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The Governance of Sustainable Agriculture in New Zealand

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Abstract

The externalities associated with agriculture mean that a transition to sustainable farming practices by farmers is essential. However, there are complex relationships between those at the centre of any such transition and the structures of governance regulating, ordering and controlling socio-economic life. Underpinning a transition to sustainable agriculture, then, is a shift to a wide range of governance mechanisms not anchored in the sovereign state. A factor in favour of this shift is a significant change, in recent years, among the mechanisms that regulate agriculture and the agrifood sector.

This thesis examines the governance arrangements involved in sustainable agriculture, both positive and negative, with data from fieldwork in New Zealand. Drawing on two constructs from the theoretical and applied governance literature and the agrifood literature, I examine farmer perceptions of hierarchy, the market and networks, and the spatial locations of new forms of governance in regard to sustainable (or 'biological') farming practices[1]. I conclude by arguing that there is a strong case for considering governance as the new way in which agriculture is regulated, controlled and influenced. At the forefront of this devolution of power away from central government is market-based regulation and control. The implications of such restructuring for the proliferation of sustainable agricultural practices means the strengthening of market instruments is needed to bolster sustainable farming. Furthermore, funding by central government is considered necessary by farmers to establish a strong case for the success of sustainable farming practices.

[1] See Key terms, page 9

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Approval for the research has been obtained from the appropriate University Ethics Committee for the fieldwork described in the thesis.

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ACRONYMS

(APO) Agricultural Political Organisation
(ABF) Association of Biological Farmers
(COP) Conference of the Parties
(DAP) Di-ammonium Phosphate
(EEC) European Economic Community
(EU) European Union
(EUREP) Euro-Retailer Produce Working Group
(FAO) Food and Agriculture Organisation
(GATT) General Agreement on Tariffs and Trade
(GDP) Gross Domestic Product
(IBRD) International Bank for Reconstruction and Development
(IMF) International Monetary Fund
(INGO) International Non-governmental Organisation
(IPCC) Intergovernmental Panel on Climate Change
(MAF) Ministry of Agriculture and Forestry
(MFAT) Ministry of Foreign Affairs and Trade
(MfE) Ministry of Environment
(MPI) Ministry for Primary Industries
(NGO) Non-governmental Organisation
(PCE) Parliamentary Commission for the Environment
(QA) Quality Assurance
(RMA) Resource Management Act
(SMO) Social Movement Organisations
(TNC) Transnational Corporation
(TPC) Third-party Certification
(TSR) Tripartite Standards Regime
(UK) United Kingdom
(UNEP) United Nations Environment Programme
(WWII) World War Two

Chapter One: Sustainable agriculture in context

1.1 Introduction: Agriculture and its problems

In recent decades the global agricultural system has changed profoundly. The Green Revolution has taken agriculture down a path of high inputs in the pursuit of high outputs to feed a growing population. Where in the past primary producers were protected from the vagaries of the world market through state-based regulatory frameworks, in neoliberal economies these frameworks have largely been dismantled (Cheshire & Lawrence, 2005). Farmers are the largest natural resource managers on Earth, shaping ecosystems, habitats and landscapes, and producing food to feed the globe, all of which has implications for the sustainability of agriculture (FAO, 2007a). Aside from meeting the requirement for increased food production, agriculture is challenged in multiple ways: to improve the health and social well-being of people (including better nutritional balance for rich and poor); to reduce dependence on fossil fuels; to adapt to climate change and extreme weather; and to reduce environmental degradation and the decline in the quality of soil, water, air and land resources. Problems in such a vast, and essential system become policy problems in a local, national, and international sense, and therefore it is necessary to describe the context in which actors attempt to find solutions to these problems.

1.1.1 What this research is about

This research in essence is about analysing the structures of governance that enable or obstruct progress toward sustainable agriculture, using case studies of farmers in New Zealand. The background and context illuminate the need to improve sustainable farming systems and ensure wider application of their practices. Most governance literature – either theoretical (see Chapter Two) or applied (Chapter Three) focuses on states, networks and organisations, not on the agency of individual farmers. This thesis complements the dominant research emphasis by exploring the governance of sustainable agriculture from the point of view of participants (farmers).

1.1.2 The research question

The key research question that structures this thesis is: How do farmers perceive the governance arrangements that influence their practices, and what are the spatial locations of these arrangements? This question is concerned with the conditions that farmers face every day and gives rise to a second question: What are the implications of these governance arrangements for the uptake of sustainable agriculture?

1.1.3 Conceptual framework

I give my work shape and meaning by using a conceptual framework that is informed by two constructs obtained from governance theory in political science. The first of these constructs consists of the new modes of governance that influence, order and regulate society, by the way of hierarchical, market and network governance. The second construct comprises the spatial reckonings of governance, or the new locations outside of central government where governance is enacted: governance above (or up), governance from below (or down) and governance to the side (or sideways).

1.1.4 Organisation of the thesis

The thesis introduces the research question in Chapter One by presenting the broad context in surrounding the issue in question. Chapter Two examines the political science literature on the theoretical concept of governance, and posits the theoretical device – or conceptual framework – employed to link relevant theory with the data contained in later chapters. This theoretical device is the new modes of governance derived from the literature, as well as the spatial locations where this governance occurs. In Chapter Three, I analyse the empirical literature on agrifood arrangements in New Zealand. Chapter Four sets forth the methodology that established the design and structure of this thesis. In Chapter Five, the results of fieldwork are presented, and in Chapter Six, I discuss these results using the conceptual framework developed from the literature review. I then assess the broad implications of my research. Concluding comments and reflections on the research make up Chapter Seven.

1.1.5 Key terms

My focus is on biological farming, which I take to mean a model of farming practices in which farmers seek to replace synthetic off-farm inputs with organic inputs or precise management, and implement environmentally beneficial practices including riparian planting, poly-culture and agroforestry.

The term 'sustainable agriculture' refers to the broad project of sustainability within farming, or the approach to agriculture aiming to enable those in the future the same access to healthy food as those in the present. Other terms used in reference to farming methods are 'organic agriculture' (which strictly excludes the use of non-organic pesticides and fertilisers), and 'alternative agriculture' (which can refer to a system of agriculture that differs from conventional agriculture, and which can be placed under the umbrella of sustainable agriculture). 'Agriculture' is the term used in this thesis to describe the production of goods within farming and growing systems, while 'agrifood' refers to the wider system in which agricultural produce is grown, processed and sold as well as contested.

