs that guides research action and as such is the ‘net that contains the researcher’s epistemological, ontological and methodological premises’ (Denzin & Lincoln, 2003, p. 33). Although a research paradigm underpins all research (Blaikie, 2007;

Crotty, 1998; Davidson & Tolich, 2003; Snape & Spencer, 2003), it is more likely to be explicitly acknowledged in the social sciences but not in the applied and fundamental sciences traditionally associated with agriculture. Agricultural science studies are predominantly implicitly framed by a positivistic or post-positivistic paradigm and experimental design is the predominant research strategy employed. As it is the intention of this research to be accessible across the agricultural sciences and social sciences, an exploration of the research paradigm that underpins this doctoral research is expanded on here to a greater extent than otherwise might be expected.

This inquiry accepts that the world is complex, messy, and context dependent and meaningful reality is socially constructed. This worldview is illustrated in the description in Chapter One of the issues of sustainable agriculture and accelerated erosion that both prompted this research and provide the focus for the research. A constructivist¹⁸ perspective is reflected in this research, and this perspective is defined by Crotty (1998, p. 42) as the view that:

...all knowledge, and therefore all meaningful reality as such, is contingent on human practices, being constructed in and out of interaction between human beings and their world, and developed and transmitted within an essentially social context.

A positivistic paradigm assumes a reality independent of people (Blaikie, 2007; Crotty, 1998). This view is accepted in this research, but rather than assuming that this reality can be understood independent of people, a constructivist paradigm and this research assume that any meaning that is brought to this reality is socially constructed. Hill country and the erosion of soil from land prone to erosion exist; however, it is the meaning people place on this that defines how it is understood and the meaning given to it. The constructivist paradigm rejects the idea that human beings can discern a reality, social or natural, unaffected by experiences, ideas and theories (Blaikie, 2000). All knowledge about hill country erosion and the governing of farming, whether gained through experimental research or qualitative research is therefore conditional, neither absolutely accurate nor certain, but context dependent. In addition, the understanding gained through interpretation of this knowledge is ‘historically and culturally effected’ (Crotty, 1998, p. 64). This has implications both for the research design and also for the choice of theories drawn on to frame this research.

As stated in Chapter One, one intent of this research is to provide new insights into the governing of farming and, more broadly, into sustainable agriculture in New Zealand. To produce these new insights this research needs to expose in novel ways prevailing views,

¹⁸ Although the term constructivist is used here the meaning inferred is that captured by what Crotty (1998) terms constructionist. Crotty (1998, p. 58 citing Schwandt, 1994) uses this term to indicate a focus on ‘the collective generation [and transmission] of meaning’ as distinct from constructivism which indicates ‘epistemological considerations focusing exclusively on ‘the meaning making activity of the individual mind’.

accepted practices and ways of thinking about farming HEHC and sustainable agriculture in New Zealand. For this reason the critical approach inherent in Foucault's analytic of government held strong appeal, as outlined in Chapter Two. This stance, although not recognised in this way by Foucault himself, is identified as conforming to strands of post-modernism (Alvesson & Sköldberg, 2009; Blaikie, 2007), and hence the reference in this research to post-modernist sympathies. As with Foucault's analysis, a focus on language and the analysis of text is central to post-modernism. However, while post-modernism takes language as constituting reality (Alvesson & Sköldberg, 2009; Blaikie, 2007), language is accepted in this research as a representation of the meaning people give to reality. Scholars who, like me, draw from but do not fully embrace post-modernism argue that one of its strengths is the demand it makes of researchers to contemplate the basis of accepted knowledge and 'truth' (Alvesson & Sköldberg, 2009). The challenging of accepted knowledge and ways of governing is central to this research, and influenced the theoretical framework used to guide the data collection and analysis in this research.

The constructivist-interpretive paradigm of this doctoral research is 'put...into motion' (Denzin & Lincoln, 2003, p. 36) through a qualitative case-study strategy of inquiry. This strategy of inquiry in turn drove the methods used to collect data. The case-study research strategy and methods used in this research are expanded in the following sections.

Qualitative case study research

The study of a single case, based on qualitative data, is the strategy of inquiry used in this research. The case study strategy is a logical extension of the research paradigm and the conceptualisation of the issue at the core of this research. In addition, the case study is seen as a research strategy that will provide insights that will inform thinking and practice by exploring in depth the intricacies of how central government, the regional council, and farmers are involved in governing the farming of HEHC in the Manawatu-Whanganui region.

Case-study research develops context-dependent knowledge (Flyvbjerg, 2001; O'Leary, 2005; Stake, 1995). New Zealand's sustainable agriculture, the farming of HEHC, and the governing of these are assumed within this research to be context-specific and context-dependent.

Sustainable agriculture is argued by Gatzweiler et al. (2001) to be context-dependent, defined by the particular socio-cultural, political, economic and ecological characteristics that exist in each country. Likewise, the governing of the farming of HEHC in the Manawatu-Whanganui region is also accepted as being context-dependent, defined by the particular mix of characteristics that exist at the national, regional and farm level.

The case study strategy has synergies with systems thinking, which also adds to the strategy's appeal. The utility of systems thinking is widely acknowledged and applied in agriculture both in New Zealand and internationally (e.g. Bawden, 1992; Eastwood, et al., 2012; Kropff, Bouma, & Jones, 2001; Reid, Gray, Kelly, & Kemp, 1999) and as mentioned in Chapter One is an approach and conceptual framework that guides my view of the world. As stated in Chapter One, sustainable agriculture and the farming of HEHC in the Manawatu-Whanganui region are taken to be complex and context-dependent, comprising linked and multiple issues and actors who have varying views on the situation. This construction of the issues reflects a systemic worldview and a problem with characteristics clearly suited to a case study research strategy.

A link between the case study strategy and systems thinking is also made by Stake who defines a case as a bounded system that has 'working parts' and 'is purposive' (Stake, 2003, p. 135), ideas consistent with the concept of a system (see, for example, Checkland & Scholes, 1990). Further the 'multiplicity of perspectives' incorporated in case studies is identified as a distinct aspect of the case study by Lewis (2003, p. 52). A systems perspective acknowledges that a component of what makes a situation problematic is the multiple and varied perspectives of people involved in the situation, and in this research includes central government, the regional council, and farmers.

The case study also provides a means to gain the comprehensive depth and richness of data that were sought. In line with governmentality theory, a deep analysis spanning both macro- and micro-aspects was required to unravel the complex inter-relationships between the multiple actors involved in governing the farming of HEHC in the region. The case study is widely acknowledged as being a research strategy that will deliver, as Flyvbjerg argues, a 'multiple wealth of details' (Flyvbjerg, 2001, p. 72), which is the aim for this research.

An intention of this research is to inform debate about, and applied knowledge in the field of, sustainable agriculture in the social and agricultural sciences and in the policy field. The case study is argued by a number of scholars as a valuable research strategy as a basis for insights and knowledge (Blaikie, 2000; Flyvbjerg, 2001, 2006; Stake, 1995, 2003). Case studies present both an opportunity for those exposed to the studies of what Stake (2003, p. 145) refers to as 'vicarious experience' and a framework for reflection on an individual's own knowledge and experiences (Flyvbjerg, 2001; Stake, 2003).

The contribution case-studies can make, Flyvbjerg (2001) argues, is to practical wisdom and common sense: a form of knowledge he identifies as *phronesis*. *Phronesis* is the experience-based knowledge that informs specific value judgements in particular situations (Flyvbjerg, 2001). The utility of this type of knowledge has been recognised and argued for by researchers working in comparative fields to that of sustainable agriculture. Jentoft (2006) promotes this

type of research in fisheries resource management, as does Hargreaves (2012) in forms of pro-environmental practice. Translating Jentoft's (2006) arguments for fisheries management to this research, what empirical social inquiry of specific cases such as this, can do, is define the basis for sound judgements and critical reflection on what sustainable agriculture and the farming of HEHC may mean in specific situations, what may work, and what may not.

In this research a qualitative case study is completed with data gathered through semi-structured interviews with research participants and a variety of written data sources, including public and organisational documents. Qualitative research is particularly well suited to case study research. In particular it is of value because, as in this research, 'behaviours and interactions (whether acted, spoken or written) need to be understood in 'real world' contexts' (Ritchie, 2003a, p. 34). The governing of the farming of HEHC in the Manawatu-Whanganui region was ill-defined, multi-layered, and poorly structured, incorporating, but not limited to, direct and indirect governing by central government, the regional council, and farmers. Qualitative methods facilitated the iterative exploration of the multi-layered, poorly structured governing. Further, as suggested by a number of authors (eg. Ritchie, 2003b; Stake, 2003), the qualitative methods allowed concepts and dimensions to emerge from the situation rather than being prescribed in the situation. This was particularly important, as the governmentality theory and research intent demanded that the intricacies and taken-for-granted aspects of governing were 'unpacked' and made explicit. This approach required avoiding purposively any tendency to assume accepted practice or prevailing norms in the situation.

The scope of this research is defined through the completion of a single case study that has explored the governing of one aspect of farming in one region of New Zealand. The value of this case study is the foundation it now provides for further studies both into the governing of the farming of HEHC in other regions and into other cases of the governing of sustainable agriculture in New Zealand.

Selecting the case for study

The case in this research is the farming of HEHC in the Manawatu-Whanganui region, and, adopting Stake's (2003, p. 142) phrasing, the issue and research question that organise the case are: how is this governed and why is it governed in this way.

The case was selected because of the potential insights it could provide to the governing of both the farming of HEHC and sustainable agriculture in New Zealand. The case is both an intrinsic and an instrumental case. A case is intrinsic when it has value in its own right (O'Leary, 2005; Stake, 1995). The farming of HEHC in the Manawatu-Whanganui region was selected because

it provided an opportunity to explore and gain an understanding of the governing of an aspect of farming recognised as environmentally unsustainable. The case had value also because both central government and the Manawatu-Whanganui regional council were involved in the case in linked programmes that directly target farming in the region. This is a governing arrangement that is not common in New Zealand, and was therefore of particular interest.

Regional councils are becoming increasingly important in defining the on-farm practices of New Zealand farmers. As such, the case has the instrumental attribute of ‘reliability’ (Basse 1981 cited by Blaikie, 2000, p. 222). As the findings from this research can be related to other regions, the study has the potential to provide insights to assist the decision-making and actions not only of people associated with the Manawatu-Whanganui regional council’s governing of farmers but also of those with interests in the policies and mechanisms of governing of farmers of HEHC used by other regional councils.

Pragmatics are a legitimate consideration in case selection (O’Leary, 2005; Stake, 1995) and influenced the selection of the case used in this research. As a result of the 2004 storm events significant changes had occurred within both central government and the Manawatu-Whanganui regional council in terms of their involvement in governing how farmers of HEHC managed this land in the region. The issue of soil erosion and soil conservation on farmland in the region was therefore topical but not highly political at a national level. When this research was instigated in 2006 the regional council had in place its Sustainable Land Use Initiative (SLUI), which was directly targeting farmers of HEHC in the region. This initiative was supported by central government for at least 4 years through its Sustainable Land Management Hill Country Erosion (SLM-HCE) Programme¹⁹. The existence of linked central government and regional council programmes directed at the farming of this land provided stability to the case. This same stability did not exist at the time for other potential cases in which the involvement of central and regional government was unresolved, dynamic, and/or contentious.

Another pragmatic consideration in the case selection was the fact that the Manawatu-Whanganui region is where I live and work. This meant I was familiar with farming in the region, the events of the 2004 storm, and had personal and professional networks into both the hill country farming community in the region and regional organisations of interest in the research. This familiarity helped identify, and gain access to, research participants. My work history and experience in the agricultural field also meant I had contacts and access to individuals in central government. Not everyone I interviewed was known to me before the research. However, my background in agriculture and my existing contacts provided a point of

¹⁹ In 2010 SLUI was refunded through the SLM-HCE programme for a further 4 years.

reference for me to introduce myself to participants who might otherwise have been more constrained.

Research integrity

The integrity of research can be judged, it is argued, by the transparent and evident validity of the research process and claims made by the research (Lewis & Ritchie, 2003). In addition, the integrity of the research is linked, according to Alvesson & Sköldberg (2009), to the reflexivity of the research. This needs to include evidence of consideration of the primacy of interpretation as the basis of the research and an awareness of the political-ideological character of the research. Both of these aspects are dealt with in the explicit articulation of the theoretical perspectives on which this research is based in the previous section and in Chapter Two. Dependability and validity claims for this research are made by way of presentation of a transparent and detailed description of the methods used in this research, as proposed by Lewis and Ritchie (2003). This description is made in the latter sections of this chapter.

However, as research integrity also includes a consideration of the respect and dignity shown to research participants and the ethical conduct of the researcher themselves (O'Leary, 2005), this aspect of the research design is now dealt with.

Integrity and research participants

Accepted norms for ethical conduct in research involving human participants were followed in this research, and the formal procedures required by Massey University's Human Ethics Committee were followed (Massey University, 2010). The purpose of the research was presented and informed consent and confidentiality issues highlighted and discussed with participants before gaining their agreement to be part of the research (see Appendix One for a copy of the consent form and information sheet). Confidentiality of many participants in this research could not be assured, given the transparency with which the site, programmes, and actors have been identified. In a small country like New Zealand, this is an issue not unique to this research, and even had place names and organisational names been changed, the unique characteristics of the case would have made the recognition of many participants unavoidable.

Participants employed in or holding positions in organisations specifically identified in the case study were made aware that their identity was more than likely going to be discernible in the research and complete confidentiality could not be assured. Some participants were sensitive to this in the responses they gave within the interviews. Informed consent was gained from all participants. However, the need to protect confidentiality was an important consideration in the presentation of results, particularly in choosing direct quotes for use in the research thesis.

Comments made by participants that could be construed as contentious or personally insulting by others were avoided. In instances in which interviewees expressed initial reticence in answering a question or making a statement, or explicitly requested certain comments be ignored or treated carefully, these data were treated sensitively or disregarded. Farmers in the main were more open and less sensitive to potential implications associated with free and frank sharing of comments and opinions than were officials employed within central government and the regional council. For some participants, including most of the farmers interviewed, their confidentiality could be assured with more certainty than for other participants. For this reason the names of these participants have been replaced with pseudonyms, while the names of those participants who, because of their position in an organisation could not be assured confidentiality, have not be changed. Names that have been replaced with pseudonyms are identified by the symbol * in Tables 1 and 2 that detail research participants later in this chapter.

The ethical principle of ‘protecting participants from harm’ (Lewis, 2003, p. 68) was used across all interviewees in the selection and use of the information they provided during the interview. Information in the public domain, including written submissions to the regional council, and in documents received under the Official Information Act, were considered to be outside the bounds of the ethical code used for interview material.

The data collection for the research was structured within three levels that recognised the national-, regional- and farm-level involvement of entities in governing the farming of HEHC in the region. Although data relevant to all levels were collected throughout the period of data collection, the regional and national levels were the predominant focus of the initial stage of data collection. The methods used in the case study and the basis on which participants and data sources selected are covered in the next section.

Case study methods

A characteristic and strength of the case study is the use of multiple data collection methods (Lewis, 2003; Stake, 2003). Semi-structured interviews and documents were the data sources. Documents, including public records, organisational reports, newspaper articles, submissions to the policy process of the regional council, and statistics were analysed for the research. A list of the range of documents and written material drawn on for the research is provided in Appendix Two. The different sources of information were not used to validate or check information given by interviewees or to confirm a single meaning, as is often attributed to the notion of triangulation. Instead, as proposed by Flick (1992 cited in Stake, 1995), the observations and interpretations of interviewees and the information included in documented data enabled a deeper exploration of the case through a richer and broader body of interpretations.

Documents were drawn on to ensure a degree of accuracy in reporting specific dates, events and circumstances detailed as part of the historical context of the case and details relating to organisations. National and regional statistics on agriculture and erosion were explored in line with the demands of the governmentality analytic (Chapter Two) to interrogate how through language, calculations, and metrics the subjects of governing and the problematic are made visible. In addition, the formal descriptions and specifications of the technologies of government used to govern farmers were also analysed. Included in this analysis was the tool at the heart of the regional council's SLUI, the whole farm plan, and also the Land Use Classification Scheme (Lynn, Manderson, Page, Harmsworth, Eyles, Douglas, Mackay, & Newsome, 2009; Ministry of Works: Water and Soil Division, 1971) that informed the analysis of the farm as part of the whole farm plan. These documents were useful, as Ritchie (2003b, p. 35) proposed, for 'illuminating the deeper meanings through style and coverage'. Publications from public and private sector organisations also provided information on aspects relevant to the case. This source of data was useful when the nature of the information sought was sensitive. Data gained from publications such as annual reports and statements of intent were used, for example, to illustrate the poor performance of the MfE during the 2000s. This information, alluded to in interviews, was able to be formally referenced from published documents from MfE.

Semi-structured interviews

The semi-structured interview combines structure with flexibility (Legard, Keegan, & Ward, 2003) and for this reason was the type of interview used in this research. An interview guide was used to provide some consistency of structure across interviews. The guide, expressed as questions and topic headings, was not a list of set questions but rather a list of information that was sought from the interviewee by the end of the interview and included prompts designed to illicit information that conformed broadly to concepts from Foucault's analytic of governmentality that were of interest in the research. The checklist was adapted depending on the professional association and position of the interviewee and their role at the national, regional or farm level of the case. The final interviews with farmers required a different list of prompts to that used when, for example, the CEO of the regional council was interviewed. Examples of the interview guide used in the interview with a senior MAF manager (at the time), the CEO of the regional council, and with a farmer, are included in Appendix Three.

The interviews were a source of data that informed the reasons why certain types of governing had and is occurring. Interviews also provided data that illustrated how governing of farming of HEHC in the region was taking place and enriched that data drawn from the analysis of documents. The value of the data was not in what individuals stated per se but the governing

that was made evident through the discourse that was used and the stories and examples that participants provided. Interviews were particularly important in providing data from which the governing of farming through farmers' knowledge-culture could be illustrated and made visible as documented and inscribed forms of this knowledge culture do not exist in the same way they do for central government and the regional council.

The objective of the interviews was not to gain answers to set questions but rather to explore and probe the interviewee's recollection of events and circumstances relating to the involvement of governing actors, including central government, the regional council, and farmers, in influencing the farming of HEHC in the Manawatu-Whanganui region. The aim was to encourage discussion and storytelling by prompting the interviewee, and then probing and clarifying to expand their descriptions and explore aspects relevant to the research. This style of interview allowed for the unexpected and unanticipated to emerge from the interviews and to ensure my expectations of the data did not constrain the responses of those interviewed.

Twenty-six, semi-structured interviews were completed as part of the research, and twenty-five were analysed and incorporated into the results. One interviewee withdrew consent for the use of their interview material a few days after being interviewed. Views they had expressed in the interview, they had realised, would have reflected badly on the organisation for which they worked. Accordingly this interview was not used.

All interviews, except one, were digitally recorded and transcribed to ensure the integrity of the interview was retained as raw data for later interpretation and analysis, as recommended by O'Leary (2005). Using the tape recorder did influence the openness and unconstrained comments of some interviewees, particularly those in professional positions. This was evident in requests from interviewees for comments to be deleted, for the tape to be turned off when certain events and people were discussed, and in interviewees pulling themselves up part way through discussions to ensure potentially sensitive information was not recorded. One individual was not comfortable being recorded; therefore, notes were taken during the interview and clarification on a number of points was made via email with the individual following the interview to ensure accuracy of information was retained. The duration of recorded interviews ranged from about one to two and a half hours.

Regional and national level interviews

Interviews with individuals relevant to the regional and national level governing of the farming of HEHC occurred between May 2007 and June 2011. Although individuals had specific responsibilities at a regional or national level, data gained from individuals at each level informed both regional and national level results. Interviews were not undertaken between May

2008 and November 2010. During this time documents and completed interviews were analysed.

Seven initial interviews were completed between May and July 2007 with individuals relevant to the regional level of the research. Individuals were interviewed because they were staff in the Manawatu-Whanganui regional council who had authority and were involved in the developing and implementing SLUI, or had been involved with the regional council on the original Governance/Advisory Group for SLUI. Sitting councillors on the Manawatu-Whanganui regional council faced local body elections in October 2007. Given the potential influence of the upcoming elections on councillors' responses to questions, no interviews of councillors occurred at this time. In October 2010 local body elections, the chair of the regional council failed to gain re-election. He was interviewed in December 2010. Given the period of time the research spanned, a second interview was also completed in November 2010 with a regional council staff member closely involved in implementing the Manawatu-Whanganui regional council's SLUI.

In April and May 2008 six interviews were completed in Wellington with interviewees in positions related to the national-level of the research. These included individuals who had historically been involved in both political and official positions in central government with relevance to the national-level involvement of central government in soil conservation and governing of erodible farmed hill country in the region. The remaining interviews were with individuals in positions in central government who had some involvement in the development of central government's SLM-HCE programme. The individuals interviewed were selected in part because of their position in an organisation that therefore made their input of value to the research, but also because from interviews in the region they were identified as having a role in influencing the input of central government into the regional level governing of farmed HEHC.

The detailed list of individuals interviewed who contributed to the national and regional level data is outlined in Table 1. The list of interviewees is organised into the national and regional level groups with the national level interviewees listed first. This order mirrors that of the results chapters with Chapter Six the national level governing results and Chapter Seven the regional level governing.

Table 1: Research participants interviewed as part national and regional level of the research data collection. * indicates a pseudonym

Date Interviewed		Organisation and Official Position when interviewed	Other Information
	National Level		
April 2008	Paul Reynolds	MAF, Director MAF Policy Head Office Wellington	When interviewed he held the position of Director MAF Policy, as at June 2009 he was appointed CEO MfE.
December 2010	Jacob Black*	MAF, Senior Official.	Involved in establishing SLM-HCE programme and in ongoing governance of SLUI with the MWRC ²⁰ up until 2011.
May 2008	Alan Walker	Senior Public Servant, Wellington	Ex MAF Policy Official involved historical in developing MAF's Sustainable Agriculture policy in the 1990s and central government's Adverse Events policy for farmers.
May 2008	Pat Helm	DPMC, Senior Official, Wellington.	Worked closely with Prime Minister Helen Clark during 2004 storm events and involved in high level discussions and development of SLM-HCE programme.
March 2008	Jim Sutton	Minister of Agriculture in Labour Government 1990, 1999–2006.	Minister of Agriculture at time of the 2004 storm, but also at the time MAF developed policy initiative in Sustainable Agriculture in 1990. Farmer and advocate for on-farm soil conservation.
May 2008	Peter Stephens	Scientist, MfE and project manager for Land Use and Carbon Analysis System (LUCAS) programme.	Soil scientist who previously worked at Landcare Research in Palmerston North prior to the removal of funding for soil science by FoRST in 2002/3. Career history in soil erosion and soil science.
April 2008	Kevin Steele	Advisor to the Minister of Agriculture Jim Anderton from 2006 to 2009.	Experienced soil conservator and advocate for soil conservation on farm, ex-official in MfE and seconded to current position from MAF.
	Regional Level		
May 2007	Rose Phillips*	Hill country S&B farmer in MWRC region, Provincial President Federated Farmers, member of SLUI advisory group.	Involved from first meeting in SLUI governance group. Also one of first farms on which a SLUI whole farm plan was developed and implemented.
May 2007	Denis Hocking	Farm Forestry Association Official and strong advocate for forestry on-farm.	Initial member SLUI governance group.
Aug 2007	Greg Carlyon	MWRC – Policy Manager	Heavily involved in the development of the One Plan and SLUI. Joined MWRC in

²⁰ MWRC: Abbreviation for Manawatu-Whanganui regional council.

			2003.
May 2007	Mike McCartney	MWRC – CE	Policy manager at MWRC until became CE in November 2004.
July 2007 May 2011	Grant Cooper	MWRC – Field staff/ SLUI implementation manager.	Experienced soil conservation field staff member. Works closely with farmers and involved at a senior level in the implementation of SLUI in the region.
Dec 2010	Garrick Murfitt	Ex-Chair MWRC and farmer of HEHC in the region.	Chair of MWRC from 2006 until Nov. 2010. Heavily involved in developing and gaining central government support for SLUI. Deputy Chair of MWRC at time of floods in 2004.
May 2007	Tony Rhodes	Agricultural Consultant	Experienced sheep and beef farming consultant located in the MWRC region. Long association with Alec MacKay and involvement in SLM initiatives. Involved in early meetings of the SLUI advisory group.
May 2011	Greg Sheppard	Agricultural Consultant/ SLUI whole farm plan implementation.	Experienced sheep and beef based in the region. Contracted by MWRC to complete the business component of the whole farm plan of SLUI
June 2011	Lachie Grant	Land Management Consultant– SLUI whole farm plan implementation	Main contractor employed by MWRC to complete the land inventory and environmental and land management plan component of the SLUI whole farm plan.
Nov 2010	Alec Mackay	Land and Environment Scientist, AgResearch, Palmerston North	Whole farm plan champion and advisor to MWRC on SLUI on ongoing basis. Promoted SLUI for MWRC to farmers and central government.
March 2011	John Dymond	Soil Scientist, Landcare Research, Palmerston North.	Completed initial work defining Highly Erodible Land for MWRC. Completed a number of research projects for MAF and MWRC supported the roll out of SLUI
June 2011	Tessa Mills	Regional Policy Analyst for Federated Farmers, Palmerston North.	Involved in submission development and negotiations in One Plan development with the MWRC.

Farm level interviews

The majority of interviews undertaken at the farm level were completed in the latter stages of the research. Comments and input from all farmers of HEHC interviewed as part of the research were included in this level of analysis as well as the insights of people who work closely and regularly with hill country farmers in the region including agricultural consultants and field staff from the Manawatu-Whanganui regional council. The final nine interviews were completed

during May and June 2011. Of the nine interviews, six were with farmers, two were with consultants developing whole farm plans with farmers as part of SLUI, and one was with the regional policy analyst for Federated Farmers; a second interview was completed with a Manawatu-Whanganui regional council staff member closely involved in overseeing the implementation of SLUI, as previously mentioned. The selection of farmers was aimed at gaining an understanding of how farmers across the region farm HEHC and why, but also at gaining a mix of farmers' perspectives on the governing of this land by central government and the regional council. Farmers interviewed were selected because they had been involved in SLUI in a range of ways: one was involved proactively from the very early stages of the initiative, another was on the advisory group, and although initially reluctant, had a whole farm plan. A further farmer was identified because, although targeted by the regional council, he was resistant to getting a whole farm plan done, another was specifically selected because she was outspoken in her resistance to the whole farm plans and had been instrumental in opposing their use by the regional council in a district of the region. Information on farmers that helped selection was gained through discussions with the field staff at the regional council and other farmer participants in the research.

In total, nine farmers, representing seven farming businesses, were interviewed over the 4 years of data collection. The nine farmers included two farming couples who farm in partnership and who were interviewed together. The experiences of the farmers interviewed reflected their position as farmers of HEHC in the region.

The following Table 2 details the farmers interviewed as part of the research.

Table 2: Hill country farmer research participants. * indicates a pseudonym

Date Interviewed	Farmer's Name	Other Information
Nov 2010	Garrick Murfitt	Ex-Chair MWRC, hill country farmer of HEHC with a SLUI whole farm plan.
May 2007	Rose & Jock Phillips*	Federated Farmers Provincial President, Hill country farmers of HEHC with a SLUI whole farm plan, member of MWRC's SLUI advisory group.
June 2011	Trevor & Lois Green*	Hill country farmers of HEHC. Received one of the first SLUI whole farm plan.
June 2011	Karen Roy*	Hill country farmer of HEHC. Member Ruapehu Federated Farmers. Active involvement in submission process to MWRC opposing aspects of the Proposed One Plan. Member SLUI advisory group. No SLUI whole farm plan.
July 2011	George Elder*	Hill country farmer of HEHC. Reluctant participant

		in SLUI, in early stages of whole farm plan completion.
July 2011	John Short*	Hill country farmer of HEHC with a SLUI whole farm plan.
July 2011	Tom Bennett*	Hill country farmer of HEHC with SLUI whole farm plan. Office holder in provincial Federated Farmers. Active involvement with Federated Farmers in developing submissions on the Proposed One Plan to MWRC.

Data analysis

All interviews digitally recorded were transcribed. The first fifteen interviews were transcribed by the researcher, while the final eight were transcribed by a professional transcriber. The intense level of interaction with the interviews required when transcribing was used as a platform for an initial analysis of these interviews. An holistic sense of the data was gained from this exercise with notes being taken and summaries made for each interview during transcription and at the conclusion of each transcribed interview. Interviews were then analysed in more detail. This was completed manually, each interview was read and then reread, and themes and concepts identified within the context of each interview. Themes from across interviews were then explored and, along with those from individual interviews, were developed into a structure that then shaped the writing of the results chapters. Questions emerged from the analysis of the transcripts that stimulated and directed an exploration of documents; this then identified more questions and themes that in turn stimulated a rereading of interviews. The writing process was itself a form of analysis, as suggested by Hunt (2010) and O'Leary (2005). Writing up the results continually demanded the re-examination of transcripts and documents to ensure my interpretation was anchored in the voices and words of the interviewees and the literature and direct quotes are used extensively in the results.

Conclusion

A constructivist-interpretive research paradigm inspired by post-modernism framed this research. A single qualitative case study was completed to answer the research question: How is the farming of highly erodible hill country in the Manawatu-Whanganui region being governed, and what are the reasons for this governing?

The case-study research strategy provided the in-depth, context-dependent knowledge required to make explicit and structure the complex, interwoven governing of farming of HEHC in the

Manawatu-Whanganui region. The case study's synergy with systems thinking was also a strength in this research. The case studied was selected for its intrinsic and instrumental value. Semi-structured interviews, documented data, and written material were used to collect the data for the research, which was organised loosely into a national, regional and farm level.

A detailed description of the research's theoretical perspective, the methods employed and the rationale for their use is presented. The basis for a consideration of the researcher's and the research's integrity is likewise documented. The extent to which this research is deemed worthy of being taken seriously is therefore now in the hands of the reader.

The historical context to the governing of the farming of HEHC in the Manawatu-Whanganui region is developed in the next chapter. While this chapter draws on historical accounts of soil conservation and central government's involvement in soil conservation, it is also informed by the interviews undertaken in this research. The case study results developed from the analysis and synthesis of data gained from interviews and documented data are then presented in three chapters covering the national-, regional- and farm-level governing of the farming of HEHC in the Manawatu-Whanganui region.

CHAPTER FIVE

Historical Context

Introduction

Past central government policies for agriculture and soil conservation influence how the farming of HEHC in the Manawatu-Whanganui region is governed. This chapter is a transition chapter, its purpose is twofold: (1) to describe the historical context to the current study and (2) to analyse and highlight aspects of history that informs the case study. The chapter draws on historical texts and reviews of soil conservation, in addition to data gained from interviews with a former government Minister of Agriculture and a former senior public servant in the agriculture ministry. Data for this chapter has also been drawn from reviews of historical records of agricultural production and policy, in addition to statistical analysis relating to agriculture in New Zealand.

The adverse impacts of the deforestation of vast areas of hill country for farming were recognised relatively early in the era of European settlement in New Zealand. The initial part of this chapter outlines these concerns and the events and individuals that contributed to the development of legislation and the start of central government's formal involvement in soil conservation on farm land in New Zealand. Central government's agenda for agriculture has been significant in shaping soil conservation historically. The drive for agricultural production and productivity had direct implications for soil conservation in the period prior to the instigation of central government reforms in the mid 1980s. The chapter explores this period of history looking first at central government's policies for agriculture and the implications of the 1980s reforms on agriculture and the implications for soil conservation. The interwoven fortunes of agriculture and soil conservation are also explored.

An integrated approach to sustainable land management by central government began in the 1970s. This policy development is explored as a precursor to a description of the impact of the mid 1980s reforms on central government's involvement in soil conservation and the eventual passing of the RMA in 1991. The implications of the neo-liberal policy reforms for adverse events assistance for farmers are then briefly reviewed.

Next the emergence of sustainable agriculture and sustainable land management as policy concerns of central government is discussed and outlined concluding with the development in 1996 of the Strategy for Sustainable Land Management.

The final section of the chapter focuses on the on-farm implementation of soil conservation and in particular land use capability (LUC) classification scheme developed in the 1950s. This scheme continues to be the basis for the planning of soil conservation work on-farm, as part of a farm plan. The LUC classification scheme features again in Chapter Eight of this thesis because it is central to the whole farm plans used by the Manawatu-Whanganui regional council in its governing of the farming of HEHC in the region.

In support of this chapter, a time line is included in the Appendix Four. The timeline covers significant central government initiatives including legislation and central government projects that specifically target soil conservation and sustainable land management. In addition, the key political, adverse climatic and international events, which have influenced the direction SLM governance has taken, are also highlighted.

Accelerated soil erosion: cultural interference in a young country

Recognition of the adverse effects of pastoral farming on HEHC is long-standing. Central government is reported to have publicly acknowledged the adverse effects of the deforestation of land as early as the 1860s (Mathewman, 2003). Policies described by Clough and Hicks (1993) as ‘ad hoc’ were put in place before the 1930s and were mainly directed at protecting state owned land, which was the concern of central government, due to deteriorating river channels, inadequate drainage and flooding.

In 1938, Norman Taylor, one of the acknowledged fathers of soil science in New Zealand, published under the authority of the Minister of Science and Industrial Research, *Land Deterioration in the Heavier Rainfall Districts of New Zealand* (Taylor, 1938)²¹. Having painted a grim picture of the devastation from erosion on deforested land, his concluding statement retained optimism:

The position facing New Zealand is serious indeed, but, broadly speaking, although land degradation is very widespread, in the heavier rainfall districts at least, its effects are irreparable in comparatively few areas. This is chiefly because the country has been occupied by Europeans for so short a span. If the knowledge gained through bitter experience in longer-settled countries be reasonably applied, the fertility of the hill lands can even yet be largely reclaimed.

²¹ Taylor’s (1938) report highlighted the issue of hill country soil erosion in New Zealand. High country erosion in the South Island of New Zealand had been identified as a concern by individuals including Lance McCaskill (1973) well before Taylor published his report.

Whether in the years to come the hill country of New Zealand will be compared to the highlands of Scotland or whether it will have a fertility and character of its own depends largely on the action taken by the citizens of today (Taylor, 1938, p. 681).

A review of the current level of deterioration of hill country land, in parts of New Zealand located in heavy rainfall areas and including the Manawatu-Whanganui region, might suggest that the ‘knowledge from bitter experience’ has not been applied and the optimism expressed by Taylor in the ‘citizens of today’ was misplaced (Taylor, 1938, p. 681). Kenneth Cumberland, a New Zealand geographer from the University of Canterbury College and a recognised pioneering soil conservationist, referred in his 1944 book to the impact of settlers on the land as ‘cultural interference’. In his book, he more specifically describes the ravages erosion had wrought on a region, a large part of which constitutes the Manawatu-Whanganui region today:

Region IIIa

The Taranaki-Wanganui Tertiary Hinterland

This compact region, ... has probably suffered more severely than any other New Zealand area in the very short period of ill-advised pastoral penetration it has experienced. Its maimed and tortured slopes range themselves with Hawkes Bay to form one of New Zealand’s two most disorderly landscapes (Cumberland, 1944, p. 31).

A rocky road – The Soil Conservation and River Control Act 1941

A succession of severe storms in the 1930s, which resulted in erosion on a massive scale, were the catalyst for a radical shift in central government’s involvement in soil conservation (McCaskill, 1973; Ministry for the Environment, 2001; Roche, 1994). This reactive response by central government to such adverse events is a recurring theme in its involvement in soil conservation of farmland, including the Manawatu-Whanganui region following the 2004 storm. The Soil Conservation and Rivers Control (SCRC) Act became law in 1941 and was a direct response to the storm events in the 1930s. The initial bill that led to the act is credited to the efforts of the then Minister of Works and the Public Works Department (which became the Ministry of Works in 1943) (Roche, 1994). Reflecting the department’s expertise and function, the initial bill centred solely on river control and flood risk reduction.

Soil conservation advocates, however, were effective in broadening the act to include soil conservation. The efforts of the advocates are highlighted in historical accounts of this period including those written by the advocates themselves (e.g. McCaskill, 1973). Lance McCaskill²²

²² Lance McCaskill was an agricultural teacher, rural educationalist, lecturer, soil conservation champion and author. In 1939 he was awarded a Carnegie Travelling Fellowship to the United States of America where he studied soil conservation and the operations of the U.S. Soil Conservation Service. Based on

is in particular acknowledged as championing soil conservation in New Zealand and in influencing the inclusion of soil conservation in to the act (e.g. Roche, 1994; Thompson, 1985).

In 1938, Taylor published his work on land degradation and the Minister of Scientific and Industrial Research was finally persuaded, through the efforts of interest groups that included the Canterbury Progress League (of which McCaskill was the chair), to set up a committee of inquiry in 1938 (McCaskill, 1973)²³. Convinced that soil erosion had reached a serious stage in many areas of New Zealand, the Committee recommended that:

Statutory and administrative measures should be taken at the earliest opportunity to inaugurate a programme to handle the serious soil erosion, soil-conservation, and land utilization problems that now face us (Committee of Inquiry, 1939, p. 37).

According to McCaskill (1973, p. 20), the importance of the committee's report was 'obscured' as a result of 'pitifully small circulation, and the outbreak of the Second World War'. Clauses relating to soil conservation were included into the act only at the final parliamentary select committee stage, when members of the committee were reported as being persuaded by Lance McCaskill to expand the scope of the original bill to include soil conservation (Roche, 1994). The power of McCaskill's argument, he claims, came from his experiences, and the examples he drew on from the soil conservation service in the United States (McCaskill, 1973).

Soil scientists from Lincoln Agricultural College, as illustrated in the photo on the following page (Figure 3), were also working at this time to raise awareness of the issues of erosion amongst farming communities.

this experience he returned to New Zealand and advocated strongly for the inclusion of soil conservation in the SCRC Act 1941 (Thompson, 1985).

²³ McCaskill's efforts through the Canterbury Progress League were significant, but equally so too were the efforts of Ernest Marsden the Head of the Department of Scientific and Industrial Research who persuaded the Royal Society of New Zealand to press for a commission of inquiry (Roche, 1994).

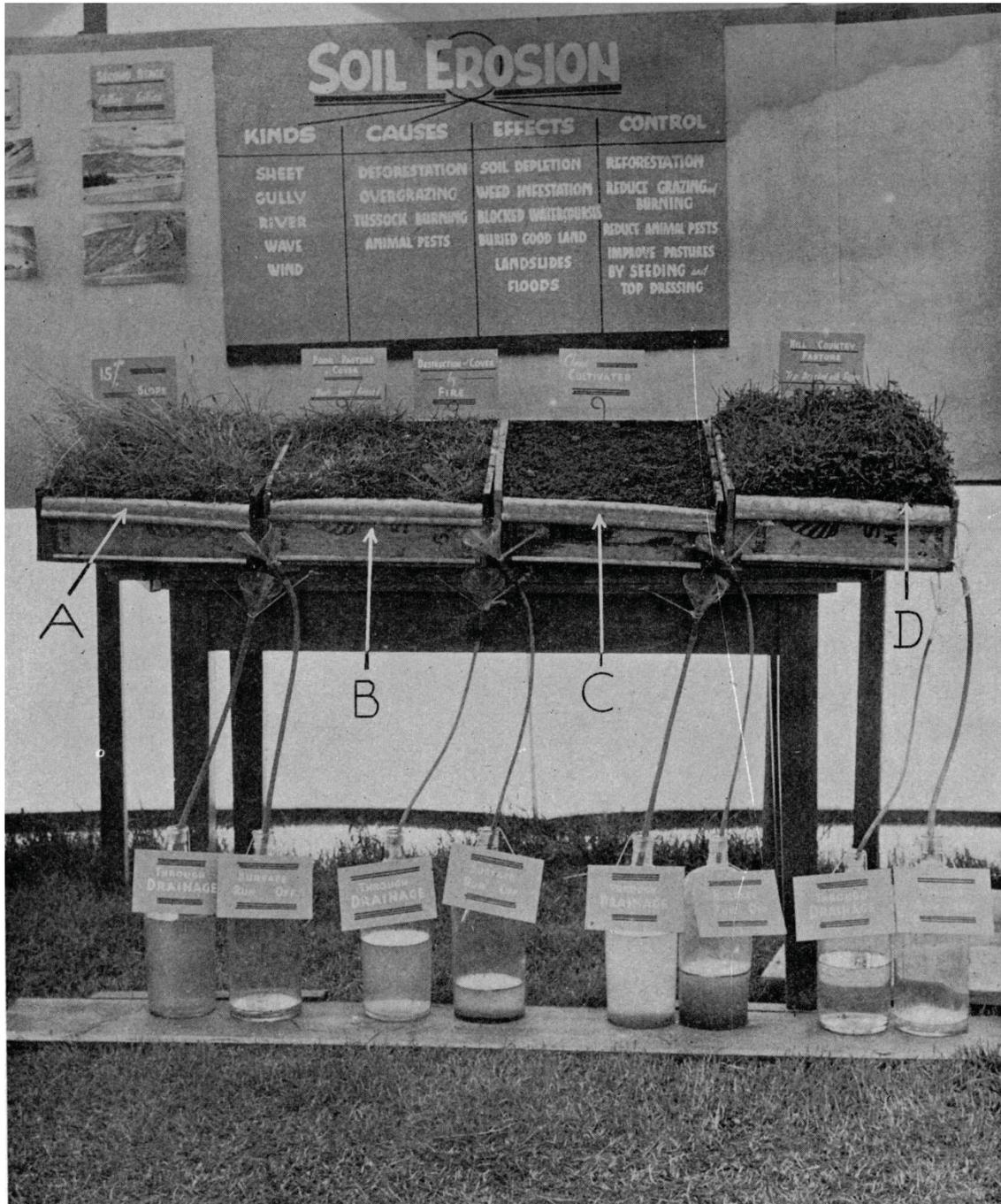


Figure 3: Photo accompanying an article entitled 'The Balance of Nature', published in the New Zealand Farmer Weekly 1939. The caption accompanying the photo states: 'A graphic illustration of the effect of cultivation on soil drainage and surface run-off. Box A represents native tussock pasture; B poor pasture, with destruction of cover by fire; C clean cultivated land; and D hill country pasture, topdressed with superphosphate. Each box has two glass jars attached, which collect the water running off by (1) drainage and (2) surface run-off. As will be seen, the surface run-off is least with boxes A and D, and shows how proper cover retards erosion' (Farmer Weekly Special Representative, 1939, p. 30).

The Soil Conservation and Rivers Control Council and Catchment Boards

The SCRC Act (1941) is identified as the first attempt by central government at a systematic approach to soil conservation on a national scale (Clough & Hicks, 1993; Taylor, 1997). Under the act, the Soil Conservation and Rivers Control Council (SCRCC) was established, in order to direct soil conservation at national, regional and local levels (Makin, Turkington, Lohrey, Moore, & Hodgkinson, 1991). The act provided for the establishment of catchment boards, but it also put in place the mechanisms for government and local government to fund erosion control measures and flood protection works through these boards (Campbell, 1966; Ministry for the Environment, 2001).

Under the act, the establishment of catchment boards occurred progressively from 1943, with 12 boards being in place by 1948. A further two boards were formed after this point. The region that today constitutes the Manawatu-Whanganui region incorporates what were originally the Manawatu and Rangitikei catchment boards and a portion of the Wairarapa Board's area. The Manawatu Catchment Board was constituted in 1943 and the Rangitikei and Wairarapa ones in 1944 (McCaskill, 1973). The primary mechanism for encouraging on-farm soil conservation works, other than through education and advice, was through direct subsidies provided by the SCRCC to farmers (Makin, et al., 1991). Subsidies were differentially applied, depending on the extent of community benefit deemed to be involved (Steel, 1991). In 1957, the SCRCC issued its first comprehensive statement of policy on cost-sharing with farmers, a document McCaskill (1973, p. 202) describes as 'a landmark in the history of soil conservation' in New Zealand. Central government funding for soil conservation continued for over 40 years. Cost-sharing varied from \$1 for \$1, up to \$3 to \$1, with central government paying the greater amount for certain structural soil conservation works that were 'entirely for flood and siltation detention' (McCaskill, 1973, p. 204). In some regions, the SCRCC and government purchased large tracts of land where erosion was particularly severe, such as Wither Hills in Marlborough (McCaskill, 1973; Roche, 1994).

The SCRCC and catchment boards had significant powers under the act. They had the right to compulsorily acquire land; to require landowners to reduce stocking rates and retire land from pasture; to carry out conservation works on a farmer's land without the farmer's consent and then recover the costs from the landowner; and to pass regulations or by-laws controlling the use of the land (Campbell, 1966; Roche, 1994). In reality, there are very few examples of when these powers were enacted (Clough & Hicks, 1993). The SCRCC and catchment boards relied rather on farmers voluntarily undertaking soil conservation work on their farms.

Agriculture and soil conservators: uneasy bedfellows

Tensions emerged between soil conservationists and the agricultural sector that would continue. Significantly, in 1939, the Department of Agriculture for the first time recognised soil erosion as a special type of land deterioration, although it did not acknowledge the link between land use and accelerated erosion (Roche, 1994). The department's recognition of soil erosion did not, however, stop it and the farming community expressing considerable reservations about the bill. Members of the sector challenged not only the bill but also the legitimacy of the concerns with erosion (Roche, 1994). The Minister of Agriculture in 1940 is quoted as saying:

In general in New Zealand, erosion per se is not a basic problem calling directly for action (cited in McCaskill, 1973, p. 22).

A rural backlash continued through the 1940s and 1950s, in particular in relation to the differential rating systems imposed on rate paying farmers for flood protection, and what farmers saw as the unacceptable level of power given to the SCRRC and catchment boards through the act (Roche, 1994). In the final report from the Royal Commission into Sheep Farming tabled in 1949, the SCRCC and its work were strongly criticised and claims made about erosion were labelled as 'propaganda' (Appendices to the Journal of the House of Representatives 1949 cited in Roche, 1994, p. 56). In response to ongoing criticism from the farming sector, a parliamentary select committee was established in October 1956, to review soil conservation and catchment board administration and legislation (Roche, 1994). As a result of this committee's work, albeit delayed through a change of government in 1957, the act was amended in 1959 to include a provision that allowed for full compensation for farmers in relation to land acquired by central government, or lost by farmers to erosion control works. Other changes included a shift in certain powers away from the local catchment boards to the SCRCC. Roche (1994) argues that this was the result of farmers' lobbying, since they believed they had better representation on the SCRCC than at catchment board or regional levels.

Soil and water conservation: the act expanded

Growing concerns about water quality, water pollution and water allocation, led to a revision and expansion in the scope of the Soil Conservation and Rivers Control Act 1941. In 1967, the Water and Soil Conservation Act was enacted and in 1968 the National Water & Soil Conservation Authority (NWASCA) was established (Roche, 1994). NWASCA was a collective grouping of the SCRCC and catchment boards and the new Water Allocation Council. It was serviced by the newly established Water and Soil Division of the Ministry of Works.

Central government subsidies for soil conservation continued to be funded through this mechanism, with money flowing through the Ministry of Works to catchment boards and on to assist land owners (Roche, 1994). Subsidies were linked by this stage to conservation farm plans, with farmers required to have a conservation farm plan in order to obtain subsidies.

Agricultural production versus soil conservation

Agricultural policy and rural sentiment often ran counter to that of soil conservation policy and its advocates. At the same time that soil scientists and the Ministry of Works were arguing for central government legislation to counter the adverse effects of deforestation, the focus for the Department of Agriculture was on increasing production in hill country (McCaskill, 1973; Nightingale, 1992). Production increases became possible with the advent of the aerial topdressing industry during the late 1940s. Soil conservation advocates questioned the Department of Agriculture's advice to hill country farmers:

It is interesting to notice that the station holder, most 'efficient' in the eyes of his neighbours and field instructors of the Department of Agriculture (in that he frees his hill country of weeds) is frequently the one whom advanced soil removal first drives off his holding (Cumberland, 1944, p. 38).

The Department of Agriculture's core role described in its 1946 annual report, according to Nightingale (1992, p. 204) 'was to increase production to earn overseas funds'. Particular mention was made, according to Nightingale (1992), of the need for hill country management techniques to improve fertility and pasture management, in order to increase production and contain erosion.

Conflict extended to the functions and work of the Extension Division of the Department of Agriculture and the Soil Conservators funded by the SCRCC, who worked from the Public Works Department (Nightingale, 1992; Roche, 1994). The Department of Agriculture argued that there was a duplication of services provided by both entities and that the soil conservators were exaggerating the extent of the erosion problem. Soil conservators were for a time, from 1956, incorporated into the department, but the marriage was rocky and ultimately short, and the soil conservators soon returned to the Public Works Department (Nightingale, 1992; Roche, 1994). The conflict between the Department of Agriculture and soil conservators, in Roche's (1994, p. 62) assessment, 'seriously retarded the development of a concerted programme of catchment management from the mountains to the sea'.

Counter also to the efforts of soil conservators were the policies and actions of the Lands Department and subsequently the Department of Lands and Survey (McCaskill, 1973). Both departments were responsible for the development of large tracts of land for resettlement by

farmers after the Second World War, until the 1980s. Up until the mid-1960s this development was implemented without any consideration of the possible risk of land degradation, which included erosion. In 1965, the Department of Lands changed its stance and allowed for land capability planning by Catchment Boards to occur prior to land development (McCaskill, 1973).

The drive for agricultural productivity: 1950s-1980s

The drive to maximise agricultural production in the 1950s failed to reach the level of agricultural growth, and hence export earnings, predicted as necessary to ‘support a continuing increase in the standard of living of a growing population’ (Nightingale, 1992, p. 233). Johnson (1968, p. 5) describes the situation as one where:

The farming community were making output decisions which were quite compatible with their individual circumstances, but which were at variance with the needs of the community as a whole.

Driven by concerns reportedly held ‘in both producer and official circles that agricultural expansion should proceed at a more rapid rate’ (New Zealand Government, 1966, Section 14B Farming: General), the Minister of Agriculture set up the Agricultural Development Conference, which comprised a number of meetings in 1963 and 1964. The conference included representatives of the main groups associated with the export industries including Producer Boards, the Department of Agriculture and The Treasury (Anon., 1966; Johnson, 1968). The terms of reference for the conference included the setting of targets for agricultural growth and to recommend measures for achieving them (Anon, 1966 cited by Johnson, 1968, p. 5).

Productivity targets endorsed by the conference were:

[by] 1972–73 livestock numbers would have to rise to 111 million ewe equivalents compared with 80 million in 1962–63. This would require an increase in stock numbers of 3.5 per cent a year, an increase in pastoral production of 3.8 per cent a year, and an increase in pastoral exports of 4.1 per cent a year (New Zealand Government, 1966, Section 14A Farming: General).

Recommendations to government from the conference included implementing

a number of measures designed to improve incentives and encourage development. Stress was also laid on the need to expand advisory services to enable farmers to improve their efficiency (New Zealand Government, 1966, Section 14A Farming: General).

The resultant policies marked an increase in central government intervention in agriculture that was to continue until the mid-1980s (Nightingale, 1992).

The interconnected nature of soil conservation and central government's push for increased agricultural productivity is illustrated in the way soil conservation is promoted by the SCRC in an advertisement targeting farmers in 1960 on the following page (Figure 4).

The New Zealand Farmer

23

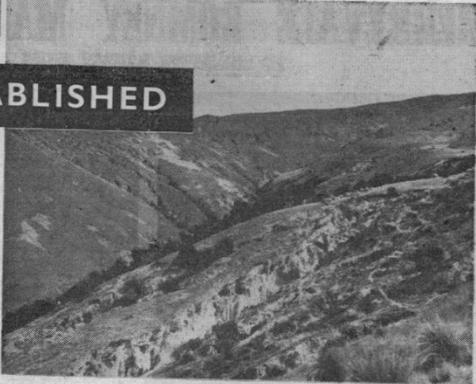
PATTERN FOR PRODUCTION. No. 2 of a series.

PRODUCTIVITY RE-ESTABLISHED

"In nature there are no rewards and no punishments—just consequences."

THE "CONSEQUENCES" ARE SOIL EROSION AND FLOODING

Soil erosion strikes at prosperity. In New Zealand today there are some twenty seven million acres on which erosion is affecting production!



CONSERVATION FARMING RESULTS IN SPECTACULAR DEVELOPMENT

Drastic changes in vegetation brought about by farming, have been reflected in equally drastic changes in the soil on our hill country.

Experimental work, such as that carried out on Wither Hills Soil Conservation Reserve, Blenheim, has resulted in simple, practical and inexpensive answers to these erosion problems. Land which, only a short time ago was unproductive, can be brought back, step by simple step, into full profit.

THE METHOD? Pasture improvement, grazing control, contouring, tree planting, gully control and fire and pest control.



TO MEET EVERY CONSERVATION REQUIREMENT THERE IS A PROVEN PROGRAMME AVAILABLE!

Pioneer investigations by catchment boards and Government Departments have resulted in the development of many conservation methods. Advice is free and subsidy is available for erosion control. Upon application to a catchment board or the Department of Agriculture a farmer can have the land capability of his property assessed and a conservation farming programme prepared and geared to his own resources for a five-year period.

NO PASTURE NEEDS TO BE UNPRODUCTIVE!

BULLETINS AVAILABLE

"Conservation Farming for Hill Country" No. 15
"Giving Wings to Soil Conservation" No. 11

Post this coupon for free bulletins and advice.

TO: The Soil Conservation & Rivers Control Council,
P.O. Box 8024,
WELLINGTON.

Please forward, free of charge, the following Conservation Bulletins.
(Nos.) _____
Name _____
Address _____

Would you like a field officer to call and discuss your conservation problems. YES/NO.

SOIL CONSERVATION OFFERS PLANNED ECONOMY

THE SOIL CONSERVATION AND RIVERS CONTROL COUNCIL

Figure 4: 'Productivity Re-established' — Soil Conservation and Rivers Control council advertisement published in the New Zealand Farmer March 3, 1960 Vol. LXXXI-No. 1: p 23.

A pivotal point for New Zealand agriculture and the country's economy occurred in 1974, when the United Kingdom joined the European Community. New Zealand's guaranteed access to the British market for its agricultural commodities 'was no more' and exporters were forced to

compete for new, lower-returning markets, internationally. Central government's agricultural policy response continued to encourage farmers, through incentives and subsidies, to increase their production (Walker & Bell, 1994).

This was particularly apparent during the period from the 1970s to the mid-1980s. Evidence suggested that hill country stocking rates in the North Island had declined, while breeding ewe performance had, at minimum, remained static and at worst declined (Molloy, 1980; Smith & Dawson, 1976). In his presidential address to the Society of Animal Production in 1979, G.K. Hight argued:

At present, hill country is grossly under-farmed ... It is my contention that the productive potential of hill country can be increased by 50% on a national basis, with the wetter and higher fertility area being capable of achieving increases of over 100% per unit land area (Hight, 1979, p. 3).

Hight's statements mirrored the findings of the National Research Advisory Council (NRAC) reported in its 1978 publication *Hill-country Research*. As reported by Molloy (1980, p. 129) the NRAC in this report claimed:

[A] 50% increase in production from hill country is realistic and that a 100% increase in yield is possible. Whether such increases are achieved depends both on a more widespread use of known and future scientific research and on the motivation of hill country farmers to use such knowledge.

Research focussing on improving the fertility, pasture production and grazing systems on hill country also attracted research funding and research output in the late 1970s and early 1980s (eg. Chapman, 1983; Clark, Grant, & Grant, 1986; Lambert, Clark, Grant, Costall, & Fletcher, 1983; Lambert, Luscombe, & Clark, 1981; Smith & Dawson, 1976).

Although assistance to agriculture to enhance production levels began in the 1960s, it was with the election of the Muldoon Government in 1975, following Britain joining the European Community, that New Zealand agriculture experienced a concentrated period of incentives to expand production (Walker & Bell, 1994). A particular focus for these policies was hill country sheep and beef properties. In 1977, the Livestock Incentive Scheme was set up and in 1978 the Supplementary Minimum Price Scheme and the Land Development Encouragement Loan Scheme were introduced. In 1978, fertiliser subsidies were introduced into all policies directed at encouraging, through stabilisation of income and subsidies, farming communities' expansion and intensification of production (Tyler & Lattimore, 1990). The impact of these policies on increasing land degradation is now well documented and it is recognised as being in direct opposition to soil conservation initiatives and policy (Makin, et al., 1991; Reynolds, Moore, Arthur-Worsop, & Storey, 1993; Steel, 1991).

1980s central government reforms: implications for farming

Radical policy reforms were instigated in 1984 by the newly elected Labour Government as referred to previously in Chapter Three. The reforms had significant implications for New Zealand agriculture and for central government's involvement in soil conservation on-farm (Sandrey & Reynolds, 1990; Walker & Bell, 1994). The thrust of the changes to agricultural policy was to improve the efficiency of the farming sector. In line with Treasury advice (The Treasury, 1984b), assistance to agriculture was removed rapidly, the aim being to expose the sector to international prices for outputs and inputs, including government services (Sandrey & Reynolds, 1990; Walker & Bell, 1994). The effective rate of assistance²⁴ to agriculture was reduced from a high of 52 percent to -3 percent, over a decade (Walker & Bell, 1994). The impact of these reforms was particularly significant for hill country sheep and beef farmers, who had been the target for subsidies which encouraged productivity growth in the period prior to the reforms. Evidence indicated not only economic but long-term social and environmental impacts, as a result of the reforms (Smith & Saunders, 1996). The stress experienced by sheep and beef farmers surveyed following the reforms is identified as having directly impacted on farmer's motivation, including with respect to soil conservation works:

Stress impacted on the physical environment. Worried about their short-term survival, some farmers lacked the energy to implement any long term plans to preserve their land. Where floods or drought set back previous attempts at erosion control (destroying previously planted poles for example) or efforts to manage pasture quality and the nutrient balance (through changes in the sheep/beef ratio), some farmers gave up hope (Smith & Saunders, 1995, p. 115).

Prior to the 1984 reforms, it has been estimated that 37.4% of the average sheep and beef farmer's income came from central government subsidies (Rhodes, et al., 2003). In 1995, North Island hill farms were assessed as being in 'a poor economic state [with] very few farms returning a profit and the majority are in effect mining the capital they have invested in their businesses' (Rhodes, Willis, & Smith, 2000, p. 1: 2).

Different impacts on HEHC are reported to have been a result of the reforms. Stocking rates in hill country land declined with the removal of subsidies. However, large areas of marginal and less productive hill country land, developed with central government support during the late 1970s and early 1980s, were now highly vulnerable to erosion, and land degradation was reported as being more of an issue following the reforms (Reynolds, et al., 1993). The situation

²⁴ 'The effective rate of assistance measures net government assistance to an industry by comparing the difference between the value-added by the assisted sector to the value-added generated by the same, but unassisted sector (at the world or reference price). It takes into account not only support directed at an industry but the amount of support indirectly received or the tax paid by the industry because the government has subsidised or taxed a supply industry' (OECD, 1987, pp. 2,3).

was exacerbated by the poor financial situation many hill country farmers found themselves in, with inadequate income to ‘steward land resources, invest in soil conservation or the conversion of marginal pasture into forestry’ (Reynolds, et al., 1993, p. 12).

Agricultural productivity in the sheep and beef sector: post 1980s reforms and today

In the longer term, the productivity²⁵ of the agricultural sector has, according to economic measures, improved. However, the implications of this for sustainable land management are unclear. According to Rhodes et al. (2003) the majority of the economic literature published since 1995, which explores the New Zealand situation, argues that the removal of subsidies was a catalyst for productivity gains. Productivity within the agricultural sector increased annually between 1986 and 2003, by an average of 5.9 percent, compared to a 1.0 percent rate of increase prior to the reforms (Rhodes, et al., 2003). A significant contributor to the agricultural sectors’ growth has been the dairy sector, but the majority of farms on hill country remain sheep and beef farms. With respect to the New Zealand sheep and beef sector, in 2011-2012, sheep numbers are reported to have declined by 42 percent and beef by 10 percent, since 1990-91 (Deloitte, 2011). This is attributed, in a large part, to there being 41 percent fewer commercial sheep and beef farms in 2008/09 compared to 1984, but those that remain are larger farms (Deloitte, 2011). The productivity gains that have been achieved in the sector have been a result of an increase in lambing percentage and the finishing of lambs to a higher weight before slaughter. The net effect on productivity for the whole sector has, therefore, been of little significance (Deloitte, 2011).

Integrative sustainable land management policy

The development of an integrated approach to sustainable land management that incorporated soil conservation began in the 1970s and informed eventually central government’s 1996 Sustainable Land Management Strategy. The development of this approach and the implications of the neoliberal policy reforms of the 1980s on central government’s involvement in soil conservation and sustainable land management are explored in these following sections.

A beginning: 1970s

An integrated approach to land management by central government was seeded in the early 1970s and it brought together land management concerns with agricultural productivity. Concern for existing land management practices and policies emerged from both the 1969

²⁵ Productivity refers to efficiency of on-farm production and was measured in terms of increases in production per head, per stock unit and per hectare.

National Development Conference and the 1970 Physical Environment Conference (Land Use Advisory Council, 1978). As a result of recommendations from these conferences, the government established the Land Use Advisory Council in 1972 (Land Use Advisory Council, 1978, 1981, 1983). The complexity of the issues relating to sustainable land management was made clear in the council's conclusions published in their final document in 1983:

The way in which land is used not only affects the physical environment but also significantly affects New Zealanders' way of life ... Decisions on land use inevitably require choices to be made between economic and environmental benefit, private profit and public interest, or between higher levels of personal affluence and higher levels of public expenditure (Land Use Advisory Council, 1983, p. 37).

The council strongly argued that central government policy needed to guide future land use in New Zealand and it presented a national goal, which it suggested all bodies and individuals involved in land use decisions should adopt. The national goal was as follows:

The use of land for the well-being of the nation by attaining its potential sustainable production and by enhancing the quality of the physical and cultural environment (Land Use Advisory Council, 1983, p. 26 italics as in original text).

Sustainable production was defined as:

economically profitable management of land, which maintains the structure and nutrient fertility of the soil (Land Use Advisory Council, 1983, p. 26)²⁶.

Sustainability, as a term, became more prevalent in central government discourse during the 1980s. The Ministry for the Environment was formed as a result of the Environment Act 1986. The primary responsibilities of the agency was to provide advice to the government on environmental issues and (importantly) it also administered the SCRC Act 1941, the primary piece of legislation that addressed issues of soil erosion and soil conservation on hill country, at that time.

The 1980s reforms: implications for soil conservation

The policy reforms initiated in 1984 heralded the demise of the so-called 'interventionist period' (Clough & Hicks, 1993, p. vii) of central government funding for soil conservation work (Roche, 1994). Aligned with the wider reforms, soil conservation funding was reviewed. The Treasury at that time challenged (together with almost all forms of assistance to the agricultural sector) the shared benefits of soil conservation (The Treasury, 1984a). In its 1984 advice to the government The Treasury argued that:

²⁶ It is worth noting that this definition of sustainable production predates the definition of sustainability that emerged out of the Brundtland Commission and was published in the Brundtland Report in 1987 (Brundtland & World Commission on Environment and Development, 1987).

In general, most of the benefits from catchment works accrue to private landowners in the form of agricultural production and avoided production losses or, in the case of urban areas, a reduction in flood risk. Because of this, the high grant levels can result in a very high rate of return to private landowners (The Treasury, 1984a, p. 49).

The final statement in the document bluntly outlined The Treasury's preferred approach, which would be adopted by the Labour Government:

We are of the opinion that contributions should be distributed according to benefits (i.e. 'User pays') (The Treasury, 1984a, p. 49).

There was strong opposition from soil conservators and scientists. According to Roche:

soil and water subsidies fundamentally differed from agricultural subsidies in that they were not directly concerned with encouraging increased production, but were intended to avert land deterioration in the long term (Roche, 1994, p. 155).

The Treasury and the government of the day were unmoved and in 1988 NWASCA was disestablished. Local government reforms and the establishment of the Resource Management Act 1991 saw the Soil Conservation and Rivers Control and Water and Soil Conservation Acts repealed, and all central government support for agriculture was removed.

The reliance on voluntary compliance by farmers in the 'interventionist' era of soil conservation, up until 1989, was assessed (in retrospect) as being only 'partly successful' (Clough & Hicks, 1993). Lack of success was argued to be the result of 'inefficient incentive effects' which resulted in expenditure on soil conservation on-farm being influenced not by need but by the level of available subsidy with farmers implementing on-farm works that attracted the highest subsidies even if the work was not a priority (Clough & Hicks, 1993).

Somewhat surprisingly, it was only in 1984 that the first attempt was made by Trustrum, Thomas and Lambert (1984) to quantify the effects of slip erosion on pasture production, whether there was a link between this work and the shift in policy stance of central government is unclear. The justification for the study was outlined in the introductory sentences:

Quantification of the effects of erosion on pasture productivity is required if agricultural policy makers are to predict the relative long term economic and environmental effects of alternative hill country land management strategies (Perrens & Trustrum in press). Poor management decisions may result in an irreversible loss of the soil resource, or conversely its under-utilisation, and therefore, a loss of income to the farmer and supply to the consumer (Trustrum, et al., 1984, p. 66).

Likewise, not until the late 1980s, according to Clough and Hicks (1992), were attempts made to assess the efficacy of soil conservation measures in reducing erosion. A single Wairarapa sub-catchment study undertaken by Hicks is quoted as the assessment. In his estimation, soil

conservation works had been implemented on two thirds of the sites required, but two thirds of the measures were deficient, in terms of their installation or ongoing maintenance (Hicks, 1991 unpub. & 1992 cited in Clough & Hicks, 1992). He estimated that erosion had been reduced by (at the most) one fifth. Where soil conservation works had been installed and maintained adequately, erosion was reduced by about three quarters (on average) compared to untreated sites (Hicks, 1991 unpub. & 1992 cited in Clough & Hicks, 1992).

The almost complete lack of quantitative assessment of soil conservation benefits and the inherent belief in the value of soil conservation were criticised during the post-reform era (Clough & Hicks, 1992; Steel, 1991). An examination of previously completed economic analysis of soil conservation was described by Clough and Hicks (1992) (an economist and soil scientist respectively) as being inconsistent and non-comparable, but the analysis had common characteristics which they identified and listed:

- 1 preoccupation with quantifying on-farm benefits
- 2 recognition that off-farm benefits exist and in some cases are assumed large enough to overturn poor analysis results
- 3 the assumption that retaining soil in the hills is “a good thing” irrespective of, or in addition to, any demonstrable effects
- 4 questioning of some distributional issues but not the basic premise of government support, on grounds of results being in the national interest
- 5 limited reference points with which to compare the returns from soil conservation against those from other outputs to which public expenditure might be directed (Clough & Hicks, 1993, p. 23).

Clough and Hicks’ (1992) criticism appears to support the stance adopted by The Treasury in 1984. The lack of quantitative analysis was also criticised in 1987, however, not because there was doubt as to the on- and off-site benefits of soil conservation. The criticism was directed at the failure (through clear evidence) to convey soil conservation’s benefits to the public, in terms other than its enhancement of agricultural production (Soil Conservation Policy Review Working Party, 1987).

Resource management and local government reforms: The RMA 1991 and regional councils

The radical restructuring of the New Zealand regulatory environment during the mid- to late-1980s also had implications for the governing of New Zealand’s natural resources, which included farmed hill country land. In 1987, the government instigated a reform of local government, in association with reforms to environmental legislation (Sandrey, 1990; Taylor,

1997). The Local Government Act 1974 was amended in 1989. This resulted in the establishment of regional councils which took over responsibility for sustainable land management and it provided for public participation in local authority decision-making. These reforms resulted in the formation of 12 regional councils (including the Manawatu-Wanganui Regional Council) and one²⁷ unitary authority (Taylor, 1997).

The Resource Management Act passed in 1991 encompassed almost all aspects of resource management in New Zealand. The overarching purpose of the act is ‘to promote the sustainable management of natural and physical resources’.

The act specifies the meaning of sustainable management as:

.... managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety while –

- (a) sustaining the potential of natural resources to meet the reasonably foreseeable needs of future generations; and
- (b) Safeguarding the life-supporting capacity of air, water, soil and ecosystems; and
- (c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment (Part II; Section 5, RMA, 1991).

The emphasis in the act is on effects, rather than activities. The implications of the act on land use were identified as significant in terms of:

changed presumptions about use. Previous legislation prohibited all uses except those allowed by plans. The [RMA] allows landowners to do anything with their land except that which is prohibited. Clear specification of the adverse effect to be managed for will be necessary to achieve sustainable management (Steel, 1991, p. 11).

Kevin Steel, at the time at MfE, (in retrospect over ambitiously) goes on to predict that the act:

should lead to improved progress towards regional councils setting clear goals for sustainable land management ... developing performance measures and gathering high quality information on sustainable land use to evaluate the achievement of these goals (Steel, 1991, p. 12).

Although the impact of local government reform and the introduction of the RMA was nowhere near as significant for agriculture or farmers as the agricultural reforms of the mid-1980s, it marked a further distancing of central government from the governing of agricultural land, and it will emerge as a significant aspect of the governing of HEHC farmland in the Manawatu-Wanganui region.

²⁷ In 1992, three more unitary authorities were created.

Adverse events assistance reviewed

In 1986, in line with broader reforms, central government's role in providing adverse events assistance to farmers was reviewed, also (Dickinson & Sandrey, 1986). The policy was described as ad hoc and represented a form of 'collective action' (Dickinson & Sandrey, 1986, p. 5) or 'risk sharing' (Morriss, 1991, p. 174). The adverse events assistance policy for farmers was criticised in 1986 by Dickinson and Sandrey (1986) for encouraging farmers to use a sub-optimal management strategy for dealing with adverse events, and they also argued that it influenced farmers' productivity decisions. In 1986, central government tightened the criteria for eligibility for assistance and altered the form of assistance. The resolve of central government in the area of adverse events was tested following Cyclone Bola in March 1988. This cyclone resulted in wide-scale erosion in the North Island East Coast hill country, including downstream flooding and sediment damage. Assistance provided to farmers was in excess of that defined by central government in 1986, although farmers were required to cover 40% of the total loss (Sandrey, 1990).

The government's adverse events assistance attracted further criticism in 1990s for its lack of coherence with the neoliberal agenda of the day. It was argued that the policy distorted farmers' risk environment and it was, therefore, 'detrimental to the necessary process of adjustment in the way farm land is managed' (Morriss, 1991, p. 174). In reviewing the impact of the policy at the time, it was concluded that there was insufficient data to assess the effect of the policy on the process of adjustment in the farming sector. However, it was concluded that the policy had done 'little to encourage greater individual and community responsibility for risk from future adverse events' (Morriss, 1991, p. 179).

Sustainable agriculture and sustainable land management: 1990s

Sustainable agriculture was cemented as a strategic theme for the Ministry of Agriculture and Fisheries, when Jim Sutton was Minister of Agriculture for nine months in 1990. Sutton continued championing the concept throughout his time in central government as the minister, including the period from 2002 until 2005, a point made by Sutton himself (Sutton interview, 2008) and by the Prime Minister Helen Clark at the time of Jim Sutton's retirement:

A feature of his agriculture portfolio tenure in successive Labour Governments was the emergence of sustainability as the central theme of Agriculture Policy (Clark, 2006b).

Initially proposed after MfE was established, the sustainable agriculture policy was developed, in large part (and in the opinion of a senior Ministry of Agriculture and Fisheries official at the time Alan Walker) because,

Sutton wanted a foil to the Ministry for the Environment because no one quite understood what the scope of MfE tentacles was going to be because it was a new concept. That was the start of sustainable agriculture ... the main reason was to actually put a perspective which said it is not all about conservation nor is it all just about environment and MfE. We have to take into consideration there is another set of objectives that exist within the country (Walker interview, 2008).

Jim Sutton remembers the emergence of sustainable agriculture somewhat differently, recalling how during a meeting with senior Ministry of Agriculture and Fisheries officials he:

thought that [the ministry] was changing ... for the last 100 to 150 years the *raison d'être* of the Department [of Agriculture] and the Ministry of Agriculture was to make two blades of grass grow where one had grown before, but our mission henceforth was to be one of sustainability, making this a sustainable industry and sustainable in terms of environmental and social factors as well as economic factors (Sutton interview, 2008).

A Ministry of Agriculture and Fisheries programme Sutton highlighted in particular, the FARM Partnership programme, that he was involved in developing in 1990, was in direct response to the damage wrought by Cyclone Bola on the East Coast of the North Island in 1988. Although not the agriculture minister at the time of Bola, Sutton had been involved with central government's response following the cyclone. Explicit recognition that the current land use on an extensive area of hill country prone to erosion on the East Coast of the North Island was not sustainable was made by central government after the cyclone. The FARM Partnership programme was developed and promoted as a programme for sustainable land management (Ministry of Agriculture and Fisheries, 1990). The name FARM was an acronym indicative of the programme's approach: Facilitation; Action; Risk Management; and Partnership. The unique approach proposed was to form a partnership between central government, local government and individual farmers, to support and assist the redefinition of farm boundaries within affected and at risk catchments. The idea was to establish fewer but larger farms, which would be more sustainable, given the financial returns farmers were receiving and the requirement for soil conservation works on-farm. The policy shift being undertaken within central government, as a whole at the time, was reflected in the programme with an emphasis placed not only on building community self-reliance, but also:

secure and sustainable farms, the protection and restoration of damaged land, and the implementation of land management systems that will allow farmers to continue with financial independence (Ministry of Agriculture and Fisheries, 1990, p. 3).

Labour lost the election to National in November 1990 and although the FARM Partnership programme had the support of the new Minister of Agriculture, John Falloon, Ruth

Richardson's 'Mother of all Budgets' of 1991 saw funding for the programme in the words of Jim Sutton:

canned by Ruth Richardson. She simply got the new cabinet to agree that every programme the Labour Government had approved funding for since the last formal budget would be cancelled (Sutton interview, 2008).

The East Coast Forestry Programme emerged in 1991 as a scaled-back and modified version of the FARM Partnership programme.

Although policy work was initiated in the later 1980s, it was 'May 1991, just before passage of the Resource Management Act' that the Ministry of Agriculture and Fisheries 'released a discussion paper entitled "*Sustainable Agriculture: A Policy Proposal*"' (Ministry of Agriculture and Fisheries, 1993, p. v). Drawing on the submissions a policy position paper was then published in 1993. The definition of sustainable agriculture proposed by the Ministry in this paper (Ministry of Agriculture and Fisheries, 1993, p. 4) is as follows:

Sustainable agriculture is the use of practices and systems which maintain or enhance:

- the ability of people and communities to provide for their social and cultural well-being;
- the economic viability of agriculture;
- the natural resource base of agriculture;
- other ecosystems influenced by agricultural activities; and
- the quality and safety of food and fibre.

Land was identified as a resource management issue for New Zealand agriculture in the policy position paper. Specifically, 'significant land instability and erosion problems in sedimentary hill country in both the North and South Islands' were identified as one of a number of problem areas (Ministry of Agriculture and Fisheries, 1993, p. 9). Consistent with the shift in central government approach during the mid-1980s, central government's involvement in achieving sustainable land management would be guided by principles that included:

- (a) efficient allocation of resources and the full accounting of all costs and benefits accruing to individuals and communities;
- (b) increasing the capacity of individuals and communities for self help and encouraging local responsibility for solving problems (Ministry of Agriculture and Fisheries, 1993, p. 13).

The Ministry of Agriculture and Fisheries' role was clearly non-interventionist and it included 'assisting the liberalisation of international agricultural trade'. It also had a role in preparedness for adverse climatic events, natural resource management, research and education and information (Ministry of Agriculture and Fisheries, 1993, p. 17).

A central government strategy for sustainable land management

Building on the Land Use Advisory Council's approach, which had heralded a more integrative approach to land management and the thinking underpinning the FARM partnership, the SLM Strategy was developed in 1996. This strategy was the initiative of Simon Upton, the then Minister for the Environment, and it came out of the National Government's Environment 2010 Strategy (Ministry for the Environment, 1995a, 1996). Consistent with the policy stance adopted by central government during the mid-1980s, the strategy accepted that 'the path towards sustainable land use rests with individual farmers and how they respond to the problems' (Ministry for the Environment, 1996, 2007c). The strategy's primary focus was on supporting individual land owners to achieve SLM, through the provision of information and the funding of a national Landcare Trust, to coordinate and facilitate community Landcare groups to work in SLM. The role for central government was negligible and the policy, in 2004, was in abeyance. However, as will be illustrated in the next chapter, this policy informed the development of the Sustainable Land Management-Hill-country Erosion programme which funds and guides the core programme of the Manawatu-Whanganui regional council and the governing of HEHC in the region.

How soil conservation is implemented on-farm has not changed substantially over the last fifty years. The methods for classifying land at risk of erosion and requiring soil conservation work have also remained relatively unchanged. The final section of this chapter provides an over view of the main tool used by regional level government with farmers to facilitate soil conservation on farm, what is referred to by the Manawatu-Whanganui regional council as whole farm plans. Central to the whole farm plan is the classification and mapping of the farm in terms of land use capability. This classification scheme is central to farm plans and will be referred to again in Chapter Eight. The development of this scheme is explored in this final section of this chapter, also.

On-Farm soil conservation: implementation

Initially, a great deal of the work on-farm was targeted at reducing the impact of erosion and it was, as a result, often isolated and 'piecemeal' (McCaskill, 1973). However, the focus shifted over the 1950s to also include the on-farm site effects of erosion. What were referred to as farm conservation plans, were introduced in 1954 as a more integrated whole farm approach to addressing soil conservation on-farm than the previous implementation of isolated erosion control works (Campbell, 1966; Clough & Hicks, 1992; McCaskill, 1973). These plans included five-year action plans with details of the subsidies available for installation of the works. Catchment control schemes expanded the scope of soil conservation activities and farm plans

were completed for all farms within a sub-catchment, through the use of funding provided for ten years — and subsidies tended to be at a higher level than those for individual farm plan works (Miller 1986, Campbell 1966).

As already highlighted, limited quantitative data exists as to the extent of plans used or their effectiveness a point also confirmed by Manderson (2003). One estimate quoting NWASCA data, suggested that between 1945 and 1985, 5578 individual erosion control works were implemented (NWASCA 1986 cited in Clough & Hicks, 1992). Farm conservation plans were established on 5923 properties, 2500 of which were part of 121 catchment control schemes (Clough & Hicks, 1992). The actual areas of each farm, on which soil conservation works were implemented is not stated; however:

[based on] surveys of some North Island hill country farms with conservation plans indicate that on average 80% of farm areas are erosion-susceptible, and about two thirds of these have received some form of treatment (Hicks, 1992 cited in Clough & Hicks, 1993, p. 18).

Following local government reform in 1989 and the cessation of central government funding for soil conservation and catchment work, individual regional councils employed farm plans to varying degrees and in different ways. Any data available prior to the local government reforms in 1989 became even more ‘vague’ following the reforms, although a tentative ‘1200-1450 *new* farm plans in their various forms’ is estimated to have been completed between 1991 and 2001 (Manderson, 2003, pp. 345, 433, *Italics as in original*). Environmental farm planning was employed in 2009 by nine out of the 16 regional authorities in New Zealand (Manderson, et al., 2007). Although widespread, the plans were described as being diverse and fragmented in their use, thus reflecting 15 years of independent development by different regional authorities since the 1989 reforms (Manderson, et al., 2007).

Soil Classification: the land use capability classification scheme

The concept of land capability is attributed to an American, Hugh Bennett, whose work and writing on soil conservation was instrumental in shaping soil conservation in New Zealand (McCaskill, 1973). It was his dictum: ‘Each acre must be used according to its capabilities and treated according to its needs’, that McCaskill (1973, p. 188) argued (in his 1973 book), was the guiding principle for all New Zealand soil conservators, in addition to being a definition for soil conservation accepted by the SCRCC (Ministry of Works: Water and Soil Division, 1971). The eight-class land use capability system that continues to be the basis for the classification of land in New Zealand was derived from a six-class American system first published in 1939 (McCaskill, 1973). In 1953, the SCRCC made a commitment to provide catchment boards with

land inventory and land capability data, as a basis for catchment control schemes and for conservation planning on-farms (McCaskill, 1973).

An eight-class system of soil classification began being used by New Zealand in the early 1950s, in conjunction with conservation farm plans (McCaskill, 1973). It was, however, not until 1969 that the classification system and associated survey process was published by the Ministry of Works, in a handbook for national use: a second edition came out three years later in 1971 (Ministry of Works: Water and Soil Division, 1971). Emphasising the link to productivity the SCRCC identified the importance of the land use capability survey to,

planning erosion control practices, to maintain production, and to match the higher productivity which arises from an expanding technology of primary production (Clark, 1971, p. 4).

Land use capability classification was defined in the original handbook as being:

“a systematic arrangement of different kinds of land according to those properties that determine its capability for permanent sustained production” where the word “capability” is used in the sense of “suitability for productive use” after taking into account the physical limitations the land may have (Ministry of Works: Water and Soil Division, 1971, p. 12).

The handbook’s publication came in the years following the 1963 Agricultural Development Conference, and the political imperatives of the government of the day were clear in the handbook. In the 1970 New Zealand Official Year Book the advancement in knowledge of soils in New Zealand was acknowledged and the value of the techniques for recognising and mapping soil’s properties recognised in terms of the contribution to advancing the efficiency of New Zealand farming:

Today, land use is guided for the most part by limitations of the soil unit as revealed by investigation. The reliability of predictions made in this way has stimulated the rapid conversion of large areas of ‘problem’ land into good farms and has raised land use to a new pitch of efficiency and intensity, which reflects the modern change from farming as a traditional art to farming as an up-to-date science (New Zealand Government, 1970, Section 14A Farming: General, Approach to Soil Management).

The LUC classification system provided a method of standardising land, which would guide central government’s financial assistance to farmers for erosion control works (Ministry of Works: Water and Soil Division, 1971). Following the 2004 storms in the North Island and central government’s increased interest in soil conservation, funding was provided to update and republish a third edition of the handbook, which occurred in 2009 (Lynn, et al., 2009).

Soil conservation is not a term used in the third edition of the Land Capability Survey handbook. Instead, the classification of land is:

according to its capability for long-term production, based on its physical limitations and site-specific management needs, provides the most reliable basis on which to promote sustainable land management (Lynn, et al., 2009).

The use of the term sustainable land management (SLM) strongly reflects the discourse employed by both central government (in its Sustainable Land Management Strategy 1996) and the discourse increasingly employed by regional councils and unitary authorities within their planning documents. The anticipated use of the LUC system in policy is made evident by a reference in the third edition to the utility of the LUC system by planners, policy developers and regulatory teams, and it is claimed that it provides an assessment technique that ‘is able to withstand close scrutiny through the legal systems’ (Lynn, et al., 2009, p. 7). Similar to earlier editions, the 2009 edition argues that the LUC system’s primary objective is SLM, which will ‘maintain and increase [agricultural and forestry] productivity’ (Lynn, et al., 2009, p. 7).

Although couched in an agricultural production rationale, central to the LUC classification of land is an assessment of the land’s susceptibility to erosion. The LUC classification is based on an assessment of the physical characteristics of land ‘considered to be critical for long term sustainable land use’ and its susceptibility to erosion dominates these physical characteristics. The physical characteristics are rock type; soil; slope angle; erosion type and severity; and vegetation cover. Rock type classification is based on erosion susceptibility and physical characteristics relevant to soil conservation and land use planning (Lynn, et al., 2009; Ministry of Works: Water and Soil Division, 1971). Slope is delineated within the seven ranges, from 0 degrees up to greater than 35 degrees: and it too is linked to soil erosion and slope stability, in addition to the practicality of cultivating the land.

Whether used for a region, catchment or farm, the LUC system compiles a land inventory map. The map spatially differentiates areas of land into land inventory units that have similar soil characteristics. The inventory mapping units are then grouped into land use capability (LUC) units, which are described in the 1971 version of the handbook as, units

which have similar soil characteristics, slope, erodibility, potential productivity and management requirements and require the same conservation measures (Ministry of Works: Water and Soil Division, 1971, p. 21).

A drive for continued increases in productivity on hill country is implied in the representation of potential productivity included in both (but more particularly) the 2009 handbook. In 1971, recommended land use was linked to capability units at a very broad level, with the detailed assessment at the farm level being left to the ‘staff of the catchment authorities’ (Ministry of Works: Water and Soil Division, 1971, p. 35). Reflecting long-term practice in the use of LUC units at farm level, the 2009 handbook outlines productivity indices for LUC units, in terms of

per hectare stock carrying capacity, expressed as stock units²⁸ per hectare (su/ha) (Lynn, et al., 2009). Three levels of carrying capacity are assigned for each LUC unit in different regions: ‘Present Average’ carrying capacity of the ‘average farmer’ on a particular LUC unit; ‘Top Farmer’ the carrying capacity of the farmer with the highest su/ha and ‘at least average stock performance’; and ‘Attainable Physical Potential’, the su/ha assessed as capable on a particular LUC unit, ‘within the limits of present technology and given favourable socio-economic conditions’ (Lynn, et al., 2009, p. 114).

The three levels of carrying capacity were assigned and included into New Zealand Land Resource Inventory (NZLRI) maps, based on input from Ministry of Agriculture and Fisheries, Farm Advisory Officers. This assessment and mapping was undertaken in the era prior to the mid-1980s, when central government was driving increases in productivity on hill country. These NZLRI carry capacities only apply to ‘typical sheep and beef farming systems’ (Land Resources Group, 1981 cited in Lynn, et al., 2009, p. 114), which are predominantly the farming systems of North Island hill country farmers.

Conclusion

Severe climatic events resulting in wide scale erosion of hill country land in New Zealand have historically led to greater central government involvement in soil conservation. However, equally significant the neoliberal reforms initiated in the mid 1980s resulted in the retreat by central government from an involvement at a national level in soil conservation. Soil conservation advocates inside and outside of central government have played a crucial role in defining central government’s policies to soil conservation over time, although not always effective their efforts combined with extreme climatic events including the 1930s storms and Cyclone Bola have resulted in the development of new approaches to central government involvement in soil conservation.

Historically, although recognising the impact of farming on accelerated erosion of HEHC, central government’s agenda for the expansion and increased efficiency of agricultural production has overshadowed and shaped soil conservation policy on farm land. This is evident in the representation of HEHC in central government discourse but also in the technologies of soil conservation including the Land Use Capability classification scheme. Within this scheme HEHC is differentiated as a class of land based on its limitations for sustained production, not in terms of its need for protection.

²⁸ One stock unit is equivalent to the annual feed intake, in kilograms of dry matter (kgDM), of a breeding ewe weighing 55 kg at mating, and rearing one lamb to weaning.

Farmers and the rural sector have had a significant and historical influence on shaping central government policy and legislation, in relation to soil conservation and SLM. Although farmers concerns were not taken into account in the drafting of the SCRRC Act (1941), the resultant backlash from the farming community led to changes being made in the legislation, and the full power of the act was never used to constrain farmers in their on-farm practices. This apparent reluctance on the part of government to actively constrain farmers is a strong thread apparent in the policy approach adopted by central government.

Despite a long history of soil conservation in New Zealand, there is a surprising lack of quantitative data accurately capturing the extent of soil conservation work and the benefits associated with the on-farm and off-farm impacts of soil conservation.

Over time, a more integrated approach to sustainable agriculture and sustainable land management emerged in central government's policies. The most recent, the 1996 Sustainable Land Management Strategy, places the responsibility for SLM primarily with individual farmers and as of the start of this research was in abeyance.

This chapter has provided an historical context for the next three data chapters which explore in more detail how the farming of HEHC in the Manawatu-Whanganui region is governed at the national, regional and farm level. The next chapter builds on and extends this one exploring more specifically central government's policies and programmes that have implications for on-farm soil conservation in the region.

CHAPTER SIX

National-Level Governing

Introduction

The farming of highly erodible hill country (HEHC) in the Manawatu-Whanganui region is the outcome of the individual decisions of land managers. However, these decisions are not made in isolation. Past and present government policy and programmes shape the decisions of land managers. Although the history of central government involvement in soil conservation goes back to the 1940s, as described in the previous chapter, the focus for this involvement changed in accordance with political priorities. In the late 1980s these priorities led, along with the other reforms in agriculture, to the cessation of central government's involvement in soil conservation. However, in 2007, central government established the Sustainable Land Management-Hill Country Erosion (SLM-HCE) programme and through this programme reinstated an involvement in soil conservation on farms in the Manawatu-Whanganui region. Although this programme influences how the farming of HEHC in the region is governed, central government's influence on the farming of HEHC extends beyond this programme. This chapter will present data on the mix of programmes and broader policies of central government that shape the farming of HEHC in the region.

Foucault's governmentality theory and the analytic of government, although not made explicit in this and the following two results chapters, is the framework for the data that is presented in these chapters. The results that are presented illustrate how through representation and intervention central government, the sheep and beef sector peak body and the farmer advocacy national body are governing the farming of HEHC in the Manawatu-Whanganui region and what has led to this governing.

Central government has no specific policy imperative for the farming of HEHC on New Zealand farmland. However, three interlinked policy areas of central government include programmes that have implications for the farming of HEHC in the Manawatu-Whanganui region: adverse events and flood risk management; climate change; and sustainability. Only the SLM-HCE programme is directly funding work in the Manawatu-Whanganui region. This programme was developed in direct response to the 2004 storm.

Shifts in the policy priorities of central government in sustainability and climate change, and the specific roles of MAF and MfE, have been significant in defining the types of central

government programmes currently influencing the management by farmers of HEHC. This chapter explores these aspects of the policy context over time and describes the development of initiatives relevant to the farming of HEHC within the three broad policy areas mentioned above.

The relative influence and specific responsibilities of MAF²⁹ and MfE are a significant aspect of the governing of HEHC. Although MAF has primary responsibilities in agriculture and forestry and MfE in the environment, the roles and influence of these ministries in relation to the environment have blurred, which in turn, has had implications for the nature of central government intervention in agriculture and the environment. The specific roles and activities of these two ministries are explored along with the events and factors that have over time contributed to and shaped the current roles of MAF and MfE in governing HEHC. A central government review of environmental science in 2004 led to changes in funding and approach, the review findings and resultant changes in this area are outlined as they have significance to central government's broader influence on the Manawatu-Whanganui regional council's role in soil conservation in the region.

Federated Farmers (NZ) Inc and Beef+Lamb New Zealand³⁰ (Beef+Lamb NZ) are the only two farmer-funded organisations that operate at a national level in New Zealand and are therefore potentially important actors in shaping not only national level governing of HEHC on farmland but farming in general. The final sections of this chapter expand on the Federation's approach and interaction with central government and also outline Beef+Lamb NZ's involvement at an industry level in shaping the broader policies of farming relevant to HEHC.

This chapter aims to convey an understanding of the mix of different identities, personalities, perspectives and agendas of individuals and organisations and their inter relationships that come together to shape the governing of HEHC on farmland at the national level. Data for this chapter are drawn from interviews undertaken between 2007 and 2011, as detailed in Chapter Four, and from central government and Manawatu-Whanganui regional council documents and reports, newspaper articles and official websites of relevant organisations (Appendix Two).

Adverse events and the helping hand of government

The 1-in-a-100-year storm that hit the lower North Island in February 2004 had destructive consequences for the Manawatu-Whanganui region, for many of its communities, and for

²⁹ In 2012 MAF, the Ministry of Agriculture and Forestry was merged with the Ministry of Fisheries to form a single ministry the Ministry of Primary Industries (MPI). This research draws on data and reports on events and resources predominantly during the period before MPI was formed.

³⁰ Meat and Wool New Zealand (MWNZ) was renamed Beef+Lamb New Zealand (B+LNZ) in 2011.

farmers in both hill country and low land. The devastation following the storm was visually dramatic, with wide-scale flooding and extensive landslides in the region's hill country (as illustrated in the aerial photo and landslide map included in Chapter One). The storm and its aftermath attracted extensive media coverage and demanded and received attention from the political leaders at the time. The impact on farmers, as described by Jim Sutton the Minister of Agriculture at the time, was 'far too big to expect farmers and local government to deal with on their own' (New Zealand Government, 2004). In accordance with central government's Adverse Events policy, given the scale of the disaster, central government responded and a range of assistance was provided including a MAF run agricultural recovery programme (*NZ Herald*, 2004c).

Early estimates of the total cost of the damage from the February 2004 storm were \$355 million (Horizons Regional Council, 2004b), \$185 million of which was the estimated short- and medium-term impacts on agriculture and forestry (Sutton, 2004). Central government provided around \$130 million to cover emergency response activities and to assist in the clean up and repair (Horizons Regional Council, 2004b).

The government's Adverse Events policy, which defined the assistance provided by central government, was revised in 1986. According to Alan Walker, a senior MAF official (1974-2006) who played a key role in revising the policy, the 1986 policy replaced one that '[did nothing] to encourage a change or adjustment [by farmers] for future events' (Walker interview 2008). In the policy, assistance is linked to the 'national significance of the disaster' (Walker interview 2008) and not to the impact on individual farms. Described as 'good sound policy' in 2008 by Pat Helm, a senior official in the Department of Prime Minister and Cabinet (DPMC), the policy treats farming as a business and 'government does not support private business ... individuals can and should manage themselves in ways that protect against adversity' (Helm interview 2008).

Accordingly, central government assistance covered only that which could not be insured by farmers themselves. Payments covered 75 percent of the cost for re-establishing all uninsurable on-farm infrastructure including on-farm flood protection works and 90 percent funding for crop establishment. Farmers were expected to pay the first \$10,000 worth of spending and payments were only made for 'non-insurable qualifying items' (*NZ Herald*, 2004c, n.p.). In addition, farmers could also benefit from changes to tax requirements and from an estimated \$10 million funded rates remission (*NZ Herald*, 2004c).

A similar rationale was evident in central government's assistance to local government after the February 2004 storm and subsequent storms that occurred over the following year. The assistance included financing up to 60 percent of the costs associated with the disaster with the

remaining 40 percent needing to come from local government. Central government's assumption was that local government 'will spend their 40 percent wisely and then the Crown's 60 percent will be spent wisely as well' (Helm interview 2008). However, only those local authorities who had shown prudent management were afforded this level of assistance:

The council can't just have had this happen as an act of god. It has to be that they have managed it and thought through these risks and made some provision to cover their 40 percent beforehand (Helm interview 2008).

The Manawatu-Wanganui regional council had instigated a strategy of insurance and had flood reserves put aside to be used in the event of a flood or failure in the scheme. The government rewarded this prudent action, as chair of the regional council at the time Garrick Murfitt describes:

[the regional council] was insured,... but the government said 'look, since you have been trying to help yourself, you don't have to use your flood reserves, because the flood reserves are not there for massive great things, it's for normal 10-year floods and that sort of thing' ... and so we were lucky (Murfitt interview 2010).

The government's recovery package for farmers following the 2004 storm was applauded by some farming leaders. The Manawatu-Rangitikei Federated Farmers' president Shelley Dew-Hopkins was reported as stating: 'I was quite overwhelmed when I saw the package' (Donald, 2004). However, it was criticised by others for not compensating farmers fully for their losses. An article in the *NZ Herald* reported Bruce Gordon a Rangitikei District Councillor and cropping farmer 'who lost \$40,000 of crops in the flood, queried why there was no compensation for losses' (*NZ Herald*, 2004b). The article quoted Bruce Gordon as stating on national radio: 'I don't understand why there is no compensation for arable farmers growing wheat and maize and barley...I would say it's a huge issue' (*NZ Herald*, 2004b).

The policy parameters guiding central government's response were made clear by Minister Sutton in the same newspaper article and align with those identified by Pat Helm from the DPMC. Minister Sutton was quoted as saying:

..farming [is] a risky business and the government could not fully compensate farmers for lost income, but it could give them a helping hand. 'We cannot make things as they would have been if this event had never occurred...what government has set out to do is to provide farmers with an effective helping hand,' Mr Sutton said (*NZ Herald*, 2004b, n.p.).

Assisting farming: a 'tricky' and contested policy area

Varying views exist as to the level and type of assistance central government should give to farmers following adverse events and the role of central government in assisting farmers. The

difficulties in allotting responsibility for flooding and balancing the competing perspectives on who should bear the risk made adverse events a ‘tricky’ policy area according to Pat Helm of the DPMC (Helm interview 2008).

The purists here in Wellington in Treasury, and places like that, argue that the prices farmers pay for land ... reflects its risk level and that therefore central government shouldn’t be in this business [adverse events assistance] at all (Helm interview 2008).

The practical difficulties for central government in implementing policy along these lines were highlighted by Pat Helm:

there is no way that central government can differentiate [between] who bought into a risky area against those who truly were affected by nature or something out of their control. ...the issues don’t just belong to any one farmer, years of sedimentation on the floor of some of those rivers has raised them above the plains and that’s exposed populations nearby to high risk [due to no fault of their own] (Helm interview 2008).

Questions of blame and ultimate responsibility implicated hill country farmers in the Manawatu-Wanganui region. As Garrick Murfitt explained, although the hill-country became the target for central government policy ‘it wasn’t the hill country that was the problem’ (Murfitt interview 2010) it was the damage caused downstream to farms, businesses and communities.