'Governance' is the theoretical concept underpinning the research question. The vexed issue of the definition of 'governance' is addressed at length in Chapter Two. The use in this thesis of the term 'Productivism' indicates the political ideology governing a particular agricultural system. It refers to the goal of maximum yield supported by a minimum of government restrictions on agriculture. 'Post-productivism' indicates an ideology in which agriculture has graduated beyond productivism.

1.2 The challenges for agriculture

One of the purposes of this chapter is to outline the problems facing the global agricultural system. The sections which follow will discuss the forces of productivism and post-productivism differentiating agriculture in various countries, and chart the rise of sustainable farming and outline the components of this system.

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A report from the Food and Agriculture Organisation (FAO, 2009a) estimates that if current patterns of food consumption persist, 50 per cent more food will need to be produced globally by 2030 (compared with 2005-07 and without significant increases in price). This challenge is amplified by an increase in purchasing power and dietary shifts in many parts of the globe, barriers to food access, and distribution, particularly in the poorest regions (Pretty *et al.,* 2010). The role of agriculture in 'feeding the world' should therefore include the new circumstances in which feeding is done, namely, the end of cheap energy, more unstable climates and weather variations (due to climate change), and much less available water (Kirschenmann, 2007). In many areas of the world where agricultural productivity is already low and the resilience to adverse events is limited, climate change is expected to reduce productivity to even lower levels and make agricultural production more erratic (Stern, 2007). Agriculture is the biggest user of water on the globe. Irrigation alone now claims close to 70 per cent of all freshwater appropriated for human use (FAO, 2007b). The effects of climate change on water supply and salinity will impact the extent and productivity of both irrigated and rain-fed agriculture, and rising temperatures will translate into increased crop water demand (FAO, 2008).

These problems are potentially catastrophic. The world needs more food, but continuing to degrade the resource base by which food production is made possible is not an option. It is not 'sustainable' in the literal meaning of that word, that is – able to be maintained at a certain rate or level. The importance increasingly attached to sustainability in agricultural production represents the convergence of different forces, reflecting, on the one hand, society's recognition of rapid changes to the quality and quantity of natural and environmental resources, and on the other, the political necessity to act with respect to those changes (Pierce, 1993; Pretty *et al.,* 2010). The complex issues facing global agriculture have received growing recognition (FAO, 2009a; Royal Society, 2009; National Research Council, 2010). However, there remain significant challenges to developing national and global policies that support the wider emergence of more sustainable agricultural production (Pretty, 2008).

1.3 Sustainable agriculture

Sustainable agriculture is referred to as an agricultural system that produces food without depleting the earth's resources or polluting the environment (Earles & Williams, 2005). The generally accepted purpose of sustainable agriculture is to meet the needs of the present, while leaving equal opportunities for those of the future (Ikerd, 2008). Biological farming is a subset of sustainable agriculture and adherents to this kind of farming were recruited for the case studies of this research. Farmers who typically identify themselves as 'biological' are committed to environmental principles, and importantly, reduce the nitrogen-derived inputs which are at the core of environmental degradation

1.4 History of the global food system

The current state of the modern world food system and agricultural production has its antecedents in a complex web of historical events. After World War II (WWII), agriculture in developed nations followed a path characterised by productivism, protectionism (economic protectionism is the restriction of trade through states by the imposition of tariffs on imported goods and quotas for domestically produced goods), and disarray in international agreements and at negotiations (Muirhead & Almas, 2012). Muirhead and Almas (2012) paint a picture of food security and sovereignty as sacrosanct after the deprivations of the war-time years. Tariffs, subsidies, and non-tariff barriers to trade or quotas have been used by both large and small Western nations alike to provide 'food security'. However, calls to solve world hunger were largely based on rhetoric. Muirhead and Almas (2012) argue that the position taken by the United States after WWII was grounded on the notion of agricultural exceptionalism, where the sector is not simply another mode of production; rather, it is a way *of* life and its harvests are essential *for* life (see also Newby, 1980; Wilson, 2001). Agricultural exceptionalism, combined with the ability of farmers and agricultural organisation lobby groups to influence politics, as well as the symbolic importance of rural communities in Europe, has meant that governance of agriculture has largely evolved outside of the drive for free trade that characterises other global agreements, negotiations and organisations (Wilson, 2001).

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The International Monetary Fund (IMF) and the World Bank were created to support the conditions of what came to be known as the Washington Consensus, i.e. macroeconomic stabilisation, economic openness with respect to both trade and investment, and the expansion of market forces (Williamson, 1989). This consensus reflected the objective of the victors of WWII, part of which was to achieve peace by globalising the world with the help of free trade. To aid this, the Food and Agriculture Organisation (FAO), the IMF and the International Bank for Reconstruction and Development (IBRD) were established to deal with facilitating conditions that enabled global food security. This regime equated agricultural production with food security. Officially this commitment was known as productivism – the maximum possible yield was to be produced and this was to be supported by policy (Muirhead & Almas, 2012). According to Burton and Wilson (2012), productivism is characterised by (a) strong state intervention in markets, a lack of government restrictions on agriculture, provision of ideological security for production, maintenance of individual property rights; (b) the industrialisation, commercialisation, mechanisation, specialisation and concentration of agricultural production; and (c) increasing levels of environmental degradation and incompatibility with conservation objectives. Lowe *et al.,* (1993: 221) define productivism as:

> a commitment to an intensive, industrially driven and expansionist agriculture with state support based primarily on output and increased productivity... by the 'productivist regime' we mean the network of institutions oriented to boosting food production from domestic sources which became the paramount aim of rural policy following World War II. This included not only the Ministry of Agriculture and other state agencies but the assemblage of input suppliers, financial institutions, R&D centres, etc., which facilitated the continued expansion of agricultural production.

Productivism includes an ideology and the organisation of industrial agriculture focused on quantitative outputs as a central aim of land management (Wilson,

2001). Its persistence in many countries and regions is logically consistent with global free-market policies applied to farming (Lawrence, 2005).