Self- reliance and sustainable land management

Floods in the Bay of Plenty in 2004 and 2005 on top of the devastation and cost of the Manawatu storm flooding and the looming threat of climate change provided impetus for the government to review its adverse events and flood risk management policies. In both policies impetus was placed on self-reliance (rather than dependence on central government,) and sustainable land management is advocated as a strategy contributing to self-reliance.

A review of central government’s adverse events policy was initiated in 2006 (Ministry of Agriculture and Forestry, 2006a). The key theme for the review was to develop ‘a clear and well-communicated adverse events framework’ (Ministry of Agriculture and Forestry, 2006a, p. 1). However, it was also designed to ‘remove expectations that the government would step in every time a natural disaster struck ... the government is not the insurer of last resort’ according to MAF’s North Island policy manager (Cheng, 2006). The aim of the review was stated as being ‘to ensure central government’s recovery assistance at the on-farm level achieves seven objectives’. The objectives include one that emphasised central government’s focus on ‘self-reliance’ and importantly also one with specific reference to sustainable land management:

1. maintain individual and local communities’ primary responsibility for recovery through risk mitigation and preparedness;

5. ensure central government recovery assistance measures signal the necessity for sustainable land management practices, prudent risk mitigation and optimal insurance cover by individuals (Ministry of Agriculture and Forestry, 2006a, p. 7).

The government instigated a review of its role in flood risk management in March 2005. As part of the review, which was led by MfE, the Flood Risk Management and River Control Review Steering Group was established (Hobbs, 2005; Ministry for the Environment & The Flood Risk Management and River Control Review Steering Group, 2008). The review focussed on the reduction and readiness aspects of flood risk management rather than response and recovery following an event. Completed in 2007, the vision for flood risk management in New Zealand placed the ‘responsibility for actively reducing the consequences of flooding’ with ‘individuals, communities and New Zealand society’ (Ministry for the Environment & The Flood Risk Management and River Control Review Steering Group, 2008, p. vi).

To support the vision the Steering Group suggested that central government adopt ‘decision-making principles to reduce flood risk’, two of which acknowledged the link between flood risk, soil and SLM at a catchment level:

- respect environmental limits and natural processes, including river and catchment processes, and protecting the life-supporting capacity of water, soil and ecosystems
- integrate flood risk management with sustainable land management and catchment management policies and decisions that affect the magnitude of flooding and/or the consequences of flooding (Ministry for the Environment & The Flood Risk Management and River Control Review Steering Group, 2008, p. 14).

Central government’s Adverse Events policy and Flood Risk Management review have few direct implications for the management of HEHC, but the concerns that underpin these policies gave added impetus to central government’s Sustainable Land Management – Hill Country Erosion (SLM-HCE) programme because all the benefits identified as coming from the programme relate directly and indirectly to reducing flood risk. The benefits identified from the SLM-HCE programme are: ‘erosion control, reduced river aggradation and reduced flood risk’ (Office of the Minister of Agriculture, 2007, p. 14). Erosion control is identified as a ‘Possible Co-benefit’ of the Sustainable Land Management and Climate Change programme (Office of the Minister of Agriculture, 2007, p. 14), principally as a result of afforestation and maintaining forests on hill country.

Greater individual and community responsibility, a proxy for reduced central government risk exposure, is repeatedly emphasised across the reviews completed. Also repeated are the interconnections between climate change, flood risk management and SLM at a catchment level.

The storms and the heightened awareness within central government of the link between flooding and soil erosion in the hill country also proved to be opportune for advocates of soil conservation.

Soil conservation: a renaissance....

The storm ‘was a bloody godsend’ for soil conservation advocates (Steele interview 2008).

Kevin Steele, a Senior Advisor in the Office of the Minister of Agriculture, Jim Anderton, from 2005 to 2008, had worked in MfE and MAF and had a history in soil conservation. As described in Chapter Five, central government funding for soil conservation work ended at the same time as the local government reforms of the late 1980s. Kevin Steele expanded on his comment - the flood,

hit the government in the face, ... we have a problem here, and...the agenda to start dealing with these long run soil conservation issues and hopefully to deal with them came back onto the political landscape (Steele interview 2008).

Peter Stephens, a senior soil scientist in MfE, concurred:

there is funding there now [for soil conservation work],... this is our best chance for a while (Stephens interview 2008).

Drs Troy Baisden and Roger Parfitt, scientists from Landcare Research, responded to interest from local and national media in the weeks after the flood to make a strong and dramatic statement about what they considered to be farmers’ inappropriate management of steep hill country. Based on the scientists’ analysis, landslides in the region were reported as being so ‘severe and widespread ... that nearly 20,000 ha of pasture has been lost from farms. Erosion scars cover about 25 percent of the damaged farmland’ (*NZ Herald*, 2004a, n.p.).

Roger Parfitt was quoted as saying that at the peak of the flood sediment at the rate of ‘28 tonnes per second’ was passing under the Fitzherbert Bridge in Palmerston North or ‘the equivalent of three truckloads of sediment passing every second translated to almost 1700 tonnes of sediment per minute’ (*NZ Herald*, 2004a, n.p.). Based on the analysis of the sediment the scientists reported that ‘25 percent of sediment was made up of valuable topsoil’ and Troy Baisden was reported as saying that ‘this indicated a need for farmers to appropriately manage farmland on steep-hill country’ (*NZ Herald*, 2004a, n.p.).

Green Party MP Ian Ewen-Street also used the storm as an opportunity to criticise government policy. He argued that the government’s agricultural recovery programme compensated farmers ‘for avoidable damage they had a duty of care to prevent’ (Green Party of Aotearoa New Zealand, 2004, n.p.). He was quoted in a media release as saying:

‘We are reaping the cost of a century of the clear-felling of marginal land to be used for pasture ... Rather than simply assisting farmers to recover only to the point of using their land again in an unsustainable way, any assistance package should be clearly tied to efforts to change their land use to include reforestation with indigenous species on marginal land’ (NZPA, 2004, n.p.).

Despite the extent of erosion and loss of soil following the 2004 storm, Pat Helm made clear his view of central government’s responsibilities:

it [central government] doesn’t have any broad principles of preventing erosion of erodible land. There is no reason to do that because it is going to erode at some point, and there is a lot of other land in New Zealand ... and there are always better uses of the money (Helm interview 2008).

Rather than ignoring the issue, hill country soil erosion was acknowledged as being a ‘different sort of case’ that required a different policy response and that policy ‘is not fully defined in that way yet so we are still feeling our way forward on that’ [Helm interview 2008]. The decision by central government to support an initiative to reduce hill country erosion as a means of managing the risk of flooding was arrived at following an exploration of other options:

One option we looked at was dredging the river but the cost just becomes astronomical so that is simply not going to work, [and] it isn’t a solution to raise stop banks (Helm interview 2008).

However, Helm emphatically rejected a return to the policies of the Catchment Board days:

governments through that time were never quite convinced the money was well spent and there are some terrible examples ... of bad spending where a lot of Crown money has gone into protecting river bends ... that benefit only one farmer and yet those risks should be reflected in the price of land... that is why government in the 1980s stepped back from doing this sort of thing and it wants to stay back from doing it (Helm interview 2008).

Sustainable land management – central government’s response

The early flurry of activity by central government at the time of the storm in February 2004 did not translate immediately into policy relevant to the HEHC in the Manawatu-Whanganui region. It was not until the Budget in May 2007 that the government allocated funds for the Sustainable Land Management-Hill Country Erosion (SLM-HCE) programme. In December 2007, it was announced that the Manawatu-Whanganui regional council had received funding for its Sustainable Land Use Initiative (SLUI).

A Labour Government was re-elected in September 2005, with a reduced majority, and again formed a government in coalition with Jim Anderton and the Progressive Party. Jim Sutton had resigned before the election and Jim Anderton took over as Minister of Agriculture and Forestry, sitting at number three in Cabinet. The minister's position in Cabinet was considered by a number of people interviewed as influential in bringing about the policy outcome that eventuated. According to one interviewee it was because '[Anderton] was quite close to the PM' (MAF official interview 2010), and another interviewee commented '[Anderton] got things done and Kevin Steele was one of his advisors and he has a soil background' (Mackay interview 2010).

The Manawatu-Whanganui regional council played a significant part in instigating and shaping the SLM-HCE programme by keeping it on the government's agenda. The regional council persistently lobbied central government. Garrick Murfitt, the chair of the regional council from 2004 until 2010, recalled:

I had the Prime Minister up, Helen Clark, and I reported to her every month while she was Prime Minister on the issue and took her around and showed her and successive ministers (Murfitt interview 2010).

Michael McCartney, Manawatu-Whanganui regional council's chief executive, outlined the council's approach:

We met with ministers, we brought them here, we showed them, we got them to stand up on ridges with cockies and say 'look, my land's falling down', and we just behind all that said, 'look, we can't afford to do this on our own and by the way it wasn't entirely us that caused this to start with, you know, and there is some national obligation around this' (McCartney interview 2007).

The effectiveness of the regional council's approach was recognised. An official from MAF acknowledged:

In terms of government engagement [the regional council] has been very effective because they are unified ...singing from the same song sheet... and they are consistent, and persistent... and the chair [Garrick Murfitt] was adept at keeping the issue in the front of the politicians minds...and those things in the end are important (MAF official interview 2010).

Aware of central government's concerns with the risk of increasingly expensive future disasters the regional council chief executive also argued:

if you help us now government and deal with the problem now then the chances of you paying 400 million dollars for another, you know, bottom of the cliff type thing, it will potentially be lessened (McCartney interview 2007).

Manawatu-Wanganui regional council submitted a request for central government funding for SLUI in early 2006. Cabinet's interest in these issues had not waned as, at a similar time, Cabinet requested the Offices of the Ministers of Agriculture and Forestry for an update -

on work being carried out to implement Total Catchment Management principles in New Zealand...[and] on issues relating to providing central government support in addressing soil erosion problems in regions other than Gisborne (Office of the Minister of Agriculture & Office of the Minister of Forestry, 2006, pp. 1, 2).

The regional council's request for funding presented a dilemma because at the time there was 'no central government framework for determining central government's role in such regional initiatives' (Office of the Minister of Agriculture & Office of the Minister of Forestry, 2006, p. 2). Before a response could be made to the regional council's bid, Cabinet approved the development by MAF of a framework to guide a response and 'ensure all [similar] future requests are dealt with equitably, consistently and transparently' (Office of the Minister of Agriculture & Office of the Minister of Forestry, 2006, p. 2).

MAF's response to Cabinet was couched in terms of sustainable land management (SLM) and it was presented as meeting multiple outcomes for the government. Cabinet papers described SLM as being 'a critical tool in addressing hill country erosion and mitigating its effects' (Office of the Minister of Agriculture & Office of the Minister of Forestry, 2006, p. 1). The rhetoric in the papers submitted to Cabinet by MAF mirrors central government's interest in adverse events, risk management, economic growth and environmental sustainability:

SLM is the prudent use of land and the prudent location of an activity within a catchment. SLM builds resilience into the land-based industries and communities, reduces the risk they face from adverse events, and ensures long-term economic growth within sustainable environmental limits (Office of the Minister of Agriculture & Office of the Minister of Forestry, 2006, p. 1).

MAF sought and gained Cabinet's approval to lead the development of the strategy in October 2006 (Cabinet Office, 2006) which led to the development of the SLM-HCE programme. Nowhere in the official documents are the government's specific goals or objectives for the programme stated, a point raised with concern in the review of MAF Afforestation Schemes undertaken in 2011:

The Review Panel is concerned that there appears to be no official record available of Government's stated goal and/or objectives for developing, funding and implementing the [SLM-HCE programme], and is wary of evaluating performance and drawing conclusions in the absence of this information (Ministry of Agriculture and Forestry, 2011, p. 59).

Despite the rhetoric in Cabinet documents, the motivation of central government in establishing the programme was, from the perspective of a DPMC official, not about SLM or reducing soil erosion for its own sake, but ‘one element of the broader package of managing floods, this is not purely about sustainable land management it’s about flood protection as well’ (Helm interview 2008).

Kevin Steele was clear also on central government’s motivation for the programme:

that piece of policy [the SLM-HCE programme] was a direct result of the really significant sums of money that it cost the economy with that storm event (Steele interview 2008).

This point is also made, although less emphatically, in Cabinet papers relating to the SLM-HCE programme at the time:

Hill country erosion is also becoming an increasingly important economic issue. There is an increasing fiscal risk to both local and central government in addressing these effects (Office of the Minister of Agriculture & Office of the Minister of Forestry, 2006, p. 3).

Hill country erosion was also argued to be an ‘environmental and agricultural issue’ impacting adversely on vulnerable communities, infrastructure, water quality, river systems and coasts and the ‘productive capacity of hill country farm land’ (Office of the Minister of Agriculture & Office of the Minister of Forestry, 2006, p. 3). MAF explicitly highlighted the link between hill country erosion and the loss of productive capacity. This aspect was reiterated throughout the documents it presented to Cabinet on the proposed programme and in the presentation and promotion of the programme once it was developed.

Agriculture Minister Jim Anderton announced the establishment of the SLM-HCE programme to ‘combat hill country erosion’ in a pre-budget announcement on 11 May 2007 (Anderton, 2007, Title). The Minister presented the holistic rationale for the programme, arguing that:

New Zealand has a massive erosion problem in some areas and for our agricultural production to be truly sustainable we need to arrest this erosion. [The programme would] give priority to proposals which achieve the greatest gains in treating land, reducing sediment flow and protecting lower catchment communities (Anderton, 2007, para. 3).

He also indicated that later in the year the government would be announcing:

a comprehensive package of climate change initiatives... [that would include] a further incentive for planting in erosion-prone catchments. And afforestation grant schemes will provide councils and their ratepayers with financial support to target critical, priority catchments (Anderton, 2007, para. 5).

The regional council was keen to highlight publicly its part in the initiative while maintaining favour with the government, as is evident in the Manawatu-Whanganui regional council's media release following Minister Anderton's announcement, which quotes Garrick Murfitt as saying:

'Since 2004 [the regional council] has been lobbying central government for funding to address the issues of hill country erosion and its direct impact on our communities downstream. We are delighted that the government has listened and acted so positively on the matters we have highlighted. It's a great sign of understanding, leadership and direction' (Horizons Regional Council, 2007c, para. 6).

In the government's Budget of 2007, the SLM-HCE programme was allocated a total of \$10 million dollars over four years, half what had been sought by MAF. The aim of the programme is described on MAF's website as being to work through local government initiatives to bring about '[central] government involvement in SLM' with the objective being to 'produce a long-term shift in management practices on erosion prone hill country' (Ministry of Agriculture and Forestry, n.d.-a, n.p.). However, it is emphasised that 'issues around land management and erosion have been, and will remain the responsibility of local government' (Ministry of Agriculture and Forestry, n.d.-b, n.p.).

The programme comprises four linked components: the SLM-HCE Fund, capacity building initiatives for local government staff, critical resource information, and leadership. The SLM-HCE Fund attracted \$2 million per year, the major part of the money, and is directed at funding

through regional initiatives,...targeted government support to communities that need to protect erosion-prone hill country while recognising that, wherever possible, farmers seek to retain the maximum practical production from their land (Ministry of Agriculture and Forestry, 2007d, n.p.).

It is through this Fund that Manawatu-Whanganui regional council's SLUI was funded. The basis of the partnership for central government is through joint funding of initiatives being implemented with farmers by regional councils and unitary authorities:

Central government will not fund the full value of the project, funding needs to come also from the regional council and landowners (Ministry of Agriculture and Forestry, n.d.-a, n.p.).

The regions identified as able to apply for funding from the programme are 'those particularly prone to hill country erosion and the consequent high risk of flooding' and are Northland, Gisborne, Hawke's Bay, Greater Wellington, Manawatu-Wanganui and Taranaki (Ministry of Agriculture and Forestry, n.d.-a, n.p.).

The regional council did not expect the fund to be contestable. Garrick Murfitt recalled the events:

We had to get the backing of the Regional Affairs Committee [of LGNZ], which is all the regions in New Zealand ... I am a great believer that together you are strong, individually you are weak, so we got the backing.

Interestingly enough ... we negotiated this 10 million and as soon as we did that MAF said 'Oh it has to be contestable' and we said 'Yeah fine' thinking no one's going to contest it. Who contested it? Taranaki, Hawke's Bay and Wellington (Murfitt interview 2010).

Contestability in central government programmes is 'to ensure that there [are] good performance criteria', which, according to a MAF official, is the response Minister Anderton gave when questioned about it (MAF official interview 2010). However, there was more to it than this. According to Pat Helm, a number of regional councils had expressed disquiet and

had argued that [the Manawatu-Whanganui regional council] hadn't done a good job in the years before [the storm]... and [it] is all very well to come charging in now but where were they? (Helm interview 2008).

Similarly, a MAF official recalled how other regional councils had said:

Look, we have been doing our work in this space. How come [the Manawatu-Whanganui regional council] is getting all the money? (MAF official interview 2010).

Paul Reynolds, Deputy Director General of MAF Policy at the time of the interview, saw MAF as having a 'steering role' in the SLM-HCE programme (Reynolds interview 2008). However, as a consequence of the SLM-HCE fund being contestable but open to only a small number of regions in the North Island, MAF 'have had a much more direct engagement' with the regional councils in the design of their regional initiatives:

as such we have shaped the way things have gone quite a lot and I think that's been a good policy .. I think it has been a strength of the process (MAF official interview 2010).

The implications of central government's 'shaping' of the regional council's SLUI are explored in more detail in Chapter Six.

The relative inexperience of the regional council in SLM also presented concerns for some in central government: 'the soil conservation capability of ... [the Manawatu-Whanganui regional council] was gutted' (Steele interview 2008). A MAF official explained the ministry's approach given the regional council's lack of experience:

So in framing the programme we were conscious of setting up clear criteria for it, but also from a risk point of view from MAF it was much better to have three or four councils involved over time than just one, because ...if [the Manawatu-Whanganui regional council] don't deliver then other councils may deliver and you can then start to see that you have some comparative performance amongst them, so from a MAF point

of view it was much better to have other regions involved ... who had a history of delivering in that space (MAF official interview 2010).

Although based on the regional council's SLUI proposal, data highlight that the final form and focus of the programme were the result of discussions between DPMC, MAF, MfE, and regional councils and unitary authorities, and informed by the 1996 Sustainable Land Management Strategy, well-accepted science, and the experiences of other countries in implementing these types of programmes.

The 1996 Sustainable Land Management (SLM) Strategy, inactive in 2004, provided a basis for elements of the SLM-HCE programme: 'We listed out pretty much as per the 1996 book because they were accepted government policy ... even though it was in abeyance' (MAF official interview 2010).

The original Strategy was developed in 1996 under the then National Government Minister of the Environment, Simon Upton, and included seven 'Desired Outcomes' for SLM (Ministry for the Environment, 1996, p. 5). In the SLM-HCE programme the stage one eligibility criteria used to evaluate potential projects for funding include criteria for establishing whether the outcomes the project seeks are consistent with the government's desired SLM outcomes (Ministry of Agriculture and Forestry, 2009f). Four of the five outcomes listed for the SLM-HCE programme are the same as the desired outcomes detailed in the 1996 SLM Strategy:

Maintenance of the potential of New Zealand soils for a range of uses for present and future generations.

The adoption of land management skills and the application of appropriate technologies to enable individuals and communities to provide for their social, cultural and economic well-being.

The avoidance, mitigation, and remediation of the impacts of land related hazards, including flooding, subsidence erosion and siltation.

The maintenance of catchments to provide high quality water resources for downstream users and for users of coastal spaces (inter-tidal areas, seabed, water) (Ministry for the Environment, 1996, pp. 5,6; Ministry of Agriculture and Forestry, 2009f, n.p.).

The fifth desired outcome included in the SLM-HCE programme stage one eligibility criteria is 'Protection of communities and infrastructure' (Ministry of Agriculture and Forestry, 2009f, n.p.) and reflects central government's underpinning concerns linked to flooding risk. In the review of the programme alluded to earlier in this chapter, the Strategy outcomes were criticised as being 'high level and not specific to the SLM-HCE programme' and as highlighted earlier the lack of clear goals and objectives meant the review panel were 'wary' of evaluating the programme (Ministry of Agriculture and Forestry, 2011, p. 59).

A catchment focus for the programme reflects the 1996 SLM Strategy, and was supported by work requested by Cabinet and commissioned by MAF in 2006 (Brown, 2006). At the heart of the regional council's proposal to MAF was the idea of developing whole farm plans with farmers to motivate and bring about on-farm change in land management. A draft report reviewing the effectiveness of environmental farm plans and integrated catchment management programmes was completed for MAF in 2006 (Brown, 2006). Work in Queensland 'suggested that where [farm plans] are connected they are far more effective than when they are separate' (MAF official interview 2010). The MAF official summarised the key findings from the report:

... the benefits [of farm plans] mostly tend to be private rather than public because the farm plans tend to connect up to what the farmers want and it is only when you do it as part of a catchment process that then the catchment benefits are more clearly identified within the individual farm plan and then you can start to get serious traction (MAF official interview 2010).

Capacity-building initiatives were allocated \$300,000 per year with \$200,000 directed at 'establishing or enhancing catchment facilitation groups' and \$100,000 for training council staff (Ministry of Agriculture and Forestry, 2007c). The capacity building emerged from MAF's discussions with regional councils, including the Manawatu-Whanganui regional council, which indicated an issue with ongoing staff capability 'so we agreed to put some resources into it' (MAF official interview 2010). This translated into a series of Land Use Capability (LUC) awareness workshops that were run throughout the country for regional council staff, including in the Manawatu-Whanganui region in 2009. In 2010/11 these initiatives were extended to include workshops on erosion processes, facilitating catchment management and farm management systems (Ministry of Primary Industries, 2012).

The original proposal to Cabinet from MAF allocated over a million dollars to catchment facilitation within the programme. The proposal had been to contract for 12 catchment facilitators to work in different catchments across the whole area 'to build that grass roots sort of momentum' (MAF official interview 2010). When Cabinet halved the original funding the allocation of money to this area was reduced to \$200,000 but was then made a requirement for inclusion by regional initiatives. Catchment facilitation, however, was not a requirement of MAF in its contract with the Manawatu-Whanganui regional council (Ministry of Agriculture and Forestry, 2008a).

The remaining funding was allocated to funding a 'science stock-take and a modelling project of 'erosion and landslide risk' areas' and the programme leadership and management of the programme (Ministry of Agriculture and Forestry, 2007c).

Science and SLM-HCE Programme

The SLM-HCE programme was developed on well-known, established scientific knowledge that a MAF official described as able to be ‘summarised in about three graphs’ (MAF official interview 2010). ‘One is sediment yield by slope ... the second graph ‘is sediment by slope for different vegetations, and the other little curve is just the percentage of original pasture production over time ..’ that will occur on an eroded slope and ‘in 40 years you are back to 80 percent production and I think in 30 years you are back to 70 percent’ (MAF official interview 2010).

The SLM-HCE programme was ‘never intended to fund science’; however, ‘to help sort of shape discussions with [the Foundation of Research Science and Technology] so that [MAF] might influence where they spent money’, the science stock-take was funded (MAF official interview 2010). The goal, as outlined in the resulting reports, was to bring together existing knowledge on hill country erosion and prevention, treatment and management (Basher, Botha, Dodd, Douglas, Lynn, Marden, McIvor, & Smith, 2008a; Basher, Botha, Douglas, Kingsley-Smith, Phillips, & Smith, 2008b) as well as ‘identify gaps in existing knowledge on hill country erosion and future research requirements’ (Basher, et al., 2008b, p. 3). The conclusion from the review of the direction for future research was summed up by the MAF official: ‘There wasn’t one’ (MAF official interview 2010). The deficiencies in existing knowledge the reports identified were not in the science knowledge but in the implementation of this knowledge: ‘it was mostly around issues of uptake and tech transfer rather than any particularly outstanding science issue’ (MAF official interview 2010).

In addition to the science stock-take in the first year of the programme, a number of other projects were funded. Two completed projects that were ‘complementary’ with the science stock-take determined the effectiveness of wide-spaced trees (Phillips, Marden, Douglas, McIvor, & Ekanayake, 2008); and the costs and benefits of erosion control (Jones, Clough, Höck, & Phillips, 2008).

A lack of understanding of the impacts of erosion and the mitigation of erosion on hill country was identified in the reports. Jones et al. (2008) summarised the findings from their review of the literature:

There is now an extensive body of literature pertaining to the physical extent and effects of erosion, and on the measures that can be used to contain it.... Much of the research tended to be focused on localised erosion, with the response measures also dependent on location-specific factors. Also, most of it did not explicitly look at the economic costs of erosion damage and the costs of measures to ameliorate it. If some consideration of the economics was given, the focus tended to be on only a subset of effects such as on-farm effects rather than external impacts (Jones, et al., 2008, p. 17).

A survey of regional councils, industry, central government agencies, and science providers indicated that most respondents regarded future research was needed on: ‘cost benefit analysis of different mitigation techniques’ (Basher, et al., 2008a, p. 9). As a consequence it was established that it was not possible to calculate with any degree of accuracy the benefits and costs of managing highly erodible land to reduce levels of erosion (Basher, et al., 2008a; Jones, et al., 2008). This finding was consistent with that of Blaschke, Hicks and Meister (2008) in their review on hill country erosion undertaken for MfE in 2008.

Science, however, was used by MAF to ensure the regional council’s initiatives funded by the SLM-HCE targeted land at most risk of eroding sediment into waterways. As part of the programme in the first year \$200,000 was directed to various scientific investigations designed not to inform the programme but to direct regional council initiatives more specifically towards achieving the aims of government. John Dymond, Landcare Research, was funded to ‘look at how erosion modelling and mapping could be used to help the regional councils in their planning work’ (MAF official interview, 2010). Dymond and his colleagues produced spatial maps of highly erodible land and used NZeem® (New Zealand Empirical Erosion Model) to model the rates of erosion for all of the regions MAF identified as being eligible for SLM-HCE funding. This information assisted the regional councils to identify and therefore target their soil conservation activities at a regional and catchment scale to those areas at most risk of discharging sediment into waterways (Dymond, Shepherd, & Page, 2008).

The increased risk of more frequent adverse climatic events as a result of climate change was a factor that drove the development of the SLM-HCE programme by central government. Although not directly targeting on-farm management of HEHC, central government policy initiatives around climate change are indirectly relevant to this land and its management by farmers. The next section will outline these initiatives and the links to HEHC.

Climate change policies

The increased risk of extreme climatic events as a result of climate change added impetus to central government’s review of its role in flood risk management, adverse events recovery and sustainable land management. The Labour-led Government ratified the Kyoto Protocol in 2002, binding New Zealand to reduce, or take responsibility for, its green house gas emissions to below 1990 levels, on average, by what was initially 2013 (Ministry of Agriculture and Forestry, 2006b). The Ministry for the Environment has overall responsibility for, and coordinates across central government, climate change work and is responsible for leading the implementation of New Zealand’s Emissions Trading Scheme (Ministry for the Environment,

2009). The Ministry of Agriculture and Forestry (MAF) leads policy work on climate change in relation to the land-based sectors (Ministry of Agriculture and Forestry, 2008c).

The New Zealand government response to climate change resulted in the development of new policies that, although not directly targeting HEHC farm land, do have implications for the on-farm management of this land. The interconnected nature of central government's policies was highlighted by Prime Minister Helen Clark in a speech to Federated Farmers in November 2006:

Climate change is a key part of wider sustainable land management. Many things we do to reduce climate change will have benefits for water quality, soil erosion and flood protection, and vice versa (Clark, 2006c).

Climate change policies and HEHC

The Permanent Forest Sink Initiative (PFSI) was announced jointly by the then Minister Responsible for Climate Change Issues David Parker and the Minister of Forestry Jim Anderton in August 2006 (New Zealand Government, 2006). The Initiative was heralded by Minister Anderton who was quoted in a government press release as stating:

'New Zealand land managers now have access to a radically new business opportunity from which to generate income-carbon farming...The PFSI provides an important new opportunity for land managers to protect vulnerable land, while still generating an economic return from it. Consequently, we expect regional authorities will be particularly interested in how the PFSI can help them respond to the risks of adverse weather events' (New Zealand Government, 2006, n.p.).

In arguing the case for the initiative explicit reference was made by David Parker to the storms that had impacted on the North Island. The press release reported as follows:

David Parker said climate change was expected to increase both the frequency and intensity of storms. 'The recent storms and serious erosion of hill country around New Zealand have highlighted the need for better protection of our hill country and the rivers and lowlands into which it drains... We are also satisfied that it has significant potential benefits, not only for climate change, but also for the environment and the economy' (New Zealand Government, 2006, n.p.).

Under the initiative, landowners who establish new and maintain closed-canopy forests will receive tradable, Kyoto Protocol compliant emission units equivalent to the increased CO₂ stored in the forest for the period between 2008 and 2012 (the first commitment period of the Kyoto Protocol).

Late in 2006, MAF initiated a consultation process for the development of a plan of action for sustainable land management and climate change (Ministry of Agriculture and Forestry, 2006b). The Sustainable Land Management and Climate Change (SLMCC) Plan of Action was

announced in September 2007 and emphasised ‘A Partnership Approach’ that would involve ‘the government and land management sectors working together to respond to climate change’ (New Zealand Government, 2007a, p. 4). The development of the Plan of Action coincided with a policy shift by the government of the day into sustainability. The emergence of this sustainability agenda is expanded upon in the next section of this chapter.

As part of the Plan of Action a range of central government initiatives targeting land management and climate change were announced, including a proposed Emissions Trading Scheme, with funding of \$175 million committed over the next five years. The Afforestation Grant Scheme (AGS) was another initiative, for which \$50 million was allocated. Introduced in 2007 and administered by MAF the AGS aims, as with the PFSI, to increase the area of Kyoto compliant new forests planted in New Zealand (Ministry of Agriculture and Forestry, 2009b). In a speech announcing the Emissions Trading Scheme on 22 September 2007, Jim Anderton applauded his and the Labour-led Government’s efforts in SLM and made clear the linkages between the AGS and other central government initiatives:

This \$50 million in new funding comes on top of the \$10m announced in the Budget for hill country erosion. It is also on top of the existing East Coast Forestry Project and Permanent Forest Sinks Initiative. After funding for sustainable land management was cancelled in the mid 1990s, we now have a comprehensive package of measures to rebuild capacity to address New Zealand’s land management challenges (New Zealand Government, 2007b, n.p.).

Landowners were able to receive a grant from the government to establish a new forest on land that was not in forest at 31 December 1989 (i.e. compliant with the Kyoto protocol for which New Zealand is a signatory). The carbon credits generated over a ten-year period by the forest will be retained by central government, while ownership of the forests is retained by the landowner (Ministry of Agriculture and Forestry, 2009b). Priority would be given to grant applications that involve the planting of forests on land that is classified by MAF as at high risk of soil erosion (according to a national soil erosion risk model), will contribute to improved water quality, and involve the planting of predominantly indigenous forest species (Ministry of Agriculture and Forestry, 2009b). Land that is not eligible for a grant includes that which is already included in the Emissions Trading Scheme, ECFP or the PFSI. Land included within a scheme funded by the SLM-HCE fund is not ineligible for funding under the AGS. Ten regional councils have existing schemes that are consistent with the criteria specified within the AGS and are therefore eligible for funding, including Manawatu-Whanganui regional council’s SLUI, which was the ‘inaugural recipient’ from the scheme (Mitchell, 2009b). In 2009 the regional council received approval for 296.4 ha at a rate of \$2400/ ha or a total of \$711,360 and pre-approval for 384.8 hectares in 2009-10 or an approximate \$923,520 (Mitchell, 2009b).

Following a review by the new National Government in 2009 funding for the AGS was reduced to \$38 million with immediate effect on the 2008-2009 fund allocation (Mitchell, 2009b).

The AGS and the PFSI are said to complement the ETS (New Zealand Government, 2007a). The Forestry sector was to come under the scheme in 2008, whereas agriculture, was not required to enter until 1 January 2013 (New Zealand Government, 2007a). The National Government elected in November 2008 have since revised the ETS and agriculture now will not be required to enter the scheme until 1 January 2015 (New Zealand Government, n.d.).

As alluded to earlier in this section, climate change issues were also at the heart of a major policy shift by the Labour Progressive Government in 2007 that placed front and centre the issue of sustainability. This shift in central government policy did not have a direct influence on the management of HEHC on farm land, but it did provide added impetus to climate change work with implications for the management of this land, it also played to the strengths of MAF and helped consolidate their role in the environmental policy area with MfE.

A vision for a sustainable New Zealand

Central government's sustainability agenda was not a catalyst for the SLM-HCE programme specifically, or for the other central government initiatives that have implications for the management of HEHC in the Manawatu-Wanganui region. However, these initiatives illustrated what the Labour-led Government argued was its commitment to sustainability, and hence were assured continued support and added emphasis.

Sustainability, somewhat unexpectedly became a focus for central government on 28 October 2006. Prime Minister, Helen Clark, in a speech to the Labour Party's Annual Conference in Rotorua, announced that sustainability was to be a core tenet of central government policy for the future and her vision was for New Zealand to be the first truly sustainable country (Clark, 2006a). Afforestation and sustainable land-use policy decisions were highlighted by the PM as examples of the government's existing commitment in the area (Clark, 2006a):

Now policy decisions, proposals, and initiatives to help us pull our weight on climate change and on sustainability more broadly are pouring out – on everything from solar heating and fuel efficiency in the transport fleet, to afforestation and sustainable land use.

I believe it's time to be bold in this area. ...

I believe that sustainability will be a core value in 21st century social democracy.

- I want New Zealand to be in the vanguard of making it happen – for our own sakes, and for the sake of our planet.
- I want sustainability to be central to New Zealand's unique national identity (Clark, 2006a, n.p.).

The PM's announcement came as a surprise to central government officials according to Peter Stephens of MfE who recalled how, the day after the PM's speech,:

we had DPMC people coming over here, 'Ooh what does this mean? What can we do?'. I don't know where she got her advice from but it appears that it caught a lot of people in her own organisation DPMC on the hop (Stephens interview 2008).

In her speech Ms Clark states that the sustainability vision is driven by the realities of the challenges of climate change for countries like New Zealand and draws on international examples to support her statement, quoting Britain's Environment Secretary and the film featuring Al Gore, *An Inconvenient Truth* (Clark, 2006a). The PM did not explicitly define sustainability but it is clear from her speech and the justification for the new vision that environmental aspects of sustainability were highlighted.

The domestic political context is also likely to have influenced the 'bold' decision by the Labour Prime Minister. The Labour Party had been elected for a third term in September 2005 with a minority government. The continued support of the Green Party was vital and climate change policy was important to the Green Party. The main opposition party's leader, National's Don Brash, initially discredited climate change but later reviewed his stance. The following extract is from an interview with Ms Clark on the TV One Agenda programme on the morning of her Rotorua speech:

[Interviewer]: ...What's making you more attractive for [the Green Party] when National seems to be delivering some of the [climate change] policy that perhaps they might have relied on you for in the past?

[PM]: Well they've obviously seen something in that policy that I haven't seen, because it's utterly vacuous, there's also the reality that the National Party is led by a climate change denier, such people are in retreat right around the world (Agenda TV One, 2006, n.p.).

The PM then argued that Dr Brash 'would shy away' from taking the 'sorts of measures that are going to have to be taken' and those actions were 'the permanent forest sink initiative, which is about helping reforestation, there is more to come on forestation and reforestation, [and] there's more to come on sustainable land use management' (Agenda TV One, 2006, n.p.).

The Labour-led Government's full vision for a sustainable New Zealand was outlined in the Prime Minister's Statement to Parliament in February 2007 (Clark, 2007). This policy shift indicated a role for central government in governing sustainability, given as the PM argued the failure of the 'invisible hand of the market' to attain this in the past (Clark, 2007). Six new sustainability initiatives were announced. However, in contrast to what the PM suggested in her

speech announcing the policy shift to sustainability, no initiative specifically focussed on sustainable land use, agriculture or the environment. Sustainability was made central to three key policy areas: economic transformation; families, young and old; and strengthening national identity. Existing initiatives mentioned by the PM were in the area of energy efficiency and biofuels and those for which MAF were responsible for climate change: PFSI and consultation on Sustainable Land Management for Climate Change. No initiatives falling within MfE's responsibility were mentioned.

MAF and MfE are key central government actors involved in informing, shaping and responding to central government policy in adverse events and flood risk management, climate change and sustainability. A tension has existed, and continues to exist, between these two agencies of central government. The next two sections focus on MAF and MfE and outline the significant events and internal changes for each organisation that are relevant to their current roles in central government and in central government's involvement in the farming of HEHC in the Manawatu-Whanganui region.

The Ministry of Agriculture and Forestry: at the top table

MAF's role, as documented in its Annual Report, is 'Leading the protection and sustainable development of our biological resources for all New Zealanders' in order to achieve its mission of 'enhancing New Zealand's natural advantage' (Ministry of Agriculture and Forestry, 2008b, p. 2). These are consistent themes within MAF's strategic and operational activities through 2003 to 2009 (Ministry of Agriculture and Forestry, 2003a, 2003b, 2005c, 2005d, 2007a, 2007b, 2008c). MAF uses what it calls a 'partnership approach' to achieve its outcomes, working 'collaboratively and constructively with numerous central and local government agencies, and a wider range of sector groups and non-governmental organisations (NGOs)' (Ministry of Agriculture and Forestry, 2009a, p. 2). That said, Paul Reynolds, described its relationship with local government as:

new and developing because actually we did not have one. MfE had the relationship with local government, we are having an increasing relationship with them because we are talking about issues in sustainable land use and we are thinking about guiding central government policy in that regard. So we talk to them, so there is a relationship that is starting to develop (Reynolds interview 2008).

As for MAF's relationship with farmers, Paul Reynolds's view in 2008 was:

Bluntly, MAF doesn't have relationships with individual farmers. I mean, we touch individual farmers but we can't run relationships with every farmer in the country,

that's not what we are about. MAF used to be and that was about driving production ... so that relationship is different (Reynolds interview 2008).

In 2001, Murray Sherwin, was appointed the Director General of Agriculture³¹, and Paul Reynolds was appointed Deputy Director General MAF Policy in 2002. As a result of a new requirement for ministries of central government to become outcome - rather than output - focussed, MAF identified three themes that captured MAF's contribution to New Zealand: (i) sector development (highlighting the link between NZ's prosperity and the continued development of the primary sectors); (ii) safe and freer rules-based trade; and (iii) protection and enhancement of natural resources, 'which recognises MAF's role as a true sustainable development agency' (Sherwin, 2003, p. 6). These themes had driven MAF's work over the preceding years and from Paul Reynolds's perspective put it in a strong position to influence central government in the area of sustainability prior to and following the announcement of Helen Clark's sustainable vision for New Zealand (Reynolds interview 2008). Paul Reynolds recalled:

... in order to get the place working I had to create a new vision so that's what I did, and [sustainability] is the core of the vision which drives what the place does. Luckily, it was the right vision, luckily for MAF actually we got going on this stuff before many other parts of the government actually started thinking about it so we'd done some serious thinking when suddenly the government stood up on its hind legs and said 'We believe in sustainability'. Well, from our perspective, part of the reason the government ... said that was because we had been feeding that line to the government for some time in the background with our minister (Reynolds interview 2008).

In 2009, MAF identifies itself as a sustainable development agency with a focus on New Zealand's primary industries (Ministry of Agriculture and Forestry, 2003b, 2009d). Paul Reynolds described how MAF argued that environmental sustainability is actually integral to economic transformation rather than

the MED [Ministry of Economic Development] line until we rolled it last year was that environmental sustainability is kind of like a useful add-on ... you know, you can't be green if you are in the red if you transform the economy we will be rich and we will be able to afford to look after the environment (Reynolds interview 2008).

Whereas MAF's argument according to Paul Reynolds in 2008 was:

If you are talking about transforming the economy ...which means transforming the [agricultural] sectors, then you better bloody make sure that the resource base on which

³¹ Murray Sherwin held the position of Director General of Agriculture until November 2010 when the current director Wayne McNee was appointed to the position.

they derive is stewarded otherwise guess what you won't have anything to transform (Reynolds interview 2008)³².

This is a slight shift in stance to that outlined by MAF in its briefing document to the Incoming Minister of Agriculture after the elections in 2005. In the document MAF argues:

Socio-economic and environmental outcomes are interlinked and should not be seen as “either:ors” or “win:lose” tradeoffs. Economic prosperity is a precondition of high environmental quality – “you can't be green when you're in the red” (Ministry of Agriculture and Forestry, 2005b, p. 12).

Putting MAF back at the top table

The focus of MAF's efforts in recent years has been in positioning themselves within central government to inform and therefore influence central government policy to a greater extent than had previously been the case and in so doing improve the position of agriculture in New Zealand. Paul Reynolds played a significant role in repositioning MAF and in breaking what he referred to as ‘the thundering silence from 101 the Terrace³³’ (Reynolds interview 2008). The Director-General, Murray Sherwin (2007, p. 4), in MAF's Statement of Intent 2007 described ‘Putting MAF back at the top tables’ as the ‘catch cry’ of the senior team at MAF. Reynolds also used this mantra:

When I came into this place I was challenged with the responsibility to get MAF back to the top tables in the policy sense - which we have done. That has taken us most of five years to do that (Reynolds interview 2008).

For MAF, being at the top tables means MAF's ‘views on the economy are now heard and reported so our data is sought after so people take notice’ (Reynolds interview 2008). A significant success for the Ministry was the explicit recognition by central government of the contribution of agriculture to New Zealand's prosperity and competitive advantage.

We won that battle too, to get the government to say that the [primary] sectors represented New Zealand's competitive advantage (Reynolds interview 2008).

A speech delivered to the Primary Industries Summit by Michael Cullen on 27 November 2007 was particularly highlighted by Reynolds. In this speech the then Minister of Finance described the primary industries as ‘The powerhouses of our economy and the drivers of much of our prosperity’ (Cullen, 2007). Cullen makes the link between the sustainability of the nation and a sustainable primary sector (Cullen, 2007). So, in the highest levels of government, agriculture, although acknowledged as impacting on and reliant on the natural environment, was also clearly

³² The interview with Paul Reynolds took place in April 2008. In July 2008 he took up the job of Chief Executive at the Ministry for the Environment. Knowing of his pending appointment may in some way have shaped some of his responses during the interview.

³³ 101 the Terrace was the location of Pastoral House, MAF's Head Office in Wellington.

acknowledged as significant for its contribution to New Zealand's current and future prosperity. This statement is significant in that it marked a shift in both the influence of MAF in the government and central government and a public recognition that agriculture was not a 'sunset industry', a description of farming argued to have been stated by the Labour Government of Prime Minister David Lange sometime in the mid to late 1980s³⁴.

A further indicator identified by MAF personnel as a sign of MAF's success is that it is

in the middle of government policy processes ... driving ... the environmental sustainability debate strongly [with] as much sway as the Ministry of the Environment..., probably more (Reynolds interview 2008).

This is reinforced by the programmes in this area that fall within MAF's leadership including the SLM-HCE programme. The significant role MAF played in the environmental area was also highlighted by the CE of the Manawatu-Whanganui regional council, Michael McCartney, who while acknowledging that 'there have been some positive things ... MAF and MfE have worked together on some things and done very well' (McCartney interview 2008), commented:

the lines between various ministries get blurred under this environment ticket MfE versus MAF you know whose... what ground are they occupying is the ground merging (McCartney interview 2008).

Although Reynolds argued that 'sustainable land management is probably the biggest single driver of thinking that goes on in the ministry' (Reynolds interview 2008), a senior MAF official in 2010 had a different view. Within MAF SLM is managed as part of the Natural Resources Group in MAF Policy and is one of three areas within the group:

We have got climate change policy, water policy and SLM as the sort of number three and it is definitely number three the other two are much higher priority and that's the Ministerial guidance as well.. it is something that in fact we have to keep positioning to remind people of its importance (MAF official interview 2010).

Information and data shaping policy

Very limited data are collected or presented by MAF that specifically target HEHC. The majority of data recorded is on productivity, profitability and land use in the agricultural sectors.

MAF in collaboration with Statistics New Zealand collects and presents national level data on the total number of livestock classes as well as trends and data on agricultural productivity across sectors. Land-use data are presented annually across and within regions, and are detailed in terms of land area (hectares) under different land use and farm numbers of certain land-use

³⁴ Farming is a sunset industry and manufacturing and tourism will take its place' is a quote attributed widely (in parliamentary debates and by Federated Farmers NZ) to the Labour Government when David Lange was Prime Minister, and continues to be referenced although specific dates and details are unclear.

types within regions. The land uses that are differentiated within these data are tussock and danthonia used for grazing, grassland, grain, seed and fodder crop, horticulture, planted production forest, mature native bush, native scrub and regenerating bush, and other purposes (Ministry of Agriculture and Forestry, 2009c). MAF also present farm monitoring data as part of the Farm Monitoring Programme. The data are drawn from the Beef+Lamb NZ's Economic Service³⁵ farm survey data, which is expanded on in the next section, and from other industry sources.

The Farm Monitoring Programme provides a short-term view of the financial and production status of a range of farm types throughout New Zealand. It examines revenue and expenditure for the past season and outlines what farmers are budgeting for the year ahead (Ministry of Agriculture and Forestry, 2009e, p. 1). Thirteen farm types are modelled, with the central North Island hill country sheep and beef farm model the most relevant to the types of farms likely to have HEHC in the Manawatu-Whanganui region. However, there are no specific data relating to the management of HEHC. The information collated for these farms includes information on issues facing farmers and their expectations for the coming year.

The Ministry for the Environment (MfE) is also an actor in the broad context within which the management of HEHC on farm land is governed. As mentioned in Chapter Five, MfE is responsible for providing advice to the government on environmental issues and it also administers the SCRC Act 1941 and the RMA 1991. The role of MfE in governing the farming of HEHC in the Manawatu-Whanganui region is therefore explored in this research. Significantly, however, the role of MfE in the governing of this land is found to be limited. The next section explores MfE's role not only by drawing on its place within the sustainability agenda of the government but also by reviewing its role as it relates in general to farming, land use and MAF.

Ministry for the Environment: crisis and recovery

The Ministry for the Environment has no direct role in governing the farming of HEHC in the Manawatu-Whanganui region. The role of MfE in agriculture is significantly overshadowed by MAF. The predominant role of MAF in the area of sustainability is explored here with respect to MfE. But the indirect role of MfE in shaping the governing of farming of HEHC is also outlined in terms of the data gathering and reporting it undertakes in the area of land use, etc.

In 2008, MfE was emerging from a particularly unstable period of leadership. According to an MfE interviewee at the time, who highlighted a significant turnover in the senior management,

³⁵ Previously the Meat and Wool Economic Service.

the ministry was not in good shape: ‘I have had six managers and four chief executives in three years (MfE official interview 2008). This situation was acknowledged anecdotally at the time and more formally by MfE management themselves more recently (Fancy, 2008; Ministry for the Environment, 2008b; Reynolds, 2009).

Howard Fancy, the MfE Acting Chief executive, in the introduction to the Ministry’s Statement of Intent 2008-2011, stated:

The Ministry will need to invest in the development of staff, organisational capabilities, relationships, strategies, systems and processes to meet future demands and expectations.

Events over the past year have identified some areas of organisational weakness. Priority areas for development are being identified and will be addressed with urgency (Fancy, 2008, p. 6).

The Briefing to the Incoming Minister for the Environment after the 2008 elections noted:

...increasing demands and expectations have been challenging for a relatively small agency. In addition, several investigations by the State Services Commission and other well-publicised problems in 2007/08 year highlighted areas of organisational weakness that we have started to address. The Ministry clearly recognises the need for a significant step up in its performance (Ministry for the Environment, 2008b, p. 24).

As a result of the high profile mismanagement of an employment situation at the Ministry, the Environment Minister, David Benson-Pope, resigned from Parliament in July 2007, having taken over the portfolio from the Hon. Marian Hobbs after the 2005 general elections.

Continuing fallout from the employment incident resulted in the resignation and departure of the Chief Executive Hugh Logan in February 2008. Hon. Trevor Mallard assumed responsibility for Environment following the departure of Benson-Pope and Howard Fancy took over as Acting Chief executive until the appointment of Paul Reynolds.

As a result of a number of internal reviews, major changes within the Ministry were instigated in 2008 to address organisational weaknesses (Fancy, 2008; Ministry for the Environment, 2008b) and continued under the leadership of Paul Reynolds (Ministry for the Environment, 2009). The Ministry developed a new mission in 2009, which remains the same in 2012: ‘environmental stewardship for a prosperous New Zealand – Tiakina to taiao kia tonui a Aotearoa’ (Ministry for the Environment, 2009, p. 2; 2012b, p. 2).