In the years following WWII, the mechanisation of farming forced many farmers to leave their small-scale holdings (Newby, 1980). All over the industrialising world, people left rural communities, responding to opportunities bought about by the manufacturing drive enveloping urban areas (Muirhead & Almas, 2012). At the same time, those left on the farms discovered that to make the money necessary to be viable as agricultural producers, there had to be fewer obstacles and larger farms. Streams and waterways were closed off to stock, hedges and trees were cut down, fields were expanded and operations were consolidated (Muirhead & Almas, 2012). Agriculture in the developed world took industrial production as its model, and vertically integrated agri-businesses took the place of small-holdings and family farms (Earles & Williams, 2005; Bowler, 1992). Lawrence explains how the global supply chain can influence farmer behaviour:

> Hoping to survive in an increasingly competitive international marketplace farmers obey market signals and adopt the behaviour required to ensure their futures in farming. This generally means specialising in production, intensifying and expanding farm operations and purchasing the latest products of agribusiness to gain a competitive edge through increases in productivity and efficiency (Lawrence, 2005: 148).

Due to this period of specialisation, intensification and expansion, between 1961 and 2007 world agricultural production almost tripled and its population doubled (Pretty *et al.,* 2011). The increases in agriculture were mostly achieved on the same agricultural land due to a significant increase in inputs, new crop varieties, water management, and rural infrastructure (FAO, 2009a).

Although food policy was markedly influenced by the political economy and agricultural exceptionalism of the post-war years, the influence of the Malthusian prophecy cannot be ignored, as it served to support the agenda of the 'Atlanticist Food Order', dominated by the United States (Wilson, 2001). In 1798, Reverend

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Thomas Malthus penned an essay on the inability of the earth's resources to provide food for a growing population. "The power of population," he wrote, "is indefinitely greater than the power in the earth to produce subsistence for man" (Malthus, 1798: 13). Later generations interpreted this as meaning, "as food increased arithmetically, population would go up exponentially" (Muirhead & Almas, 2012: 26). Malthus was proven wrong on the first count as scientific and technological investment in the twentieth century facilitated the development of new crop breeds, inputs, products and knowledge allowing farmers to substantially increase their yields. However, the latter interpretation was seemingly met by the 'Green Revolution', which enabled those in developing countries, whose populations were increasing at a high rate, to produce and import enough food to feed their growing populations. Thus, population levels continued to climb. But, while enhancing crop production, the Green Revolution has proven to be unsustainable as it damages the environment, causes dramatic loss of biodiversity and associated traditional knowledge, favours wealthier farmers, and leaves many poor farmers deeper in debt (Altieri, 2009).

In some ways, agricultural productivism and the growth of population have gone hand in hand. The global political economy, however, has not been able to deliver food for all. Although there is currently enough food to feed the world, it is estimated that some 870 million people on Earth are hungry and close to three billion live on less than the equivalent of $2 a day (FAO, 2012). Developing countries are struggling to feed their populations due to the growing push toward industrial agriculture and globalisation – with an emphasis on export crops, lately transgenic crops, and with the rapid expansion of biofuel crops (sugar cane, maize, soybean, oil palm, eucalyptus, etc.) (Altieri, 2009). This pressure from international organisations and agreements, along with the economic rationale of free trade, has seen numerous countries organise their economies around a competitive export-oriented agricultural sector based mainly on monocultures. Altieri (2009) points out that even though economists and free-trade advocates argue that the returns on commodities will enable developing countries to buy goods from abroad, the

continuing protection by developed countries of their agricultural sectors makes this untenable.

Despite the problems inherent in such an industrialised form of agriculture, it is clear that agricultural production gains across the world have helped millions of people to live without the threat of starvation, and have provided a platform for rural and urban economic growth in many countries (Pretty *et al.*, 2011). According to Smil (2002: 126), "for at least a third of humanity in the world's most populous countries, the use of [nitrogen] fertilisers makes the difference between malnutrition and adequate diet." Farms are vital in securing the survival and well-being of humans, both directly by producing food and fibre, and indirectly by producing amenities or physical characteristics (Campbell *et al.,* 2012; Darnhofer *et al.,* 2010). However, many farming practices negatively affect not only ecosystems on-farm, but also those off-farm, by using ecological subsidies to produce goods and then exporting ecological degradation as externalities of those goods (Campbell *et al.,* 2012; Moller *et al.,* 2008). For example, a farmer might use water from a river to irrigate paddocks, diverting the water from its natural path and affecting the complex ecological systems that have developed around the original flow of the river. Farmers rely on natural capital, which are the stocks of natural resources such as water, biodiversity, soil and the 'services' that this natural capital provides, including clean air and water, the creation and maintenance of fertile soil, liveable climates, pollination, genetic resources for growing food, and processes to decompose and assimilate waste (PCE, 2004). These services have immense value; it is forecast that by not meeting the 2010 targets for biodiversity set at the World Summit on Sustainable Development in 2002, the cumulative loss of biodiversity and associated ecosystem services between 2000 and 2050 could be equivalent to seven per cent of the 2050 world Gross Domestic Product (GDP) (Braat, *et al.,* 2008).

Farming can affect natural capital in positive and negative ways, but in recent decades it has overwhelmingly degraded the natural environment (Altieri, 1995; Gliessman, 1998; Pretty & Smith, 2004; Ikerd, 2008). The model of agriculture

involved in this widespread degradation is known as 'intensive agriculture' and is characterised by "capital-intensive, large-scale, highly mechanised agriculture with monocultures of crops and extensive use of artificial fertilisers, herbicides and pesticides, with intensive animal husbandry" (Knorr & Watkins, 1984: x). The consolidation of farms so that land is increasingly dominated by fewer and larger farms results in the reduction of botanical and structural variety of crops and grasslands grown on a single farm, loss of semi-natural habitats such as ponds, uncropped field margins and scrub, the simplification of crop rotations, and a reduction in species variety by weed removal and sowing pasture with a limited number of herbage varieties (Benton *et al.,* 2003 in Jay, 2007). Intensive agriculture has become the 'conventional' method of farming in much of the world. However, the backlash against industrial-scale agriculture is growing, as the public is made aware of its effects on the environment, public health and rural communities (Tegtmeier & Duffy, 2005). These effects are broad: soil erosion disrupts both natural and artificial water systems, and runoff of pesticide and fertiliser contaminates groundwater and disturbs aquatic ecosystems (Evans, 1996; Conway & Pretty, 2003). Pesticide residue found on fruit and vegetables induce concerns about their safety (Darnhofer *et al.,* 2010).

The deterioration of natural capital has serious implications for the on-going viability of farming. The ability of the sun, soil, water, and associated ecosystems to produce food relies upon a healthy and functioning resource base (PCE, 2004). The *Economics of Ecosystems and Biodiversity Business Report* (TEEB, 2010) found that overall, about 85 per cent of agricultural land globally is considered to be degraded due to erosion, salinisation, soil compression, nutrient depletion, biological degradation or pollution, while each year 12 million hectares are lost to desertification.

Problems linked to industrial agriculture are now widely recognised as the unseen costs of modern industrialised farming, costs that until the late 1970s were interpreted as justified by the spectacular gains in food production during the previous 100 years (Schaller, 1993). The overuse of natural resources as inputs or

their use as sinks for pollution results in what is called a negative environmental externality, because it imposes costs which are not reflected in the market price of the product (Pretty, 2003). Pests, pathogens, weeds, soil fertility loss, salinisation of water, water pollution, water scarcity and biodiversity loss are among the greatest threats to sustainable food production. Since WWII, the common approach to the most visible of these problems (pests, pathogens and weeds) has been to spray with pesticides (insecticides, nematocides, fungicides, bactericides, and herbicides) (Conway, 2001). The use of pesticides eliminates not only the pest, but other living parts of that particular ecosystem, resulting in reduced diversity of agricultural landscapes as well as neighbouring landscapes. Moreover, plants and insects develop resistance to pesticides, and so different types of pesticides must be applied. Agro-ecosystems deprived of basic components lack the capacity to sponsor their own soil fertility and pest regulation. In order to continue production, farmers must then supply crops with costly external inputs (Altieri, 1999). The application of inputs becomes cyclical.

Notwithstanding the demand for inputs in order to increase outputs, nutrients harvested in crops and consumed by animals need to be replaced in order to ensure that the innate nutrient capital of the soil is not eroded (Pretty *et al.,* 2010). However, the dramatic increase in the use of synthetically derived nitrogen fertiliser has had catastrophic impacts on waterways and soil fertility around the world. Excessive application of fertiliser can reduce the amount of organic soil carbon, which contributes to the reduction of soil fertility (Khan *et al.,* 2007). The loss of soil carbon has many adverse consequences for productivity, such as a decrease in water storage. There are also adverse implications for air and water quality. For example, excessive use of nitrogen fertiliser promotes the pollution of ground and surface waters and ultimately results in the degradation of ecosystem services (Khan *et al.,* 2007). Moreover, excessive synthetic fertiliser contributes to climate change, as a main component in its production and breakdown is the greenhouse gas nitrous oxide. The use of nitrogen fertiliser that has been central to the intensification of agriculture has increased greenhouse gases and reduced levels of carbon sequestration (UNEP, 2010). Agricultural and food systems are estimated

to account for one-third of global greenhouse gas emissions, more than twice that of the transport sector (Pretty *et al.,* 2010; IPCC, 2007). The inputs that modern, conventional agriculture rely on to produce low-cost food, in turn rely on cheap energy. Pesticides and fertilisers are produced using natural gas and oil and transported across (often substantial) distances to farms. Consequentially, the effects of high oil prices on pesticides, nitrogen fertilisers, transport, tillage and irrigation systems could result in declines in agricultural productivity (Pretty *et al.,* 2010).

The basic premise of many of those who have turned to or support the model of food production known as sustainable agriculture is that the continued model of conventional farming is unsustainable. Put simply, if extended into the future at its current rate with its current practices – given that intensive, productivist agriculture depletes natural capital – productivity will undergo a precipitous decline. Because agriculture is in competition with other sectors for land, and arable areas have largely been utilised, the expansion of conventional agriculture into new lands with the continuation of current practices is overwhelmingly considered to not be a viable option (Pretty *et al.,* 2011).

1.5 Has agriculture reached a post-productivist stage?

Rural regions of the so-called 'advanced societies' have witnessed the entrenchment of productivist or 'high-tech' farming systems despite growing recognition that productivist agriculture is largely unsustainable (Altieri, 1995). However, by the end of the 1980s, researchers and academics reported that state-driven, productivist agriculture might be in decline in various countries around the world, particularly in Europe. The food surpluses of the late 1970s had threatened to drown Europeans in oceans of surplus milk, wine, butter and wheat (Muirhead & Almas, 2012). The resulting dumping of food in African markets contributed to the famines and starvation of the 1970s. This was due to the flooding of local markets with cheap food from the surplus in Europe, which meant that African farmers did not have the money to invest in the crop for the following year (Pretty *et al.,* 2001). Furthermore, escalating costs and environmental degradation caused by the

incessant drive for production had made the model unsustainable on economic, political, and environmental grounds (Burton & Wilson, 2012).

It is argued, therefore, that the United Kingdom (UK) and Europe are no longer following a productivist agricultural regime, rather one that is post-productivist (Ilbery & Bowler, 1998). 'Post-productivism' involves, in policy terms, (a) reduced state market intervention, greater restrictions on agriculture in terms of inputs and outputs, ideological promotion of environmentally friendly farming, the lessening of individual property rights; (b) reduced intensity of farming, a move towards more sustainable agriculture, diversification of income sources; and (c) promotion of environmental conservation in agri-environmental schemes and the re-establishment of lost or damaged habitats (Burton & Wilson, 2012). Within post-productivism is the idea that agriculture has environmental and social as well as economic functions, and farmers should be compensated for providing these functions. Thus, agriculture is 'multifunctional' (Muirhead & Almas, 2012). Farmers in the UK and Norway in particular have been paid by their governments to implement agri-conservation projects on their properties, such as the restoration of wetlands, or agroforestry. Although the goals of multifunctionality seek to de-emphasise the conventional drive for maximum yield by incentivising environmental conservation, the model is struggling to progress with sustainable farming (see Burton *et al.*, 2008). Furthermore, many scholars contest the idea that post-productivism is entrenched in the UK and Europe (see Wilson, 2001; Evans *et al.,* 2002). While there is debate about the turn to post-productivism in the Northern Hemisphere, productivism remains the default position for the highly neoliberal New Zealand agricultural economy (Dibden & Cocklin, 2005), albeit in the evolved form of 'co-operative productivism' under the industry dominance of the dairy exporting giant, the Fonterra Co-operative Group (Jay, 2007). This model privileges the co-operative power of farmers within a grassroots culture of productivism (Burton & Wilson, 2012).