MfE and sustainable land management

The relative weakness of MfE in the area of SLM was acknowledged by people interviewed outside and inside the organisation in 2008. A senior staff member at the Manawatu-Wanganui regional council stated, ‘MAF have got the land sustainability portfolio over MfE, MfE are just

lost at sea on that stuff’ (Carlyon interview 2008). A senior MfE scientist, when interviewed, expressed his frustration with the organisation:

there is nobody who understands, in the business part of the Ministry [MfE] anything about land use, land use sustainability. And that to me is an indictment on the focus that New Zealand has in terms of this (Stephens interview 2008).

The MfE ‘Land’ website, last updated on 17 September 2007, acknowledges that MfE is involved in two programmes that aim to assist local government and landowners develop more sustainable land use practices (Ministry for the Environment, 2007b). These programmes are the East Coast Forestry Project and the 1996 SLM Strategy, which, as already highlighted, was inactive in 2004. The SLM Strategy accepts that ‘the path towards sustainable land use rests with individual farmers and how they respond to the problems’ (Ministry for the Environment, 2007c) and is primarily focussed on supporting individual land owners to achieve SLM through the provision of information and the funding of a national Landcare Trust³⁶ that will coordinate and facilitate community Landcare groups to work in SLM. MfE continues to provide funds for Landcare Trust, although the amount of funding has since 2004/05 decreased. Although some of the projects in which the Landcare Trust is involved are focussed on tree planting initiatives, the level of specific focus on erosion on hill country farm land is small.

Ministry for the Environment environmental reporting

MfE is responsible for national level environmental reporting to inform decisions on the management of natural resources and the development of environmental policy but also to monitor progress over time in environmental management. Two national level reports have been completed reviewing the state of New Zealand’s environment. The first was completed in 1997 and the second a decade later in 2007. A five yearly comprehensive state of the environment report was due to be released by MfE in December 2012. However, to a written question from the Green Party, the Environment Minister, the Hon. Amy Adams, replied on 25 October 2012: ‘The Ministry for the Environment will not be producing a consolidated State of the Environment report in 2012’ (Adams, 2012, n.p.). Instead, according to Green Party MP Eugenie Sage, the Ministry ‘is releasing simple ‘report cards’ on a patchy, ad hoc, occasional basis’ (Green Party of Aotearoa New Zealand, 2012, n.p.). Although in 2012, six report card updates were released these did not include one for land, and the most up-to-date information remains that published in the state of the environment report *Environment New Zealand 2007* (Ministry for the Environment, 2007a).

³⁶ NZ Landcare Trust is a non government organisation that ‘works with farmers, landowners and community groups to improve the sustainability of our landscapes and waterways’ (NZ Landcare Trust, 2012, para. 1).

Environment New Zealand 2007 reports on the state of New Zealand's environment based on a set of national environmental indicators developed after the publication of the first State of the Environment report in 1997. The 19 indicators were selected 'for their ability to provide the best representation of the information that is available on high-priority issues for the environment' (Ministry for the Environment, 2007a, p. 17). MfE is reliant on data gathered by other agencies including central and local government agencies, non-government organisations and Crown Research Institutes. The data gathered by these agencies are not specifically for the purpose of informing the national level state of the environment reporting so the final national report is the product of an amalgamation of available data. Four indicators were developed to capture the data available on land: land cover, land use, soil health, and soil intactness of erosion-prone hill-country. The agencies that provided data to MfE to report on these indicators at a national level were Department of Conservation, MAF, regional councils including Manawatu-Wanganui, and Crown Research Institutes including Landcare Research. In accordance with the analytical models on which MfE drew, these indicators are defined as Land cover: State & descriptive; Land use: Pressure and Descriptive; Soil health: State and Efficiency and Soil intactness of erosion-prone hill country (that is the ability of soils to stay in place on erosion-prone hill country): State and efficiency (Ministry for the Environment, 2007a). Reflecting on the environmental reporting undertaken by central government a senior MAF official commented:

One of the things we are not doing as a country is... we haven't got any long term monitoring sites of soil loss...MfE have a number of national environmental indicators and there is no soil loss monitoring in there at all (MAF official interview 2010).

In the briefing document for the incoming Minister for the Environment in 2008, MfE included a table of 'benchmark' meters that summarised from an 'environmental perspective' the current state of the environment as defined by selected environmental indicators based on the 2007 report. Erosion risk was one of the indicators, and it was acknowledged that for this indicator there existed 'No national or international benchmark against which we can compare the current state, not enough data to determine a national trend, not able to be measured, or no data available' (Ministry for the Environment, 2008a, pp. 7,8). However, the trend for this indicator was classified as 'getting better' based on a reduction in pasture on erosion-prone hill country at a national level between 1997 and 2002, as '36 300 hectares were converted to exotic forestry or retired and left to revert to scrub' (Ministry for the Environment, 2008a, pp. 7,8).

This chapter has to this point described central government's involvement in governing the farming of HEHC as it relates to the Manawatu-Wanganui region. The three areas that convey central government's involvement have been the three interlinked policy areas of managing the risk of adverse climatic events including flood risk, climate change, and sustainability. The role

of the Ministries of Agriculture and Forestry³⁷, and the Environment have or have not been the key influences of relevance. In the next section the role of central government-funded science, the national farmer organisations Federated Farmers and Beef+Lamb NZ are described in terms of how they have (or have not) shaped the national level context within which farmers and regional level agencies are governing the farming of HEHC.

Environmental science: review and reinvestment

In December 2005, a new fund was established with the then Research Science and Technology Minister, Steve Maharey, announcing the fund in early 2006.

An evaluation in 2004 of environmental research showed that while great work was happening, the organisations with the frontline responsibility for managing the environment were not always hearing about it. Envirolink is set to change this (Maharey, 2006).

Envirolink was a Foundation of Research Science and Technology³⁸ (FoRST) administered fund receiving around \$1.8 million per annum (FoRST, 2010). Councils can apply for two types of funding ‘Advice Grants’ small and medium, which are for funding regional councils’ access to specialist advice; and ‘Tools development grants’, which will fund the ‘development of environmental management tools for councils’ (FoRST, 2010). Nine of the smaller regional councils and unitary authorities are eligible to apply for the fund, including the Manawatu-Whanganui regional council (FoRST, 2010), which has accessed the Advice funds to inform a range of initiatives around sustainable land management. The fund was originally established as a two year pilot, but proved to be a worthy investment for central government and it is now base line funded (FoRST, 2010).

In 2004 the Ministry of Research, Science and Technology undertook an evaluation of the Environmental Research Output Class (OC14) up to 30 June 2003 (Ministry of Research Science and Technology, 2004). Central government funded around 85 percent of the environmental research at the time, with local government and the private sector funding the remainder. All the funding sources were included as part of the evaluation.

The findings from the evaluation shed a less than positive light on the state of environmental-related research, including soils, in New Zealand over that time. Funding for many areas of

³⁷ The Ministry of Agriculture and Forestry merged with the Ministry of Forestry and the New Zealand Food Safety Authority in 2012 and became the Ministry of Primary Industries (MPI).

³⁸ In 2011, FoRST was merged with the Ministry of Research Science and Technology (MoRST) to form the Ministry of Science and Innovation (MSI). As of 1 July 2012 the new Ministry of Business, Innovation and Employment (MBIE) was formed through the merging of MSI, the Ministry of Economic Development, the Department of Labour, and the Department of Building and Housing. Therefore, as of 1 July 2012 Envirolink is now administered by MBIE, but the structure of the fund remains the same.

environmental research had remained static since 1998 and in some areas since 1993 (i.e. declined in real terms). As a result, the underlying core capabilities on environmental science systems had declined (Ministry of Research Science and Technology, 2004, p. i).

Landcare Research and the National Institute for Water and Atmospheric Research (NIWA) are the two primary environmental Crown Research Institutes undertaking environmental research in New Zealand, with Landcare Research having core capabilities in soils; with sub-categories identified as environment and sustainability, resource information and catchment processes (Ministry of Research Science and Technology, 2004). For Landcare Research, there was a reduction across the whole soils area in the decade before 2003 of 21 full-time equivalents or, more specifically, a reduction in capability of ‘54% in environment and sustainability; 56% resource information and 62.5% in catchment processes’ (Ministry of Research Science and Technology, 2004, p. 21).

The evaluation further concluded: ‘There is an absence of clear research directions for environmental research’ and the blame for this was placed ‘outside the science system’ and attributed in part to the failure of central and local government agencies to ‘clearly articulate their collective research needs’ (Ministry of Research Science and Technology, 2004, p. i). The report also highlighted deficiencies in the connections between the science system and its end-users including regional councils, with many end-users feeling they had ‘a lack of influence over the research direction’ (Ministry of Research Science and Technology, 2004, p. i) and the research that was made available was not in a form able to be understood or applied by end-users. Specifically, Manawatu-Whanganui regional council fell into the category of councils in which the level of engagement with the science system was described as ‘variable, but most are not well engaged’ (Ministry of Research Science and Technology, 2004, p. 25).

Federated Farmers of New Zealand (Inc)

Federated Farmers of New Zealand is the only national level farmer organisation that explicitly advocates for and works to protect the interests of farmers in New Zealand in central government and local government policy. The national office of the Federation is situated in Wellington close to central government.

The national body of the Federation has had no discernible influence on shaping the national level governing of HEHC in the Manawatu-Whanganui region. The Federation strongly promotes the economic importance of agriculture and counters the environment lobby’s concerns with the impact of agriculture on the environment. However, in recent years the

Federation has undermined its potential to constructively engage and influence central government.

Federated Farmers has had a significant input into local government policy in the Manawatu-Whanganui region in relation to land management through submissions to Horizons Regional Council One Plan hearing process. This aspect of the Federation's role in management of HEHC on farm land will be explored in detail in the next chapter.

The Federated Farmers of New Zealand is a national industry organisation that claims to be 'the largest independent representative of New Zealand farmers' (Federated Farmers of New Zealand (Inc.), 2008, p. 4). The organisation has a voluntary membership the exact details of which are very difficult to ascertain accurately, but were reported in 2008 to have been in decline (*The New Zealand Farmers Weekly*, 2008). In 2007 membership was reportedly around 17 000 (Federated Farmers of New Zealand (Inc), 2007a) and in 2008, 15 000 (*The Press*, 2008). Membership is not limited to farmers and the percent of members who are farmers is also not formally reported. The Federation's mandate is outlined in a document prepared before the 2008 general election:

Federated Farmers is democratically accountable to its farmer members. Being voluntarily funded, policy is completely member driven. Member views are canvassed by staff and elected representatives, who formulate submissions that help local and central government decision-making.

Federated Farmers is an apolitical organisation and neither supports nor opposes political parties or candidates. Its interest is in representing the views of its members to central and local government on the important policy issues facing agriculture and farming (Federated Farmers of New Zealand (Inc), 2008, p. 4).

The organisation has a National Board comprising seven elected farmer members who work closely in a governance role with the senior management team in the organisation. Provincial representation at the national level is gained through a national council that includes the national board members and the provincial presidents of the 24 provinces and provincial chairs of industry groups. The Manawatu-Whanganui regional council region covers four Federated Farmers' provinces (Taranaki, Manawatu/ Rangitikei, Ruapehu, and Whanganui).

The Federation's work and policy stance

The work by the national body in recent times arguably has had little direct impact on the policy decisions of central government relevant to land management of HEHC. The influence of the national body has been at a broader level in contributing (not always positively) to the public and national-level debate on sustainability and agriculture, the impact of agriculture on New

Zealand's natural environment, and the role farmers should have in contributing to the environmental costs of agriculture.

Offsetting or balancing the environmental implications of agricultural productivity with the economic advantages has been a core and highly publicised mantra for the Federation over the past decade as well as the demand to minimise the cost to farmers for the environmental impact of agriculture on the environment. The previous and particularly publicly contentious president of Federated Farmers, Charlie Pedersen, is quoted in an article in the *NZ Herald* as saying:

'We understand there are some areas of farming where we need to work harder to reduce the depth of the environmental footprint but reducing productivity was not socially acceptable in a country where the standard of living depends on agriculture's continued success' (Ward, 2006).

In the Federation's General Election Manifesto written for the incoming government before the 2008 elections, agriculture was highlighted as the 'sustainable backbone of the New Zealand economy' (Federated Farmers of New Zealand (Inc), 2008, p. 3). The significant contribution of agriculture to the economy was detailed and the commitment of New Zealand farmers to their environmental obligations emphasised.

In that document the Federation defined sustainability as:

the unity of positive environmental management with economic reality. The two are not mutually exclusive yet the concept of sustainability is increasingly skewed away from taking economic considerations into account (Federated Farmers of New Zealand (Inc), 2008, p. 34).

This continues to be a strong theme that pervades the Federation's responses to and demands of central government and local government policy development. The approach of the national body after 2009 is more conciliatory than during Charlie Pedersen's presidency, but the principles underpinning the Federation's approach remain the same³⁹. Their approach is evident in the following extract from an article written by the then national president of Federated Farmers, Don Nicholson in the Federation's magazine:

Sustainability ought to be a farming word but we've seen it hijacked by consultants and special interest groups who don't create anything but distrust and disharmony. Sustainability has now become an environmental word. The problem is everyone forgets that if you cannot afford to do something, it's not sustainable. Economic viability is integral to sustainability (Nicholson, 2009).

³⁹ On 1 July 2011, Bruce Wills was elected as National President of Federated Farmers NZ. With his presidency the approach of the Federation to the environment and to its engagement with central government has changed markedly. The Federation's approach is now more constructive and less confrontational, although the exploration of this shift in approach is beyond the scope of the research.

A history of conflict foreshadows the Federation's current stance on the environment. The so called 'Fart Tax' campaign, an anagram for Fight Against Ridiculous Taxes, instigated by the Federation in response to the Labour-led Government's proposed tax on methane emissions from livestock was a significant success from the Federation's perspective. In 2003, following the ratification of the Kyoto Protocol, farmers were offered by the then Labour-led Government what Jim Sutton, the Minister of Agriculture at the time, described as 'the deal of the century' (Sutton interview 2008). The deal exempted farmers from the full cost implications of greenhouse gas emissions, and instead the government proposed a nominal tax on farmers that would help fund research into reducing livestock emissions.

The proposed tax rankled many farmers, and the Federation responded and built on the opposition among the farming community. The Federation mobilised protests by farmers around the country. A petition opposing the emissions-tax attracted 65 000 signatures from across New Zealand. By October that year the government abandoned its plan to levy farmers for emissions research, obtaining the money for research from other players in the sector. The government's back-down was taken as 'a fantastic victory for farmers' by Federated Farmers of New Zealand (TVNZ, 2006a, n.p.).

Support for the Federation's actions and approach was not universal among farmer members or farmers in general. A provincial president of the Federation expressed disappointment at the national body's 'red neck' response:

We might think we run the country but we don't ... Yeah, we have got a lot of red necks in Feds, unfortunately, that think ...the country owes us a living and I'll do what I like but actually a lot of farmers don't think like that and we are being led by too many red necks (Phillips interview 2008).

The Federation has also been consistent in its strong opposition to any form of regulation, imposed costs or direct central government or local government interference in the autonomy of farmers to make decisions about their own farm businesses and the management of the farm's natural resources. Voluntary mechanisms for policy implementation are favoured across the board, including in relation to soil erosion (Federated Farmers of New Zealand (Inc), 2007a). The Federation is also strongly opposed publicly to anything that in anyway could be construed as challenging the property rights of individual farmers without fair and adequate compensation (Federated Farmers of New Zealand (Inc), 2008).

Relations with central government

During the mid-2000s, Federated Farmers developed a reputation that was not constructive in terms of its engagement with the government and environmentalists. Opposition to the approach

taken by the then national President, Charlie Pedersen, came from within the organisation itself.

When interviewed in 2008, a provincial president of Federated farmers expressed her view:

Charlie did our organisation a lot of damage with his first speech, particularly, you know, slagging off conservationists ...really it did a lot of damage to those farmers who are doing their best out there, actually. There are some great things happening. He got quite a lot of slack over it, and we heard that the corridors of power were pretty angry with him and he had a lot of doors shut in his face (Phillips interview 2008).

The Federation's stated political neutrality was strongly challenged by Jim Sutton. From his stand as the ex-Minister of Agriculture in a Labour-led Government he felt that the:

rank and file members of Federated Farmers wanted... their organisation to help to get rid of the government [Labour] they had been brought up to detest. Not to work with them but to bring them down (Sutton interview 2008).

Others considered the Federation's unconstructive approach to apply to whatever government was in power. Paul Reynolds of MAF Policy outlined his view of the Federation's involvement with central government:

unfortunately they [Federated Farmers] seem to have increasingly taken an orientation ... that anything that any government is doing is designed to buggar farmers, and basically they have been on that track now for so long they are shunned ... they still come along to things but no one takes any notice of what they say, ... they are highly reactive to particular issues, highly political and not really prepared to sit down (Reynolds interview 2008).

Beef+Lamb New Zealand

Beef + Lamb New Zealand (Beef+Lamb NZ) is an industry body representing sheep and beef farmer interests at a national level in Wellington. Its direct influence on HEHC is negligible; however, it does work to shape the broader context within which sheep and beef farmers farm. However, Beef+Lamb NZ is only one of a number of peak bodies in a sector accepted as having leadership that is fragmented and not unified (Deloitte, 2011).

The sector, as illustrated in the Red Meat Sector Strategy (Deloitte, 2011), is strongly wedded to a market-led model for agricultural productivity in the sector. This Strategy is supported by central government. A significant role of Beef+Lamb NZ is gathering, collating, and making accessible economic and production data on sheep and beef farm businesses and the broader sector. These data inform the sector itself and central government, primarily through MAF. Beef+Lamb NZ has a limited but emerging awareness of environmental issues and has tentatively promoted the use of a Land Environment Plan by sheep and beef farmers.

Beef+Lamb NZ is an ‘industry good’ organisation funded through levies on all sheep and cattle slaughtered in New Zealand. In a 2009 referendum, farmers voted against the continued funding of research or promotion of wool or goat meat but supported a further 5 years of sheep meat and beef research and market-related activities of the organisation (Meat and Wool New Zealand, 2009b). As a result of the vote and to reflect its new mandate, the organisation changed its name from Meat and Wool New Zealand to Beef+Lamb NZ.

Beef+Lamb NZ works to ‘benefit all farmers by undertaking activities that would not occur unless funded collectively – either because they would cost individuals too much, or because others could benefit without paying’ (Meat and Wool New Zealand, 2009b, p. 3). The organisation’s vision is ‘Improved sheep and beef farm profitability through investing farmer levies in programmes that have impact, value and relevance for farmers’ (Meat and Wool New Zealand, 2010b, n.p.). At an operational level the organisation has a strong market focus and undertakes work in New Zealand and overseas that is directed at ‘improving market access arrangements and market development programmes to enable the industry to deliver better returns to farmers’ (Meat and Wool New Zealand, 2010b, n.p.). Beef+Lamb NZ uses levy money to fund research and support extension with farmers that will lead to increased productivity on sheep and beef farms. In addition, they undertake and support initiatives that encourage people to enter into the industry and improve their skills; they also claim that they ‘provide leadership and better sector strategy development’ (Meat and Wool New Zealand, 2010b, n.p.).

Unlike Federated Farmers, Beef+Lamb NZ does not engage publicly in debates and or lobbying on behalf of farmer interests and has a limited profile outside the agricultural sector. The organisation does contribute submissions to central government and to standing committee hearings on issues of relevance to levy payers. Beef+Lamb NZ is a farmer-funded, farmer-governed organisation, but it does struggle to engage farmers actively in decision making, and the outcomes of the last referendum have reduced the organisation’s resources and role. Following 54 consultation meetings around New Zealand before the national referendum, there was a 39 percent voting return percentage or 7820 participants sent in valid postal votes out of a potential 20 051 (Meat and Wool New Zealand, 2009a), and in recent elections for two new directors the voting return percents were 25 percent and 39 percent (Meat and Wool New Zealand, 2010c).

Policy and role in environmental management

The organisation’s primary focus is on enhancing the productivity and profitability of the sheep and beef sectors and their focus in the area of the environment and agriculture has been limited and reactive rather than proactive. In the 2005-2006 Annual Report, Meat and Wool New

Zealand acknowledges the increasing scrutiny the sheep and beef sector is under in relation to its environmental footprint and ‘central and regional government, environmental groups and others are requiring higher standards of environmental behaviour and protection’ (Meat and Wool New Zealand, 2006, p. 6). This is the first reference in an annual report to activities undertaken by the organisation that are linked in any way to considerations of the New Zealand environment. The section of the report titled ‘Contributing to the Environment’ then outlines a number of activities and areas of work that it argues are responses to the ‘challenge to ensure a measurable and positive environmentally sustainable position for the sector into the future’ (Meat and Wool New Zealand, 2006, p. 6). The work areas identified include the Pastoral Green House Gas Consortium, a research consortium that came together as a result of the introduction of the Emissions Trading Scheme under the Labour Government. The consortium draws on funding from a range of actors in the agricultural sector and is described as: ‘an investment vehicle that aims to understand, and provide mitigation solutions for, greenhouse gases produced by grazing animals’ (Meat and Wool New Zealand, 2010a).

Significantly, an activity highlighted for the first time in the 2005-2006 Annual Report was a joint project with MAF Sustainable Farming Fund and regional authorities to develop a ‘farmer-friendly’ Land Environment Plan (LEP) package for use by farmers. The LEP resembles a scaled-back physical farm inventory Whole Farm Plan as used in the Manawatu-Wanganui regional council’s SLUI. A LEP is a plan developed for on-farm land management based on assessment of a farm’s soil types and land-use capability characteristics, and focuses on addressing land and environmental issues on the farm (Meat and Wool New Zealand, 2009b). From January 2006 all farms involved in the Meat and Wool New Zealand’s Monitor Farm programme were required to have a formal LEP in place by mid-2007. During 2008-2009 a LEP Toolkit for all farmers was launched and 850 requests for the toolkit were received during that year (Meat and Wool New Zealand, 2009b). However, the organisation does not record nor have data on how many of the tool kits have actually been taken up and implemented by farmers. It was acknowledged by a regional director in 2011 that the LEP had been absolutely under-utilised by the organisation (Roy interview 2011).

The Red Meat Sector Strategy: a vision for the Sector 2011

In 2011, Beef+Lamb NZ and the Meat Industry Association commissioned the development of the Red Meat Sector Strategy. Its vision was to:

Improve the long-term profitability of all the participants in the red meat sector and thereby enhance the reinvestment and sustainability of the sector (Deloitte, 2011, p. 12).

This is a Strategy supported explicitly by the Government of the day, with the Prime Minister John Key present at the strategy’s launch. The potential benefits of the strategy’s

implementation are expressed only in financial terms and are estimated to be 1.3 percent of GDP or a real value change of \$3.4 billion in 2025 (Deloitte, 2011). How it is to be achieved is not made clear, however. What is required, it is argued, is for sector stakeholders to own the strategy. To achieve the stated timeframe ‘stakeholders must find their place in the strategy and support and adopt its options’ (Deloitte, 2011). In an attempt to aid the process of achieving the outcomes sought, a workbook with relevant sector examples is appended to the strategy.

The assessment of the sector made in the strategy is:

The sector is not broken, though participants from all parts of the supply/value chain have identified that change is needed (Deloitte, 2011, p. 18).

The sector is characterised as one that, because of ‘fragmentation’ and internal competition between processing companies who have in the past exhibited ‘dysfunctional behaviour’, is not enabling effective alignment by the market, as a result its profitability has suffered (Deloitte, 2011, pp. 36, 38). The strategy is underpinned by a belief in the market, and strongly argues for better alignment between the sector as a whole including farmers and the market, as is reflected in the ‘Initial Hypothesis’ that drove the development of the strategy:

That the absolute and relative profitability of the New Zealand red meat sector will sustainably improve by changing practices and behaviours that:

- Develop market led, differentiated value propositions that consistently achieve premium pricing;
- Reinforce the integrity and quality positioning of New Zealand’s red meat products in global markets;
- Support a culture of innovation from behind the farm gate through to the market; and
- Increase and protect available margins through integrated continuous improvement across the supply/value chain (Deloitte, 2011, pp. 12, 13).

Not surprisingly, therefore, the Strategy ‘Blueprint’ that is developed ‘for [sector] participants to follow – if they choose’ (Deloitte, 2011, p. 99), comprises three strategic themes: efficient and aligned procurement, increased coordination of in-market behaviour and sector best practice. Sector best practice translates into improving on-farm productivity, improving business skills, and developing farming systems. An issue for the sector, identified in the strategy, is that of the 542 sheep and beef farmers surveyed for the report 59 percent do not have a written business plan, and 27 percent did not understand their costs of production.

It is argued that the attributes needed by sector participants are those exhibited by ‘top performers’ currently in the sector. The sectors ‘top performers’ are ‘good business people’,

including farmers who are not defined ‘by their land class, their age or the size of the farm, but it is their behaviour and willingness to invest in their business that defines them’ (Deloitte, 2011, p. 84). Further, ‘top performers’ have a ‘willingness to adopt [and trial] new science and technologies’ and use experts to advise them, they have capabilities in ‘data capture, performance monitoring and data analysis’ (Deloitte, 2011, p. 30).

Hill country erosion or the environment receives very little attention in the strategy. The approach extended is one of matching land use to land class. Forestry as a land use on hill country is identified as a threat, increased by the ETS, and on-farm risk when forestry is planted on land for which the optimal use is not forestry but ‘red-meat farming’ (Deloitte, 2011, p. 52). One exception in the strategy is in one of the case studies of sector participants included to illustrate the attributes of ‘top performers’. The case study, titled “‘the quiet overachiever’” profiles a Bay of Plenty farmer who is described as having achieved ‘profitable and environmentally sustainable farming’, thus winning the Supreme Award in the 2010 Bay of Plenty Ballance Farm Environment Awards (Deloitte, 2011, p. 123). His approach has been to improve on-farm productivity by matching land class to use, including the planting of trees and the retiring of gully areas to reduce the risk of erosion on erosion prone land.

The proposed emissions trading scheme (ETS) is analysed in terms of its potential impact on the sector and in terms of the options open to farmers to gain value from forestry on their farms. It is acknowledged that the sector needs to reduce its emissions. However, consistent with the focus on the market, the ETS is presented also as a quality assurance mechanism that will ‘show customers/consumers that the sector is addressing the issues that are important to them’ (Deloitte, 2011, p. 46). Because, as the strategy argues, ‘Regardless of whether global warming is real or not, it is real in the mind of the sector’s consumers’ (Deloitte, 2011, p. 46).

Conclusion

Hill country erosion is recognised by central government as a high-priority environmental issue, but the responsibility for this erosion is considered by central government to lie with local government and land managers. The New Zealand government has no specific policy for the management of HEHC in New Zealand, and this is reflected across central government in a lack of data on the current status of or trends in the erosion loss of soil from hill country in New Zealand. It is reflected also in a lack of profile or funding for scientific endeavour in the area of soil conservation and a declining level of capacity in this area within New Zealand.

The farming of HEHC is implicated, however, in a number of central government programmes that do not have the reduction of hill country erosion as a central driver. These policy initiatives are instead directed at central government concerns with: the potential fiscal risk to central

government from nationally significant climatic events that result in broad-scale flooding; the future requirements of central government to conform to climate change mitigation actions acceptable internationally; and the need for central government to be responding appropriately to growing awareness and disquiet with the impact of agriculture on the environment.

The SLM-HCE programme is the only central government programme that is targeting the farming of HEHC in the Manawatu-Whanganui region. It is a departure in policy approach for government. The Manawatu-Whanganui regional council played a large part in the establishment of the programme. Soil conservation ‘champions’ in key positions in central government added impetus to the development of the programme. The programme is directed at increasing the region’s resilience to future adverse events to reduce the government’s and the region’s future fiscal risk. The Permanent Forest Sinks Initiative and the Afforestation Grant Scheme, which fall within the central government climate change policy initiatives, also have implications for the farming of HEHC in the Manawatu-Whanganui region, but in neither programme this is not the main outcome sought.

Support for and encouragement of land managers to retain forestry, afforest, and/or allow the reversion of pasture to forest on land classified as being HEHC are common elements in all the central government programmes that have implications for HEHC in the Manawatu-Whanganui region. Farmers are not compelled to participate in any of these programmes, nor do the programmes dictate how farmers should farm. The programmes utilise incentives, information and technical support as mechanisms to influence farmers land management decisions for this land. However, central government dialogue does allude to the possibility that in the future some limits may be placed on how farmers farm this land.

The national policy and social context within which central government is developing a policy of relevance to the management of land by farmers including HEHC, is defined by debate and a political tension on the relative weight given to the economic contribution of agricultural production to New Zealand and the implications of agricultural production for the environment in policy decisions. MAF has positioned itself to be a significant factor in agriculture, forestry and environmental policy at central government level. The relative strength of MAF’s position in central government compared with MfE is defining central government policy for agriculture and therefore also intervention in governing HEHC on farmland. MAF and the national farmer organisations, Federated Farmers NZ and Beef+Lamb NZ, although acknowledging agriculture’s environmental responsibility, emphasise the economic and productivity imperative and a reliance on the market primarily to govern farming. Soil erosion on HEHC and the management of this land are not issues that have mobilised farmers at a national level, nor are they focuses for the two farmer organisations, Beef+Lamb NZ and Federated Farmers of New Zealand.

Central government's policies and programmes have direct and indirect influence on how the regional council is governing the farming of HEHC in the Manawatu-Whanganui region. The implications of central government's influence, along with those from within the region, are the focus of the next chapter, which presents data specific to how the Manawatu-Whanganui regional council is governing the farming of HEHC in the region.

CHAPTER SEVEN

Regional-Level Governing

Introduction

The Manawatu-Whanganui regional council is the local government authority responsible under the RMA (1990) for the sustainable management of the region's natural resources. As related in Chapter One, the Manawatu-Whanganui region is recognised as having the highest total area of erosion-prone hill country pasture land of any region in New Zealand (Ministry for the Environment, 2007a). Before the 2004 storm, the regional council's involvement in soil conservation in the region was limited. The storm was a catalyst for significant change in how the regional council governs the farming of HEHC, but also in the council itself and in its approach to governing farming in the region.

As related in Chapter Six, the regional council were instrumental in central government establishing its SLM-HCE programme, which ultimately funded in part the regional council's SLUI. The regional council began implementing SLUI in 2005, with funding from central government established in 2007. SLUI was adapted to align more closely with central government's objectives for the initiative. In parallel with developing and implementing SLUI, the regional council was also drafting a ten-year integrated resource management plan for the region, the One Plan. The Proposed One Plan represented a significant shift in approach by the regional council to its governing of farming with implications for farmers of HEHC and for the region's farming more broadly. The Proposed One Plan provoked a strong reaction from within the farming community, which led consequently to the council modifying the proposed plan.

Data for this chapter are drawn from interviews undertaken with regional council staff, farmer members of the initial group that developed SLUI, and an agricultural consultant, just before the confirmation of funding for SLUI from central government. Additional interviews took place with key individuals involved in the development and implementation of SLUI, including the chair of the council from 2004 to 2010, MAF officials linked to the SLM-HCE programme, farmers who have had a whole farm plan completed as part of SLUI, as well as a number of farmers who were directly involved in the consultation with the regional council on the Proposed One Plan. In addition, a broad body of secondary data has been drawn on to complete the analysis of regional-level governing (refer Appendix Two). As with result chapters Six and

Eight, although the theory of governmentality frames and defined what is included in this chapter the concepts are not explicitly identified, but rather are reflected in the data presented.

This chapter begins by reviewing the regional council's involvement in soil conservation of hill country before the storm. The history and development of the regional council's policy for managing HEHC following the storm is outlined, as are the planned and unplanned events, and the politics and contests associated with the development and roll-out of SLUI. The organisational changes that accompanied the development of SLUI are outlined and the role of science in promoting and supporting SLUI policy described. Details of the lead up to gaining central government funding, the changes required of SLUI by MAF, and the outcomes included in the final contract for SLUI with MAF are also outlined. In the closing section of the chapter, the Proposed One Plan and its implications for the farming of HEHC are described, together with the changes made as a result of farmer reaction and input into the process.

The regional council: finding its core business

The regional council's approach to soil conservation on hill country was generally ad hoc and reactive, following the 1989 local government reforms. Erosion on hill country and the management of HEHC were not central concerns for the regional council. In the period following the reforms, when the regional council came into being with a new structure comprising 'an amalgamation of 42 authorities' and a 'law to do whatever the community wanted', it grappled with what its role should be, which included its work in relation to hill country soil conservation (Murfitt interview, 2010).

In the words of the past chair of the regional council, following local government reforms:

The [regional] council found ... difficulty in really [finding] where its place was in the sun (Murfitt interview, 2010).

This has been a common sentiment expressed by the individuals interviewed, who worked within the regional council and also those looking in from the outside.

The chief executive (CE), Michael McCartney, describes the period following the 1989 reforms as a time in which the regional council lost sight of its 'core business' (McCartney interview, 2007):

... as a consequence of local government reorganisation I think, suddenly we were something different and we do different things now. ... I know this [regional council] had to find its business again ... what was its core business? ... and it took a long time to do that because there were different perspectives politically about what our business was. Oh, we should be involved in regional economic development and that's where tourism would have come out of. I think we went through a period where the issue or

the impacts of soil erosion if you like, or sustainable land management, weren't that obvious to people (McCartney interview, 2007).

A similar viewpoint was expressed by a farming leader, who felt that the 2004 flood highlighted the poor track record of the regional council, in relation to soil conservation in HEHC:

When catchment boards were around [soil conservators] were much more proactive, and when the catchment boards disappeared into the regional councils, [the council] went to sleep for a significant period of time. There was a 15–20 year gap where there was very little active soil conservators coming onto each person's farm saying 'I think you need to do this' (Phillips interview, 2007).

An agricultural consultant expresses this viewpoint more strongly, when he states that the regional council 'frankly did bloody nothing in [soil conservation], all they focussed on was flood plain protection in the Manawatu' (Rhodes interview, 2007). The regional council did retain a core of eight or nine soil conservation staff following the 1989 reforms but soil conservation was not a priority. A soil conservator working for the regional council describes the council's approach to soil conservation at the time as being 'more reactive than proactive' and more 'output' rather than 'outcome' focussed (Cooper interview, 2007). Staff members were driven by a 'need to spend the environmental grants budget' and 'do so many farm plans', rather than achieve a clear goal of reducing soil erosion in the region (Cooper interview, 2007). Nevertheless, he did acknowledge that:

there was still stuff going on but [soil conservation] certainly didn't have the profile with the public nor with the councillors and so it was just sort of ticking over ... It didn't have a high profile in the policies and it struggled to get extra funding for works and also the core staff they were getting dragged off into other issues, so there was not the core soil conservation (Cooper interview, 2007).

The 2004 storm: winds of change...

Between 15 and 17 February 2004, the Manawatu-Whanganui region experienced 'the storm', an extreme rainfall event that was to be the catalyst for significant change. Not only did this storm act as a trigger for changes in central government's role in relation to the management of HEHC, it was also a significant trigger for changes in the regional council's role. However, the storm was only one of many events along with a number of factors that contributed to the Sustainable Land Use Initiative being established and funding to support this long-term initiative. The regional council's chief executive is cited as describing the synergy of circumstances and events as being a case of the 'stars are in alignment' (Carlyon interview, 2007). A scientist involved in the development of the SLUI uses a different metaphor:

In hindsight, there were a few ducks lined up at the right time and... a lot of these things are about the right people being in the right place but also circumstances are combined (Mackay interview, 2010).

Before and after the storm the regional council underwent changes in leadership, management, and operational personnel, which provided an organisational mandate and a drive for change.

Peter Davies, who was the Regional Operations Manager for the regional council, was appointed chief executive in October 2000. With the death of the then chair, Don Linklater, in December of that year, Chris Lester was elected chair. In March 2004, ‘in a year of turbulence and change’ (Horizons Regional Council, 2004a, p. 6), the then CE, Peter Davies, resigned after less than three and a half years in the position, under controversial circumstances that attracted media attention and speculation. Newspaper articles reported (among other things) that the relationship between the CE and the then chair, Chris Lester, was ‘totally dysfunctional’ (Wallis, 2004a) and ‘the line between governance and management [had become] blurred’ (Wallis, 2004b). Michael McCartney, who was then the Group Manager Regional Planning at the regional council, was appointed to the vacant CE position in November that year. Local body elections in the same year resulted in the departure of the chair, Chris Lester, the election of four new councillors and the election of returning councillor and farmer, Garrick Murfitt, to the chair position (Horizons Regional Council, 2004a, 2005).

The impetus for change in the regional council did not emerge immediately after the floods, according to a senior staff member, who joined the regional council at the end of 2003:

Pretty soon after the flood the general message and culture here said, ‘OK, back to business now floods over, you know we’ll do some flood mop ups and carry on doing what we have always done’ (Carlyon interview, 2007).

Over the preceding months, however, key personnel within the regional council had carried out a process of review and change that has since defined the council’s core business. Changes in key personnel within the organisation created the opportunity for this to occur in a way that might not have occurred previously. Some staff accepted that the flood had to be taken as an indicator that the regional council had not been as successful as it could have been, when managing the risk of flooding – and it was the responsibility of the regional council itself to challenge its own performance across the board. For some people, including Garrick Murfitt, the flood brought a realisation that it was ‘time for a change’ and there was a window of opportunity to ‘do things differently’ (Murfitt interview, 2010). New leadership and new staff members, no doubt, gave impetus to this willingness to reflect critically on the past performance of the organisation:

Well, if that [the aftermath of the flood] is the sign of how successful we have been ... if we are honest, which was the kind of path we were going down, a bit more honesty about our success then we [the regional council] have to say we have not succeeded (Carlyon interview, 2007).

The flood 'sobered' (McCartney interview, 2007) the regional council and 'galvanised thinking' (Murfitt interview, 2010), in relation to the regional council's core activities, which included its role in the management of HEHC in the region.

It was the floods of 2004 when I was first appointed chairman that we really as an organisation found out where we were and what we had to do (Murfitt interview, 2010).

As Michael McCartney describes it, in the 'afterglow of 04', the regional council reviewed its strategic direction, which involved the regional council identifying its core business:

What is really important for us? If tourism goes belly-up in the region they are not going to blame the regional council but if the region floods and people's houses get lost and people lose their lives ... who are they going to point the finger at? Well, that's our core business (McCartney interview, 2007).

'If you wanted a good disaster you probably could not have got a better one'. This is how a local agricultural consultant describes the storm (Rhodes interview, 2007). He went on to explain:

The event impacted on a lot of people over a big area, from dairy farmers to Feilding houses dropping in the river...the strength of the visual imaging and the exposure nationally (Rhodes interview, 2007).

This meant that the event gained national coverage, and 'it's still so bloody visible when you fly from Hamilton back to Palmerston North'. As a result, the regional council had a 'golden opportunity' to take a strong message to ratepayers, but also 'it gave them a strong platform on which to raise issues with the minister' (Rhodes interview, 2007). The highly visible scale of the devastation across the region and the number of people affected by the February storm proved to be beneficial for the regional council. The plight of farmers and communities and the dramatic destruction of land, infrastructure, and homes, provided a rich source of news for the television and print media in the weeks following the storm. The disaster captured national and local interest and it was classified as a disaster of national significance by central government.

The flood presented an opportunity for the regional council. It was 'an opportunity that arose out of adversity' (Rhodes interview, 2007), which also provided the regional council with a clear purpose and direction to build on the level of local and national interest in the floods and to use that interest to gain support, both financial and political, for specific policy initiatives. The chief executive states:

For us in particular we are in a very fortunate position of, dare I say it, having the 2004 flood event. From our flood management portfolios and our sustainable land use it was real to people. They saw it, they felt it, they were hurt by it. There were consequences from things that happened. They still understand those consequences so we had that benefit if you like, and we've been building on that (McCartney interview, 2007).

Timing was also critical and it is a factor identified by many people interviewed: 'I have got to say that we were quick enough' (Murfitt interview, 2011). Although in the main unplanned, in retrospect the speed and the timing of certain events sustained the profile and memory of the flood in the minds of the local community, the country and politicians, and it maintained a momentum that assisted the efforts of the regional council to secure a community mandate for action, including farmer buy-in and central government support – and ultimately funding. Tony Rhodes, a local agricultural consultant, sums up his assessment:

Sometimes, it's not luck but fortuitous timing. It is how you respond to the situation (Rhodes interview, 2007).

The visual manner in which the data on the impact of extreme rainfall on the region were captured and presented (and the speed at which it was made available) provided the regional council with the means to keep the images of the floods in front of the public, politicians, and farmers, in a way that proved advantageous to the regional council.

Data from the flood were gathered and collated. Some data gathered were funded by central government through the flood relief package put in place after the flood. These data included information produced by Landcare Research and NIWA, drawn from an analysis of satellite imagery of the areas on which the storm impacted, and it was often presented in graphic form as graphs and satellite imagery enriched maps. Greg Carlyon recalls:

What normally happens is my science team – post an event – produce these incredibly dull technical reports (Carlyon interview, 2007).

This report was completed but the opportunity for presenting the data and photographs to a wider audience was recognised:

If the issues are going to be relevant ... you've got to take these messages to people not sell anything to them, this was all about awareness raising (Carlyon interview, 2007).

The regional council sponsored an exhibition 'storm....when the rain kept falling FEBRUARY 2004', in partnership with Te Manawa, the Manawatu region's art gallery and museum in Palmerston North. In association with this exhibition, the regional council published and printed 4000 copies of a book 'storm civil emergency – storm and flood report February 2004' (Horizons Regional Council, 2004b, text as in original). In the foreword to the exhibition book, the then regional council chair explained that the purpose of the exhibition was 'to take the

lessons of the storm to the region’ (Lester, 2004a, p. 4). The exhibition opened on the evening of 29 September 2004 and included in its coverage of the devastation, photographs, videos, text, graphics, and quantitative data. The impact of the storm was summarised by the regional council in the exhibition publication under the title ‘the facts collated as the effects of the storm became apparent’ (Horizons Regional Council, 2004b, p. 2) and are reproduced below (

Figure 5).

0	lives lost in the storm
4	rivers breached their stopbanks
28	tonnes of sediment passing under Fitzherbert Bridge, ... every second for 8 hours
70	percent of Horizons Regional Council territory affected
75	days the Manawatu Gorge was closed to cars
100	the most devastating flood in 100 years
230	kilometres per hour wind gust recorded on the Tararua Range
6700	vehicles per day using Pahiatua Track (usually 100 per day)
7000	volunteer hours running Flood Warehouse
10000	dairy cows in Manawatu District relocated
15500	customers without power in the region
290000	dollars spent by Government to reopen Kopane School
2500000	tonnes of soil lost down the Manawatu River
2500000	estimated value of sheep stock losses
4000000	Transit estimated cost to repair State Highway damage
13500000	litres of milk production lost in Manawatu District
66000000	estimated cost to repair roads in the region
112000000	estimated insurance bill
200000000	tonnes of soil lost across the Region
300000000	estimated economic impact on the region

Figure 5: The impact of the Manawatu Storm as presented in the exhibition and in the book accompanying the exhibition under the title ‘the facts collated as the effects of the storm became apparent’ (Horizons Regional Council, 2004b, p. 2).

Two photographs, depicting the damage wrought by the storm, are reproduced, also (Figure 6 and Figure 7).



Figure 6: Flooding of Tangimoana Township (Horizons Regional Council, 2004).



Figure 7: Landslides resulting from the 2004 storm with dramatic comparison between forested and non-forested hill country (Horizons Regional Council, 2004).

The effect of the exhibition and book on the community is unknown. However, what did result was a realisation by some regional council staff that the visual nature of the data, including photographs, video, and maps, provided a way of communicating the impact of the storm, to a broader audience. The exhibition ‘hooked’ the media and this media interest led the regional council to review its communication strategy. As part of the exhibition, a video was put together, described by Greg Carlyon as,

a beautiful clip [with] this tragic classical music to these images right through the region ... absolutely incredible and the media hooked up into that (Carlyon interview, 2007).

The content of the exhibition and book show that, from a relatively early stage following the flood, some individuals in the regional council were putting form to a strategy for regional council action. This strategy was based on a given: that the flooding in the region, following the storm, was linked to hill country erosion.

A section of the exhibition book headed ‘Impacts on Hillcountry [sic]’ begins with a sub-heading ‘Hillcountry [sic] erosion – where it all begins’ (Horizons Regional Council, 2004b, p. 29). The section describes and graphically illustrates the extent of the erosion as a result of the storm, the location of the erosion and the influence of rock type, slope and vegetative cover on the erosion. In a conclusion to the section, under the heading ‘What must be done to lessen the impact of future floods?’ (Horizons Regional Council, 2004b, p. 38), the need for a package resembling what would become the Sustainable Land Use Initiative (SLUI) is argued.

In the short term, it is important to identify those areas of land which are at risk of being flooded, covered in mud or suffering severe erosion.

In the longer term, the sources of the gravel, sand and mud which cause problems in the river valley must be identified. Sediment budgeting is required to achieve this. A land-use change package, to accelerate reforestation of the identified high-risk sediment sources and erosion hazards, is urgently needed (Horizons Regional Council, 2004b, p. 38).

The seeds had been sown and a momentum begun that was to produce significant changes within the regional council and in its approach to the management of HEHC.

The technical information provided to the regional council by Landcare Research and other science providers was funded from the central government storm recovery package and, importantly, it was produced quickly. The speed with which the data were collated and presented, in addition to the way they were presented, had advantages that were only fully realised in retrospect, as a senior soil conservator in the regional council relates:

The satellite imagery the stuff that Landcare [Research] came out with by June after the February storm event ... we had those hot spots of erosion we knew by district which

ones had the most erosion and we had these coloured-up maps ... so that was by June, so that was still immediate, still in people's minds so that was important ... and when we had that meeting in September all that information was at the fingertips and I think it made a big difference (Cooper interview, 2008).

The birth of SLUI: community leaders workshop

The September meeting referred to above was the 'Hill Country Land Management Workshop' (Carlyon, 2004) held on 30 September 2004, which was hosted by the regional council and organised by (among others) Greg Carlyon, the Manager of Policy. The timing of this event proved to be opportune, as also articulated by Alec Mackay:

It was critical that it was held within six months [of the flood], not before ... we didn't need it early, people are still in denial and if we had done it any later people would have forgotten (Mackay interview, 2010).

The workshop was held the day following the opening of the exhibition. The workshop proved to be significant for the regional council, because it gave them what they took to be a mandate to act, to 'fix things' (Murfitt interview, 2010). Garrick Murfitt's description of the workshop was that it was about:

What are we going to do, what shall we do, because we all agreed that it's really what the people wanted, because in the end they will be paying, and they just wanted things fixed ... and that's when we came up with the whole farm plan (Murfitt interview, 2010).

The focus of the day, as outlined in the notice sent to participants prior to the workshop, was to

take time with community leaders to talk through the issues facing, and the opportunities available to restore, the region's hill country following the February Storm [sic] (Carlyon, 2004, p. 1).

The objectives for the day were as follows:

- Agree to work together and provide regional leadership on this issue.
- Agree the way forward for developing a game plan around the future use of severely eroded land, and
- Confirm future roles and responsibilities (Carlyon, 2004, p. 1).

Somewhat at variance with Garrick Murfitt's viewpoint of the workshop, the organisers of the day consciously or unconsciously played a large part in orchestrating the meeting outcomes, through the selection of who was invited and who and what was presented to the workshop. From those attending, a large contingent had backgrounds in sustainable land management and soil conservation – and in many instances they were well known to each other.

The 36 so-called ‘community leaders’ listed as attendees in the workshop report (Lester, 2004b) included: seven regional council councillors, including the then chair, Chris Lester and the soon to be chair Garrick Murfitt, the acting CE and six regional council staff members, including three science staff and three staff with backgrounds in soil conservation; six provincial farmer representatives from Federated Farmers, including one with a strong history and interest in SLM; four people from the Farm Forestry Association, three of whom were farmers in the region and one from the national organisation; one person from the NZ Institute of Forestry; Alec Mackay, a land and environmental scientist from AgResearch and member of Sustainable Land Use Research Initiative⁴⁰ (SLURI); two Landcare Research soil scientists both with associations to SLURI, including John Dymond; an engineering geologist from Geological & Nuclear Sciences, with expertise in landslides; two Wanganui District and one Tararua District Council staff members; the Manawatu District Mayor; and one local farming leader whose farm and home had been devastatingly affected by the floods and who was also (at that time) a Director of SLURI and a recognised advocate and experienced user of trees for erosion control and fodder for stock on his Taihape hill country farm.

According to the programme for the day, Federated Farmers presented ‘Observations on the storm event’, and the Farm Forestry Association gave a talk titled ‘Forestry is an option’ (Carlyon, 2004, pp. 1, 2), and the regional council staff members presented an overview of the extent of the erosion, based on the quantified digital data and analysis completed by Landcare Research and NIWA, as earlier alluded to by Grant Cooper. Alec Mackay from AgResearch presented a rationale for the adoption of a ‘sustainable development strategy’ with a ‘sustainable land management policy’ at its ‘heart’, ‘delivered at the farm scale through whole farm planning’ (Mackay, 2004, p. 3).