Those who support the industrial agricultural model argue that the best way of ensuring food security is by attaining maximum yields via technological fixes, i.e.

with improved and constantly applied synthetic fertilisers and pesticides, and the genetic modification of plants and animals (Smil, 1997; Dyson, 1999). This argument has gained traction since the food crisis of 2008 and 2010/2011 and is termed 'neo-productivism'. The global shortage of food seen in 2008, and again at the beginning of 2011, has introduced a moral dilemma and contested legitimacy to political discourses around agriculture: should farmers and policy makers be more concerned about protecting the environment, landscapes and animal welfare (as in post-productivism and multifunctionality), or should the first priority be the production of food to prevent starvation in poorer countries (Almas & Campbell, 2012)? On the other side of the debate are those who argue that a sustainable agriculture comprised of technological fixes for the worst excesses of productivist agriculture will not solve the deep-seated problems. To them the change must be holistic (*Science Daily*, 2011). This notion has given rise to the paradigm of sustainable agriculture.

1.6 The rise of sustainable or 'alternative' agriculture

The problems of agriculture are tied to broader problems of the global economy, however, sustainable agriculture was not initiated by policy makers, but by small farmers and environmentalists who saw the devastation that mid to late twentieth century intensive farming was causing to the very foundations of agriculture – water and soil (Earles & Williams, 2005). According to D'Souza and Ikerd (1996) the paradigm of sustainable agriculture has emerged to solve problems created by the industrial model, primarily pollution of the environment and degradation of the natural resource base. Agriculture must meet rising global food needs based on the soil, water, land, and fertility resources that are available at present without compromising the capacity of future generations in meeting their food, environmental, and resource needs (FAO, 2009a). Compromising the needs of future generations involves contributing to climate change through the release of greenhouse gases, degrading water sources, eroding and depleting land and soil, and contributing to biodiversity loss. The way to protect the rights of future generations, therefore, seemingly cannot lie within the conventional system of agriculture.

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Fairweather and Campbell (2003) argue that the contrasts between sustainable and conventional systems are best identified through the approach termed 'agroecology'. This refers to four systems of biological processes that enable sustainable farm production. Altieri (1995) describes these four systems as: (1) the encouragement of biodiversity to enable pest control by natural agents; (2) use of crop and stock rotations; (3) use of mulch and non-till systems to conserve soil resources; and (4) promotion of biological activity within soils to preserve fertility (see also Carroll *et al.,* 1990; Gliessman, 2001). Sustainable agriculture involves the reduction of inputs such as synthetic fertiliser and chemical pesticides and instead utilises organic inputs that are often derived from the farm itself. This reduces biodiversity loss (a consequence of pesticide use), excessive nitrate run-off (from excessive fertiliser use), nitrous oxide being released in the atmosphere, eutrophication caused by nitrogen released into waterways after an excessive application of fertiliser (or via animal urine deposits), as well as reducing the greenhouse gases used in the manufacture, transportation and use of agri-chemicals.

A sustainable approach to agriculture can include agri-environmental behaviour such as land stewardship. This includes: riparian planting and fencing off livestock to protect waterways; restoring swamp land to its natural state; and planting native trees and shelter belts. Such practices have the potential to reduce many of the environmental externalities present in intensive agriculture. Larney and Janzen (1996) reported that the use of organic manures (livestock and crop residues) might provide an alternative for producers with a desire to restore eroded soils and, at the same time, reduce their inputs of nitrogen (N) and phosphorus (P) fertiliser. However, Fageria (2007) argues that maximum yield cannot be achieved with green manure alone and it should be used in combination with chemical fertiliser (see also Hansen *et al.,* 2007). This brings us to the debate between sustainability and maximum yield.

Those that oppose the sustainable agriculture paradigm argue that it cannot produce the yields needed to feed the world, whether now or in the future (Foresight, 2011).

Yield benefits associated with sustainable agriculture may emerge only over time, and short-term impacts may be negative, depending on underlying agro-ecological conditions, previous land-use patterns, and current land use and management practices, although these could be mitigated in the long term. Moreover, yield variability can intensify in the short term where changes in practices require new information and experience, and farmers unfamiliar with such systems require a period to successfully adopt the practice, although long-term impacts are expected to be positive for increasing stability and average production levels (FAO, 2009a). However, numerous studies suggest that a loss in production does not occur with 'low-input', 'biological' or 'organic' methods (Pretty *et al.,* 2011; Gliessman, 1996). Research has documented that improved pasture management can lead to higher livestock yields due to greater availability of better-quality forage, with potential increased returns per unit of livestock (Sleugh *et al.,* 2000). Adopting improved grazing management can also increase livestock yields (FAO, 2009b).

International organisations (i.e. the FAO) and regional governmental organisations (i.e. the European Union (EU)), along with national governments, have taken up the call for sustainability in agriculture over the last decade. The *Green Food Report* released by the British Government acknowledges the necessity of producing more with less: "A growing, and in some cases increasingly affluent global population, alongside the increasing demand for limited resources such as water, energy, land and the pressing need to address key environmental challenges such as climate change, water availability, soil degradation and biodiversity loss, means that food security is *seriously* and *increasingly* threatened" (DEFRA, 2012: 3, emphasis added). However, the food crisis of 2008 and associated shocks to the global food system has brought about the rise of 'neo-productivism', based on the argument that food security must come before ecological concerns. Prior to the crisis of 2008, there was a general sense that on a global scale, hunger was caused by environmental disaster, civil and ethnic conflicts, or the actions of dictators (Rosin *et al.,* 2012). Furthermore, the volatility of food prices is not abating, and this will have severe impacts upon the world's poor (Meyers & Meyer, 2008). The fine balance between biodiversity and complex ecosystems, weather variations and

climate change has meant the calls from academics, social movements, community groups and farmers to foster sustainable agriculture have become louder. The inability of essential environmental services to absorb and maintain the agricultural productivity base fosters the need to develop an approach to agriculture that balances ecology and anthropomorphic concerns. However, whether this policy should arise from within the agriculture sector, from the consumer, or from government, is an important question.

1.7 Conclusion: from agriculture to governance

In this chapter, the state of global agriculture and the myriad problems facing it have been outlined. The context, within which small numbers of farmers are changing their practices from conventional to biological, has been considered. The governance environment that farmers are operating under in New Zealand is one in which the markets seemingly dominate, regional government plays a regulatory role, and policy networks are increasingly influential. On the surface, in regard to agri-environmental regulation, the state appears to have packed its bags. Thus, this transformation in the institutional landscape of agricultural regulation is ultimately a question of governance: has a new mode of governing affected the governance of the agrifood sector in New Zealand and the uptake of sustainable farming practices? This leads to the next chapter, which examines the literature on governance and looks at how the new modes and spatial locations of governance have impacted upon the actions of farmers. A substantial part of the governance literature is concerned with the power displacement of central government, and in the so-called absence of a strong core, interrogates whether power has moved upwards, sideways, or down. The state has come under scrutiny, as questions are asked about its relevance in an era when non-state actors are allegedly increasingly influential in shaping the activities of primary producers. It is necessary to consider how the emergence of new modes of power has changed our understanding of the meaning of policy and regulation and, by implication, the way in which agricultural production is governed in contemporary societies.

Chapter Two: The Governance Literature

2.1 Introduction

This thesis looks to the governance literature in political science to explain the ways in which the activities of farmers practising sustainable farming are shaped, influenced and regulated. The governance literature spans many disciplines. Within the political science tradition itself, it is utilised by several schools of theory including public policy, public administration, political economy, international relations, and regulation theory. Regardless of the diverse uses of governance terminology (a sense of which this chapter will provide), it can lend considerable insight into new arrangements for ordering society, and, fundamentally for this thesis, the ordering and regulation of agriculture and the uptake of sustainable farming.

This chapter will outline the different approaches in the political science literature on governance, and its various definitions. Critically, in terms of research design, this chapter will also work towards a definitive operationalisation of governance for which will, (a) be based upon two core governance constructs; and (b) serve to organise much of the generation, collection and analysis of subsequent data. Thus, the chapter will address the literature on the structural nature of new modes of governance. It will then examine the locations where governance is enacted, and lastly, examine what these new formations of governance imply for state sovereignty. Various governance scholars rely on the rationale that networks are the dominant way that governance is enacted. However, much of the regulation of food and agriculture has shifted to the private sphere, and therefore market governance is perceived to be the principal way that governing is done in regard to agriculture. Both of these views of governance operate on the understanding that the state has been 'hollowed out' (or has lost its monopoly on policy, and societal and economic control), and thus hierarchical governance is largely insignificant in the regulation of agriculture. This chapter will examine these assumptions.

Chapter Two: The Governance Literature

2.2 Governance: defining the slippery beast

Governance is at once a theory (a system of ideas intended to explain something), a perspective (a way of looking at something), and an approach (a way of doing something). Although the term is used in different ways, there is agreement by scholars on one point: it has come to refer to a shift in regulatory arrangements where governing is not confined to a single domain, such as, for example, the state (Higgins & Lawrence, 2005). The term governance and its use in describing the ordering of society is 'in vogue' – Peters (2011) points to one French theorist reproaching British scholars' fascination with the phrase as bordering on a fetish. Hill and Lynn (2005) believe governance fever is catching. Indeed, in recent years, governance has been used across not only academic disciplines, but across the public and private sectors, and for numerous different reasons.

In *spite* of, and even *because* of its broad usage, a governance perspective provides a map with which to navigate and analyse the changing ways in which governing is done (Stoker, 1998). This map has many parts: for some, governance is new public management, or the contracting for and franchising of services, and implementing new forms of regulation (Hood, 1991; Osborne & Gaebler, 1992). For others it is 'good governance' or governance that is 'transparent' in the language of international institutions in the political study of international relations (Rosenau & Czempial, 1992). It features in discussions and publications of international organisations, especially those responsible for improving the lives of people around the world facing poverty and oppression (Peters, 2000). The term has also been used in relation to the management of organisations in the private sector, with interest in corporate governance becoming prominent after the global financial crisis, given the extent to which large corporate firms had been involved in that issue (Peters, 2000). Finally, the term governance is used as a broad qualification to indicate a new mode of governing distinct from the hierarchical control model that has dominated the political and economic sphere for the last century. It indicates a more co-operative model where state and non-state actors participate in mixed public/private networks.

Instead of a pluralist relationship in which power lay with government and non-governmental groups tried to leverage their interest, Marsh and Rhodes (1992) argue that societal interests, particularly professions and business, are increasingly involved in policy making, such that power is dispersed away from government. The diffusion of power away from the state (or, rather, the assertion that this is occurring) has come to characterise the turn to governance. As Peters (2011) notes, the role of the state, in a sense, has changed from instigator and enforcer to administrator and enabler.

This process of the 'hollowing out of the state' was first emphasised by Rhodes (1997) in public administration studies:

> The state has been hollowed out from above (for example, by international interdependence); from below (by marketisation and networks); and sideways (by agencies and the several species of parasitical bodies) (Rhodes, 1997: 23).

Governance evokes an image of a policy and regulatory process where the state shares its regulatory function and responsibilities with non-state actors, such as supranational governing bodies, corporations, industry associations, and non-government organisations (NGO) (Jessop, 1995; Rosenau & Czempiel, 1992; Kooiman, 1993; Rhodes, 1997; Stoker, 1998; Pierre & Peters, 2000; Kjaer, 2004; Higgins & Lawrence, 2005; Peine & McMichael, 2005; Marsden *et al.,* 2010; Peters, 2011). Attempts at collective problem solving outside of existing hierarchical frameworks at the level of supranational and local decision making have also contributed significantly to the shift in the meaning of the term governance (Mayntz, 1998). However, from this notion stem myriad interpretations of the way that these different bodies influence and affect the policy and regulatory process.