Alec Mackay’s involvement in the September workshop was the result of a ‘fortuitous’ (Mackay interview, 2007) meeting between Greg Carlyon and Alec Mackay earlier in the year. This meeting would lead to the long-term and influential involvement of Alec Mackay in the development, design and promotion of SLUI. Mackay recalls how he and another soil scientist, as representatives from the soil science community, gave a presentation to resource managers of regional councils in mid-2004, in which they gave the managers ‘an earful about the appalling job they have done’, claiming that the managers had ‘completely failed in the protection of land as a resource and the life supporting capabilities of it’ (Mackay interview, 2010). His recollection is that some in the audience reacted angrily but, in contrast, Greg Carlyon agreed with the criticism directed at them: ‘I agree with you totally – it is just too hard’ (Mackay

⁴⁰ Sustainable Land Use Research Initiative (SLURI) is a national government-funded research programme for maintaining and managing New Zealand’s soils. It is a collaboration between three Crown Research Institutes, AgResearch, Landcare Research and Plant and Food Research (SLURI, 2010).

interview, 2010). As a result of this meeting and ongoing interactions, Mackay was invited to participate and present at the September workshop, where his call for the use of whole farm plans, as a way of achieving sustainable land management on farms, was, not surprisingly, taken up and became the central mechanism for change within the regional council's SLUI.

Broad agreement was reached at the meeting on a number of issues that would inform the future development of the policy initiative developed by the regional council. The points agreed to at the meeting clearly reflect the focus of the presentations made on the day and included the potential role of forestry and whole farm plans, as mechanisms for achieving sustainable land management on erodible hill country, albeit with conditions. Both options were 'familiar' (Cooper interview, 2007) to council staff members and many farmers present, since farm plans and forestry were tools employed historically by the regional council and the region's previous catchment boards, for soil conservation work on farms. The issues agreed to at the meeting included:

The areas of **accelerated erosion** are of greatest concern and need attention; ... that **whole farm plans** are a useful tool for working with landowners in priority sites; ... **forestry** is an important tool for erosion control. However it is not a panacea for all ills. ... Hill country landowners do not want blanket afforestation or wholesale retirement of land. ... The **economics** of land-use change must stack up. ... [and] Landowners do not want a lot of rules imposed on them. In general, councils are using voluntary approaches, however there are environmental bottom lines that need to be stated (Lester, 2004b, p. 1, bold as in original).

The workshop attendees agreed that '[the regional council] is to take the initiative to move this issue forward. It will 'shoulder tap' key groups and individuals to be involved in a steering group (overall governance) and appropriate Working Groups' (Lester, 2004b, p. 2). 'Who is going to pay for this?' was also a concern that emerged from the meeting and it was noted that there was a need to 'raise the urban and general public awareness of the funding needed.' However, it was also stated that 'fund-raising proposals need to be developed' (Lester, 2004b, p. 3). Furthermore, a caution was noted that, although central government could be sounded out for funding, 'outside funding can also mean outside control, and this is not desirable' (Lester, 2004b, p. 2). Also agreed on was the need for 'some groups who were missing from the workshop ... to be included in future work' and this included 'river engineers and lowland communities' (Lester, 2004b, p. 3). There is no evidence to suggest that this action was in fact followed through, since membership of the groups formed to take the initiative forward did not include representatives of these other groups.

The regional council had a clear strategy when it included the members it did in the steering group or Governance Group⁴¹. The ‘whole strategy’, as described by McCartney, was to establish a network of trusted linkages into the hill country community, through people who were influential and respected in the community and thus, through them, gain farmer ‘buy in’ for the initiative that was to be developed, from those who would need to implement the policy on the ground (McCartney interview, 2007). He explained further:

To say to the [provincial] presidents of Federated Farmers, ‘Is this a good idea?’ and get their commitment to it, and say ... ‘How do you think we should approach it? Then they give us their views, from their stakeholder or vested interest perspective and that’s the way you get buy in, so when they go out and talk about sustainable land use they do so in a way that is positive rather than reacting to something that [the regional council] might produce (McCartney interview, 2007).

A Federated Farmers’ representative involved with the regional council in SLUI expressed it slightly differently:

We were asked to shoulder tap and ask other farmers that we thought might be useful ... useful people that would be more conducive to what they wanted to sell (Rainey interview, 2007).

The participation of representatives from the region’s district councils was also identified by McCartney as ‘important tactically because they are another step potentially closer to their communities and they need to be in support’ (McCartney interview, 2007). Part of the job of this Governance Group, highlighted by a regional council staff member on the group, was to lobby central government, ‘back through Feds, Landcare Trust to whoever they can link through’ (Cooper interview, 2007). The Governance Group was established and met for the first time in December 2004. Membership of this original group of 19 also suggests that it too was strategically orchestrated. Members, as listed in the written evidence submitted by Greg Carlyon to the hearings committee for the Proposed One Plan (Carlyon, 2008), included three regional council councillors, including the chair, Garrick Murfitt and David Meads (both farmers), and three managers from the regional council, Alistair Beveridge, Grant Cooper and Greg Carlyon, in addition to the new chief executive, Michael McCartney. Four Federated Farmers representatives were on the group, three of whom were hill country farmers and current provincial presidents from within the region. The group also included the mayor of the Manawatu district council, the chief executives of both the Rangitikei district council and Landcare Trust, two regional hill-country farmer members of the Farm Foresters Association, an agricultural economist, a farming leader who was also a hill country farmer, and Alec

⁴¹ The Governance Group was later renamed the Advisory Group.

Mackay from AgResearch. Noticeably absent was any representation from Federated Farmers or the Ruapehu District Council.

According to Greg Carlyon's evidence presented to the Land Hearing for the One Plan, the Governance Group at its first meeting 'agreed the purpose and general content of the land use package – the Sustainable Land Use Initiative was formed – along with the Working Party participants, deliverables and timelines' (Carlyon, 2008, p. 5).

The original working party had a core membership of 12, seven of whom were also on the Governance Group. Membership included five managers from the regional council, Alec Mackay from AgResearch, two provincial presidents of Federated Farmers who were also hill country farmers, a local Farm Forestry Association member and farmer, an agricultural economist, a staff member from the Tararua District Council, and an agricultural consultant (Carlyon, 2008).

The Sustainable Land Use Initiative takes shape

The early years of SLUI work were focussed both on developing the tools for completing whole farm plans and implementing the programme, and on maintaining ratepayer support, gaining farmer 'buy-in' and central government support.

Full implementation of SLUI began in July 2006 (Kirk, 2008). In the year before, a whole farm plan template had been developed, based on an initial trial in which a 'prototype whole farm plan' (Mackay, 2007, p. 3) was completed on six farms 'hand-picked to represent a range of land types, locations and issues' (Kirk, 2008, p. 5). The full rationale for the careful selection of the farms was explained by Garrick Murfitt:

We wanted [farms] in the area where there was slipping, obviously erosion, but also we wanted people who were leaders of the community, and that was a political decision, because farming is one industry where people always look over the fence (Murfitt interview, 2010).

The final whole farm plan template included an assessment of the farm as a business, an aspect that differed from previous whole farm plans developed in the region. In order to emphasise this difference, the plans were initially referred to as whole farm business plans⁴² (Mackay, 2007).

The SLUI whole farm plan is described as 'a tool developed specifically for SLUI that identifies on-farm opportunities for sustainable resource management and sustained business growth'

⁴² The farm plans used as part of SLUI were initially referred to as whole farm plans. However, in order to differentiate them from farm plans used historically by regional councils and catchment boards and to emphasise the incorporation of both the land resource assessment and financial assessment of the business, they were renamed whole farm business plans. In this thesis they are referred to as whole farm plans.

(Horizons Regional Council, 2007d, p. 1). The whole farm plan is outlined as containing the following elements:

- an assessment of the land (soil and rock type), water, living heritage and farm production resources
- list of environmental issues (including erosion) and threats to production
- recommendations on best practice solutions
- a review of the existing farm business using benchmarking
- integrated long-term business and work plans (Horizons Regional Council, 2007d, p. 1).

The farming of HEHC is not considered in isolation within the plan, but rather as part of an integrated analysis of the whole farm business, which includes an in-depth inventory and analysis of the physical natural and business resources of the farm. An agricultural consultant assessed the whole farm plan as:

the right approach because it is trying to look at the whole farm from the point of view of the viability of the enterprises, it is not just saying, well you need to plant this and fence this area off and keep cattle out of this ... it is identifying opportunities to intensify areas within the constraints they have (Rhodes interview, 2007).

A key concept underpinning the plans is that the overall productivity and profitability of the farm do not need to be compromised, but are rather increased, through the appropriate targeting of land use to land class. The aim, as described by the regional council's CE, was they wanted the farm plan to

be seen as adding value to the farming operation ... rather than inhibiting or impeding or imposing. Yes, it is voluntary but if we can show that there are better ways to yield productivity out of a farm then a lot of more, what I call business type farmers recognise that and grab it quickly (McCartney interview, 2007).

The incorporation of the business assessment in the whole farm plan was challenged by some farmers on the Governance Group and during implementation. A farmer on the Governance Group, on whose farm a whole farm plan has been completed, understood the inclusion of the farm business assessment for a different reason. The regional council's argument as she understood it was:

they are going on to properties that are going to need a significant part of their farm ... retired ... and they are going to have to be able to convince the farmer, look if you do take that out you can put that much more into this section of your farm and it can still make money (Phillips interview, 2007).

The independence from the regional council of individuals who prepared the whole farm plans with the farmer was an aspect emphasised by the regional council, during its promotion of the plans. Although 'the first and ongoing point of contact for a landowner' (Mackay, 2007, p. 6) is

the local regional council Environmental Management Officer (EMO), ‘two professionals – a land management expert and a farm consultant’... ‘work alongside the farmer to develop a business and works plan’ and ‘this is a private conversation’ (Horizons Regional Council, 2007d, p. 2).

A regional council EMO described the process of developing the final works plan as:

a discussion, what can we do here rather than a blueprint, it’s not just we think you’ve got to plant trees there, it’s trying to lead through the whole process of understanding the resource, what its strengths and weaknesses are so that we all reach the same conclusion (Cooper interview, 2007).

The cost of completing a whole farm plan document is between \$10,000 and \$20,000 and this cost is covered by the regional council out of SLUI funds. SLUI implementation and incentive guidelines were outlined in a document included in a report to the regional council’s Catchment Operations Committee, in July 2009, by Craig Mitchell, Group Manager Environmental Management (Mitchell, 2009a). A works action plan is decided between the regional council and farmer based on the whole farm plan. Works are incentivised through regional council grants to a level dependent on the proportionate benefit assessed as being ‘private’, that is, ‘to the landholder’ or ‘regional’. Regional benefits are ‘offsite’, but it is also assumed that, if the works are undertaken on land classified according to the regional council’s criteria as Highly Erodible Land and therefore at high risk of erosion and ‘connected’ to waterways, this also provides regional benefits and attracts an incentive payment from the regional council. Payments range from 0 percent, to 70 percent land holder 30 percent the regional council; 50:50; 30:70; 25:75; 70:30; and 0:100 percent. The highest incentives are given where land is leased long-term from the farmer by the regional council and in instances in which a joint venture commercial forestry agreement has been entered into between the regional council and landowner.

The regional council had considered the options of buying land and entering into joint venture arrangements with land owners and forestry companies, however a clear policy on this had not been defined. Michael McCartney offered his view on the regional council purchasing land in the region for afforestation:

[if] the outcome ... is a change in land-use, in my view it is a legitimate transaction for us, but that is something that our council is going to be grappling with over the next wee while (McCartney interview 2007).

The long-term future of SLUI was by no means assured in the early years, which was a situation on which a number of people involved in the initiative commented when interviewed, Garrick Murfitt, for example, reflects, ‘It was a bit dicey for a while’ (Murfitt interview, 2010). Alec

Mackay, likewise, indicated that ‘SLUI in the first few years was really difficult, we did those prototype whole farm plans then they put them on the runway, the pressure was on from day one to deliver them’ (Mackay interview, 2010). A senior EMO identified that 2007 was a particularly important year for the initiative:

We had to prove that we could do what we said we would do, we had to prove that there is some support for it, and there seems to have been and we had to get some Government money and we have (Cooper interview, 2007).

The development of SLUI by the regional council occurred in conjunction with a significant seachange within the regional council itself. The 2004 storm was, in part, a catalyst for this organisational change, but it was not the only driver, as outlined in the following section.

Organisational change and commitment

A change in the culture of the regional council was initiated in the year following the flood that had significant implications for the governing of HEHC by the regional council, with SLUI emerging as pivotal to the organisation’s change.

After the turbulent events of 2004, ‘the regional council essentially started all over again’ (Mackay interview, 2010). The new chief executive implemented changes within the organisation that were linked directly to SLUI, for which there was broad commitment from both the political and executive arms of the council. Garrick Murfitt insists, ‘[SLUI] had to happen, it had to happen’ (Murfitt interview, 2010).

SLUI was made ‘the organisational priority’ by the chief executive (Carlyon interview, 2007). Organisational changes were put in place to ensure, in the CE words, that ‘the work [the regional council was] initiating ... gets entrenched in the organisation’s culture, that it can’t be pried out by future political changes’ (McCartney interview, 2007). Within the organisation, changes were made to ensure not only that the new thinking and direction were embedded in the organisation, but also to illustrate to central government that the regional council was in it for the long haul. McCartney described his reasoning thus:

... so I re-engineered the business to address this issue, so it is not a fly-by-night thing. This is not something we can chop and change on. We’re going scholarships at Massey for soil education programmes, we’re restructuring our staff, some staff were made redundant, new staff came on board. There is a real organisational commitment to this, so I need to communicate that to our politicians (McCartney interview, 2008).

Staff members too were aware of the importance to the organisation of the initiative and what was at stake for the organisation as a result. A senior manager explains:

Yeah, [the CE] made it very clear ... that if we stop delivering ... people's jobs are on the line and other important work, our biodiversity work ... will get canned to make this SLUI thing go, so there is not much that will stand in front of us going ahead with SLUI (Carlyon interview, 2007).

Another regional council manager reiterates the point, stating 'It is important to our organisation and it will go for at least the first ten years if we get runs on the board' (Cooper interview, 2007).

Other internal changes were also put in place that seemed likely to have been aimed at ensuring a different relationship between councillors and council officers, to that which prevailed under the previous chair and chief executive. A senior manager in the council explained:

In the new structure since Michael [McCartney] and the new exec came on board, the previous structure councillors did not speak to staff. They did everything through the chief executive and vice versa and we took the view at the start that if we show them what we are up to and we keep exposing them to it ... so we've got nothing to hide, they are welcome to have a look at it. It's a bit painful at times but in the end they are going, 'I don't need to inspect it' (Carlyon interview, 2007).

Gaining both community and central government support was a critical factor for the regional council to be able to implement the policy decision to which they were committed, at the speed they had defined, and the regional council acted proactively and deliberately to gain this support. The goal was to communicate, as far as Murfitt was concerned,

because a whole lot of people don't know what the regional council do now anyway, but we had to actually communicate to the people what we are doing because they are paying rates and what are they getting for it (Murfitt interview, 2011).

In 2005, the regional council put in place what the CE described as 'a deliberate tactical move' to be 'in the media a lot more ... to have a profile' to 'encourage greater engagement by the community' (McCartney interview, 2007). He explained the reasons for the change:

This regional council has been very, very subdued over the years. It didn't like to have any profile at all, it didn't like being in the paper, and as a consequence of that we went unnoticed to a degree we still are unnoticed, but we are better than we were. Now the political environment is such that we need to get out there and communicate with our rate payers and stakeholders and say 'This is what we are about'. So far it seems to be working (McCartney interview, 2007).

A political agenda also underpinned the regional council's efforts to lift its profile, which was very clear to the chief executive:

our level of engagement is to make sure that we get political support but also more importantly we get community support, now politicians respond to what the community say, so if there is genuine understanding and belief in what we are doing around these

initiatives, then it is very hard for any political body to change direction on that (McCartney interview, 2007).

Decisions: regulation (yes or no) and who will pay?

The opposition of the farming community to the imposition of rules by the regional council was confirmed clearly at the September workshop and acknowledged by both the chair of the regional council and the chief executive. The chair outlines his reasons for agreeing:

The first thing was that [the policy initiative] should be voluntary, we could make it compulsory but I don't believe that you can ... you can take the horse to water but you can't make it drink (Murfitt interview, 2010).

In a similar vein, the CE expresses his cynicism of regulation as a tool:

Does it really change behaviour, no it doesn't. Regulation is often written for 1 percent or 2 percent of people who will never change (McCartney interview, 2007).

However, in spite of clear resistance to regulation, in the development of SLUI, regulation was included as part of the toolkit that the regional council had at its disposal. As the chair explained:

In the end, if in a bad place somebody doesn't want to do it, in the end you make them do it, but that is a long way down the track (Murfitt interview, 2010).

The inclusion of regulation in the initiative, even as a 'last resort' by the regional council, was a minor but significant shift and it marked a growing resolve in its engagement with farmers – a resolve that would see more regulation of farmers included in regional council plans in the future, and would also lead to a more rigorous enforcement of existing rules. To illustrate the shift that had occurred among the regional council councillors, the CE of the regional council, provides an example of the council's involvement when establishing the Clean Streams Accord with Fonterra in 2004:

... you've got to realise that 3 years ago [in 2004] this council was somewhat nervous and I don't know whether it was even a majority vote about supporting Fonterra Clean Streams Accord, and they did so on the proviso back then, only if this is voluntary (McCartney interview, 2007).

The question, 'Who should pay for SLUI?' was resolved within the regional council by addressing the question, 'Who benefits from SLUI?' A similar rationale defined the rating regime imposed by the regional council, in order to fund the region's flood protection schemes. A point is made by Murfitt: 'We rate in these schemes, the ones who receive the greatest benefit do the greatest paying, which is fair' (Murfitt interview, 2010). However, Garrick Murfitt also recognises that applying the same rationale to SLUI was problematic:

Who receives the greatest benefit? I could say it is the lowland people, you could say the hill country people, so where in the hell are we? (Murfitt interview, 2010)

In the end, according to Murfitt, the regional council stated:

This affects everybody in the region, everybody, the cities, the towns ... and so in the end we said, well how about we all pay, just a flat rate not [based] on how rich you are (Murfitt interview, 2011).

The potential inequities of what one regional council manager referred to as this ‘no-blame/everybody-pays approach’ (Carlyon interview, 2007) are identified by the same manager, who predicted the potential for a future backlash from urban ratepayers to this uniform annual charge (UAC) for SLUI. His reasoning in 2007 is as follows:

[Urban ratepayers] are at the moment paying the largest proportion of SLUI and they will go on to pay the largest proportion because they live in these towns. It is relatively cheap at the moment, I don’t know what they’ll do when it is \$80 or \$90 in 5 years’ time ... at the moment they are paying for flood protection as well, so they are both paying to stop it and then they are paying for the protection at the other end as a consequence of that action (Carlyon interview, 2007).

The UAC for rate payers to fund SLUI was argued and set in the *Horizons Council Community Plan 2006*:

As the long-term benefits are region wide, a Uniform Annual Charge for each ratepayer of \$5 (inc. GST) will be applied. For the 2007/08 and 2008/09 year the Plan budgets this Uniform Annual Charge at \$7.50 and \$10.00 respectively (McCartney, 2006, p. vii).

This assumed the cost of SLUI would be borne 50 percent by central government, 25 percent by the regional council, and 25 percent by the landowner on whose farm a whole farm business plan was developed and implemented. This ‘equal sharing’ of the ‘financial burden between the regional community and central government’ was justified by the then chair and CE, on the basis that ‘[the regional council] believe there is a New Zealand wide benefit’ (Murfitt & McCartney, 2007, p. iii). Since central government had not come to the party by the time the regional council’s plans were being set for the 2007/08 year, the CE and chair stated in the Annual Plan that:

To maintain the momentum of the programme until that funding stream is resolved we propose an increase in our Uniform Annual Charge (UAC) for the Sustainable Land Use Initiative (SLUI) from \$7.50 to \$23.89, for this year only. This increase will be offset by any central government contribution, if it is forthcoming (Murfitt & McCartney, 2007, p. iii).

If submissions to the Annual Plan are any indication of the level of resistance to council policy, then there was no resistance to the proposed UAC for SLUI proposed in the 2007 plan.

According to the CE the regional council received ‘13 submissions against [the \$23.89 UAC for SLUI] 10 in favour and three said ‘Yes it is a good idea but we are worried about paying 23 bucks’ (McCartney interview, 2007). This lack of response was taken by the regional council to be an indication of widespread support for the initiative and it added weight to its case for receiving funding from central government.

From the regional council’s point of view, it believed that there were implications for hill country farmers associated with the ‘no-blame/everybody pays’ approach. It expected hill country farmers to feel a moral and social obligation to act in appropriately managing land at risk of erosion – and if not, the council considered it was then legitimate to use regulation to bring about a behavioural change. The CE expresses it as follows, when interviewed in 2007:

I think our strategy here is to say we are all going to invest, whether it is 15 or 23 dollars for sustainable land use, all of us are going to invest in this. We expect something to happen. We’ll give some chance if it is done voluntarily, we can help you achieve that but we reserve the right to [regulate] and that’s in the One Plan.

With the SLUI thing we always felt that the way to make it work would be that non-regulatory path, with the stick being in the One Plan around if you are not in a whole farm plan which has got a non-regulatory approach ... then a regulatory suite of rules prevails. There are rules around vegetation clearance and work on slopes and culverts. All those things are still in the One Plan for anyone that is not in a whole farm plan (McCartney interview, 2007).

Consistent with this stance, a senior manager at the regional council felt that, with the regional council adopting a ‘no-blame/everybody-pays’ approach, farmers would respond in accordance with the regional council policy, because he believed that hill country and other farmers ‘in the back of their minds ... always knew that [they have] a responsibility to stop soils from coming [over] the edge of the property’ (Carlyon interview, 2007). A similar view is held by the CE:

I think inherently a lot of the farmers know that already, they know deep down the productivity of their units ... and in the past they have fudged it by looking at the total productivity of the complete farm but they know that different parts of their farm are ‘really good’ and other parts are ‘crap’ (McCartney interview, 2007).

The role of science and a scientist

Science did not drive policy in the development of SLUI, but rather science and a scientist were used to promote and champion SLUI. The role of science in the regional council came under review after the 2004 floods. As a result, according to Garrick Murfitt, the regional council ‘took the decision ... to invest more in science’ (Murfitt interview, 2010). For Murfitt, this marked a radical change in how the regional council made its policy decisions, from ‘What we [the regional council] thought was significant’ to ‘What is actually scientifically [informed]?’

(Murfitt interview, 2010). A senior manager reiterates the regional council's shift in focus: 'I think science here was pretty irrelevant, and did not have much in the way of output' and now the regional council 'trie[s] to make the science support policy'. He goes further to state emphatically that 'policy is leading science here' and not the other way around (Carlyon interview, 2007).

An exception to the regional council's stated stance on science was a steadfast acceptance of the link between downstream flooding and hill country erosion that underpinned SLUI. As Garrick Murfitt recalls: 'You didn't need to be a scientist to know where all that stuff came from' (Murfitt interview, 2010). As reported by the regional council's Manager of Science, Jon Roygard, in his evidence to the Land Hearing of the Proposed One Plan⁴³ in 2008:

The sentiment from the September workshop was that much of the science required for SLUI was [already] known and that the science the regional council had used since the workshop was focused on varying aspects of SLUI roll out (Roygard, 2008, p. 4).

The claim that policy drove the science is confirmed by a review of the studies linked to SLUI. The majority of the studies appear to reinforce, rather than redirect, the policy approach in SLUI. These scientific studies were detailed by both Jon Roygard (Roygard, 2008) and Alec Mackay (Mackay, 2008a), as part of their evidence to the Land Hearing of the One Plan. The majority of the studies had funding support from central government through the Envirolink Grant scheme. Of eleven studies identified by Jon Roygard as informing the roll out of SLUI, eight were funded through Envirolink grants.

Following the storm, two studies were completed 'to document the erosion that occurred during the storm event' (Roygard, 2008, p. 4). The data and imagery included in these studies, by Hicks and Crippen (2004) and Hancox and Wright (2005a, 2005b), were from the exhibition sponsored by the regional council in 2004. Two studies that helped to 'bring ... consistency to the SLUI programme' (Roygard, 2008, pp. 4,5) specified the protocol for completing a whole farm plan (Mackay, 2007) and the other first scoped (Douglas, Harmsworth, & McIvor, 2006) and then completed an update of the Land Use Capability (LUC) handbook (Douglas, Manderson, Lynn, Harmsworth, & Page, 2008).

What would become controversial was work commissioned by the regional council to help it target the roll out of SLUI into priority catchments within the region. In response to a request from the regional council, Landcare Research scientists developed a framework for classifying land in the region to help identify Highly Erodible Land (HEL). HEL was defined by the

⁴³ The One Plan is the Manawatu-Whanganui regional council's integrated plan that will guide the direction and actions of the regional council for the next 10 years. During the period in which this research was completed the Proposed One Plan was under consultation.

regional council as, ‘hill country with a potential for ‘severe erosion’, or hill country with a potential for ‘moderate erosion’ but where erosion debris will enter directly into waterways’ (Page, Shepherd, Dymond, & Jessen, 2005, p. 5). Page et al. (2005) then mapped this land using an image file format at 15 pixel resolution or 1:50 000 scale. Based on this classification, the regional council then identified (and represented graphically on maps) the region’s ‘hill country land parcels (farms)’ that had between ‘0.1% and 40% of their farm falling into the most highly erodible categories’ (Mitchell & Cooper, 2006, p. 17). The colour red was used on these maps to represent the top priority, highly erodible land. Linked to this information seven priority sub-catchments were selected and mapped, with the priority farms within these sub-catchments highlighted in red. The exact location and boundaries of these farms was clearly evident on these maps, which were presented at a scale between 1:135 000, 1:68440. The map of highly erodible land was included in the Proposed One Plan as Schedule A and is reproduced on the following page⁴⁴ (Figure 8).

The individual identification of farms on this basis was predicted by Alec Mackay to ‘offend people’, but it was a ‘deliberate strategy’ (Carlyon interview, 2007) designed by some people in the regional council to challenge and create engagement between the regional council and farmers. One manager in the regional council thought that HEL was ‘mission critical’ since, in 2007 when he was interviewed, the regional council were:

still having debates with people ... It is HEL land, it is highly erodible land – that is what it is and people need to be provoked ... because if it is dull they are not interested (Carlyon interview, 2007).

However, the scientists were not in consensus. One soil scientist involved with SLUI argues:

I think all [the HEL classification of land did] was created chaos for five years, [the regional council] have gone back to LUC because you cannot map HEL. It’s a product of a model using 1:50 000 inventory. You can’t go out and identify on a piece of landscape ... if you are making decisions at a farm scale, 1:5000 is appropriate (Mackay interview, 2010).

Scientific studies provided data and information that were used to argue the case for SLUI and to promote it by and for the regional council. Both Mackay (Mackay, 2008a) and Roygard (Roygard, 2008) make reference to studies that provided a basis for assessing ‘potential outcomes from’ and ‘monitoring the effectiveness of SLUI’ (Roygard, 2008, p. 5) and ‘define outputs, expected benefits and key measures at the farm, catchment, district and regional scales’ (Mackay, 2008a, p. 19).

⁴⁴ The classification of land as HEL and the map indicated on the next page were deleted and not included in the final version of the One Plan. Although, HEL land classification is still the basis for the identification of priority catchments for SLUI and is included in the contract for SLUI between MAF and the regional council.

Schedule A: Properties Containing Highly Erodible Land

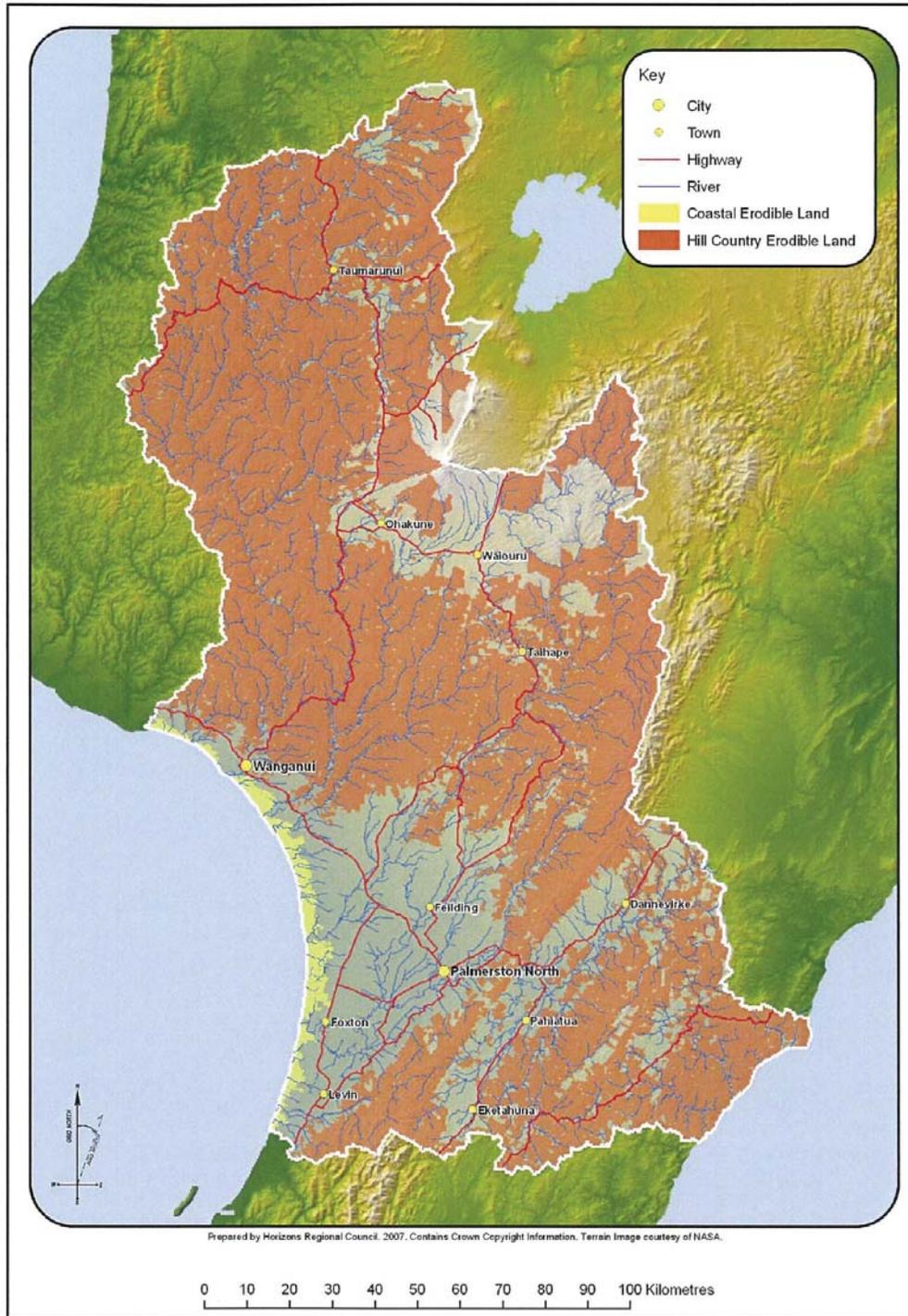


Figure A:1 Highly Erodible Land

Figure 8: The map of highly erodible land included as Figure A:1 Schedule A in the 2007 notified version of the Proposed One Plan (Horizons Regional Council, 2007b).

With reference to an Agriculture New Zealand report prepared for the regional council in 2005, which outlined the agricultural statistics for the region, Mackay argued that:

many commentators expect hill country to be more intensively farmed to finish sheep and cattle and in doing so highlight the significance of the hill land to future economy of the region (Mackay, 2008a, p. 19).

By implication, Alec Mackay is arguing also for the potential significance of SLUI to the future economy of the region.

A relatively small study was referred to extensively by the regional council, in order to promote the potential benefits of whole farm plans. This study by Schierlitz, Dymond and Shepherd (2006) predicted the impact a number of whole farm plan scenarios could have on the mean sediment discharge of the Manawatu River. The impact predicted was what would occur 10–15 years after the initiation of SLUI, assuming a 70% reduction in erosion, as a result of SLUI on HEL and details not included when the study results were promoted. Roygard summarises the findings thus:

It was determined that if whole farm plans were implemented on 500 of the highest priority farms (about 10% of the farms in the catchment), the reduction in sediment discharge would be 47% when compared to the scenario with no whole farm plans implemented in the catchment (Roygard, 2008, p. 5).

The potential water quality benefits to the Manawatu catchment, based on the findings of this study, were published by the regional council in a promotional pamphlet in November 2006. In large, bold, coloured print that highlighted the text the concluding statements on the pamphlet read:

By addressing the top 500 most at risk farms in the Manawatu catchment we can expect a 40–50% improvement in water quality.

50% of the region's 3,000 at risk farms will [sic] operating under an active whole farm plan by 2016.

500 of these will be within the Manawatu Catchment (Horizons Regional Council, 2006b, p. 2).

The chief executive, when interviewed in 2007, identified 'water quality as a spin off' from SLUI and he referred to this study as a validation of the community' benefits that would be gained from SLUI:

Like, if we have 500 farm plans in the Manawatu catchment we increase the water quality in the Manawatu River by 50%. You know a measureable science backs it, so there is a real benefit to the community (McCartney interview, 2007).

Community buy-in for SLUI is likely to have been the reason for this focus on water quality. Community input into the 2006–2016 Community Plan identified ‘Water quality as the single most important issue for the Region’ (Horizons Regional Council, 2006a, p. 25). ‘Erosion’ was ranked 4th, 5th and 6th important, as an issue only in the Rangitikei, Whanganui and Manawatu districts (Horizons Regional Council, 2006a, p. 53).

The potential impact of SLUI on water quality was more specifically targeted in a study completed by Parfitt et al. (2007), which found, as summarised by Roygard (Parfitt, et al. 2007 cited in 2008, p. 5), that ‘most phosphorus enters the river in particles of eroded sediment from steeper land in major floods’ and, further supporting SLUI ‘the study concluded that the phosphorus particle losses could be reduced from 511 to 280 tonnes by targeted planting of trees on highly erodible land’. The time frame for this to occur was not included as part of the summary.

Alec Mackay, an AgResearch scientist, played a significant role in driving the development, design, and promotion of SLUI. Mackay, a member of the Governance and Working Group for SLUI, introduced the whole farm plan idea at the September workshop in 2004. Together with a colleague, he developed the final whole farm plan template and (as outlined in his evidence to the Land Hearing) initiated a number of research and development projects that informed the roll out of SLUI (Mackay, 2008a). In addition, he contributed to the case put to central government for SLUI funding, and promoted and lobbied within the farming community. In 2007, he was ‘retained by [the regional council] on an ongoing basis to continue the development ... and evolution ... of SLUI’ (Mackay, 2008a, p. 3).

Selling SLUI: the good, the not so good and the bad

Selling SLUI to farmers was important for the regional council’s case for central government support, and the long-term success of the initiative. In line with their new policy of engagement, the regional council chair, regional council staff and Alec Mackay, attended many farmer meetings, where they spoke in support of the initiative at a range of forums. The nature of the regional council’s engagement with farmers and communication was moderated by a belief that farmers perceived the regional council with a degree of suspicion. The regional council sought to engage with the farming community, in an attempt to shift farmers’ traditional view of the regional council. A manager at the time explained the strategy:

That is why we have that anywhere, anytime philosophy and we do drive up dead-end roads because people are quite surprised to see when you do that ... ‘my gosh, this person is a person not a bureaucrat’ and we are willing to have a discussion (Carlyon interview, 2007).

A strategy the regional council employed was to use individuals, who were independent from the regional council and respected by farmers, in its promotion of SLUI and also the One Plan. With reference to Alec Mackay, a senior manager in the regional council said:

Science communicators [are] really critical. I know it when we walk into a room and the guys look at the regional council guys and spit on you if you are down on the ground, but I watch people like ... a local vet or Alec walk into a room and people are interested in what they say. They both challenge them but they know they are there to support the sector (Carlyon interview, 2007).

Mackay, likewise, accepted his role was one of promoting the policies and stance of the regional council, even when he did not necessarily agree with the science underpinning it. Before the decision to delete HEL from the One Plan was made, he recounts how, in spite of not agreeing with the concept of HEL land:

I got asked to comment on HEL after it was already too far embedded and too far advanced and then you have to help defend it (Mackay interview, 2010).

Significant in the farmer buy-in of SLUI (for some people) was having a hill country farmer as chair of the regional council during the early roll out of SLUI. The chair, Garrick Murfitt, farmed a hill country farm in the Tararua district of the region. An agricultural consultant notes:

There could have been quite a different reaction from people in the community. It was a farmer from Tararua saying it, and Tararua was affected [by the storm] and caught up in this ... I think it was incredibly fortuitous (Rhodes interview, 2007).

The regional council's ability to engage with the region's rural farming leaders in a reasoned way, in the view of a council manager, was 'because our council leaders are farmers as well, they talk the same kind of [stuff]' (Carlyon interview, 2007). The relations between the regional council and farmers in the region would, however, emerge to be far from universally positive.

Farming leaders were reluctant to be seen publicly supporting SLUI. Even those farming leaders involved with SLUI from the beginning were reluctant, as a provincial president of Federated Farmers at the time explains:

I don't want to be seen as holding hands with the regional council and they do annoy me with some of the things they do, but I support SLUI, although we have members that don't (Phillips interview, 2007).

The reluctance of 'farming leaders' to stand up and challenge their farming peers and support SLUI was a point of frustration for Alec Mackay:

You'd go to shed meetings and get yelled at. 'Oh it's a conspiracy.' But the sad thing is that all the farming leaders who were on that list [at the September workshop], they'd be at these forums and they would never say 'Boo', and it is something that would

really disappoint me. Really key people, if they said 'This is good let's go forward', it would have made it so much easier (Mackay interview, 2010).

He recounts how he challenged one of the farming leaders on why he did not speak out. His response was, 'I have to live here' (Mackay interview, 2010).

However, not all the regional council's attempts to engage positively with the farming community were successful. An articulated truck and trailer unit, nicknamed the Green Rig, was put into service in 2006 by the regional council as part of its efforts to communicate more effectively. Funding for the rig was provided in part by MAF through a Sustainable Farming Fund grant (Office of the Minister of Agriculture, 2007; Sustainable Landuse Community Governance Group, 2006). The aim was to raise awareness of SLUI among the farming community, 'inspire uptake' by farmers, and to 'raise awareness of the issues and promote understanding of the challenges associated with sustainable land use' amongst the broader community (Sustainable Landuse Community Governance Group, 2006). The Green Rig was reviewed in 2008 in part because, although receiving a number of awards and having been 'generally endorsed by the wider community', it had also gained a number of 'detractors both within and outside [the regional council]' (Brown & Walcroft, 2008, p. 1). The nature of the criticism directed at the Green Rig was reported as arguing that the programme was 'too green and unbalanced in its portrayal of the farming sector' (Brown & Walcroft, 2008, p. 3).

The response from the farming community to SLUI was mixed, with some of it being coloured by the parallel One Plan process. A council EMO explains that the regional council

had no trouble finding enough farmers to do a whole farm plan ... we've had people putting their hands up saying 'We've heard about SLUI'. They've seen it on their neighbours or in the paper and 'I want a plan'. However, counter to this situation was the attitude from some farmers: 'A lot of guys who were saying, 'It's not our problem' (Cooper interview, 2007).

A national media report from TVNZ One News in August 2006 reported that the Manawatu-Whanganui regional council's proposed plan would mean that 'Some farmers will have to stop using large chunks of their land' (TVNZ, 2006b, n.p.). The programme quoted Garrick Murfitt as saying:

'In the end we may well have to use regulation to actually make them join the race' (TVNZ, 2006b, n.p.).

The reaction from the farming community and Federated Farmers, as reported in the media, was, not surprisingly, prompt and antagonistic towards the regional council. To the regional council's credit and in keeping with their policy of engagement and communication, they utilised the farmer interest generated by the media coverage as an avenue to make contact and

engage with the farming community. As one regional council staff member related, ‘We ended up going out and visiting a lot of concerned groups and explaining ... things, so it wasn’t all together bad’ (Cooper interview, 2007). However, the apparent threat of regulation ‘stuck with some famers’ (Cooper interview, 2007) and remained a bone of contention.

Strong opposition to SLUI came from some farming groups. After being made aware of negative reaction to SLUI in a particular farming area, a regional council officer agreed to meet with the farmers to talk through SLUI. ‘There I was thinking there would be eight or nine farmers and there were over 40, it was incredible’ (Cooper interview, 2007). The farmers were very negative; he recalls the farmers’ questions and comments:

Why is Council spending money on this and our money? It is not our problem, the problem of erosion isn’t our problem ... they are the guys down stream’s problems. What’s in these whole farm plans? What are you going to make us do? What are the rules going to be? (Cooper interview, 2007)

The nature of the conflict between the regional council and farmers presented in the media included the strong opposition from farmers to any form of regional council regulation around land use. The rural media reported the response from farmer Steve Anstis, who, as a provincial president of Federated Farmers, was involved in the September workshop:

‘If they bring in regulations to alter land use in this region they will have a battle on their hands’ (Annabell, 2006a).

Farmer knowledge and experience was matched against scientist knowledge in an article published in *Rural News* in June 2006 (Annabell, 2006b). The farmer was quoted as saying:

Inspite [sic] of 50 years of tree planting, erosion is worse among his trees than on bare pasture, with trees exacerbating flood problems lower down by blocking rivers and smashing bridges. He is now taking trees out ‘because they’re doing more damage than good’. Many farmers echo his solution: ‘Just leave it – erosion is a process that’s been going on for millions of year’.

A counter view was presented, in the same article, from scientists in both the Institute of Geological & Nuclear Sciences (GNS) and Landcare Research:

But GNS Science business development manager Dr Noel Trustrum disagrees. He says there are over 20 years’ research on the effect of deforestation on erosion rates and the associated decline in hill country pasture productivity (Annabell, 2006b).

Central government governing

Gaining central government funding was a ‘big coup’ for the regional council, which was acknowledged by the chair at the time (Murfitt interview, 2010). The CE put their success down to a number of factors:

tenacity on our part ... incredibly proud of the fact they put the effort in to constantly meeting, constantly talking ... I just think it is a combination of just pure bullishness to say this is important and you have to have a role to play and a little bit of clever networking and lobbying ... all in the aftermath of 2004 (McCartney interview, 2007).

Before the events started by the storm of 2004, in the view of some regional council staff, the relationship with central government was not strong and nor did it need to be. In one manager’s view the only reason that the regional council had a relationship with central government was not ‘because it was an outcome in itself’ but to ‘benefit outcomes ... to get things done’ at a regional level (Carlyon interview, 2007). The CE reiterates the point by emphasising the inability of national policies, rules, regulations, and statements to cater for the specific and varying issues of the regions. Furthermore, although accepting that the regional council had obligations to provide some standardised data to central government (in particular MfE), reflecting the independence of local government from central government Michael McCartney stated: ‘We are not accountable to any ministry’ (McCartney interview, 2007).

MAF funding for SLUI was formalised in late 2007. Before this and before a final contract was signed between the parties, MAF had a direct role in shaping SLUI, which was a point made clear in papers obtained from the Office of the Minister of Agriculture in 2007: ‘MAF has maintained regular contact with [the regional council], as the council re-designed its SLUI’ (Office of the Minister of Agriculture, 2007, p. 4).

Frustration was expressed at the length of time and the level of perceived bureaucracy involved in the regional council gaining support and final agreement for central government funding for SLUI. A farmer member of the governance group comments thus:

the government have [**] around. It falls within their criteria, they want to go down the sustainability path ... according to Helen ... and some of it would fall in with the climate change policy but they have been very reticent in coming forward (Phillips interview, 2007).

A regional council manager had a more specific gripe with the level of input MAF was having when defining SLUI:

We think it is our responsibility and we think that they should hold us to account, make us accountable for not doing it if we are not. I think that it would be better to say that is

what regional government's job is. I don't think there is a hell of a lot they can do but resource us and hold us accountable.... for me it is 90% about practice and anything is possible if you treat the legislation as guidance (Carlyon interview, 2007).

The level of detail MAF negotiated surprised the chair, Garrick Murfitt, who recalls: 'We had to go through a whole lot of things ... like if we close this up and we plant trees can we put sheep in there you know after shearing and so on ... and MAF said 'No, No, No', and we said I said 'Yes, Yes, Yes!'?' (Murfitt interview, 2010)

MAF staff were not immune to these feelings towards them. A senior MAF official, who had been involved with the regional council over SLUI, makes the point:

I think part of the perception of the regional council was, well we know what we are doing ... so MAF shouldn't fiddle around with these things, they should just give them the money, and get on with it. Our view was that perhaps they didn't know quite so much as they thought they did' (MAF official interview, 2010).

Over the period of approximately three years, the regional council developed and reshaped SLUI in response to input and feedback from central government and in particular, MAF. A contract was finally agreed on, and signed by the regional council and MAF, in December 2008 (Mitchell & Cooper, 2011). Changes at a range of levels were instigated by central government. Early in the negotiations, before June 2006, it was made clear to the regional council that central government would only consider funding at a maximum of one-third of a project, with one-third coming from the regional council, and the final one-third from the land owner. The regional council took this on board relatively early in the piece and adjusted the uniform annual charge calculations accordingly. As highlighted in the previous chapter, the 1996 SLM Strategy guided MAF's design and final specifications for the SLM/HCE programme and as a result this strategy also shaped SLUI. The dialogue of the regional council altered over time, in response to its involvement with central government. The whole-of-catchment and catchment-based approach became much more prominent in their language and presentations on SLUI.

MAF drove the targeting of SLUI to priority catchments in the region. MAF funded Landcare Research to identify (using NZeem®) the sub-catchments and catchments in the region with the greatest risk of contributing high levels of sediment to water ways. Although the regional council had prioritised catchments based on the definition of HEL, this work further refined that information and ensured the targeting of catchments linked to the highest sediment yield. Initially, five priority catchments were targeted and this was extended to six in the first contract and 14 in the second contract. As part of the contract MAF also required that 75% (not the proposed 50%) of the area in these catchments would be targeted for whole farm plans within SLUI (Ministry of Agriculture and Forestry, 2008a).

The performance of the regional council, in terms of SLUI, is monitored by MAF on the basis of six monthly ‘milestone reporting’ (MAF official interview, 2010). Planned milestones set down in the original contract were checked by MAF against what had actually been realised. The contractual milestones (Ministry of Agriculture and Forestry, 2008a, p. 18) agreed to and monitored by MAF in the first contract period were as follows:

Farm plans completed,
HEL coming under management (ha),
HEL non retirement work completed (ha),
and HEL retirement work completed (ha).

In addition, there was ‘Deliver 75% of whole farm plan by area to the five most at-risk sub-catchments within the Region’ and a ‘Survey for client satisfaction’, which included both farmers involved in SLUI and the wider community for ‘recognition and acceptance’ (Ministry of Agriculture and Forestry, 2008a, pp. 18,19).

MAF were also invited to sit on the regional council committee that oversees SLUI. Although MAF did not action this immediately, regular attendance by one or more MAF official occurs at the regional council’s Catchment Operations Committee meetings, every three months.

A ‘performance validation’ was completed on SLUI in 2010 for MAF Policy (Brown, Dobbs, & Ramsden, 2010, p. 42). In the terms of reference for the performance validation, a single emphatic aim for SLUI is given and an equally emphatic and singular reason for the development of SLUI. The aim of SLUI is stated as being ‘to target high priority highly erodible land’ in order to ‘protect the upper and lower catchment land and communities from the effects of erosion and river sedimentation’ (Brown, et al., 2010, p. 42). The stated reason for SLUI being developed is because the damage that resulted from the 2004 storm in the region

highlighted that [the regional council] land use programme at the time was not adequate to future proof the region against the reoccurrence of such events, which are increasingly likely to occur with global warming (Brown, et al., 2010, p. 42).

The reviewers were asked to validate that the money the regional council had received from central government had been used as intended and in accordance with the agreed outcomes. Specific issues were highlighted for investigation, and included checking that the on-the-ground soil conservation works funded by SLUI were being implemented on HEL land and in priority catchments. However, the reviewers were also asked to assess the ‘effectiveness of whole farm plans in achieving treatment of erosion prone land’ (Brown, et al., 2010, p. 42).