Kjaer (2004: 10) proposes that "governance theory is mainly occupied with institutional change and it involves human agency". Kjaer's approach to governance, then, is dismissive of the use of the term in referring to specific organisational arrangements, such as the minimal state, or a specific theory, such as neoliberalism. Rather, for Kjaer, governance theory explores change in political

practices and their implications for the political 'rules of the game' (Kjaer, 2004). Kjaer's conception of governance is consistent with a political theory that seeks to explain occurrences within a political system. However, the use of governance as a 'theory', an 'approach', and a 'perspective', more openly examines the way society is functioning with due regard to the influence of the market, of networks, and governmental hierarchies. A governance theory simply confined to the movement of actors in and around institutional arrangements is limited.

Marinetto (2003) paints a picture of the Anglo-governance school's positivist orientation where, for example, policy networks take precedence over hierarchy; governance over government; and the core executive, the hollowed-out state, and the differentiated polity reign supreme. According to this approach, networks have become an integral feature of public management and can be managed in different ways. However, according to Fawcett and Daugbjerg (2012), UK scholars have recently approached 'governance' with a methodology summed up by Bevir (as cited in Fawcett & Daugbjerg 2011: 5), as consisting "of contingent practices that emerge from the competing actions and beliefs of different people responding to various dilemmas against the background of conflicting traditions". Governance is thus a 'bottom-up' interpretation of how society is ordered (Bang & Sørensen, 1999 in Fawcett & Daugbjerg, 2012). In short, Fawcett and Daugbjerg argue that this approach is based on an anti-foundational theory of the state, leading to what Bevir and Rhodes (2010) have called a 'stateless state'.

2.3 The hollow state

The term 'hollowing out of the state' refers to two levels of fragmentation. According to Marinetto (2003), the internal hollowing out of the core executive is mainly the result of market-orientated, public-sector reforms. Negotiations with policy networks or neo-corporatist structures, and the delegation of regulatory functions to institutions of local or sectoral self-government indicate a loss of both rowing and steering capacity (Marinetto, 2003). Accordingly, the state appears weak, or "semi-sovereign" (Katzenstein, 1987) a perspective consistent with modern systems theory and postmodernism, both of which are characterised by viewing society as centreless, or polycentric (Wilke, 1987 in Mayntz, 1998). The

acceleration of globalisation in recent years has resulted in the external hollowing out of the nation state, with the internationalisation of finance, and production constraining the ability of central government to manoeuvre freely.

However, empirical political science research over the past 20 years has made the case that, instead, necessarily, of a loss of control by the core executive, there has instead been a change in its function (Marinetto, 2003). Societal self-regulation takes place, after all, within an institutional framework underwritten by the state. The state does not only legitimise, but has often enough helped to establish various forms of self-government. This can be seen in particular in the UK, Canada, Australia, and New Zealand. According to this theory, the state has ceded authority (rather than lost it) to levels of government above (multinational institutions) and below (local government) which are better equipped to regulate and deliver services (Rhodes, 2007). However, in the two other spheres of influence – networks, and the market – whether or not the loss of state authority is deliberate is contested. The general assumption is that it is not intentional.

There has been on-going discussion in the governance literature about whether the state has been usurped as a form of sovereign authority, or whether there has in fact been a reconfiguration of state power (Rhodes, 1998). There are significant arguments that autonomous action through networks and voluntary agreements can solve the problems of market and policy failure in the absence of government (Ostrom, 2010). However, although the theory of network governance is undoubtedly popular as a way to explain how policy problems might be solved in the absence of a strong centre, there are difficulties associated with imposing collective governance through networks or communities, given the onerous task of trying to co-ordinate actors with different volitions, in matters of macro-level importance. Thus, the public sector has been able to maintain itself as one of the principal sites in which governance is done, or should be done (Pierre & Peters, 2000; Shaw & Eichbaum, 2011). In addition, the state has a monopoly on the legitimate use of force in society, and it has a collective pool of resources for the set purpose of solving policy problems (Peters, 2000). Hill and Lynn (2005: 174) further query whether the constitutional scheme in which public governance is

embedded has truly been eroded. "What," they ask, "of the importance of legislatures and courts, of politics and the rule of law, of accountability to citizens through representation and electoral processes, all of which tend to impose hierarchy and agency on public administration?" Hill and Lynn advance the possibility that the seemingly ''paradigmatic'' shift away from hierarchical government toward horizontal governing (hence the increasing preference for horizontal governance as an organising concept at the expense of hierarchy) is less fundamental than it is tactical. Governance can be seen as a political project by the state. For example, the new image governance has fostered of government being akin to a 'lean and efficient' corporate firm has helped the state gain a partially new and more contemporary image, at the same time as it has provided a degree of support and legitimacy to further cut-backs in expenditures (Pierre & Peters, 2000); or as Stoker (1998: 39) puts it, "governance is the acceptable face of spending cuts".

Some authors have challenged the idea that the state is insignificant (Peters, 2000; Pierre & Peters, 2000; Shaw & Eichbaum, 2011). Peters (2000: 63), believes "the powerlessness of the state, in some cases has been exaggerated". He goes further, arguing that "effective governance, except in very rare exceptions [...] may be better provided with the involvement of state actors, and hence governance is essentially a political concept and one that requires thinking about the forms of public action" (Peters, 2000: 64). Peters concedes, however, that acknowledging the important role of social actors in governing is useful, as it has dispelled the idea that governance is solely a function of the formal public sector (Peters, 2000).

Building on a decade of governance scholarship, Peters (2011) argues that the definition and conceptualisation of governance is crucial. He sees governance as the foundation of a significant political theory, and therefore, its definition must pay due regard to the many interpretations and ambiguities inherent in the use of a concept that can be shaped to "conform to the intellectual preferences of the individual author and therefore to some extent obfuscates meaning" (Peters, 2011: 63). Such a definition must nevertheless find a solid platform by which to position the theory of governance as a way to make collective decisions. An emphasis on

governance enables the discipline of political science to recapture some of its roots by focusing on how the public sector, either in conjunction with private sector actors or alone, is capable of providing direction to society and economy (Peters, 2011). Governance implies accountability, a common pool of resources and effective collective action, and these are only available, at all times, via the state (Peters, 2011). Therefore, governance is necessarily anchored in central government (Pierre & Peters, 2000). Peter's conception of governance is a helpful addition to the discipline; nonetheless, his analysis has a normative slant, and is not vital in establishing the current definitions of governance.