Achievements and deficiencies in [the regional council] performance were highlighted in this review. The review acknowledged that the regional council had achieved, in large part and in

some instances exceeded, the deliverables agreed to in the contract. The grant from central government was being used in an ‘accountable manner that contributes to the outcomes of SLUI’ (Brown, et al., 2010, p. 5). Deficiencies were highlighted in aspects of the regional council’s accountability and transparency with central government and in the adequacy with which they consulted with central government over changes from the SLUI plan. In particular, the point was made that the level of consultation was ‘not what would normally have been expected in a partnership’ and it was suggested that, in order to strengthen the partnership, ‘a joint MAF/[regional council] governance group be established’ (Brown, et al., 2010, p. 5).

The level of expenditure on whole farm plans was raised as a concern. It was argued that ‘limited funds may be better spent on on-ground works ... Whole Farm Plans alone will not reduce the erosion risk to the region. Works generated through the whole farm plan process will’ (Brown, et al., 2010, p. 5).

The recommendations from this report informed the regional council’s application for an extension of funding from the SLM-HCE fund in 2010 (Mitchell & Cooper, 2011).

The One Plan process and farmer reaction

At the end of 2003, the regional council began a project to bring together into one document the regional council’s existing seven resource management plans and to develop an overarching plan that ‘genuinely integrated the management of resources’ (Carlyon interview, 2007). This plan is the ‘One Plan’ and (as at December 2012) the hearings have been completed and the interim decisions from the Environment Court were published in September 2012. A number of appeals to this interim decision have been lodged, and as yet have not been heard by the Courts. The One Plan integrates the Beds of Rivers and Lakes Regional Plan (2001); the Land and Water Regional Plan (2003); the Manawatu Catchment Water Quality Regional Plan (1998); the Oroua Catchment Water Allocation Regional Plan (1997); the Regional Air Plan (1999); the Regional Coastal Plan (2002); and the Regional Policy Statement (1998). The One Plan will guide the direction and actions of the regional council for the next 10 years. It is one of the first second generation plans developed by a regional council since the formation of regional councils – and as such it is being watched with interest.

The organisational changes triggered by the 2004 storm are reflected in the process the regional council undertook to develop the plan, and the resulting policies and policy mechanisms have been included within the Proposed One Plan. Importantly, the process used to engage the farming community in developing the Plan and the content of the Plan has influenced relations between the regional council and farmers. Farmer resistance to the Proposed One Plan led to

changes in the proposed role of whole farm plans in the longer term management of HEHC across the region. SLUI stands as a separate project outside the One Plan⁴⁵. SLUI remains the main mechanism by which the regional council will achieve its objectives around pastoral hill country that is at risk of accelerated erosion, but it is not the only mechanism. The Whanganui Catchment Strategy and environmental grants continue to play a role in shaping farmers' management of HEHC but these are very much aligned with SLUI.

As alluded to earlier, following the 2004 storm there was a growing resolve within the regional council that was translated into an explicit acceptance by the regional council of agriculture's contribution to the environmental issues in the region. This shift in emphasis by the regional council became clear in the Proposed One Plan. Garrick Murfitt, the former chair, illustrated the significant change in the council's approach to farming with reference to an interaction between himself as a newly appointed regional councillor, the then chair (also a farmer), and another long-standing councillor representing the urban constituency:

Now Garrick, your job is to convince the city people how important agriculture is ... and so I did that. They were serious! (Murfitt interview, 2010).

Murfitt is at pains to emphasise that 'farming is the economic viability of [the] region' and an important part of the regional council's role is to 'look after the economic viability of our region' (Murfitt interview 2010). However, it was 'the 2004 flood when all the silt came down ... [the regional council] realised and I realised that it is time for a change' (Murfitt interview, 2010).

The regional council in 2009 described the Proposed One Plan as:

A new way of working

We wanted to do things a little differently this time round, and make a number of improvements to the current planning regime.

Our intention is to:

- be clearer about what is acceptable and what is not in relation to resource use
- work closely with our community to identify and realise environmental outcomes
- focus our environmental enhancement efforts on priority BIG FOUR problems – water quality, water demand, hill country land use and threatened habitats (Horizons Regional Council, 2009, n.p., bold as in original).

⁴⁵ At November 2012, as outlined in the Environment Court decisions, the One Plan, includes reference to SLUI, and the use by the regional council of voluntary whole farm plans as a method for 'reducing the risk of erosion and sedimentation' (Environment Court New Zealand, 2012, para. [4-11]). The percentage of farms in SLUI priority catchments that have a whole farm plan is included in the One Plan as an indicator also for Anticipated Environmental Results linked to the Plan's policies for water quality.

In a departure from earlier plans, the One Plan explicitly highlights the link between farming and ‘The Region’s Challenges – the ‘Big Four’ (Horizons Regional Council, 2010a, p. 1-2). This is succinctly described by the CE: ‘What is driving our business is rural issues impacting on the environment’ (McCartney interview, 2007), and a senior manager states: ‘It is mostly agriculturally driven, our plan, because it is the type of region we are’ (Carlyon interview, 2007). This stance was reflected strongly in the 2007 version of the Proposed One Plan that was notified and opened up for public submissions in May 2007.

Farming is specifically identified as a contributor to three of the larger issues in the Proposed One Plan: ‘Surface water quality degradation, increasing water demand and unsustainable hill country land use and it is implicated in the decline of indigenous biological diversity’ (Horizons Regional Council, 2008a, p. 1-3). Agriculture ‘particularly pasture-based farming’ is acknowledged in Chapter Five (the Land chapter of the Proposed One Plan) as being the ‘foundation of the Region’s economy’ but ‘past and present agricultural practices’ are identified as having ‘damaged the resource upon which the agricultural sector is based – the land and soil’ (Horizons Regional Council, 2008a, p. 5-1). Accelerated erosion is classified as being a ‘significant resource management issue’ in Chapter Five, that has both ‘on-site and off-site impacts: to the landowner ... the environment ... [and] to others in the Region’ (Horizons Regional Council, 2008a, pp. 5-2, 5-4). ‘Some aspects of current farming’ in hill country, together with other land uses, are claimed to be ‘unsustainable’, and with a potential to cause accelerated erosion. The regional council’s rationale for addressing accelerated erosion in the region encompasses concerns, in relation to land productivity, environmental and infrastructural damage, and the risks to people:

*Accelerated erosion** is often causing:

- (i) a significant reduction in the productive capability of land
- (ii) increased sediment loads in water bodies which are reducing water quality, smothering aquatic ecosystems, infilling rivers, lakes and estuaries, and increasing flood risk to lowland communities
- (iii) land stability hazards, particularly in steep hill country, which threaten people, buildings and infrastructure (Horizons Regional Council, 2008a, p. 5-4, italics as in original).

This extract is taken from the Proposed One Plan after it had been amended in accordance with the decisions made by the commissioners, at the completion of the hearings for the One Plan. In the initial 2007 notified version, SLUI, together with the Wanganui Catchment Strategy, was included as a key mechanism through which the policies linked with accelerated erosion would be addressed. In retrospect, the then chair now argues that SLUI should never have been included:

It wasn't part of the One Plan process ... it was actually brought in through the Land chapter and SLUI was not part of it and was never intended to be part of it; it is outside, it is voluntary (Murfitt interview, 2010).

The regional council had completed multiple versions of the One Plan, before the final proposed version was notified. A senior manager describes the regional council's approach:

We have treated the whole process as a negotiation so people on day one who got that message, like Fish and Game and [some provincial representatives of Federated Farmers], they've been in the door going 'Well, what about this?' (Carlyon interview, 2007),

and from his perspective feels that this would have meant the other parties would 'own the policies'. This perspective would be shown to be somewhat awry.

The chief executive, when interviewed in 2007, articulates the parameters he brought to the One Plan process with farmers:

All I want to do is say, look this is your business you decide how you want to manage it and just make sure that our expectations and the community's expectations around environmental standards are met, that's fair you know. But you tell us, we won't tell you, and that's what these strategies are all about – they are part of a conversation (McCartney interview, 2007).

Regulation? Well, maybe

Mixed messages were coming out of the regional council about the role of regulation. A senior manager, in evidence given to the Land Hearing in 2008, stated that 'participation in SLUI is entirely voluntary – there are no rules or regulations' (Carlyon, 2008, p. 7). However, a different intent was evident when he was interviewed in 2007, albeit in relation to the One Plan as a whole:

It's about the courage to push hard enough but not too hard that you tip people over that point. It is absolutely a mix of education and regulation. People need to know that if one doesn't work the other's coming, and what we are saying is education has not worked and until people realise that we will regulate they won't bother, you know (Carlyon interview, 2007).

The apparent contradictions in the regional council's message added to a feeling of unease that became clearly evident through media reports on farmers' reactions to the Proposed One Plan: and through formal submissions to the Plan. In Chapter 5 of the 2007 version of the Proposed One Plan (the Land chapter), future regulation was hinted at for hill country farmers, if the proposed non-regulatory SLUI did not bring the results the regional council sought:

Policy 5-1: (c)

A non-regulatory approach has been adopted to encourage the use and uptake of whole farm business plans to achieve sustainable land use on Highly Erodible Land. If, however, monitoring indicates that this approach is not achieving sustainable land use, other methods to achieve the outcome will need to be considered (Horizons Regional Council, 2007a, pp. 5-6).

Rules about the management of HEHC were included and detailed in Chapter Twelve of the Proposed One Plan, which specifically related to vegetation clearance and land disturbance. These rules were not new. In the regional council's 2003 Land and Water Regional Plan under LM Rule 3, vegetation clearance and soil disturbance 'that cannot comply with one or more conditions of LM Rule 2 is a **Restricted Discretionary Activity**' (Horizons Regional Council, 2003, p. 115, bold as in original). In the 2007 Proposed One Plan, both rules did not apply when the activity was 'carried out in accordance with a whole farm business plan' (Horizons Regional Council, 2007b, pp. 4,5). The difference, however, was seen when the regional council adopted a more resolved approach and began enforcing the rules. A farmer explains:

Class 6, 7 and 8 [land] ... in terms of soil disturbance or vegetation clearance for more than two hectares you did need a consent, but it had never been enforced (Bennett interview, 2011).

As a result, most farmers were unaware of the existence of this rule and when the regional council began enforcing it the farmers affected expressed their opposition to it, since it was viewed as a further example of the change in the regional council's approach towards regulation and their lack of engagement with the farming community.

The Proposed One Plan policies on water quality also proved significant to the farming community's response to the regional council, since regulation was a component of the policy. Intensive farming was targeted specifically in the water quality policies and in specific priority catchments the 'management of intensive farming land use activities will be specifically controlled' (Horizons Regional Council, 2010a, pp. 1-2). Intensive farming in priority catchments would be subject to 'a consent to farm', and the cost of the consent process fell completely on the affected farmers. These policies attracted a great deal of opposition from farmers, who then mobilised a greater awareness of the Proposed One Plan, which consequently increased the submissions and growing opposition to the regional council and its plan.

Reshaping the One Plan: farmer resistance

Reaction to the One Plan from the farming community was strong, orchestrated, persistent, and ultimately effective. Farmer input into the Land Hearing came through individual submissions from farmers (including many organised by Federated Farmers), and a substantive submission from Federated Farmers NZ Ltd.

Garrick Murfitt made attempts to engage the national body of Federated Farmers in the development of the One Plan from a relatively early stage. However, to his disappointment, they refused to be engaged and chose rather to be engaged through the formal submission process. At that stage,

The Feds took [the Proposed One Plan] up nationally and it wasn't about Manawatu and Whanganui, it was about New Zealand, because they knew that when the One Plan goes through, every regional council outside of Auckland will pick it up (Murfitt interview, 2010).

Federated Farmers' submission to the One Plan reflected and reiterated much of the stance taken by the national body on other issues. Their submission argued for the regional council to balance the economic and social with 'environmental aspirations' and policy mechanisms, including those within SLUI that 'should not be regulatory. Regional council must work with farmers to develop measureable, objective, tangible and scientific standards for resolving identified environmental challenges' and the Federation also 'strongly urged' the regional council to ensure that 'no unjustified cost is imposed on farmers' (Federated Farmers of New Zealand (Inc), 2007b, p. 2).

The Federated Farmers' submission also encouraged the regional council to change the wording and terminology throughout the plan, which placed the sole blame for environmental impacts on farming and agriculture. Their submission argued for generic terminology that recognised that land uses, other than farming, have effects on hill country land. For example, in Chapter 5 of the plan, section 5.2 Significant Resource Management Issues, Issue 5-1: Accelerated erosion a) was originally headed 'Hillcountry [sic] Farming' and read 'Some aspects of current farming practices in the Region's hill country and along streams are unsustainable' (Horizons Regional Council, 2007a, p. 5-4). In their submission, Federated Farmers opposed this issue (in part) and argued that 'Several of the potential effects listed in issue 5.1 are not limited to farming land use' (Federated Farmers of New Zealand (Inc), 2007b, p. 8). The amended Proposed One Plan was changed to read: 'Farming and other land uses in hill country', 'Some aspects of current farming and other land use practices in the Region's hill country and adjacent water bodies are unsustainable' (Horizons Regional Council, 2008b, p. 5-5).

The ‘Principle Issues of Contention’ within the One Plan Land chapters identified by the Land Hearing Panel included the linking of SLUI and whole farm plans to rules, and the ‘delineation and definition of Highly Erodible Land (HEL) (Horizons Regional Council, 2010c, pp. 4-12). Many Ruapehu district farmers were particularly aggrieved, since they had not been included in the process that led to the establishment of SLUI and were being confronted with new policies in the Proposed One Plan, into which they had not had any input. Close to 70 farmers emphatically voiced their opposition to aspects of the One Plan and SLUI at a Land Hearing meeting held in Ohakune in July 2007, in spite of it being ‘the only fine day in July’ (Roy interview, 2011).

Emotional and impassioned submissions made to the hearing committee made very clear the anger and dissatisfaction of the farmers with the process and the Proposed One Plan. In particular, some submitters were upset by the extent to which the ‘blame’ for the damage to land that occurred in 2004 was levelled at them and by the implied assumption within the Proposed One Plan that farmers were not sustainably managing their land: ‘[The Proposed One Plan] rests the blame on us and is really most unfair’ (Roy interview, 2011). In a spoken submission to the Land Hearing in 2008, which gained a standing ovation from the other farmers in the room, a farmer articulated her concerns:

Unfortunately, from the blanket definition of our land, and the resulting connotation, blame and underlying threat, has come suspicion. This suspicion has totally alienated landowners, especially those of us living on apparent HEL land, and undermines the good work that [the regional council] want to undertake (Bryant, spoken submission, 2007).

The alienation of farmers by the regional council also resulted from what was perceived to be the ‘duplicity of Garrick Murfitt’ (Green interview, 2011). As one farmer put it:

He said ‘it’s all going to be carrot – no stick’ at the time the [Proposed] One Plan was developed, and he would have known it’s all stick and no carrot’ (Green interview, 2011).

One farmer also gained the impression from media reports on the One Plan process that the regional council had not been completely honest through the process: ‘a terrible lot of things came out in that hearing that came out in the paper that nobody knew about’ (Elder interview, 2011).

Highly erodible land and the representation of the land by the colour red in maps included in the Proposed One Plan drew strong reaction from farmers, which was also publicised in the written media. Circulated to farmers nationally, *Country Wide* reproduced portions of some farmers’

spoken submissions, including that of Kirsten Bryant, a Taumarunui farmer and representative of the Ruapehu Branch of Federated Farmers:

‘By labelling our land HEL, not only have [the regional council] created a really negative perception of where we live in the market-place, they’ve potentially affected the saleability and value of our assets. They’ve created doubt. They’ve also created a perception amongst farmers that large parts of all our farms will be targeted for retirement – if not now then potentially sometime in the future’ (*Country Wide*, 2008).

HEL was deleted from the One Plan, although it remained in the regional council’s 2008 contract with MAF, for the delivery of SLUI. HEL was replaced in the Proposed One Plan by ‘hill country erosion-management-areas’ or EMAs and they were defined not in terms of parent material, connectivity to water ways or vegetation cover but as any ‘area of *land* with a pre-existing *slope* of 28° or greater on which *vegetation clearance, land disturbance forestry or cultivation* is being or is to be undertaken’ (Horizons Regional Council, 2010b, p. Glossary-9, italics as in original)⁴⁶.

The original wording of Policy 5-1: (c), quoted previously in this section, was also controversial. Reference in the Proposed One Plan to ‘other methods’ was deemed contentious and as concluded by the Land Hearing, ‘Many submitters perceived this part of the policy as a threat of future regulation’ (Horizons Regional Council, 2010c, p. 4-26). The Land Hearing Panel acknowledged the concerns of submitters and concluded that, ‘as voluntary instruments, [whole farm plans] should not be required as a condition of consent’ (Horizons Regional Council, 2010c, p. 4-31). Issues of equity were also raised by the Land Hearing Panel, who agreed with submissions that highlighted only certain catchments were targeted for whole farm plans and this meant those not targeted (and therefore without plans) would be required to gain a consent for certain land activities.

The failure of the regional council to develop policies that were able to be practically implemented on-farm by farmers was at the core of a large component of Federated Farmers and individual farmers’ submissions on the Proposed One Plan. This aspect of the regional council’s policies was a catalyst for some farmers becoming actively involved in the policy development and hearing process. One farmer recalls how a fellow farmer stated:

If they are going to impose regulations then I want to be in from the start to make sure what they come up with is practical and useable (Green interview, 2011).

⁴⁶ In the decisions from the Environment Court on the One Plan, September 2012, a slope of 20 degrees or greater not 28 degrees is included as part of the definition of a hill country EMA. In addition, the Court rules that ‘cultivation on slopes greater than 20 degrees should be a restricted discretionary activity’ (Environment Court New Zealand, 2012, para. [4-60]).

Another farmer involved through Federated Farmers with the One Plan hearing process expressed his frustration with the ‘quite breathtaking ignorance of people as to what and why [farmers] do things’ and he spent a lot of his time ‘explaining to policy analysts and planners why we do things’ (Bennett interview, 2011).

Farmer reaction to the Proposed One Plan was not only limited to seeking changes to the plan. Farmers also utilised their democratic rights as voting rate payers to send a message to the regional council. In October 2010, the then chair of the regional council, Garrick Murfitt, failed to gain re-election in his rural electorate of Tararua. The successful candidate who ousted Murfitt, John Barrows, is a dairy farmer and a provincial representative of Federated Farmers. Mr Barrows’ farm is located in a catchment classified in the One Plan as being a priority in terms of water quality. As a result he will be required to gain a consent to farm on his land under the proposed One Plan and he is an outspoken critic of the One Plan. Murfitt recounts:

John would say at meetings, ‘Look, this is not against Garrick, he is great [but] he’s the chairman. We have got to get rid of the chairman to send a message to the council’ (Murfitt interview, 2010).

Conclusion

The farming of HEHC in the Manawatu-Whanganui region is primarily governed by the regional council through the voluntary adoption and implementation by farmers of whole farm plans and through regulation of vegetation clearance, land disturbance, forestry and cultivation. The regional council will regulate farmers’ management of HEHC, when the HEHC, is part of, or conforms to the regional council’s definition of a hill country environmental-management-area. The regional council’s regulations relating to the farming of HEHC in the region has not changed significantly to that in place before the 2004 storm. However, the regional council is now actively using regulation to influence how farmers manage HEHC. In addition, the regional council is proactively targeting farmers of HEHC in priority catchments and sub-catchments to adopt and implement soil conservation methods facilitated through whole farm plans.

Whole farm business plans are central to SLUI, and productivity and profitability imperatives are assumed in the development of such plans. A works plan for the management of areas of a farm that are at risk of erosion (or already eroding) are developed with the farmer, based on an analysis and description of the physical land and soil resources, the farming system and the financial situation of the business. The aims of these plans are to differentiate those areas of land according to their productive capability and constraints; to plan for managing the areas at risk of erosion, or already eroding; and to develop a plan to maintain and/or increase the productivity of the remaining areas of the farm.

The partial funding of SLUI by central government led to specific changes being made to SLUI by the regional council, in line with central government demands for accountability. The regional council now target farmers of HEHC for whole farm plans in catchments and sub-catchments with the highest risk of sediment from erosion entering waterways. Further, whereas the Proposed One Plan aims, by 2017, to attain 50% uptake of farm-wide sustainable land management practices, MAF requires the regional council to achieve a 75% uptake of whole farm plans in priority catchments.

The regional council describe SLUI as being outside of the Proposed One Plan. SLUI and whole farm plans are not linked to regulation, but whole farm plans are the central mechanism used by the regional council in the Proposed One Plan to shape how farmers in the region manage HEHC.

There was limited initial opposition to SLUI; however, farmer resistance to the council's initiative occurred as a result of the change in approach to farming included within the Proposed One Plan. Farmer opposition came not only through a well-orchestrated regional farmer lobby, but also through the national body of Federated Farmers. Farmer opposition was directed in particular at the proposed increased use of rules and regulation by the council in governing farming's use and impact on the region's natural resources, and at the explicit link made in the Proposed One Plan between farming and the region's biggest environmental issues.

Science did not drive the development of SLUI; the link between hill country erosion, sedimentation, and downstream flooding is widely accepted within the policy, by both the scientific and farming communities. Science, in the main, was employed by the regional council to promote and sell SLUI to the community and, more significantly, to the regions' farmers. Science also helped to inform the roll-out of the initiative. In addition, a scientist, who championed SLUI with the regional council and who has credibility in the farming community, worked with the regional council to gain 'buy-in' for SLUI among hill country farmers.

In spite of farmer reaction to SLUI and the Proposed One Plan, participation of farmers targeted for whole farm plans within SLUI, although initially slow, has exceeded the regional council's proposed targets. How the regional council's SLUI and broader policy approach and central government's broader policies influence how farmers in the Manawatu-Whanganui region farm HEHC is the focus of the next chapter.

CHAPTER EIGHT

Farm-Level Governing

Introduction

Chapters Six and Seven explored how and why central government and the Manawatu-Whanganui regional council govern the farming of HEHC in the Manawatu-Whanganui region, at a national and regional level. Against this broader context of government, the focus of this chapter is the farm level. How and why do farmers farm HEHC on their farms? It is on farm that the outcomes of governing by central government and the regional council are reified through the moderated actions of farmers.

This research has not captured the full range of interrelated variables that shape the management decisions of all farmers of HEHC in the region. Based on interviews with farmers and a number of key informants closely involved with the farming community around HEHC, this chapter conveys the drivers that are shaping the collective management of farmers and what is shaping their on-farm management of HEHC. Consistent with chapters Six and Seven, the results presented here, although not identifying explicitly the concepts of governmentality or the analytic of government are derived from an analysis of data framed by this theory.

The chapter begins by exploring and analysing the farm-level mechanisms of government, employed by the regional council. The whole farm plan is the main mechanism used by the council to govern the farming of HEHC. The whole farm plan assessment of the farm, as a physical productive land resource and farm business, is described and explored, in addition to the process by which the regional council negotiates a works plan for HEHC with each farmer.

Next, soil erosion on farms is put into context by exploring the implications of erosion for farmers and the factors that moderate and define how it is managed by farmers. The role of regional council staff in shaping farmers management is highlighted as significant in the research and is also explored here. Farmers' management of HEHC is also shaped by what constitutes for the farmer good and bad farming. Using examples specific to hill country farms this aspect is explored and examples provided that relate to the management of HEHC specifically and to hill country sheep and beef farming more generally. This final results chapter is then concluded.

Regional council mechanisms

Farmers farm HEHC in ways that are shaped by their individual circumstances: the farm's characteristics; the management approach of each farmer; and as one component of an integrated farming operation. The regional council's SLUI has influenced and continues to influence some farmers' management of HEHC in the region.

One of the main mechanisms used by the regional council, in order to directly influence the farming of HEHC at the farm level, is a plan of on-farm works developed for the farmer through negotiation between the regional council and the farmer. This negotiation is framed by a whole farm plan specific to the farm and by a range of financial grants available from central government and the regional council, in regards to differentially funding certain soil conservation works on various types and areas of HEHC.

A number of factors define the regional council's motivation to work with a farmer to shape her/his management of HEHC on the farm. If the farm includes areas of HEHC and is located in a priority catchment the farmer will be targeted by the regional council. In addition, if HEHC on the farm poses a potential threat to regional infrastructure or is likely to deliver sediment into waterways the regional council will actively seek to influence the farmer's management of that land. Some farmers choose not to have the financial component of the farm plan completed, but all farmers are encouraged to do so by the regional council. At the end of 2011, according to a regional council staff member involved in managing SLUI, an estimated 20–25 percent of farmers who have had a whole farm plan completed, as part of SLUI, chose not to have a farm business analysis as part of the whole farm plan (Cooper personal communication, May 2012). Of 36 farms identified as a priority for whole farm plans in the year 2011-2012, six 'refused the offer of the business assessment' (Mitchell, 2011, p. 3).

To June 2010, according to an internal regional council report, from the 296 whole farm plans completed as part of SLUI, 256 (86 percent) were assessed by the regional council as 'Being Implemented' (Mitchell, 2011, p. 3); that is, works plans agreed to between the council and farmer were being implemented by the farmer. The remaining 40 whole farm plans were classified as being 'Delivered' (in the process of being developed) or 'On Hold' (developed but not being implemented). The regional council reported that the major reasons given by farmers for the plan not being implemented were:

- 7 – property sold, new owner not keen or still to decide
- 4 – major personal disruptions in family (death or illness)
- 9 – financial

- 2 – had implemented major works and have now stopped (there are still works to do)
- 18 – not interested or more follow up required (Mitchell, 2011, p. 3).

As a result of opposition to SLUI and the Proposed One Plan from many farmers in the Ruapehu district, farms in the Whanganui River Catchment are dealt with slightly differently by the regional council from those in other priority catchments. Farmers in this district fall within the regional council's Whanganui Catchment Strategy, rather than SLUI. In direct response to outspoken farmer criticism of the business component of the whole farm plans, farmers in this catchment are able to have farm plans completed but they do not include a financial assessment or a nutrient budget (Cooper interview, 2011). Farms in priority sub-catchments within the Whanganui Catchment are targeted by the regional council for these partial whole farm plans. In addition, environmental grants exist as an option for subsidising soil conservation work on hill country farms in the region. Grant Cooper of the regional council explains when the environmental grants are used:

if [the farmers] are in hill country we'll try and convince them to get a whole farm plan. But if they don't want one or they're new or they've only got a little bit of work, you know, and it's just plainly not sensible or they're really outside a priority zone - we'll try and capture them with the environmental grant (Cooper interview 2011).

Whole farm plans: making farms visible

The whole farm plan is the core mechanism used by the regional council to influence how individual farmers farm HEHC in the region. The whole farm plan makes the farm visible for farmers in two ways: one, as a spatially distinct land resource and two as a competitive business.

The farm is mapped according to the land's current and potential level of pasture productivity and the characteristics of the land resource. Significantly, the basis for this spatial differentiation of the farm is the land's susceptibility to erosion, because it is based on a classification of the land using the LUC classification system outlined in Chapter Five. The land resource is mapped and differentiated in a number of ways, as part of the 'assessment of land, water, living heritage and farm production resources' (Mackay, 2007, p. 5):

In the whole farm plan, the farmed land is mapped in terms of the following:

1. Fertiliser management units (FMUs) which indicate groupings of paddocks that share a similar fertiliser policy and hence level of fertility and production, or land soil properties that indicate the need for a new policy.
2. Effective area and paddock boundaries: effective area being that which is in pasture.

3. Estimated existing and potential pasture production levels expressed as kgDM/ha/year⁴⁷. As with the LUC classification, the NZ LRI is used to predict the potential productivity of land.
4. Land Use Capability (LUC) classes of land (AgResearch, 2005, 2006).

The LUC classes are assessed in terms of their strengths and weakness, and key environmental issues are also identified, in relation to water, natural heritage and physical business resources. An environmental works programme is developed that specifies and prioritises a five-year programme of actions for the farmer to complete for each of the environmental issues identified as relevant to the farm, including actions for land, soil erosion, nutrient balance and soil health. A similar schedule of actions is specified in the plan for the environmental issues identified in relation to water, living heritage, and physical business; however, soil erosion is the main focus. This programme of actions is specified for different LUC classes and subclasses of land for different types of erosion (slip, surface, stream bank etc). An example map differentiating the farm on the basis of LUC classes is provided on the next page (Figure 9).

For those farmers who agree to have the business assessment component completed, the farm is made visible also as a competitive business, through standardised per unit of land and livestock productivity and profitability performance metrics. The metrics are developed from an assessment of the farm's physical and financial data, and are expressed not as a total for the farm, but per hectare or per stock unit basis. The standardised metrics are then used to benchmark the farm's productivity and profitability performance, relative to 'KPIs' (key performance indicators) for an 'average' and 'top 10%' performing farm of a similar class. An example of the business benchmark for a farm is reproduced on the next page (Table 3). The analysis and comparative system is described in the whole farm plan as a system that 'provides a benchmark for existing performance and identifies opportunities for improvement by management' (AgResearch, 2005). The assumption is that the farmer is an entrepreneurial business person, who seeks to optimise the productivity and profitability of each unit of farm land in accordance with its productive potential. Management, therefore, is assumed to be farming practices that are directed at increasing the annual per hectare productivity and profitability of the farming operation. The business assessment process in the whole farm plan is described by the regional council as follows:

A rural consultant works through various production and economic indicators to assess the 'health' of the farm business and compares that against the industry average and top 10%. This can be used to identify opportunities for improving the production and environmental performance of the farm (Horizons Regional Council, 2007d, p. 2).

⁴⁷ kgDM/ha: kilograms of dry matter per hectare. This is a standardised unit of stock food that has been dried to remove the water content.

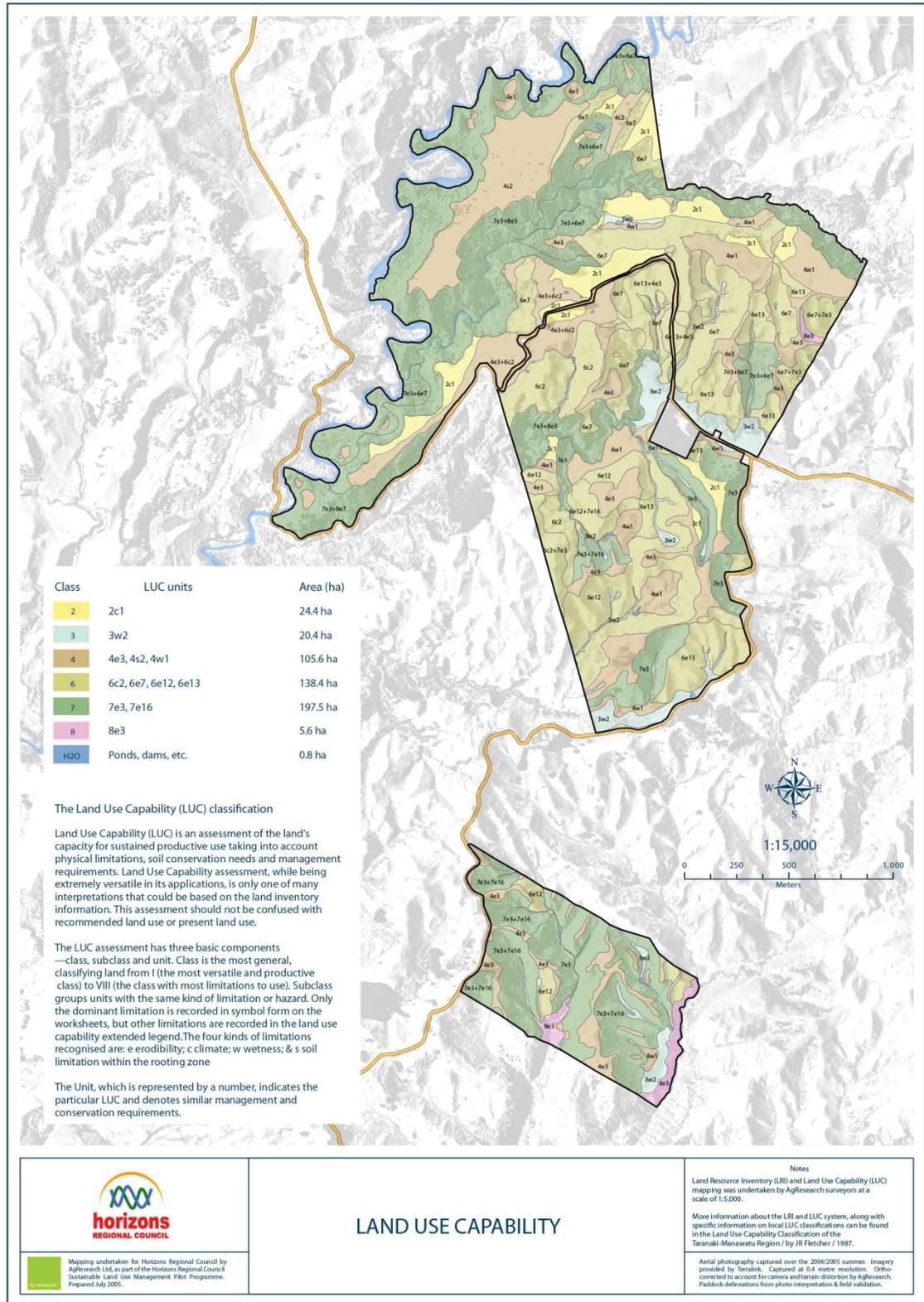


Figure 9: An example map differentiating the farm on the basis of LUC classes (AgResearch, 2005, p. 34)

An example of the key performance indicators calculated and presented for a farm in a whole farm plan is illustrated below.

Indicator	The Farm	Class Average	Top 10 %
General Production KPIs			
Area effective (ha)	356	463	528
Opening Stock Units	3942	4867	6661
Stocking Rate (su/ha)	11.1	10.5	12.6
MA Lambing %	137	121	140
Reproductive index	66.3	62.9	70
Hogget Lambing %	80	59	73
Lamb Weaning Wt (kg)	28.7	28.2	29.5
Calving %	90	90	NA
Calf Weaning Wt (kg)	250	202	NA
Fawning %	81	80	NA
Meat & Fibre/ha	205	279	395
Financial KPIs			
Gross Farm Income (GFI)/ha	570	662	846
Farm Working Expenses (FWE)/ha	416	405	409
R&M Expenditure (\$)	89	54	NA
FWE/GFI %	73	64	48
EBIT	153	264	424
EFS/ha	50	134	327
EFS/GFI %	8.5	18.6	40
Interest & Rent/GFI %		NA	NA
Return On Capital	0.7	2.1	3.3
Return On Equity	-1.4	1.0	9.4
Cash Surplus		NA	NA
Change in Equity		NA	NA
Change in Equity %		NA	NA

Table 3: Key performance indicators for Kinross Farming Partnership, sourced from the SLUI whole farm plan completed for the farm (AgResearch, 2005, p. 8).

The indices calculated for the farm include production indices for livestock reproductive efficiency, age-related target growth rates for young stock per unit of pasture land, and weight of meat and fibre produced per unit of pasture land. Financial indices include expressions of profit, income, and costs per unit of land, in addition to a series of economic efficiency ratios depicting various relationships between costs and income: and income, costs and profit, relative to the assessed market value of the farm business.

Based on the business and physical assessment of the farm, recommendations are made as to how the farm's profitability can be improved, through productivity on classes of land classified as having productive capability. The productivity assessed as 'possible', for different classes of land, is linked to the land's LUC classification.

The independence (from the regional council) of the individuals who prepare the whole farm plans with the farmer is an aspect emphasised by the regional council during its promotion of the plans. Although ‘the first and ongoing point of contact for a landowner’ (Mackay, 2007) is the local regional council Environmental Management Officer, it is not regional council staff but ‘two professionals – a land management expert and a farm consultant’ who ‘...work alongside the farmer to develop a business and works plan’ and ‘this is a private conversation’ (Horizons Regional Council, 2007d). The land management consultant sees value for the regional council in his independence from the council. He explained:

From the regional council’s perspective the beauty about the approach is if we’re having to play ‘Bad Jelly the Witch’ and say that piece of land’s not suitable under a pastoral environment [for] long-term sustainability...it’s not coming from [the regional council] (Grant interview, 2011).

Both components of the farm assessment are completed in discussion with the farmer. The business assessment is undertaken after the physical assessment, and the final plan and recommendations included in the whole farm plan emerge from a discussion between the agricultural consultant and the farmer. The analysis of the farm and the final plan developed within the whole farm plan is completely independent of any consideration for grants available from the regional council or through central government.

The regional council retains and incorporates into a database the physical resource data from the farms mapped as part of SLUI and the Whanganui Catchment Strategy. The financial and production information specific to each farm is not retained by the regional council, nor the agricultural consultant. To date, the regional council has not asked farmers to evaluate the value of the financial assessment of their farms.

The whole farm plan protocol was developed, it is argued:

to ensure an ongoing relationship between an Environmental Management Officer of the regional council and the land owner in the implementation of the works programme (Mackay, 2008a).

After the completion of the whole farm plan, the regional council and farmer then negotiate the final works plan. The whole farm plans developed for farmers are described by an EMO, who works with farmers, as not a ‘blueprint’ but the basis for ‘a discussion’ between a regional council staff member and the farmer (Cooper interview, 2007). A regional council staff member considers this to be a strength of the process:

a discussion ... what can we do here ... it’s not just ‘we think you’ve got to plant trees there’, it’s trying to lead through the whole process of understanding the resource, what

its strengths and weaknesses are, so we all reach the same conclusion (Cooper interview, 2007).

The grants available for environmental soil conservation works are also used to influence on which HEHC land farmers implement soil conservation and how they do this. As explained by a regional council staff member, the grants are used to align the farmer's management with the regional council's priorities:

So we'll go to a farmer and if he wants to do some poplar poles that are just sort of behind the house protecting the woolshed ... or his track, we'll still do that work but there'll be a lower grant rate than, say, if it was something falling down into the river that he may be less interested in, so we can put a higher grant rate into those things (Cooper interview, 2011).

In addition to the grants for on-farm works, the regional council also makes available larger grants to encourage farmers to implement larger-scale works that have more significant implications for the farm's cash flow. These include joint ventures for planting large-scale forestry, or grants accessed through central government's Afforestation Grant Scheme. The final form of these ventures depends on the individual circumstances on each farm and what the farmer is willing to agree to.

A farming tradition of soil conservation

Soil conservation activities are a familiar and accepted element of farming hill country farms in the region for many farmers. This familiarity and acceptance of soil conservation are linked to the past experiences of some farmers and also to a familiarity with a farming landscape that includes on-farm works implemented for soil conservation (see for example Figure 10).

Some farmers interviewed had been involved in soil conservation programmes funded and implemented by central government through catchment boards, before the 1989 local government reforms. These farmers remember the farm plans developed for them by the catchment board back in the 1960s and 1970s and the works they themselves were involved in establishing, many of which remain in place on their farms today:

As a result of setting up the farm plan, two retention dams were built ... in one of the main gullies, ... we planted some poplars in vulnerable gully spots and they're still growing today. And then we put about four or five hectares of the bottom gully into radiata pine (Short interview, 2011).

I'd fenced all the gorges off and let them re-vegetate and we'd planted heaps and heaps of [poplar] poles (Elder interview, 2011).



Figure 10: Hill country farming landscape in the Pohangina Valley, Manawatu July 2011 (Author, 2011). Poplars planted for soil conservation are evident on the hills, a characteristic on many farms in the area.

For those farmers interviewed, expectations of the nature of the involvement of central and local government in soil conservation on-farm are anchored in their experiences with soil conservation and soil conservators. These farmers recall with respect, honest, hard working men with whom they had a ‘good working relationship’ (Short interview, 2011). Particularly valued was the practical farming knowledge of these soil conservators and their willingness and ability to work with the farmers. Two farmers, who had farm plans developed during the 1960s and 1970s, speak highly of a soil conservator with whom they had both worked:

[The soil conservator] had a very good manner with farmers: he’d get on with them, he wasn’t bombastic or dictatorial ... He knew what he was talking about, and I guess you built up an element of trust (Short interview, 2011).

He had his finger on the pulse, he knew what he was doing....delightful fellow (Elder interview, 2011).

The expectation of this type of involvement with the regional council was also highlighted in a spoken submission presented to the One Plan land hearing in Ohakune, July 2007. In referring to the attributes of a soil conservator who had assisted them, one farmer highlights the attributes she valued:

He loved farming and he loved the land. ... He helped my husband and I plant hundreds of poles, at times in torrential rain. He helped us drag poles up hillsides and rammed most of them in, too (Roy interview, 2008).

She argues that it was attributes like this that would ‘create a sense of partnership and farmer buy-in’ (Roy interview, 2008).

The behaviour and the nature of engagement by the regional council, when establishing SLUI and developing the One Plan, however, did not match farmers’ expectations, and for some it coloured their willingness to be involved with the regional council in SLUI. The regional council’s approach undermined the trust some farmers had, or expected, in the regional council. One farmer felt betrayed and ‘offended’ (Roy interview, 2011) by what she felt was a lack of respect shown to her and other farmers in the district, some of whom had been proactively undertaking soil conservation on their own farms for many years. She explains:

what people that are completely worried about environmental outcomes to the expense of everything else have to realise is where we’ve come from, you know. Those guys that broke this country in...There was one [profiled] in the [newspaper] yesterday, Ernie Matthews. Been through more hardship than ...you know, it’s totally disrespectful to them and what they have achieved (Roy interview, 2011).

In 2007, a farmer who had been involved with establishing the SLUI initiative and who had a good working relationship with the council explains:

Some farmers feel quite threatened ... they are scared that the regional council is going to come and say ... you shouldn’t be farming that ... and we’ll close you down (Phillips interview, 2007).

A farmer located in a priority catchment, who had been visited over a period of years by regional council staff with the intention of convincing him to participate in the SLUI, finally agreed in 2011 to be involved, but only after a regional council staff member put in writing that the SLUI Whole Farm Business Plan scheme was voluntary:

See, the way it read initially, we weren’t going to have any say. They were going to demand that we do this and we do that. Well, I asked him to stipulate in a letter ... here it is ... ‘this programme throughout is entirely voluntary and we would only act after consultation, discussion and agreement with yourselves.’ I said that’s got to be in there, no way will I sign anything until I get that, and I treasure that bit of paper, because... I’ve never been told what to do up till now (Elder interview, 2011).

A farmer, who was one of the first to have a SLUI-whole farm plan developed for their farm and who had direct and positive interaction with regional council field staff, was also unwilling to engage with the regional council in relation to a potential issue with effluent run-off from his woolshed:

I know it is a problem but I am loathe to go to the regional council and say ‘What can we do about it?’ because they’ll say ‘Oh, you’ve got to move your woolshed’ and that is not practical (Green interview, 2011).

In spite of reluctance on the part of some farmers to participate in SLUI, and criticism of the approach taken by the regional council, the regional council has achieved its annual target of whole farm plans since beginning the initiative in 2007.

On-farm soil erosion in context

Soil erosion occurs most years, to some extent, on hill country farms prone to erosion in the region, as pointed out by a farmer: ‘Most winters we’ll get one or two little [landslides]’ (Elder interview, 2011). The storm and resulting erosion that occurred in February 2004 was not an isolated or unique event for farmers in the region. One farmer recounts:

We had [a major event] in ’88, the flood in ’88 when a lot of fences went. We had another in 1992 but nothing to the extent of ... 2004. That was just an utter disaster ... and then we had a big snowstorm in August ... and that did just as much damage (Elder interview, 2011).

The hill country erosion that occurred in February 2004 was devastating for some farmers, in terms of the scale of damage and erosion that occurred. For many others in the region it was no more or less significant than any number of storm events they had experienced in previous years including, as one farmer states, ‘Our own mini weather bomb... in 2001’ (Bennett interview, 2011) and ‘the damage on the hill country on this block here in 2004 was minimal to the damage that occurred in 1988’ (Short interview, 2011).

In the short- and long-term operation of hill country farms, erosion is just one of many issues facing farmers. This point is made by one farmer who took over their hill country farm not long before the February storm:

Our biggest challenge living here is the weather, and it’s every season we’ve been here has been unpredictable ... well, we’ve had the 2004 floods followed by the 2004 snow storm which wreaked havoc, and then 2007/2008 was the worst drought, and then the winter storm at the end of 2008, 2009 wasn’t too bad, 2010 was a drought, 2011 was a drought, not to mention September (Green interview, 2011).

Erosion is managed and erosion damage repaired by farmers within the broader context of operating their farming business. This point is also made by the land management consultant involved in the physical assessment of the farm. He saw value in the inclusion of the business analysis as part of the whole farm plan because it meant erosion was being considered within the broader context of the whole farm system. He states:

I think the beauty of the SLUI plan is that it doesn't just deal with erosion; it deals with the whole farm management system and it also incorporates the financial side of it ...and you can't actually take it ahead without looking at 'can you afford to do this or you can't' – how can we improve the bottom line to actually incorporate some of these changes? (Grant interview, 2011).

The issue of erosion for farmers

There are relatively few if any formal measures or informal metrics that farmers use to capture the extent of erosion on their farms. The extent of erosion is articulated rather in terms of the cost and extent of the damage that has resulted from the erosion debris, or the size and number of landslides.

The major topic of the farmers interviewed, when asked about erosion, is the cost of soil erosion in terms of money, time, and effort to repair and/or reinstate infrastructure damaged by erosion, including fencing, tracks, conservation planting, and stream banks, in addition to the resulting disruption to the normal operation of the farming enterprise. This is illustrated by a farmer who states:

[erosion] is a costly issue ... you don't even have to get a big storm ... a wet winter and you lose sections of fences and your dams go out and your tracks go out and that all adds up (Phillips interview, 2006).

Furthermore, there is the level of devastation experienced following extreme events such as the 2004 storm. One farmer explains the impact on his farm:

We had about \$100,000 worth of damage. We lost over 100 head of stock down the river, we lost a number of stock involved in slips on the hills and we had ... cattle ... about 15 that just disappeared off the property through fences falling down ... we never found them (Short interview, 2011).

Another farmer recounts the extent of damage after the 2004 storm:

We had a very large slip on this place ... the Government gave us about \$70,000 odd back towards the cost of restoring tracks, fences, water supply... little bit of re-grassing slips (Bennett interview, 2011).

The loss of short- and long-term pasture production from land affected by erosion is widely acknowledged by soil scientists, MAF, and the regional council staff, as being an important downside to hill country erosion. This is supported by research results often quoted (Trustrum, et al., 1984), which show that it takes 20 years to reach 80 percent of previous production. However, this is not an aspect of erosion highlighted by the farmers interviewed, with the exception of one farmer who, after the 2004 storm, had close to 15% of his farm affected by landslides and as a result was not able to carry the same number of stock as he had previously.

Erosion on-farm is put into perspective as an issue by the land management consultant, who highlights that the worst farm affected in the 2004 event ‘effectively only got like 12-15% [of their land] as scars or debris trails’ (Grant interview, 2011). As a result, the overall effect on pasture production was relatively small:

It’s not even the difference between a good and a bad drought year [in a drought prone summer dry area]. Sure, it wipes out fences, but you get smart about where you put your fences’ (Grant interview, 2011).

Farmers involved in the research identify the impact of erosion on the farms infrastructure as being significant. The damage wrought by erosion and the futility of soil conservation work failures are also identified as having a much deeper personal affect on farmers. A farmer whose farm was particularly badly affected states:

2004 ruined it. We had [the farm] running sweetly and it was lovely. We had about 1900 ewes on it and they’d done well ... and we have never once not put manure on, every year there has been 50, 60 up to 70 tonnes on it, and after 2004 everything’s just, the stock are not as good and its harder to farm ... it will never be the same ... you can get quite despondent about it (Elder interview, 2011).

Soil conservation is but one element of farm management that is linked to the farming operation and decisions about soil conservation are made by farmers, as part of a consideration of their whole farm system and business.

Farmers’ management of HEHC on-farm

Irrespective of farmers’ involvement in SLUI, the farmers interviewed vary in their management of HEHC and in the level of soil conservation they undertake on their farms. The extent and type of soil conservation works established on HEHC by farmers is encouraged through the provision of subsidies from the regional council and encouragement and support provided by regional council field staff.

The amount and rate of soil conservation implemented by farmers, who choose to do it, is dependent on ‘money, time and labour’ (Roy interview, 2011). The agricultural consultant sums it up thus:

It’s about how much money they have got spare ... I mean, you can’t be green if you are in the red (Sheppard interview, 2011).

For some farmers, ‘subsidies make [soil conservation] worthwhile’ (Bennett interview, 2011). Whereas, for others, it means the works can be completed at a faster rate than would otherwise have been financially possible:

We'd have done [the soil conservation and repair work] but it would have been just done at the pace we could afford [and even with the subsidy associated with the farm plan,] we're just planting poplar trees as we can afford to do it; we're draining areas as we can afford it (Bennett interview, 2011).

The work subsidised through SLUI would in some instances have been done anyway because it aided the effective operation of the farm from the farmer's perspective. A farmer explains why they would have fenced off a large area of re-growth on their farm irrespective of subsidies:

Scrubland, it was a waste of time ... it would take five minutes to put the sheep in and five days to get them out again (Green interview, 2011).

He did, however, acknowledge that the subsidy from the regional council, which helped pay for 2½ kms of fencing to ring fence regenerating bush, was a significant advantage, compared with those farmers not able to get a subsidy. Another farmer in an area not eligible for the SLUI is somewhat disgruntled with the level of support being provided to other farmers:

Some people are getting heaps more [subsidies] for doing the same thing. And I am not doing it because I have a [whole farm] plan but because I've done it for 15 years (Roy interview, 2011).

Hill country sheep and beef farms have not been highly profitable over the last seven or eight years. Based on an analysis of his farming clients for the 2009 financial year, the agricultural consultant illustrates the situation on many farms:

The average 4000 stock unit farm was generating about a \$90,000 cash loss before they even thought about putting fertiliser on ... so when they are ... in that sort of situation they just can't afford to be spending money on planting trees (Sheppard interview, 2011).

Based on what farmers do once they have received a whole farm plan, this consultant identified three different types of farmers. The first type has the financial wherewithal to go ahead and implement the plan; the second is financially restricted, 'they want to do it but financially ... they have to do it over a greater period of years'; and the third type is:

those that say, 'Oh yeah, thanks for that information. It's been quite useful and interesting. We'll look at it and maybe address it when we get a chance (Sheppard interview, 2011).

The significance of the financial situation is also highlighted by a number of people interviewed, who make reference to the work of catchment boards before the 1990s. The land management consultant makes the point about the catchment boards that:

[the catchment boards] operated through some really good times ... there was plenty of money in the rural sector and they achieved a lot of good work (Grant interview, 2011).

A farmer explains why he has a different viewpoint on planting areas in poplars now, compared with when his father farmed the farm:

The economic returns were slightly better then, so you could afford to shut up a paddock for 18 months without an awful lot of stock in it, or take it out of production entirely and put it into pines (Bennett interview, 2011).

Farmers farming larger enterprises are argued by one farmer to have more ability to ‘absorb [the] sorts of costs’ associated with ‘more environmental type things’ because of their ‘economies of scale’. She goes on to give an example from their own farm:

We retired that bit above the woolshed, and we should never have planted it [as it was too expensive] and we did plant it and it cost us six grand (Phillips interview, 2006).

Decisions to implement soil conservation work (and the extent of this work) in any one year are influenced by what can be afforded out of income and what is practically possible, in terms of time and labour at the time of the year when the works need to be completed:

If you do one or two paddocks at a time, and most of us can only handle about 3-400 poles a year because you’ve got to do it this time of the year [mid-winter] (Bennett interview, 2011)

Even with subsidies provided through SLUI, a farmer assesses the economic implications of proposed soil conservation changes to be too great to justify the recommended actions:

Originally they wanted this fenced out and I said, ‘No I’m not going to fence that out, it just doesn’t make economic sense to me’ (Short interview, 2011).

The process of negotiation between farmers and the regional council, which allows for specific works plans to be tailored to the farmer’s farming operation and situation, is identified by the regional council and farmers as a strength of the whole farm plan process. A farmer provides a specific example of how he had negotiated a change to the initial works plan with the regional council and he recounts what he had said to the council:

Look, I would be happy enough to plant all this out, I might scratch to find all the funds to do it ... but what about some of the money you put into fencing putting it into the planting? And they came back and said ‘Yep, that’s OK, we’ll provide a subsidy on the planting’ so [...] at the end of the day commonsense prevailed (Short interview, 2011).

The interactive and negotiated way in which the physical farm assessment and plan component was completed is also seen as a strength by some farmers. One farmer, who did have an existing interest and knowledge in soils, recounts the value he gained from going round the farm with the land management consultant when he mapped the farm, and the increased knowledge about the soil resources he gained from the experience:

None of it had been mapped to this detail in the past, you know, they were just called Whangaehu steep land soils, well ... you know there's quite a mix of other soils in there, so it was really good in terms of getting to know ... and we stood on the face opposite and he'd say to me, 'Well what are you going to do on this bit?', and I'd say 'I'll probably do that there, this there', and that and he'd say, 'Yeah, but perhaps I think we need to do drainage round here as well'. So it was far more interactive and I think it's really good value. I think if I was buying a farm that didn't have a SLUI plan on it I'd get Lachie along (Bennett interview, 2011).

This level of involvement and interest is, however, not universal across the farmers interviewed. Although all farmers were encouraged to accompany the consultant, as he mapped the farm, the level of interest ranged in the words of the land management consultant '...from one end of the spectrum to the other' (Grant interview, 2011). Another farmer, who did not accompany the consultant when he mapped his farm, when asked if he had learnt anything different about his property from the maps, responds:

Yeah, I guess you did, although having farmed it for so long you certainly know its peculiarities: you certainly know that sheep run a certain way and it doesn't matter what you do with the dog, they won't run the other way (Short interview, 2011).

Reduced access to poplar poles has limited the extent of planting by farmers in some years, and a number of the farmers interviewed have established their own nurseries to ensure they have access to adequate supplies at a time suited to them for planting.

The ongoing maintenance and impact of works on-farm operations is also a factor influencing farmers' willingness to plant poplar poles. The spraying of thistles and gorse needs to be timed and managed around the time when poplar trees are in leaf, or in areas where spray will not impact on trees. Pruning and maintaining poplars on hill country can be 'extremely dangerous' (Bennett interview, 2011) and 'bloody hard work' (Roy interview, 2011). Old poplars can also cause ongoing issues when branches break off:

It can make it difficult in getting stock through these areas and cattle getting stuck in the crooks of [fallen] branches (Bennett interview, 2011).

Negative experiences with conservation planting of poplars on farms have impacted on farmers' willingness to implement some soil conservation activities:

There is a generation of farmers out there now that won't put a poplar pole on their property (Phillips interview, 2006).

Adult poplar trees that have not been pruned and managed

... get big and break and make a hell of a mess and they get too big and their holding capacity becomes ... a liability because they seem to bring the dirt down with them (Phillips interview, 2006).

The use of forestry for soil conservation has downsides for farmers, not only in terms of the impact on their immediate cash flow, but also in the uncertainty associated with a certain time frame before gaining income off the trees. *Pinus radiata* plantations reach harvestable maturity in around 27 years. One farmer explains:

If you are in an industry in which the cash flow is 27 years apart, you've got to have a fairly large time horizon for risk. My time horizon for risk is about one year ... what price will I get for store lambs next year? But for 27 years out that's an awful lot of faith that you are going to have to have ... that the rules don't change (Bennett interview, 2011).

Another recalls his response to a suggestion from the soil conservator in the 1970s that the

'whole property would be better in trees' and I said, 'Yeah, that sounds fine but I've got three kids to feed' (Short interview, 2011).

Personal circumstances, other than available time and money, come to bear on shaping farmers' management of their farms, including HEHC, and this is a factor supported by the regional council's findings as to why farmers are not implementing the whole farm plans that have been developed for their property, noted earlier. One farmer illustrates this when he says:

With [my wife] dying last year we ... sort of had a holiday [from soil conservation activities] for one year (Bennett interview, 2011).

The agricultural consultant describes a situation where, as a result of the whole farm plan process,

70 percent of the farm was identified as going into trees and the farming couple had decided to put 50 percent of it into trees, which was a big, big deal, especially when the parents were still on the farm and the father was vehemently against it (Sheppard interview, 2011).

Specific management considerations identified by farmers for their hill country, in addition to tree planting, also include consideration of the grazing of steep hill country by heavy livestock, or large numbers of livestock, particularly during wet winters. One farmer explains:

Because of the weight of the cattle beast and pugging ... you can find they walk round the hill and they make huge tracks and they can cause bits of slip offs. So you learn that by experience (Short interview, 2011).

Ongoing one-on-one input

All the farmers interviewed acknowledge that having a soil conservator who regularly monitors and supports the progress of soil conservation works on the farm increases their motivation to implement soil conservation works. The follow-up by regional council field staff is argued by

farmers to be critical to on-the-ground implementation of the whole farm plans, as one farmer explains:

Two regional council staff came back, they come back on a regular basis, like every three to four months, or every six months, and they go through your plan and they say ‘Where are you up to, what have you done?’, and they will need to keep doing that. There is no point having all these plans done unless they are going to follow through on them (Phillips interview, 2006).

A farmer describes how his father became ‘enthused again, planted a whole lot more poplars, planted these areas in forestry’ because a keen young soil conservator became involved in the property (Bennett interview, 2011).

In a spoken submission to the Land Hearing⁴⁸, another farmer describes how their soil conservator provided them with information based on their farming systems ‘and gave us the drive to incorporate that information into our strategic plan’ (Roy interview, 2011). The agricultural consultant also acknowledges that from his experience:

[farmers] are wanting a little bit of a push, a bit of confidence to say, ‘We’re doing all right, where do I go from here?... I think it is the pat on the back that they’re looking for (Sheppard interview, 2011).

Farmers’ willingness to have someone scrutinise their farm and farming business has influenced participation of some farmers in the SLUI-whole farm plan process. Some farmers interviewed see the value of having ‘somebody divorced from [their] farm and situation coming in and saying ‘Hey, what about this’’ (Phillips interview, 2007). Others were less comfortable, in part because it was the regional council who would access information about their property, and one farmer attributed the reluctance of some farmers to an ‘institutional dislike of people telling [them] what to do on [their] farm’ (Bennett interview, 2011).

In another situation where the farm had been particularly badly affected by the 2004 storm, the farmer anticipated the outcome of the whole farm plan would be a recommendation to plant a significant proportion of the farm in trees. His reluctance to be involved in the process was because, as he states it:

I know what’s going to happen and I am not looking forward to it (Elder interview, 2011).

The implications of planting substantial parts of the farm in forestry were significant in his eyes for himself and his son, who is also currently working on the farm:

⁴⁸ The Land Hearing was held as part of the consultation process relating to the Proposed One Plan and focussed specifically with the regional council’s proposed policies for Land.

What do we do for an income? And what does [his son] do? (Elder interview, 2011).

Gorse and scrub: good or bad farming?

The management of HEHC by the farmers interviewed reflects their differing ideas as to what (for them) constitutes good farming practice. Some farmers' practices are linked to historical approaches to farming and viewed as part of 'good farming' by some farmers, whereas these practices are viewed by others as being increasingly unacceptable. The management of gorse⁴⁹ and scrub (mānuka or kānuka) on HEHC is as an example of how farmers' views on what constitutes good practice can diverge, and of the implications for their management of HEHC. Photographs showing gorse (Figure 11) and scrub (Figure 12) growth on hill country are presented on the next pages.

Clearing hill country of woody vegetation and native bush was undertaken historically to establish pasture for stock grazing. This practice is referred to as '[breaking] the country in' (Roy interview, 2011). A farmer describes the farm he purchased in 1967 as being 'all covered in scrub and gorse' and he cleared it himself because 'when you're young and fit and you haven't had much land' that was what you did (Elder interview, 2011).



Figure 11: Gorse re-growth on hill country on a farm at Ashhurst, Manawatu. Source (Author, 2012).

⁴⁹ Gorse (*Ulex europaeus*) is an introduced plant.

Gorse and scrub on a farm is viewed by many farmers as signs of poor farming, or a farm that is ‘out of control’ (Elder interview, 2011). Maintaining land clear of gorse and scrub was a reason for one farmer’s reluctance to fence it off from stock and plant gorges on his land:

Plant the gorges and de-stocking is not that easy. The minute we de-stock, the gorse and the scrub comes back, so it’s a no win situation. You’ve got to keep farming it (Elder interview, 2011).

This quotation also highlights how, for this farmer, land planted in trees or fenced-off from livestock was not being ‘farmed’. This thinking is lamented by a Farm Forestry farmer, who criticises the use of the term ‘retire from farming’ to signify the planting of land in trees, or allowing the land to regenerate into native bush or scrub (Hocking interview, 2007).



Figure 12: Scrub re-growth on a hill country farm in the Pohangina Valley. Source (Author, 2012).

An agricultural consultant, reflecting on his training and perspective, bemoans the lack of quantitative analysis used by farmers in their decisions to unquestioningly clear scrub and gorse from their land:

Farmers will look at a piece of highly erodible hill country and see some scrub on it. So, without any due consideration to the profitability of it they cut it, they will spray it, they will burn it, they will roll it, crush it ... without actually thinking ... is this cost effective, is it worthwhile financially given the returns I can get off this land once it is cleared? (Sheppard interview, 2011)

A farmer new to hill country farming acknowledges that he sees scrub ‘differently to other people’. A hill face covered in scrub, which he planned to leave uncut, was assumed by a local fencer to require clearing and he offered his services to the farmer: ‘I can scrub cut it for you’ (Green interviews, 2011).

Approaches to farming hill country that contribute to accelerated erosion continue to be used by some farmers, but they are criticised by others within the farming community, and attitudes to these farming approaches are changing. The historical ‘slash and burn’ (Bennett interview & Roy interview 2011) approach to farming is viewed as outdated, and wrong. A farmer with a long history of soil conservation on his farm describes his elderly neighbour’s ‘slash and burn’ approach to farming:

There’s been no poplar poles planted ... the only thing you could find is a few amenity trees. They’ve actually started protecting bush, well, that would never have happened previously. It was just what you could make off the farm (Bennett interview, 2011).

Another farmer argues that the era when this type of farming was accepted is over ‘and by and large farmers do try and manage their land more susceptible to erosion differently’ (Roy interview, 2011). In another example, offered to illustrate how he had changed, a farmer recounts how, during a farm discussion group visit to another farmer’s property, he had challenged the farmer on his failure to plant poplars above a track that required bulldozing because of soil erosion debris.

The acceptance over time of SLUI among initially reluctant farmers is illustrated through an example provided by one farmer:

If our neighbour is now [after five years] considering [getting a whole farm plan done], you know, he’s seeing what we are doing and talking with others and he’s thinking, ‘Well perhaps it might not be a bad thing’. Whereas he would have been one who would have said [to the regional council] ‘Don’t set foot on my place’ (Green interview, 2011).

‘Good’ farming

Good farming constitutes different things for different farmers. In the descriptions of their own and others’ farms, the farmers interviewed describe visual aspects of the farm, which include the amount and type of trees planted and scrub and bush retained, the tidiness of the property, and aspects of management: ‘We put on manure every year, we never fail’ (Elder interview, 2011). The implementation of soil conservation works on farm is not explicitly acknowledged as an indicator of good or bad farming by the farmers interviewed. Individual farmers, when asked, vary in their definition of what constitutes a good year or a good farmer. However, the aspects they identify as constituting a good year are reflected in general terms as aspects of livestock

production and income generated. ‘Money in the bank, lambing percentage, weight of lambs sold’ (Bennett interview, 2011) was how one farmer assessed his farming year. Another expresses a good year as being:

when you think you’ve sold stock at a good price, good value, and at the end of the day your net profit’s probably not too different ... so as long as you’ve got sufficient to live on, pay your bills, you don’t want to be paying too much tax and so you cut your cloth accordingly (Short interview, 2011).

The same farmer relates it to what was budgeted:

If your lambing percentage is 5% better than it was last year, if the lambs you send off are one kilogram heavier, if your bulls are better ... then that’s a successful year because the dollars will flow through (Short interview, 2011).

Another farmer articulates a good farmer as being based on ‘the condition of his stock and the condition of his paddocks’ (Elder interview, 2011).

Farmers have different expectations of the levels of production they want to see and the need to attain these levels. A farmer who undertook work on other farmers’ farms during the year comments on one farm he had visited:

His scanning percent was 112⁵⁰ and he didn’t seem overly concerned, and I’m thinking ... if we had 112 I’d be beside myself [He explains further:] If he hasn’t got a mortgage, he doesn’t need to do more than 112%. There’s nothing like a fairly big mortgage to make you focus a little bit (Green interview, 2011).

In relating aspects of their farming approach, the farmers interviewed identify and refer to the influence of peers, parents and other influences. One farmer highlights the market-based quality assurance scheme he was involved with and recognises and willingly accepts the need for external scrutiny of their farms and farming systems, in order to satisfy the demands of the market place. A whole farm plan developed under the SLUI had acknowledged value within this quality assurance framework.

One farming couple had travelled internationally and hosted foreign tourists in their home. This interaction they felt had given them an awareness that ‘clean green New Zealand doesn’t deliver’ (Green interviews, 2011) and they had responded by becoming more environmentally aware in the management of their farm – and more accepting of the influence of external drivers on their farm business.

In the case of the agricultural consultant, the reality of farmers influencing farmers was illustrated by an experience he had when working on a farm as a student. The farmer employed

⁵⁰ Scanning percent: the percentage of ewes mated that are identified by ultrasound scanning to be pregnant early in pregnancy.

an agricultural consultant who, based on financial analysis, recommended that he could earn an additional \$100,000 annually by farming bull beef rather than sheep on a portion of his farm,

and the guy didn't do it, simply because he was scared of what the neighbours would think. And I'm sure that's part of what goes on with this whole farm programme (Sheppard interview, 2011).

This example also illustrates the strongly productive and profit-framed viewpoint of farming, which the agricultural consultant brings to his analysis and recommendations for his farming clients.

A number of farmers relate advice and principles of farming they have followed, which they had gained from their farming fathers:

My father told me ... he did give me a bit of decent advice, he said 'Listen to all the experts, [listen] to what they are saying, and do the opposite' (Short interview, 2011).

My father's perception or statement is that you leave the land in better condition than when you took it over. That's the definition of a good farmer. I go along with that, too (Bennett interview, 2011).

Conclusion

The governing of a farmer's management of HEHC, at the farm level, is achieved by the regional council in the main through farmers' voluntary involvement in regional council initiatives directed at attaining the implementation of soil conservation on HEHC. Reflecting central government priorities, farms with HEHC that are located within sub-catchments and catchments identified as at high risk of delivering sediment into waterways are targeted by the regional council. A whole farm plan and varying levels of regional council and central government subsidies for on-farm works provide the basis for the negotiation of an on-farm works plan by the farmer and regional council.

The whole farm plan represents land within the farm boundary, including HEHC, in terms of its current and potential pasture based productivity. HEHC is identified within the whole farm plans as land with relatively low potential for pasture based productivity. Soil conservation of HEHC on any farm is negotiated and planned within a broader consideration of the productive potential of the farm and with consideration also of the financial situation of the farm business.

The relationship and interaction with regional council staff members is important, and this includes the practical negotiation of works on the farm that are tailored to the farm situation and negotiated with the farmer. The flexibility of these arrangements, in addition to financial subsidies, encourages certain work to be undertaken. The flexibility of the regional council to

find ways that can assist farmers to manage and implement works practically is also important. On-going input by the regional council encourages the implementation of the plan over time. The one-on-one relationship between the farmer and the staff member of the regional council is a significant aspect of the governing process.

A tradition of soil conservation seeded in the 1930s continues to influence farmers' management of HEHC in the Manawatu-Whanganui region. In the main unchanged since the 1930s, on-farm works, which mitigate the risk of erosion and minimise its impact on-farm, continue to be implemented by farmers today. The farming of HEHC on farms in the Manawatu-Whanganui region is undertaken by farmers as one component of an integrated farming operation. Erosion occurs to some extent on many hill country farms every year, and soil conservation is an accepted farming practice of most hill country farmers for HEHC. As with many other aspects of farming, the management of HEHC and the extent of HEHC managed in any year are influenced by factors that include the level of discretionary income, the availability of labour and time, and the practicalities of implementing works and maintaining them in the longer term .

The specific treatment of this land by farmers occurs and is driven by outcomes that are, in the main, not linked to reducing sediment loss into waterways or reducing the risk of downstream flooding, although these off-farm benefits are acknowledged by farmers. The outcomes that drive the management of HEHC on farm are linked to what constitute for farmers good and bad farming, and how farmers express this differs from the representation of farming included within the whole farm plans. Although farming is a productive activity, the focus on productivity and profitability evident in the whole farm plans was not evident in how farmers expressed what for them was good farming.

Farmers' management of HEHC had links to the historical practices of their fathers and other farmers but included soil conservation. Although there are variations in some of the management practices considered as good and bad for HEHC, there was also evidence that over time these had and are being moderated through interaction with other farmers and with the regional council.

This chapter concludes the results for this doctoral research. To reiterate, the historical context of the current governing of the farming of HEHC was outlined, then the national- and regional-level governing of this land in the region was explored and analysed. Finally, the interplay between this governing and farmers and the influence of farming was explored. In the next chapter the key findings from the four results chapters will be synthesised and considered in relation to the research question and the literature.

CHAPTER NINE

Discussion

Introduction

This chapter returns to answer the research question: How is the farming of highly erodible hill country in the Manawatu-Whanganui region governed? The findings are framed using concepts from governmentality theory. But this analytic is expanded beyond the simple description of the ‘how’ of governing of HEHC in the region to unravel a deeper understanding of the reasons for this current governing. This is done to explain insights relevant to a consideration of the governing of sustainable agriculture in New Zealand.

The farming of HEHC in the Manawatu-Whanganui region is governed by an interwoven web of governing of and by farmers, central government, and the Manawatu-Whanganui regional council. The chapter is structured in to four main sections. The first section analyses and describes how central government’s rationality of rule for agriculture is perpetuated in multiple ways across central and regional levels of government. The competing demands that define how central government governs farming in the Manawatu-Whanganui region with implications for the farming of HEHC are then discussed. The second section focuses on the regional council, explores and defines the variants of rule inherent in SLUI, and clarifies the links to central government rationalities of rule through an examination of the rationalities inherent in whole farm plans. The implications of how the whole farm plans represent the farm and the broader implications of this are discussed. The rationality of rule of the regional council reflected in the Proposed One Plan has significant implications for the governing not only of the farming of HEHC but also for all farming in the region. The reasons for this are outlined, and how farmer resistance moderated the policies of the regional council is described and discussed, also. The role of farmer resistance in shaping the governing of the regional council begins the third section, which focuses on farmers and farming as a knowledge-culture and form of government. Good and bad farming, and what these constitute for farmers of HEHC in the Manawatu-Whanganui region are considered, and their implications are discussed in terms both of farmers’ management of HEHC and the effectiveness of SLUI as a mechanism of rule.

Fourth, how the loose network of advocates for soil conservation influence central government, the regional council’s involvement in soil conservation, and the implications of this for the farming of HEHC are described, as is their significance to the current governing of farming of HEHC in the Manawatu-Whanganui region.

A New Zealand variant of neo-liberal rule

The governing of the farming of HEHC in the Manawatu-Whanganui region presents an example of a New Zealand variant of neo-liberal rule of agriculture. The form of rule exposed through this research exhibits the variegated features argued to embody current forms of neoliberal rule, including contradiction and contestation, hybrid and composite characteristics (Larner, 2000; Peck & Tickell, 2002), and, with specific reference to agriculture, adaptation and compromise (Lockie & Higgins, 2007). The New Zealand form of rule for this aspect of agriculture also illustrates, as predicted by Peck and Tickell (2002, p. 388), ‘local peculiarities’ at a national, regional and farm level that are contingent in this case on timing, geography, history, political imperatives, and the opportunistic influence of certain expertise. Different hybrid variants of rule, technologies of government, and expertise, and the resistance and accommodation between central government, the regional council and farmers defines the governing of the farming of HEHC in the region, and will now be discussed.

Central government governing: a contradictory and inconsistent hybrid variant of neo-liberal rule

The farming of HEHC in the Manawatu-Whanganui region is governed by central government through a programme that directly targets this land. Central government govern this land also through national level policies that, do not directly target, but, influence how HEHC is farmed in the region. Central government governs the farming of HEHC in the Manawatu-Whanganui region through its influence on the regional council’s SLUI.

Central government has no purposeful or coherent policy directed at the farming of HEHC at a national level. However, the farming of HEHC is governed indirectly by central government as a result of its broader rationality of rule for agriculture and two of its climate change policies: the Afforestation Grant Scheme (AGS) and the Permanent Forestry Sinks Initiative (PFSI).

All three programmes do not reflect a pure neoliberal form of rule as all collectivise risk, and indicate, as defined in the literature, a hybrid form of rule accepted as characteristic of the ‘roll-out’ of neoliberalism in Western countries, including New Zealand (Larner, 2000; Peck & Tickell, 2002). What is contradictory is that in all three programmes central government employ technologies of government that collectivise risk, in order to advance a longer term neo-liberal agenda – a characteristic of governing not unique to this research (Larner, 2000). The aim of both the AGS and PFSI is to support and encourage afforestation to offset not only farmers but also New Zealand’s obligations under international agreements, primarily the Kyoto Protocol. Livestock farming is a dominant contributor to New Zealand’s total greenhouse gas emissions. New Zealand’s climate change obligations, if allowed to flow through directly to farm

businesses, would have significant and uncertain implications for these businesses and would also distort existing production-consumption relations. By collectivising the risk and governing New Zealand's farmers' climate change obligations 'through society' (Rose, 1996b, p. 61), central government is continuing to facilitate market-led governing of farming⁵¹.

The SLM-HCE programme is also not an example of pure neoliberalism as it is a form of risk sharing and, as with the AGS and PFSI, has incidental implications for the farming of HEHC in the Manawatu-Whanganui region. This programme is also contradictory. Although targeting the farming of HEHC, the motivation for central government funding the programme, and hence partially funding SLUI, was not to conserve soil on HEHC but to build the region's resilience to future adverse climatic events. The 2004 storm highlighted for the government of the day the Manawatu-Whanganui region's vulnerability and the SLM-HCE programme, as articulated in Chapter Six, is but one of a suite of programmes through which central government aims to build the region's resilience and thereby reduce the government's and the region's future fiscal risk. Central government's hardened stance on the provision of assistance following adverse events taken after 2004 and the favourable treatment handed out to the regional council for its prudent investment in flood damage insurance before 2004 are further evidence of the commitment by central government to a neoliberal rationality of rule.

In the governing of agriculture and the environment, the New Zealand central government is grappling with how to balance state-led and market-led forms of governing. This balancing act is evident also in the governing of agriculture and the environment by central/federal governments in Europe and Australia (Buller & Morris, 2004; Higgins, et al., 2008). The set of power relations that international climate change obligations introduced to New Zealand in the early 2000s added further complexity to the set of 'hierarchical power relations' (Lockie, 2006b, p. 35) already introduced by exposure to the market. New Zealand's international demands for free-trade, along with other Cairns Group countries including Australia, impose restrictions on the types of intervention that it can employ within country to govern agriculture.

In-country dynamics also contribute to the complexity central government faces in achieving a balance of rule that is acceptable domestically and internationally. The sustainability vision and linked policies of the Labour-led Government in 2006 are illustrative of the competing international and in-country dynamics faced by the government when dealing with the environment and productive agriculture in New Zealand. The sustainability vision advanced by the PM in 2006 and the resulting policies were ways for New Zealand to 'pull [its] weight on

⁵¹ In December 2012 at the United Nations Doha Climate Change conference, the New Zealand National-led Government indicated that it will not participate in the second commitment period for the Kyoto Protocol. The implications this decision will have on central government's current and future funding for PFSI and the AGS is unclear.

climate change and on sustainability’ (Clark, 2006a) as a responsible member of the international community. Clearly also it was a political strategy of the government to gain support from other political parties and voters, as is evident from the political rhetoric and manoeuvring at the time of the announcement of the vision by the PM, as discussed in Chapter Six.

The competing demands faced by the government from within New Zealand are also evident in the broad-ranging benefits referred to by the government to promote the climate change initiatives, including the AGS and PFSI. The Prime Minister highlighted the environmental (‘water quality’, ‘soil erosion’) and broader community (‘flood protection’) benefits from sustainable land management linked to climate change (Clark, 2006c). The agriculture minister hailed the PFSI as a ‘radically new business opportunity’ for land managers as well as an opportunity for them ‘to protect vulnerable land’ (New Zealand Government, 2006), while the climate change minister extolled the ‘significant potential benefits, not only for climate change, but also for the environment and the economy’ (New Zealand Government, 2006).

This in no way, however, can be construed as evidence for the New Zealand government’s acceptance that there is a place for farmers to be recompensed and supported for the ‘public good’ environmental services they provide, as suggested is the case in Australian agriculture (Dibden & Cocklin, 2009). Central government and regional council rhetoric is devoid of any references to multi-functionality, but within the discourse around sustainability there is an acceptance that farmers need assistance to manage some of the environmental implications that farming has rendered on the environment.

The complementarity of planting and retaining trees on HEHC that was afforded to other political priorities of the government at the time, including climate change, sustainability, environment, and the economy, provided an impetus for central government’s support for the SLM-HCE programme and ultimately the regional SLUI.

Central government: facilitating market-led governing and competitive productivism in the sheep and beef sector

HEHC is farmed as part of an integrated farming system. The external factors that shape how the farm as a whole is managed also therefore shape the farming of HEHC. Central government govern the farming of HEHC at a national level indirectly by facilitating market-led rule and by shaping the broader impact and rationality of government and industry policies on farming. The governing of climate change at a national level by central government is, as argued above, an example of central government facilitating undistorted market-led rule of farming.

Domestic and international trade and financial markets are significant in shaping the farming of HEHC in the Manawatu-Whanganui region through their influence on the prices farmers receive for their agricultural products, the structure of that pricing, and the overall profitability of hill country farming enterprises. Sheep and beef farmers interviewed in this research respond, as do many primary producers in New Zealand, to market-linked signals by producing stock for sale at a certain weight and with carcass and meat quality characteristics defined by the processors through price-based schedules and quality standards. In this research there were isolated examples of farmers who had voluntarily aligned parts of their livestock production with a retailer-driven quality assurance scheme. However, as yet the audit culture has not influenced the use and management of natural resources including HEHC by hill country sheep and beef farmers in the Manawatu-Whanganui region or the impact of their farming on these resources. No evidence emerged in this research to suggest that the land-use decisions of hill country farmers are defined or moderated by retailer specifications. Other New Zealand researchers have also highlighted the limited reach of the audit culture into conventional farming systems (Campbell, et al., 2012; Haggerty, et al., 2009).

Central government's governing of the New Zealand economy, in conjunction with these effects of markets, has also had significant indirect impact on the farming of HEHC. The profitability of hill country sheep and beef farms, the predominant farming systems with HEHC in the region, has over the past decade received relatively low and variable returns and faced increasing input costs as a direct result of market and broader economic factors, including the exchange rate (Deloitte, 2011). The level of discretionary income and the financial 'health' of the farm business is a factor that influences not only the investment by farmers in environmental works like soil conservation on HEHC, but also expenditure on inputs fundamental to the productive performance of the farm, like fertiliser.

As illustrated, through meat processor' price-schedules and quality standards, the market influences livestock production systems on hill country sheep and beef farms in the region. However, it is not the market but central government, together with the sheep and beef industry body, which encourage production and business efficiency in farming through the advancement of competitive productivism. The analysis of, and future strategies recommended for, the sheep and beef sector in the Red Meat Sector Strategy (Deloitte, 2011), as outlined in Chapter Six, illustrate clearly Beef+Lamb NZ and central government's commitment to this rationality for the sector. This neo-productivist form of governing differs from that argued to exist in the New Zealand cooperative dairy industry (Burton & Wilson, 2012), but reflects that argued by Dibden and Cocklin (2005) as dominant in Australian agriculture, and contrasts with the market and repositioned productivism said to characterise agriculture in Europe (Tilzey, 2000 cited in Burton & Wilson, 2012; Potter & Tilzey, 2007).

The competitive-productivist governing of sheep and beef farming by central government is also evident in the way agriculture and farming (including hill country sheep and beef farms) is represented, principally by MAF and supported by Federated Farmers at the national level and the industry body Beef+Lamb NZ. Farming is made visible primarily in economic and business terms through government and industry discourse, economic metrics and farm level productivity and profitability statistics MAF draws from industry sources including Beef+Lamb NZ. MAF's position at the 'top-table' in Cabinet also means this construction of farming and agriculture informs and moderates broader government policies. Supported by central government, the sheep and beef industry, through Beef+Lamb NZ, also govern the sector by advancing a competitive-productivist rationality. This is evident in the discourse used and the statistics compiled by Beef+Lamb NZ from the sector and outlined in Chapter Six. The Red Meat Sector Strategy (Deloitte, 2011) developed to guide the future development of the sector emphasises as crucial the need to enhance the business management capabilities of sheep and beef farmers if the productivity gains for the sector are to be realised.

As illustrated in Chapter Six, MAF's dominance in the 2000s over MfE in the sustainability and sustainable agriculture space was significant to how farming and agriculture was not only made visible for governing by central government but also how it was not made visible. Agriculture, including farming, is in the main constructed in economic and productivity terms. In making farming visible in this way MAF has neglected to make it visible in other ways. Statistics and metrics that can convey agriculture and farming in dimensions of sustainability other than economic have not been given the same attention or status within central government. For example, a broader focus on social and land use change across rural spaces, including but not limited to farms, would provide insights that currently do not exist. The inattention to the environmental dimension was evident in the lack of investment by central government in environmental research identified in the government's 2004 review (Ministry of Research Science and Technology, 2004).

The current construction of agriculture in economic and competitive-productivist terms, at a central government and industry level, also contributes to how farming and agriculture is more broadly seen in New Zealand. This view of agriculture therefore also informs some of the challenges directed at farming in the sustainable agriculture debate that portrays farmers as driven solely to optimise production and profit.

Central government governing the regional council

Central government governs how HEHC is farmed in the Manawatu-Whanganui region, in part, through the specific arrangements put in place as a result of central government's funding of SLUI through the SLM-HCE fund. The arrangement is by way of a contract that includes

performance criteria that link to central government's priorities in funding the programme. This arrangement indicates a targeted intervention by central government through the regional council and not a form of 'governing at a distance' predicted of a neo-liberal form of rule such as a partnership or network arrangement (Dean, 2010a; Lerner, 2000). In addition, however, the regional council is advancing a competitive-productivist form of agriculture that aligns with central government and the sheep and beef industry body's rationality of rule for this sector; an aspect discussed in more detail in a later section.

Before the SLM-HCE programme was established, the CE of the regional council stated that the council was 'not accountable to any ministry' (McCartney interview, 2007), and Paul Reynolds, the then Director of MAF Policy, and senior managers in the regional council acknowledged that the relationship between MAF and the regional council was not strong. The provision of funding by central government to the regional council came with conditions that resulted in the regional council's SLUI aligning with the priorities of central government and being accountable to MAF. The conditions were developed through negotiation before funding was given and cemented as performance criteria in the contract signed between the regional council and MAF. The contract represents a technology of performance through which the governing of the regional council by central government is achieved. Central government's involvement led to the targeting of the regional council's efforts on farms with HEHC in catchments and sub-catchments identified as most at risk of receiving sediment from soil erosion from farmland.

Regional council governing: a mixed variant of rule

The farming of HEHC in the Manawatu-Whanganui region is governed by the regional council through SLUI, a voluntary mechanism partially funded by central government, the regional council and individual farmers; and the Proposed One Plan, a mix of voluntary and rule based mechanisms (as documented in Chapter Seven). The regional council's new rationality of rule for governing farming's use and impact on natural resources in the region also defines how the council governs the farming of HEHC in the region. This section will first discuss SLUI and then the new rationality of rule that is reflected in the Proposed One Plan and across the council's governing of farming in the region.

The Sustainable Land Use Initiative: a hybrid form of rule

Through SLUI the regional council seeks both to improve the resilience of the region to future extreme climatic events, as is the intent of central government, and to protect the soil-resource and reduce the impact of soil erosion on water quality. Soil conservation on HEHC in the region satisfies both these demands. How the regional council governs farmers to protect the soil resource is influenced in this case by the involvement of central government at a regional level.

The funding arrangement for SLUI means risk is collectivised not only at the national level but also at the regional level through the region's community. The farming of HEHC in the region is governed therefore in multiple ways: through society, through community, and through what is articulated by Rose (1996b, p. 61) as the 'regulated and accountable choices of autonomous agents' – the farmers of HEHC. From a neo-liberal perspective, the jointly funded soil conservation model incorporated in SLUI brings together in one programme two contrasting forms of rule. One seeks to advance hill country farmers as independent, economically rational actors, while the other seeks to advance a social responsibility in their farming of HEHC. This is a hybrid form of governing evident also in agri-environmental programmes in Australia (Higgins & Lockie, 2002; Lockie & Higgins, 2007). This hybrid form of rule incorporates both neo-liberal and social mentalities of rule and is argued by Lockie and Higgins (2007) to compromise the performance of agri-environmental programmes. However, evidence from this case study does not support Lockie and Higgins' (2007) stance.

The shared model for soil conservation in New Zealand included within SLUI has a proven track record among many hill country farmers of HEHC in the region and regional council staff. The 1/3, 1/3, 1/3 funding model and the use of differential incentives by regional council staff in negotiating the scope and type of on-farm works with farmers are familiar and generally accepted. There is no contradiction for the farmers interviewed or for the regional council in implementing soil conservation works as part of SLUI that provide benefits both on and off-farm, to the regional community and the nation.

Whole farm plans: a competitive-productivist agenda for farming

In seeking to gain 'buy-in' for SLUI the regional council packaged soil conservation within a competitive-productivist frame, assuming this would then appeal to farmers. This assumption is evident in the CE of the regional council's explanation for using whole farm plans in SLUI:

Yes, [SLUI] is voluntary but if we can show that there are better ways to yield productivity out of a farm then a lot of more, what I call business type farmers recognise that and grab it quickly (McCartney interview, 2007).

However, in framing soil conservation in this way the regional council is also advancing this model for farming on hill country farms. The resource map and work action plan in the whole farm plan are based on an analysis of the land resource in terms of its ability to sustain differing levels of intensity of agricultural production. The LUC classification scheme perpetuates at farm level the competitive productivist agenda for agriculture evident in central government and in the industry body. The LUC classification scheme is a powerful example of how a rationality of rule is made stable through inscription in seemingly 'mundane' and 'neutral devices' (Dean, 2010a; Rose & Miller, 1992), and how this rationality of rule can then be translated across time

and space. In the 1960s, when the classification scheme was initially published, as outlined in Chapter Five, central government's agenda for agriculture was one of increased productivity. Soil conservation was moderated by this rationality through the classification scheme and land at risk of erosion was represented as land with limitations for productive use. This construction of HEHC in the LUC classification scheme remains today, and is used within the whole farm plans to identify both HEHC that can be 'retired' from farming through soil conservation, and farm land with the potential for increased productivity. The whole farm plans make farmland including HEHC predominantly visible in productive terms and fail to represent the farm and the impacts of current management of the farm in broader environmental sustainability terms. As highlighted in Chapter Seven, in a SLUI whole farm plan the farm is made visible in a number of ways, but in all instances it is made visible as a distinct and separate parcel of land defined by the legal property boundaries of the farm. The farm is not made visible as an integral and linked component of a sub-catchment or catchment. The competitive productive model for farming is also emphasised in whole farm plans through the inclusion of the productivity and profitability assessment in the business component of the plan.

Incorporating a business plan with the soil conservation plan, to quote Higgins & Lockie (2002, p. 426), constitutes ecological sustainability as a contingent outcome of 'conducting oneself in an economically and socially 'responsible' way':

Hence, in this sense, statistics become a highly significant technology of agency that constitutes farmers as environmentally rational and socially responsible only to the extent that their behaviour conforms to statistical representations of economically rational conduct (Higgins & Lockie, 2002, p. 426).

An alternative interpretation of these findings can be offered, however. The whole farm plans and the LUC classification scheme can be argued to represent a successful example of how environmental aspects of sustainable agriculture and the competitive productivist agenda for farming can work together. What the soil conservationists have achieved is to construct soil protection in a way that accords with the dominant rationality of rule for agriculture (land use).

The original guiding principle for New Zealand soil conservators as argued by Lance McCaskill, was that:

Each acre must be used according to its capabilities and treated according to its needs (McCaskill, 1973, p. 188).

This principle remains evident in the outcomes sought by advocates of soil conservation interviewed in this research. However, what is also illustrated in this research is the potential consequence of not making visible through metrics and statistics land's ecological and broader environmental value and the impact of farming on this. The failure to represent land in this way

means it is not ‘amenable to intervention’ (Miller & Rose, 2008b, p. 15). Soil conservation within the Manawatu-Whanganui regional council was side-lined as a priority within the region after the formation of the council in 1990, as described in Chapter Seven. Current policy initiatives to reduce the loss of soil through accelerated erosion from pastoral farming are now in place because of an extreme weather event, major organisation change within the regional council, and the aligning of a number of events and political imperatives that encouraged central government to help fund SLUI. Had the types of metrics, maps, and statistics that now make HEHC visible in multiple ways been accessible to and in use by the regional council before the storm, soil conservation might have provided a focus for the council’s efforts long before 2004.

The One Plan: a new regional rationality of rule for governing farming

The Proposed One Plan reflects a new rationality of rule for the regional council in its governing of farming’s use and impact on the natural resources in the region. The changes put in place within the regional council after the storm and the shift in emphasis on farming in the Proposed One Plan, as detailed in Chapter Seven, altered the relationship between the council and farmers, which has implications for how the farming of HEHC is governed by the regional council. The balance of power between the regional council and farmers shifted as a result of the changes the council made. The explicit recognition in the Proposed One Plan of the impact of agriculture on the region’s natural resources and the strengthening resolve of the regional council in its approach to using rules and regulation to govern farming are significant. The regional council cemented its identity as a governing authority of farming’s use and impact on the natural resources within the region. Farming is represented as contributing significantly to the region’s environmental issues within the Proposed One Plan, and the increased use of regulation the regional council indicated it is prepared to use in governing farming is indicative of this new rationality.

In taking this stance the regional council acknowledges that the market has to date failed in governing the adverse impact of farming on HEHC and other natural resources at the regional level. The regional council does not resist market-led rule for farming or the broader agenda for competitive productivism in agriculture (as is illustrated in the whole farm plans in SLUI), but it is resisting a neo-liberal rationality of rule for farming’s use and impact on natural resources at the regional level. The regional council are demanding of farmers independent entrepreneurship and social responsibility in terms of the impact of their farming on the environment. The CE makes clear the message to farmers implicit within the Proposed One Plan:

Look, this is your business, you decide how you want to manage it and just make sure that our expectations and the community's expectations around environmental standards are met. That's fair, you know (McCartney interview 2007).

The form and rationality of rule evident in the regional council's governing of the farming of HEHC do not accord with a post-productivist shift (Wilson, 2001) nor do they illustrate the broad rural development agenda of multi-functionality (Marsden & Sonnino, 2008). Adapting Burton's (2012) classification of neo-productivism, the form of rule reflected here is one that can be described as a repositioned regional form of competitive productivism: a market-led productivism facilitated by central government but moderated by the regional council through sustainability objectives.

Farming and farmers: shaping how farming is governed by the regional council

The governing of farming of HEHC by the regional council was moderated by resistance from farmers not only from the region, but also nationally through the peak body, Federated Farmers, and was linked to the shift in rationality of rule for farming indicated in the Proposed One Plan. As with central government, the regional council is also faced with competing demands that ultimately define how the council governs aspects of farming in the region. Although not as complex as central government, competing demands come from within the region and beyond. However, most significant for the regional council is the resistance from farmers.

The demands of central government are imposed directly through its contractual arrangements for SLUI and the SLM-HCE programme. In the aftermath of the 2004 storm, early development and funding through the community of SLUI met limited opposition. Criticism of SLUI from within the farming community was a consequence of resistance to the apparent threat of regulation of farming by the regional council as indicated in the Proposed One Plan, of the representation of farming as the major contributor to the environmental issues in the region, and the view of hill country farms as HEL land. Although the regional council argued that SLUI was separate from the Proposed One Plan, for farmers this was irrelevant as at the heart of their concerns was the changing relationship between the council and farmers. Resistance to the regional council's proposal to utilise more regulation resulted in the council's Proposed One Plan facing opposition from farmers potentially impacted by the proposed regulation. Proposed regulation of the management of one group of farmers was viewed not only as being a precedent for future regulation of all farmers in the region but also as a precedent for the greater use of regulation by other regional councils and the governing of farming nationally. As a result the policies the regional council have in place are moderated by interests beyond the region.

Resistance is inherent in government a point argued in Chapter Two and illustrated in this research, also. Farmer resistance to regulation as a mechanism for governing farm management is common to farmers in New Zealand (Rosin, et al., 2007) and Australia (Cocklin, et al., 2007; Higgins, et al., 2010a; Leviston, et al., 2011). Resistance to regulation is argued to reflect the strong independent character of farmers (Cocklin, et al., 2007; Higgins, et al., 2010a). Dibden and Cocklin (2007) argue that this demand by farmers for independence from external forms of rule contrasts with the cooperative norms and collective allegiance shown within the farming community. This collective allegiance of farmers, argued to be a form of resistance to the advance of competitive productivism by Dibden and Cocklin (2007), was also evident as a form of resistance in defining how the farming of HEHC in the Manawatu-Whanganui region was governed. Farming leaders' reluctance to side with the regional council and its advocates to support SLUI in the face of farmer opposition was a source of frustration to the council and Alec Mackay in his efforts to promote and gain farmer 'buy-in' to SLUI. The former chair of the regional council, Garrick Murfitt, failed to gain re-election in his rural electorate because of his role in and support for the Proposed One Plan.

Farmers are not passive recipients of governing from above (Dibden & Cocklin, 2005). They are shown to be actively engaged in resisting and mutually constructing aspects of government. In this research farmers' resistance to the governing of farmed HEHC took a number of forms. Farmers individually and through Federated Farmers were involved in direct and indirect political resistance to SLUI and the proposed policies of the regional council. Contrary to what Dibden and Cocklin (2007) argue is the case in Australia, the neoliberal mentality it would appear has not neutralised New Zealand farmers' engagement in direct political resistance to governing that they oppose. Farmers' rejection of SLUI and their refusal to participate in the scheme also constitutes a form of resistance. So too does the negotiation process that occurs during the development of the whole farm plan with the regional council in setting the final schedule of on-farm actions. Resistance also will occur in the extent to which the schedule of works specified in the whole farm plan is completed in the proposed time and to the extent agreed to.

Defining good and bad farming

What this research empirically illustrates is that the farming of HEHC is not done in isolation. A point made by other New Zealand researchers with respect to on-farm practice on organic and conventional farms and in intensive sheep farming (Campbell, et al., 2012; Haggerty, et al., 2009). Farmers' farm amidst a complex of uncertain variables including market returns, the climate and changing regional council and central government policies for agriculture. The farming of HEHC is governed by the market, central government, the regional council, and

most important, farmers. What this research definitively illustrates is how the farming of HEHC is governed through a collectivised co-construction of farmer knowledge (a knowledge-culture) that shapes the individual decisions and practices of farmers of HEHC.

The farming of HEHC is integrally linked to what farmers consider to be, simplistically stated, good and bad farming and, as reported in the United Kingdom (Clark & Murdoch, 1997; Tsouvalis, et al., 2000), this is constituted and shaped by a stable and historically anchored farming knowledge-culture. Although not explored in this research, the distinctness of the sheep and beef sector to other agricultural sectors, like dairying, highlighted in other New Zealand research (Campbell, et al., 2012) suggests that different knowledge-cultures are likely to exist in different farming sectors and potentially in different farming regions. As argued in Chapter Two, and illustrated in this case study, knowledge-culture as a concept recognises and provides a way to describe and make visible farming as government. The idea of resistance as a concept in the agriculture governance literature has been predominantly used to acknowledge the role of farmers in shaping how farming is governed by central/federal and regional government. This research argues for and provides evidence to support the need to acknowledge farming as not just resistance but a form of government in its own right.

The historical link to current farming practices on HEHC is illustrated in farmers' references, when describing their current farming, to the practices of their farming fathers and the past practices of other sheep and beef farmers. A similar characteristic is identified in the knowledge-culture of United Kingdom farmers (Riley, 2008), and it is likely, given the European origins of many New Zealanders, that elements of English farming culture still resonate in the practice of New Zealand farming today.

The stability and durability of farmers' knowledge-culture (Morris, 2004) is evident in the narratives of HEHC farmers about farming. But hill country farmers' knowledge-culture is also shown in this research to be malleable and porous, and, over time, dynamic. Farmers' varying attitudes and responses to the clearing of gorse from hill sides and the criticism directed by farmers at the outmoded 'slash and burn' practices of farmers on hill country illustrate a shift in knowledge and what constitutes good and bad farming. Morris (2006) argues that the continuous co-construction of farmers' knowledge-cultures occurs through interaction, a point supported by this research. Soil conservation practices were highlighted in this case as being an embedded component of HEHC farmers' knowledge-culture. A key mechanism through which soil conservation practices were transferred historically to farmers was the interaction of farmers with a soil conservator. This research highlights the importance of the soil conservators and the staff members of the regional council who work with farmers in developing the on-farm works plans as part of SLUI are important mechanisms of governing that contribute to the uptake and

wider acceptance of SLUI in the region today. Defined in the literature as intermediaries (Eastwood, et al., 2012; Morris, 2006), these people have a working knowledge of farming and are able to bridge the knowledge-cultures of policy and farming. The flexibility within the whole farm plans that allows for farmers and the regional council to tailor through negotiation soil conservation works to the specifics of the farm and the farmer is also highlighted as a strength of the process and a reason farmers are more accepting of involvement with the regional council. The non-prescriptive and means-based nature of SLUI is highlighted in other research as a factor contributing to the effectiveness of voluntary agri-environmental schemes (Burton & Wilson, 2006; Hodge, 2001; Riley, 2008; Robinson, 2006).

Soil conservation is a widely accepted part of farming in the hill country of the Manawatu-Whanganui region. However, soil conservation is not necessarily enhanced or complemented by what for some farmers constitutes ‘good farming’. This also illustrates and confirms the heterogeneity of farmers and the variable and inconsistent way farmer’s subjectivities are altered and modified through interaction. The visual artefacts of farming in the landscape are part of the knowledge-culture of hill country farming and shape also farmers’ practice. The association made between gorse on hill slopes and lazy farming by some farmers is an example of how observable aspects of farmers’ practice contribute to farmer’s identity and social/cultural rewards, as argued by other authors (e.g. Burton, 2004b; Burton, 2012; Burton & Paragahawewa, 2011).

All farmers interviewed acknowledged the on-farm benefits of minimising erosion on HEHC on their farms. The financial assistance provided to them meant they did not change their attitude or instigate soil conservation works; rather it encouraged them to implement works in areas where they otherwise might not have because the off-site benefits outweighed those on site. Productivity and profitability in farming is conveyed in the literature by some authors as being mutually exclusive with an environmental ethos (e.g. Cloke & Goodwin, 1992; Wilson, 2001). This research has not explored in detail this relationship on hill country farms in the Manawatu-Whanganui region, but it has shown that this apparent dualism is a simplification of a much more complex inter-relation of factors.

Hill country farming in the Manawatu-Whanganui region does not conform to the entrepreneurial competitively productive identity arguably the aim of central government within the current neoliberal era of rule. In Chapter Eight, the aspects of farming highlighted as important to farmers interviewed include but are not limited to livestock performance and relate to effectively managing the uncertain seasonal dynamics of climate and prices rather than attaining higher levels of production than other farmers. The lack of accord between macro-level rationalities of rule and that of farmers was also reported by Burton & Wilson (2006),

although they identified it as a temporal discordance implying that farmers were lagging behind central government. Farming is fundamentally a productive activity (Burton, 2004b; Wilson, 2001). However, as argued as being the case for farmers in the United Kingdom (Burton & Wilson, 2006), it is only one dimension of an interwoven mix of dimensions of what constitutes farming for farmers of HEHC.

Soil Conservation: a loose network of government

Accurate calculations as to the costs and benefits of managing HEHC were identified as not existing in the stock-take of science funded by MAF (Jones, et al., 2008). This conclusion reflected the paucity of statistics and metrics used at both a regional and national level to record accurately the extent and location of accelerated erosion in New Zealand. This lack of data is evident also in the data on agriculture compiled by MAF and in the environmental reporting undertaken by MfE. However, there was no doubt at any level, from central government through to the farming community, that there were benefits to investing in soil conservation in the Manawatu-Whanganui region. The dramatic and visual impact of the 2004 storm and the legacy of soil conservation expertise and knowledge that remains within the farming community and at regional council and central government level added certainty to the value of investing in soil conservation.

Emerging as significant to governing in this case is the loose network of individuals with knowledge of farming and soil conservation that extends through central government and the regional council. The loose arrangement of soil conservation expertise and advocacy is an artefact of history. Soil conservation was a well-recognised and strong field of expertise and practice in the period before the local government reforms of 1989 when central government ceased funding for soil conservation, as was related in Chapter Five. Many individuals with expertise and experience in soil conservation from this period still remain actively employed and involved in related fields and sites and, given their average age, hold positions of authority and seniority in central government and the regional council. In this research Jim Sutton, the Minister of Agriculture at the time of the storm in 2004, farmed the family farm before entering politics and had direct experience of soil erosion in the South Island and with the ECFP after Cyclone Bola. Likewise, Kevin Steel, an advisor to the Minister of Agriculture who followed Jim Sutton, has a background in soil conservation, and his role in central government's support of the SLM-HCE programme was acknowledged by participants in this research. The MAF official called on to develop the SLM-HCE programme and negotiate and work with the regional council on SLUI also had previous experience with the pre-1990 model of soil conservation in New Zealand, as did various staff members in the regional council. Garrick Murfitt, the chair of the regional council during the development and initial implementation of

SLUI, is a hill country farmer with experience in soil conservation. The scientist, Alec Mackay, was an initial catalyst to the regional council's commitment to developing a programme to govern HEHC in the region and directly contributed to the development and on-going roll out of SLUI, including advocating with Garrick Murfitt for central government funding.

The scattered infiltration of expertise and knowledge within and across levels of central and regional government shapes central government and the regional council's governing of HEHC in the Manawatu-Whanganui region. The informal network of soil conservation advocates conforms with what Miller & Rose (2008a, p. 34) articulate as being 'a delicate affiliation of a loose assemblage [...] into a functioning network'. This alignment is not based on formal or informal alliances or explicit acknowledgement of common interests. The informal and loose nature of the alignment is illustrated in the events that led to the funding by central government of SLUI described in Chapters Six and Seven. As argued by Miller & Rose (2008a), the loose alignment is in part established on a shared language and accepted theories and relationships between cause and effect. The soil conservation network highlighted as existing in this case is a consequence of a shared language and knowledge of soil conservation and farming and an unquestioned acceptance of the link between hill country erosion and sediment in waterways and of the legitimacy of a shared funding model for soil conservation on farmed HEHC. The result of this network, this research suggests, is not only the incidental inclusion of HEHC as the focus of governing in central government's AGS and PFSI but also the deliberate support by central government of a programme for soil conservation on HEHC that is contradictory to the core mentality of government.

Conclusion

The governing of the farming of HEHC in the Manawatu-Whanganui region is a product of the interplay between the governing of central government, the regional council, and farming itself. Governing by central government and the regional council are also influenced by competing demands that for central government include both international and national country obligations and imperatives, and for the regional council obligations both within the region and beyond.

This variant of rule is a hybrid form of rule at central government level and also at the level of governing by the regional council; there are inconsistencies and contradictions inherent in this form of rule, as well as complementarities and linked synergies. The form of rule exhibited in this research conforms to a form of rule predicted in the governance literature and also exhibits, as predicted, local peculiarities contingent on history, geography, timing, and the opportunistic influence of a loose network of expertise. However, the neoliberal model for rule is exhibited through this research as a simplistic and incomplete representation of the complex

interconnected web of multi-scale rationalities and forms of rule evident in the governing of the farming of HEHC.

Central government governs the farming of HEHC in the region in multiple and varied ways. However, reducing accelerated erosion of HEHC through farming is not a central motivation of central government. The farming of HEHC is governed as an incidental component of programmes of central government and through central government's broader neoliberal rule of farming, which is also reflected in the rationality for sheep and beef farming of the industry body, Beef+Lamb NZ. The central government programme that targets the farming of HEHC in the Manawatu-Whanganui region is not a departure by central government from a predominantly neoliberal path. The hybrid variation in rule is a means to advance neoliberalism by building the capacity of the region, in the face of future adverse climatic events, to be independent of central government.

The farming of HEHC in the region is defined also by farmers who moderate and define the governing of this land through their resistance and involvement in developing and implementing the rationality of rule and mechanisms of government for HEHC of the regional council. However, the influence of the governing of central government and the regional council on the farming of HEHC is defined ultimately by how the policies and mechanisms of rule of these governing authorities are integrated into or accord with what farmers consider to be good and bad farming.

Importantly farming knowledge-cultures are argued for and illustrated as being a form of government that governs how farmers farm HEHC. The rationality of rule of farming reflects aspects of a neo-liberal variant of rule, but significantly it is grounded in cultural and social dimensions that are not captured by the characteristics of neo-liberal forms of rule or the macro-level conceptualisations of agricultural change presented in the literature.

CHAPTER TEN

Conclusions

The intent of this research is to add constructively to the sustainable agriculture debate in New Zealand. This has been done by completing a case study of an aspect of farming that has potentially adverse impacts for the environmental sustainability of a natural resource. The case studied is the farming of highly erodible hill country in the Manawatu-Whanganui region and how the farming of this land is governed, and the reasons for this governing are the questions answered by the research. The case was selected because hill country erosion is acknowledged as being a significant environmental issue in New Zealand (Ministry for the Environment, 2007a). The pastoral farming of hill country prone to erosion leads to accelerated erosion of this land which ultimately compromises the long term sustainability of this land and hill country farming. The Manawatu-Whanganui region has the highest total area of erosion-prone hill country pasture land of any region in New Zealand.

The purpose of this chapter is to present the insights gained from this case study that add to the sustainable agriculture debate in New Zealand, as well as the broader empirical and theoretical contribution of this research. Finally, consideration is given to future research that will advance and inform not only the sustainable agriculture debate but also agricultural change.

Research conclusions and contributions

Farmers' decisions and on-farm management are being scrutinised and challenged as part of the debate around sustainable agriculture in New Zealand. What this research provides is an example of the difficulties faced by farmers in balancing the diverse and often conflicting demands placed on them to farm sustainably. This research illustrates the complex contradictory and inconsistent demands that are brought to bear on farmers with regard to the management of HEHC through the governing by central government and the regional council of HEHC specifically, but of farming generally, also. Farmers are encouraged to be competitively-productive and financially profitable as well as socially responsible in the management of the environment.

This research identified that central government currently has no coherent policy imperative for reducing the rates and extent of accelerated erosion in HEHC or for sustainable agriculture in New Zealand. Across some programmes of central government, which have implications for agriculture, the impact of farming on the environment is taken into account in the design of the

programme as was evident in the AGS and PFSI for HEHC. However, in the main this research suggests environmental, and it is likely also social, outcomes for agriculture are incidental to economic and trade outcomes sought by central government. At a regional level, the Manawatu-Whanganui regional council has a coherent programme targeting the farming of HEHC in the region that is supported and shaped by central government. However, the regional council does not have a coherent policy for sustainable agriculture.

At a macro-level the form of rule identified is consistent with neo-liberal forms of rule identified in the governing of agriculture in Australia (Dibden & Cocklin, 2010; Higgins, Dibden, & Cocklin, 2010b) and in neo-liberal governing more generally (Larner, 2003; Peck & Tickell, 2002). The form of rule identified as governing the farming of HEHC in the Manawatu-Whanganui region exhibits tendencies of marketisation and individualisation recognised in the literature as constituting a form of neo-liberalism (Larner, 2005). As a form of neo-liberal rule, inconsistencies and contradictions, alignments and complementarities are evident in the hybrid forms of rule at national and regional scale. These characteristics reflect those identified as evident in neo-liberal forms of rule of agriculture in Australia and more broadly (e.g. Dibden & Cocklin, 2005; Herbert-Cheshire & Higgins, 2004; Higgins, et al., 2010a; Peck & Tickell, 2002). Central government and the regional council govern the farming of HEHC by collectivising the risk and cost of preventing accelerated erosion while also advancing a rationality of rule that encourages farmers to become competitively-productivist business people in the global agri-food market place. The competitive-productivist rationality for farming is moderated at the regional scale by objectives for environmental sustainability inherent in the regional council's SLUI which is funded and shaped by central government.

Alignments and complementarities were highlighted in this research in the policies of central government and the regional council in the governing of HEHC and competitive-productivist rationality of rule for farming, also. The alignment in governing across time is also importantly illustrated as a characteristic of governing in this research. As a result of the use of the Land Use Capability classification scheme in the whole farm plans, the productivist agenda for hill country farming inherent in the scheme aligned with the current productivist agenda of the central government and the regional council.

The hybrid neoliberal model for rule is highlighted in this research to be a simplistic and incomplete representation of the complex interconnected web of multi-scale rationalities and forms of rule evident in the governing of the farming of HEHC. Neo-liberal forms of rule are identified in this research to be evident in the rationalities of governing of the farming of HEHC by central government, the regional council and farmers. However, a neoliberal rationality of rule fails to account in any meaningful way for the cultural and social dimension illustrated in

the shaping of farmers decisions by what has been described in this research as inherent in farming knowledge-cultures.

Farming is highlighted in this research as comprising a stable set of practices and knowledge that are, within a particular farming sector and farm type, socially and culturally constructed and distinct. Accepted farming practices maintain and enhance, as well as constrain and compromise, the environmental sustainability of natural resources. The farming of HEHC in the Manawatu-Whanganui region to reduce accelerated erosion is an accepted farming practice amongst hill country farmers. However, as illustrated by the varied attitudes to gorse and scrub on hill sides, there are accepted farming practices that run counter to environmental sustainability. What is clearly illustrated in this research is that farming practices and knowledge are not static, but do change in response to central government and regional council policies.

What is emphatically established as a result of this study is the inherent danger associated with generalising across New Zealand agriculture, or for that matter across farming systems and farms. The governing of the farming of HEHC illustrates the complex, and highly specific mix of national, regional, farming sector and farm characteristics, events, factors, and policies that come together to define how one aspect of a farm is managed by a farmer. What constitutes sustainable agriculture in New Zealand, this research suggests, as predicted by Gatzweiler et al. (2001), will depend on the specific socio-cultural, political, economic, and ecological contexts and dimensions of farms and farming system types, agricultural sectors, and regions of New Zealand. The issues and solutions relevant to sustainable agriculture in one farming sector will not apply necessarily to another, nor will the issues and solutions impacting on one region be necessarily relevant to all regions, likewise what constitutes sustainable agriculture on any farm will be contingent on the specific characteristics of the social, economic and environmental dimensions of that farm. The advancement of sustainable agriculture, this research argues, is dependent on a deeper and different understanding of these dynamics than is currently available or even considered.

What is confirmed is that central government's agenda for New Zealand agriculture is for a market-led competitive-productivist form of agriculture, and this agenda is pervasive across levels of government and within the sheep and beef industry. The market influences farming significantly as a result of the prices farmers receive and the costs of the inputs they use. However, this research also confirms how weak the market has been to date in influencing some specific on-farm practices of conventional sheep and beef farmers in New Zealand (Haggerty, et al., 2009; Rosin, et al., 2007), including how they use and impact on natural resources.

Central government's competitive-productivist rationality of rule has shaped, and continues to shape, farming in New Zealand. The technologies of government employed by government to govern agriculture at a distance have resulted in changes in the productive efficiency of sheep and beef farms and the conformation and size of livestock produced for sale by farmers. As illustrated in this research, central government can also shape how farmers manage land to reduce the impact of farming on the environment. This can be achieved through targeted programmes, which do not conflict with international trade agreements and commitments, by governing farming through regional councils. This therefore suggests that progress in achieving sustainable agriculture through change in farming practice can be achieved if central government develops and commits to a more coherent and deliberate policy for sustainable agriculture.

If some current farming practices are accepted as impacting on the sustainability of agriculture then these findings point to a need for attention to be directed at farming from within New Zealand, rather than relying on the market. Strong parallels exist between New Zealand and Australia in terms of how the countries are grappling with the issue of sustainable agriculture (Dibden & Cocklin, 2005). However, there is no evidence from this study that central government in New Zealand is in any way contemplating a shift from its current agenda or approach to governing agriculture. This contrasts with the shift argued to be occurring in the Australian government's stance on governing sustainable agriculture (Dibden & Cocklin, 2009; Dibden, et al., 2009).

The difficulties the New Zealand government faces in navigating the complex and contradictory demands of the market, its international obligations and in-country political and public pressures in directing policy to on-farm environmental change are resoundingly illustrated in this case-study. As is also argued to be the case in Australia, the 'intractable dilemmas' for central government (Higgins, et al., 2008, p. 1778) posed by these competing demands in governing farming's impact on the environment are not easily tackled at a national level.

What this study has revealed is the significant role regional-level government can, and do have, in governing how farmers use and impact on natural resources in New Zealand. This regional-level governing has the advantage of not facing the complex and competing demands of the market, international obligations and country politics. Also, regional-level governing offers the opportunity to develop policies that more closely respond to the regionally specific environmental issues and the farm system characteristics in the region. However, a challenge for regional councils, this study reveals, is to develop policy that targets the use and impact of farming on the region's natural resources while accommodating the resistance of farmers both within the region and nationally. The resistance of farmers in the region, and nationally through

the peak body of Federated Farmers, played a significant role in shaping the final version of the Manawatu-Whanganui regional council's One Plan. In addition, if central government provide financial support, regional policies will need to provide outcomes that are in accord with central government's broader priorities.

This study expands both the theoretical and empirical literature that explores the governing of sustainable agriculture in New Zealand but it also contributes to a broader body of literature concerned with the place of agriculture in New Zealand and the dynamics of international and national factors that are defining and shaping New Zealand farming. The regional-level governing of agriculture has received little attention in the academic literature internationally. One of this study's significant contributions is to extend the theoretical and empirical understanding of this sub-national level of governing of agriculture in New Zealand. In doing so, this research adds empirical validation to the criticism by a number of authors (e.g. Burton & Wilson, 2006; Pritchard, 2005) that attempts to conceptualise sub-national governing and change in agriculture fail to capture accurately the complex dynamic of the governing. The multi-scale complex of governing of farming, across national, regional and farm level, evident in this research cannot be captured by macro-level conceptualisations of agriculture proposed in the literature to date.

The theoretical conceptualisations of macro-level agricultural change that are used to represent forms of agriculture and its governing in the United Kingdom and Europe, are found wanting in this research. However, this study explored only conventional sheep and beef farms, therefore a conclusion cannot be drawn as to the relevance of these conceptualisations to broader rural change in the region or New Zealand. The neo-productivist typology for agriculture proposed by Burton and Wilson (2012) is illustrated as having relevance to considerations of New Zealand agriculture at a national level. What this study illustrates, however, is the importance of accounting for regional-level governing as well as central government governing when representing the forms of government that are directed at changing agriculture in New Zealand.

New Zealand farmers do not farm in isolation. The decisions farmers make and the practices they use are shaped by a complex and interwoven web of factors that are contributed to by other farmers, central government, regional councils, farming and industry bodies, and broader society, as well as the individual circumstances and motivations of the farmers themselves. If, as some argue, sustainable agriculture requires a fundamental shift in thinking and approach then this shift requires a sea change across not only farming but also across central and regional government, agricultural industry, and New Zealand society. Sustainable agriculture in New Zealand will be constantly re-defined and challenged through the interplay of tensions that exist between social (and cultural), environmental and economic concerns. What is hoped is that in

the future this interplay will account more accurately for the realities that farmers face and provide a broader understanding of what constitutes farming beyond the constructions that are more frequently used in the media and by central government. This research goes some ways to contributing to this.

Future Research

The critical analysis completed in this research has raised a number of pertinent questions with regard to sustainable agriculture and in particular how to inform and structure progress in this area. The analysis of the farming of highly erodible hill country by farmers in the sheep and beef sector has provided insights into the distinctness of the sheep and beef sector and hill country farming in the lower North Island of New Zealand. A broader debate on sustainable agriculture in New Zealand would be informed through the completion of critical analyses of other farming sectors as well as of other aspects of the hill country sheep and beef sector in New Zealand.

Social science, although extending its influence and securing a place in informing and shaping agriculture in New Zealand, remains under utilised in the agricultural domain. In Federated Farmers' manifesto for the incoming government in 2008, a demand made of the new government was a 'ring fencing of investment to prevent its access by social scientists and related practitioners' (Federated Farmers of New Zealand (Inc), 2008, p. 29). Although this organisation has in recent years made significant changes to its approach, there is still a need to show that social science is worthy of investment by this sector. The challenge is to extend research similar to that undertaken in this research in a way that engages with the agricultural sector but also informs policy agencies and governing authorities more accurately of the diversity and uniqueness of farming. The knowledge-culture concept holds promise as a vehicle through which farming can be captured and conveyed across boundaries of understanding to better inform the increasing intervention by regional councils and also central government as illustrated in this research.

This research highlighted the limited metrics and statistics that are gathered and used by central government to inform and frame the governing of farming that accounts for the environmental and social dimension of sustainable agriculture. Research is required that identifies relevant metrics that capture the social and environmental dimensions of farming.

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Appendices

Appendix One

Information sheet for research participants

Consent form for research participants

Appendix Two

Documented Sources of Data

Appendix Three

Interview Schedule: Senior Manager MAF Wellington

Interview schedule: CE Manawatu-Whanganui Regional Council

Interview Schedule: Farmer participants

Appendix Four

Time line of sustainable land management and agricultural policy.

Appendix One



MASSEY UNIVERSITY
COLLEGE OF SCIENCES
TE WĀHANGA PŪTAIAO

Governance of Sustainable Agriculture in New Zealand: A case study of hill country erosion

INFORMATION SHEET

Researcher(s) Introduction

My name is Janet Reid I am a senior lecturer at Massey University in the Institute of Natural Resources. I am conducting research for my PhD on the governance arrangements that will foster sustainable agriculture. While government policy supports the goal of sustainable agriculture, progress towards the goal is limited. This research seeks to identify and describe what is shaping the management of erodible hill country on farm land in the Manawatu Wanganui regional council region. The Manawatu Wanganui Region will provide the focus for a single case study that will incorporate semi-structured interviews, documentary analysis and observation. Up to 50 interviews will be completed with people in local government, land managers, elected farmer representatives and environmental lobby groups. The collection of data for the research will be undertaken during 2008 and 2011.

The supervisors for my PhD are Dr Christine Cheyne, School of People, Environment and Planning, and Professor Russ Tillman, Institute of Natural Resources, both at Massey University.

Our contact details are as follows:

Janet Reid

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Dr Christine Cheyne

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Prof. Russ Tillman

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Participant Recruitment

I am seeking your input into this research because you have been identified by me or by other participants in the research as someone with knowledge and information that will assist me to complete my research. Your selection will be because you have a professional involvement related to sustainable agriculture and/or you have knowledge and experience likely to be of value to the research.

Project Procedures

With your agreement the interview will be tape recorded to ensure accuracy in data collection and to assist the data analysis process. The taped interviews will be transcribed and then analysed by using qualitative data analysis software. A transcriber who will be bound by a confidentiality agreement will undertake transcription of interviews. Your name and identity will not be stated explicitly in the research however given the small number of people in certain positions in the region full confidentiality cannot be guaranteed.

Participant involvement

Interviews will be undertaken at a time and location that is agreed to by you. Interviews will be a maximum of 90 minutes.

Participant's Rights

You are under no obligation to accept this invitation to participate in this research. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study at any time;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.
- ask for the audio tape to be turned off at any time during the interview.

Project Contacts

If you have any questions about the research or concerns about your involvement please do not hesitate to contact me or my supervisors.

Research Ethics

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz".



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Governance of Sustainable Agriculture in New Zealand: A case study of hill country erosion

PARTICIPANT CONSENT FORM

This consent form will be held for a period of five (5) years

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/do not agree to the interview being audio taped.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature:

.....

Date:

.....

Full Name - printed

.....

Appendix Two

Documented Sources of Data

Central government level

- Annual Reports, Statements of Intent and Briefings to Incoming Ministers.
- Cabinet Office papers and Ministerial reports to Cabinet committees relating to the SLM-HCE programme.
- Transcripts of media interviews and speeches made by Ministers and senior elected politicians.
- Press releases and releases from the government of the day and other political parties.
- Reports and draft reports completed on contract for MAF and MfE.
- Documents outlining the rationale for and the specifications of central government programmes and schemes.
- Statistics compiled by Statistics NZ, MAF and MfE.
- Technical reports, public discussion documents and agricultural sector overview and forecasting reports from relevant ministries.
- Ministry and New Zealand Government web pages.
- Popular press media reports quoting politicians and senior public servants relevant to the research.

National and regional farmer and sector organisations

- Annual reports, promotional brochures and material.
- Speeches and media reports on speeches made by senior elected officials in the organisations.
- Submissions to central government and Manawatu-Whanganui regional council.
- Statistics compiled and published by the organisations.
- Media reports and popular press articles relating to the organisations.

Manawatu-Whanganui regional council

- Regional council annual and long term plans and planning documents.
- Draft and Proposed One Plan documents and amended plans.
- Submissions to the One Plan
- Reports to the One Plan Land Hearing Commissioners from regional council officers and experts on their behalf, as well as reports from experts on behalf of submitters.
- One Plan hearing minutes, reports and decisions.
- Catchment Operations Committee agenda's, minutes of meetings and reports to the committee.
- Regional council promotional brochures, web pages and press releases.
- MAF contractual agreements and specifications for service from MWRC in relation to SLUI as part of the SLM-HCE programme funding.

- MWRC proposals and plans for implementation of SLUI.
- Art Gallery Exhibition booklet.
- Regional council organised workshop agenda, presentations and report on the workshop.
- Performance validation report on MWRC SLUI prepared for MAF.

Other

- Technical manuals and reports related to whole farm plans and the Land Use Capability classification scheme.
- Whole farm plan templates and example reports.
- Technical reports commissioned by MWRC as part of the roll-out of SLUI.

Appendix Three

Interview Topic Schedule for Senior Manager MAF Wellington.

- What has / has not shaped and is currently shaping the management of highly erodible hill country (HEHC) land in New Zealand at a national, regional and on-farm level?
- What role has /and are MAF (and other key entities) played/ playing in shaping sustainable agriculture and in particular the management of HEHC?
- What influenced this role, what were the reasons they were put in place and what constrained the roles played?
- What specific policy instruments have and are being implemented?
- What is the background to the current SLM initiative which MAF is responsible for administering and why is it in the form it is?
- What is the nature of the interaction between MAF and central and the regional council in terms of issues like the management of HEHC?
- What is Federated Farmers role?
- What other actors are important from your perspective?
- Who else do I interview?

Interview schedule: Chief Executive Manawatu-Whanganui regional council

To ascertain their individual and their organization's role in the governance of HEHC in the MWRC region and the reasons for the role.

What is your official position here and what does it entail?

History of involvement in HEHC soil erosion/ soil conservation activities and research.

- How important is HEHC and its management in the region and why?
- Involvement in HEHC pre flood/ post flood?
- Role / Involvement at a national level? SLURI?
- Involvement at a regional level? (SLM groups)
- Outline Involvement/ role over time with MWRC around SLUI.
- Direct / indirect involvement in policy around HEHC in the region?

Specifically what research/ science have you (your organisation) been involved with that has contributed to policy process development/ justification of MWRC around SLM?

- What other role have you had? (Champion). (public meetings).
- How has your science influenced policy/ management of HEHC in the region?
- What is the role of science in HEHC management?

SLUI:

- SLUI, where did the name come from?
- Why did government support it?
- Why is it a MAF initiative?
- Why whole farm plans? How did this occur?
- How were catchments selected, on what basis?
- HEL?
- Scale issues? LUC/ LRI. What we measure we manage?
- Link between sedimentation and flooding and hill country erosion?

Comment on MWRC's policies and those currently in place at national level?

What has influenced your role/ involvement?

What has been the role of science and what has influenced the type of science undertaken?

What other science/ technologies have influenced HEHC management in the region?

To identify what factors, people and information have shaped their role and the manner in which they are enacting their role.

- What are the reasons for the actions your organisation has taken and plans to taken in relation to HEHC?
- What led to your decision to use voluntary measures only and why whole farm planning?

- Whose expertise and data did you draw on in developing the approach you are taking?
- Who else within your organisation has played a key role in defining how your organisation is enacting its role?
- Why are they (have been) involved and in what way are they involved?

To identify and describe forms of collective action they are involved with that relates to HEHC and at what level.

To identify the important collaboration / networks influencing governance of HEHC in the region.

MfE, MAF, Farm forestry, research & science providers, district councils, agricultural consultants, media.

- Who/ what else is contributing directly or indirectly to changes on-farm/ regionally / nationally with respect to the management of erodible hill country?
- How is your organisation involved? What role does your organisation play in this group or initiative?

To identify the key actors and stakeholders to HEHC in the MWRC region.

- Whose problem is it, or should it be and why?

[If farmers are mentioned] which farmers in particular and why?

What is farmers' role in governance?

Federated Farmers?

MWRC's links with farmers?

How do you balance rural/urban or is it that straightforward?

Who else do I interview?

Interview schedule: Farmers

To what extent and in what way is erosion on hill country an issue? Farm, off-farm, region.

How do you manage HEHC? Outcomes why?

How do you farm HEHC? Is it farmed differently to other land?

What specific initiative for managing HEHC have been undertaken and why? (Programme/factors?)

What factors have shaped their actions on HEHC?

What role do/should central government/ regional council have in HEHC?

What role have farmers had in shaping how central and regional 'government' shaped their farming of HEHC? (Farmers' voice and power.)

What has been their involvement in SLUI. What other initiatives directed at HEHC are they (have they) been involved with? Involvement in developing SLUI / One plan land and process? Why? What input/ opinion and issues?

Science/scientists what role?

Role of Federated farmers at regional and national level? What outcomes do they seek?

How effective are Federated Farmers?

Beef & Lamb? What outcomes? Effectiveness?

Industry? Who / what else influential at farm level?

How do local government and central government view HEHC and why are they involved?

Farmers in general.

What role do farmers in general have in shaping how HEHC is farmed? How is HEHC/ soil conservation viewed by the farming community?

What factors influence what farmers in general do to their HEHC?

What is shaping how farmers manage their hill country farms?

How would you categorise farmers in terms of management of HEHC?

Appendix Four

Time line of sustainable land management and agricultural policy

This time line places into temporal context events relevant to the governing of highly erodible hill country in the Manawatu-Whanganui region. Historical events and those relevant to the case study on which this research centred are included in the time line. The time line has been compiled from multiple sources and a bibliography of these sources are included at the end of this Appendix section. Every attempt has been made to ensure accuracy of details included; however, this is not guaranteed.

Three distinct time lines are included. First the list of political parties in power as the government of the day since 1984, the Prime Minister and Minister of Agriculture are outlined from 1984 up until 2012. The main time line then details events relevant to the development of central government's role in sustainable land management and changes in agricultural policy. Finally a summary time line of events linked to the Manawatu-Whanganui regional council and this research is included.

New Zealand Government timeline from 1984

- 1984 July Labour Government elected. David Lange, Prime Minister. Colin Moyle, Minister of Agriculture (a Waikato dairy farmer and teacher).
- 1987 Labour Government re-elected. David Lange, Prime Minister. Colin Moyle, Minister of Agriculture.
- 1989 Geoffrey Palmer took over as Prime Minister from August 1989.
- 1990 Jim Sutton (farmer from South Canterbury) replaced Colin Moyle as Minister of Agriculture in February 1990. Mike Moore replaced Geoffrey Palmer as Prime Minister for two months from September 1990 until general election in November 1990.
- 1990 Jim Bolger (a King Country farmer) became Prime Minister. The Minister of Agriculture was John Falloon (a Wairarapa farmer).
- 1993 National Government re-elected. Jim Bolger was Prime Minister and John Falloon the Minister of Agriculture.
- 1996 National - New Zealand-First Coalition Government formed following elections. Jim Bolger was Prime Minister; Lockwood Smith (a Northland farmer) replaced John Falloon as Minister of Agriculture.
- 1998 Jenny Shipley ousted Jim Bolger to become Prime Minister. Lockwood Smith replaced by John Luxton as Minister of Food, Fibre and Bio-security (Luxton was a Waikato farmer).
- 1999 Labour Government elected. Helen Clark became Prime Minister; Jim Sutton, Minister of Agriculture.
- 2002 Labour Government re-elected. Helen Clark, Prime Minister; Jim Sutton, Minister of Agriculture.

- 2005 Labour: Progressive Coalition Government formed after elections. Jim Anderton became Minister of Agriculture (not a farmer).
- 2008 National led Government elected. John Key, Prime Minister; David Carter, Minister of Agriculture (a South Island sheep and beef farmer).
- 2011 National led Government re-elected. John Key, Prime Minister; David Carter, Minister of Agriculture.

Events relevant to agriculture and soil conservation at a national level

- 1889 George Richardson appointed as the first Minister of Agriculture for New Zealand.
- 1892 Department of Agriculture formed.
- 1930s Depression and reduced farm product prices.
- 1938 Hawke's Bay flooding and severe erosion in the Esk Valley. Extreme rainfall led to severe erosion in Marlborough.

Marsden (head DSIR) lobbied central government for action via Royal Society of NZ (RSNZ). Resolution from RSNZ went to Prime Minister Savage June 1938 and Cabinet approved establishment of a Land Deterioration and Soil Erosion Problem Committee in September 1938. (A committee of inquiry).
- 1939 Department Agriculture acknowledged and recognised soil erosion for the first time as a special type of land deterioration.

Commission of Inquiry into sheep farming appointed. The final report of the Commission delayed until 1949 due to the War.
- 1941 Soil Conservation and Rivers Control Act passed and the Soil Conservation and River Control Council (SCRCC) established.
- 1943 First Catchment Board established: the Manawatu Catchment Board.
- 1944 Wither Hills Reserve of the SCRCC established in Marlborough in an area devastated by erosion in storms in the late 1930s.
- 1945 Country Quota for seats in parliament abolished.

Royal Commission into Sheep Farming. Final report submitted in 1949.
- 1946 First scheme for subsidizing soil conservation work on farms established and administered through the Catchment Boards.

Dr Burns, Lincoln Agricultural College initiated first lecture course in soil conservation and soil erosion to complement Lance McCaskill's lectures on the history and practice of soil conservation.
- 1948 Total of twelve Catchment Boards operating.
- 1949 Final report from the Royal Commission into the Sheep farming Industry tabled. Report scathing of the soil conservation council and its work. During 1940s and 1950s strong opposition from farmers to SCRCC work in particular to the differential rating systems imposed and the extent of the power given to the authority through Act.

National elected to Government after 13 years of a Labour Government.
- 1952 Land use capability mapping formally introduced. The SCRCC formally adopted the 8 class American system of land capability.

- 1951 circa. First fully constituted and implemented farm conservation plan in New Zealand put in place on the property of Mr L. Tews in the Manawatu region. This became a demonstration farm for the region.
- 1953 SCRCC made a commitment to provide Catchment Boards with land inventory and land capability data as a basis for catchment control schemes and for conservation planning on farms.
- 1955 Soil conservators transferred to the Department of Agriculture as a result of tension between the two groups and fears that the soil conservators were duplicating the work of Agricultural extension personnel.
- 1956 Farm conservation plans became the basis for soil conservation Subsidies were linked closely with farm plans.
Parliamentary select committee established to consider soil conservation and catchment board administration and legislation based on continued concerns with the rating classification systems and criticism of the SCRCC's activities. Report tabled just prior to the election and change in government in 1957.
- 1957 Labour Government elected.
First Catchment Scheme established in the Whareama Catchment in the Wairarapa.
SCRCC issued its first comprehensive statement of policy on cost sharing.
Circa. Soil conservators returned to Public Works because of continued tensions between the two groups and difficulties SCRCC had in coordinating officers across Public Works and Department of Agriculture.
- 1959 SCRC Amendment Act as a result of the select committee report from 1957. The Act included the provision for full compensation for land acquired by Government or lost for erosion control.
- 1960 National elected into Government.
- 1963 Agricultural Development Conference late 1963. Concern was with how to increase agriculture exports. Conference recommended setting up the Agricultural Production Council.
- 1964 Agricultural Production Council established and recommended greater input by government in agriculture. Specific recommendations were for taxation concessions, fertiliser subsidies, concessionary lending policies, and assistance for farmers on marginal land to increase production.
- 1965 Lands Department relented in its opposition to land capability planning prior to development of new land for settlement. Prior to this the Department of Lands and Survey had developed large tracts of land for resettlement post war without consideration of the likely risk of erosion.
- 1967 Water & Soil Conservation Act passed which built on the 1941 SCRC Act.
- 1968 National Water & Soil Conservation Authority (NWASCA) established, chaired by the Ministry of Works. NWASCA was the collective grouping of the SCRCC & Catchment Boards and the new Water Allocation Council. This collective was serviced by the newly established Water & Soil Division or the Ministry of Works.
- 1969 National Government re-elected.
Land Use Capability Survey Handbook finally published by Ministry of Works.
National Development Conference.
- 1972 Labour Government elected. Norman Kirk, Prime Minister.

- Land Use Advisory Council established by central government with specific terms of reference relating to the use of rural land, particularly rural land of the Crown.
- Commission for the Environment under the Minister for the Environment established.
- 1973 United Kingdom joined the EEC, 1 January. New Zealand lost its unrestricted guaranteed access to the British market for agricultural commodities.
- 1975 National Government elected. Robert Muldoon, Prime Minister.
- 1976 Livestock Incentive Scheme established, farmers received subsidies increasing livestock numbers on land that included marginal hill country in the Manawatu-Whanganui region.
- 1977 Town & Country Planning Act passed.
- 1978 Central government put in place the Land Development Encouragement Loans (LDEL) to assist and encourage farmers to develop marginal land (hill) for livestock production.
- Introduction of the Supplementary Minimum Price (SMP) schemes for wool, meat and dairy to maintain farmers' incomes in a time of falling export returns for meat.
- Fertiliser subsidies introduced by central government to encourage the greater use of fertiliser and lime.
- Land Use Advisory Council (established 1972) set about developing a Land Use Strategy. The Ministry of Lands announced it was the principal body for assisting central government in developing a New Zealand land use policy.
- 1979 National Development Act passed.
- 1980 Les Molloy compiled a DSIR discussion paper *Land Alone Endures*, which highlighted the problem of sharing land resource information between government agencies.
- 1981 OECD review of New Zealand's environmental policies completed. Report recommended changes including strengthening the environmental advice to the government, and establishing an environmental body with a separate audit and oversight function.
- Land Use Advisory Council convened a forum on land use issues in Wellington (Land Use Advisory Council, 1981). This saw a major reassessment of aspects of land-use and the role of research.
- 1983 The Land Use Advisory Council published its national strategy document : *Land Use in New Zealand: a National Goal* (Land Use Advisory Council, 1983).
- 1984 Labour Government elected. David Lange, Prime Minister.
- Major agricultural policy reforms initiated that led to the removal of agricultural subsidies and assistance and a dramatic reduction in farm incomes.
- 1986 Environment Act passed and the Ministry for the Environment established.
- As part of the roll out of the reforms in agriculture cost recovery for farm advisory and agricultural research was initiated and MAFs budget was progressively reduced.
- 1987 Office of parliamentary commissioner for the environment (PCE) established. PCE provided independent advice to influence decisions made by public authorities including government. Helen Hughes appointed Commissioner.
- Conservation Act passed and the Department of Conservation established.
- 1987 Budget removed funding of soil conservation subsidies to farmers and began the removal of funding of Government grants for soil conservation activities on farms.

- New Zealand Land Resource Inventory (NZLRI) was used to prepare a draft national plan identifying areas suited to particular levels of sustainable land use. The survey used land use capability as the method for assessing the suitability of land for sustained production.
- 1987 -1989 Local Government Reforms: formation of regional councils and unitary authorities through the amalgamation of 625 local and regional government units down to 94.
- 1988 Cyclone Bola in March caused severe devastation across the central North Island with particularly severer soil erosion and flooding occurring on the East Coast of the North Island.
- Government's review of statutes governing the management of natural and physical resources in New Zealand, (Resource Management Law Reform) launched.
- NWASCO abolished along with the Ministry of Works and Development who serviced and supported NWASCO.
- Lands and Survey Department and the New Zealand Forest Service disestablished.
- The reorganisation of science was instigated. Department of Science and Industrial Research (DSIR) Soil Bureau and part of the Water and Soils Divisions, Aokautere and Christchurch Centres amalgamated to form the DSIR Division of Land and Soil Science.
- 1989 Geoffrey Palmer becomes Prime Minister, previously he was Minister for the Environment.
- As a result of local government reforms regional councils and unitary authorities were formed through the amalgamation of 625 local and regional government units (including Catchment Boards) down to 94.
- Rabbit and Land Management Program set up which ran until June 1995, based around whole farm plans linked to assistance from central government.
- 1990 Jim Sutton took over Agriculture and Forestry Portfolios from Colin Moyle in February.
- The FARM Partnership programme for SLM championed by Jim Sutton was put out for public discussion by Ministry of Agriculture and Fisheries.
- 4th September Mike Moore became Prime Minister, replacing Geoffrey Palmer.
- National Government elected 2nd November. John Falloon became Minister of Agriculture. Ruth Richardson's 'Mother of all Budgets' saw the funding for the FARM Programme thrown out.
- 1991 Ministry of Agriculture and Fisheries released a discussion paper: Sustainable Agriculture: A Policy Proposal, which they later adopted. The purpose of the discussion document was to initiate a Ministry position on sustainable agriculture.
- Resource Management Act passed. RMA subsumed soil conservation policy and land use planning within wider issues of environmental management by replacing the 1941, 1967 Acts and the Town and Country Planning Act 1977.
- International Conference on SLM held in Hawke's Bay in November.
- 1992 International Earth Summit held in Rio de Janeiro.
- The research functions and research stations of Ministry of Agriculture and Fisheries and DSIR transferred to independent Crown Research Institutes, thus severing the direct link between the Ministry and science.
- Landcare Research NZ Limited was established by combining DSIR Land Resources and Forest Research Institute's Wildlife Ecology Division, DSIR Plant Protection

- Division and DSIR Physics and Engineering Laboratory's Remote Sensing Group.
Landcare Research retained the remaining soil survey and soil conservation capability.
East Coast Forestry Project established as a direct response of Cyclone Bola.
- 1993 National Government elected. Jim Bolger, Prime Minister.
Ministry of Agriculture and Fisheries Policy Position Paper 1 *Sustainable Agriculture* finally published. The outcome of this work was for central government to recognise the 'value' of landcare groups and the landcare approach.
- 1994 *Towards a National Science Strategy for SLM* (Smith, Sutherland, Cairns, & Turbitt, 1994) was published by MoRST.
New Zealand Conference on SLM 12-14th April 1994, Lincoln University.
Summary of the Environment 2010 Strategy: (E2010) released as a discussion document by MfE (Ministry for the Environment, 1994).
- 1995 MfE Discussion Paper *A Sustainable Land Management Strategy for New Zealand* published (Ministry for the Environment, 1995b).
Published after consultation in September 1995: *Environment 2010 Strategy: A Statement of the Government's Strategy on the Environment* (Ministry for the Environment, 1995a) .
The Strategic Consultative Group on SLM Research was established by the Hon Simon Upton, Minister Research Science & Technology to develop a strategic framework and goals for research and science that will help attain SLM in New Zealand. In November MoRST published the Groups report : *Science for SLM: towards a new agenda and partnership* (Strategic Consultative Group on Sustainable Land Management Research, 1995). The report identified a lack of research leadership, no effective overall scientific coordination and failure to fund complex multidisciplinary research at a large scale over longer time horizons.
Ministry of Fisheries established as a separate ministry to the Ministry of Agriculture.
- 1996 National – New Zealand First Coalition Government formed following elections.
Morgan Williams appointed as Parliamentary Commissioner for the Environment.
The Path 2010 was endorsed by the 1996 Government Coalition Agreement and the Green Package included in 1996 and 1997 budgets
OECD review of New Zealand's environmental policies.
MfE published the *Sustainable Land Management Strategy* (Ministry for the Environment, 1996). Key principle was that primary responsibility for SLM should rest with individual users (land managers).
- 1997 The first New Zealand *State of the Environment Report* was published by MfE (Taylor, 1997).
First meeting of the National Committee of the National Science Strategy Committee for SLM.
National Science Strategy for SLM: First Priorities Statement published.
- 1998 Ministry of Agriculture and the Ministry of Forestry merged to form the Ministry of Agriculture and Forestry (MAF).
- 1999 Labour Government elected. Jim Sutton again became the Minister of Agriculture.
- 2002 Labour Government re elected.
New Zealand Ratified the Kyoto Protocol, 19th September.

- Crisis in funding for soil science by FoRST. Response in late 2003 AgResearch, Crop & Food Research, Hort Research and Landcare Research proposed the formation of the Sustainable Land Use Research Initiative (SLURI).
- 2003 Dairying and Clean Streams Accord was agreed between Fonterra Co-operative Group, the Minister for the Environment, the Minister of Agriculture, and regional councils.
- 2004 February severe storm causes floods and widespread damage in lower North Island. This was followed in June by floods and damage in the Bay of Plenty.
- PCE published *Growing for Good. Intensive farming, sustainability and New Zealand's environment* (Parliamentary Commissioner for the Environment, 2004).
- 2005 Government instigated a review of central government's role in flood risk management. MfE established a Flood Risk Management Governance Group.
- Jim Sutton's retirement from Parliament announced.
- General Election: Labour elected to form new Government. A Coalition Labour Progressive Government was formed. Jim Anderton was appointed Minister of Agriculture & Forestry.
- November Manawatu-Whanganui regional council (MWRC) submitted to the government a Sustainable Land Use Initiative (SLUI) proposal.
- 2006 Office of Ministers of Agriculture and Forestry seek agreement from Cabinet, in June, for a framework for determining central government's response to regional sustainable land use initiatives.
- Review of MAF's role in agricultural recovery response undertaken.
- Government announce Permanent Forest Sinks Initiative in August.
- Cabinet directed MAF, in consultation with MfE, to develop a SLM-HCE programme in October.
- Prime Minister Helen Clark delivers a speech to Labour Party Annual Meeting in Rotorua outlining her vision for a sustainable New Zealand, October 28th.
- MAF Discussion paper Sustainable Land Use and Climate Change published December.
- 2007 Dr Jan Wright appointed as PCE.
- Prime Minister Helen Clark expands on the sustainability vision in the Prime Minister's Statement to Parliament Speech in February.
- MfE published second state of the environment report *Environment New Zealand 2007* (Ministry for the Environment, 2007a).
- 11th May Pre Budget (pre budget announcement) \$10 million dollars (spread over 4 years) nationally to go to funding a Sustainable Land Management -Hill Country Erosion (SLM-HCE) framework
- 15th May Garrick Murfitts's response in the paper to announcement.
- 17th May The Budget presented.
- July Manawatu-Whanganui regional council submitted an application for \$8.675m for 4 years of their programme. Decision from MAF due November 2007 with the Manawatu-Whanganui regional council successful in securing funding for SLUI through the SLM-HCE fund.

September *New Zealand's Climate Change solutions: Sustainable land management and climate change Plan of Action a Partnership Approach* published (MAF Policy, 2007). Includes reference to the establishment of the Afforestation Grant Scheme.

2008 Paul Reynolds resigns his position as Deputy Director MAF Policy to take up the position of CE at MfE.

Manawatu-Whanganui regional council timeline

1990 MWRC formed following the local government reforms.

1991 MWRC *Soil Conservation Activity Review* was undertaken and published (Makin, et al., 1991).

1997 Whanganui Catchment Strategy released.

2000 Peter Davies appointed in October as Chief Executive an internal appointment (ex River engineer).

Don Linklater, Chair of regional council dies. Chris Lester farmer from Taumarunui elected as new Chair.

2003 MWRC agreed to non regulatory/voluntary approach to Clean Streams Accord agreement

Whanganui Catchment Strategy Action Plan Reviewed.

Greg Carlyon began work at the regional council.

Proposed One Plan drafting process initiated.

2004 February - severe climatic event and flooding with wide scale flooding and hill country erosion.

March - Chief executive Peter Davies resigns in controversial circumstances.

May/June - Alec Mackay & Greg Carlyon meet.

June - Landcare Research and NIWA complete detailed analysis and presentation of the impact of the flood linked to land erosion risk, vegetative cover and slope.

September - Te Manawa and MWRC sponsored exhibition on the storm.

September - MWRC held a stakeholder meeting out of which committees were formed which led to development of SLUI.

November - local body elections Chris Lester loses his seat. Garrick Murfitt elected as Chair of regional council.

November - Michael McCartney appointed Chief Executive (internal appointment).

2005 Six initial whole farm plans developed in year one.

September - *Draft: Sustainable Land Use Implementation Plan 2006-07* published (Mitchell & Cooper, 2006).

2007 MWRC rates increased to specifically assist the funding of SLUI. Uniform annual charge of \$15 per rate payer.

Launching of the GreenRig funded by MAF's Sustainable Farming Fund.

Funding for SLUI from central government's SLM-HCE fund announced for 3 years.

2008 December- contract between MAF and regional council signed for delivery of whole farm plans to priority catchment within SLUI.

2009 Hearings for Land Chapter of the Proposed One Plan commenced.

- 2010 SLUI funding announced from central government for a further 3 years.
- 2011 Mediation around Proposed One Plan continues and Appeals lodged.
- 2012 Environment Court Decisions released on One Plan September 2012.