So far, I have examined the significant variations in the literature about what governance actually is, and I have discussed the hollowing out of the state. Now it is time to address the antecedents of governance, firstly by looking at the influence of globalisation and neoliberalism.

2.4 Globalisation and neoliberalism

Globalisation represents a key macro-social phenomenon behind changes in governing mechanisms (Higgins & Lawrence, 2005). Here, globalisation is taken to signal the "intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa" (Giddens, 1991: 64). Held *et al.,* (1999: 1) would add to this definition that globalisation involves a transformation in the organisation of human affairs, by linking together and expanding human activity across regions and continents and "essential to any meaningful definition of globalisation is the inclusion of extensity (stretching), intensity, velocity and impact". In the context of policy areas such as environmental governance, globalisation has greatly impacted the need for collective decision making, as societies face challenges such as climate change, and serious resource depletion and degradation. These challenges cannot be addressed by individual actions, and indeed are often cases in which individual action is likely to generate collective harm (Ostrom, 1990). Globalisation has affected the way governing is done at a local, national and international level. For instance, a local council may look at how a similar policy problem was solved in a different country, such is the intensification of global relations.

Governance arrangements also stem from the increasing loss of financial stability of nation states since the 1960s, in which globalisation has played a part. Pierre and Peters (2000) assert that until this time Western nations had the relative ability to function with surplus budgets, giving rise to the belief that government had some control over the state economy. However, the 1980s and 1990s saw the fiscal crisis of the state, which has since become entrenched. The effective maximum of taxation levels reached in the 1970s in many countries (increasing taxation beyond a certain point, it is argued, brings about tax evasion and impaired economic growth as well as social protest), combined with shocks to the established trade system, changing trade relationships, resultant fluctuations in GDP, and falling state revenues, ushered in a new age of fiscal austerity. This meant that expenditure was curtailed and state management of policy goals took on a necessarily collaborative bent, as while resources were restricted, policy problems still demanded solutions, and thus different parts of society stepped into policy. Western economies largely took on policies of economic neoliberalism, involving a commitment to free trade, the privatisation of state enterprises, deregulation, and an increase in the role of the market.

Peck and Tickell (2002) use the term ''roll-back'' neoliberalism to describe neoliberal policies focused on the extraction of the state from the channels of regulation. However, by the early 1990s superficial forms of neoliberalism began to exhaust themselves in countries that were early adopters of neoliberal policies (Hatanaka, *et al.,* 2012). The response by states has been what Peck and Tickell (2002) termed ''roll-out'' neoliberalism, equating with a shift from government to governance (Rhodes, 1997; Stoker, 1998; Jessop, 2002; Hatanaka & Busch, 2008; Marsden *et al.,* 2010). Roll-out neoliberalism signalled a change in the practice of neoliberalism but not in its ideology (Peck & Tickell, 2002). The result has been a shift from deregulation to reregulation. However, in place of direct government regulation, with roll-out neoliberalism, non-state-centered governance approaches are increasingly employed (Hatanaka *et al.,* 2012). Services are contracted out to different parts of society, notably the private sector and the much-lauded networks. Pierre and Peters (2000) note that governments have found ways to continue to

acquire revenue in the way of consumption taxes, although public scepticism about raising revenue prevails. On the other hand, public expectations of state-based solutions to policy problems present an intractable situation for governments.

This phase of neoliberalism has a vast critical scholarship. At the centre of this opposition lies the notion that the rolling back of the state, and the decoupling of political and economic control, favours business, both state and global, and facilitates a 'race to the bottom', or the removal of regulation in order to attract transnational capital. The state is seen as working as a facilitator of the requirements of capital (Moreira, 2003). Critics argue that the 'magic concept' of governance legitimises cuts in expenditure, while excusing the state of its responsibilities (Mayntz, 1998; Stoker, 1998). Similarly, Peck and Tickell (2002) assert that governance and roll-out neoliberalism are the same thing.

2.5 Modes of governance

In this thesis thus far, I have established two key conceptions for the use of governance. Firstly, governance is used as a theory, as a perspective, as an approach, or as a new way that governing is done, and secondly, governance is not restricted to a single domain, most significantly the state. There is, however, one further conception of the term central to the design of this research. Mayntz (1998) presents the case for a third useful meaning and application of governance. This conception has a different genealogy and is broader in use than the idea of governance being restricted to actions of politics and public policy. Here, governance means the different modes of co-ordinating individual actions, or basic social order, outside of institutional avenues (Mayntz, 1998). This use of the term seems to have grown out of transaction-cost economics, and more specifically the market as an alternative form of economic organisation (see Williamson, 1979). Mayntz (1998) argues that Williamson's typology has been rapidly extended to include other forms of social order, such as tribal groups, associations, and – most importantly – networks. It was in fact the 'discovery' of forms of co-ordination not only different from hierarchy, but also different from the pure market form, that led to the generalisation of the term 'governance' to cover all forms of social coordination – not just in the economy and the political sphere – but in other sectors

(Mayntz, 1998). This distinction is important, as the governance scholarship often groups autonomous forms of market or network governance in with public/private partnerships or configurations of civil society and local government, when in fact they are self-organising and arguably even in conflict with the proceedings of the state. Governance as the way to influence and order behaviour in different sectors, and the ability of different parts of society to control others, has come to be known as 'modes of governance'. The following table summarises the characteristics found in the three 'modes'.

Table 1: Characteristics of the modes of governance

Characteristic	Market	Networks	Hierarchies
Organisational basis	Contracts, property rights	Complementary	Employment relationship
Goals of organisation	Profit	Reciprocal gains	Policy solutions, careers
Means of organisation	Prices	Relationships	Procedures
Mode of organisation	Competition	Competition and cooperation	Cooperation
Control and coordination	Horizontal	Horizontal and vertical	Vertical
Conflict resolution	Legal proceedings	Trust, reputation	Supervision, hierarchical accountability
Flexibility	High	Medium	Low

Adapted from Powell (1990: 81).

2.5.1 Hierarchical governance

Hierarchical governance implies the state-centric top-down form of policy making that preceded the so-called turn to governance. Policy institutions, processes and vertically integrated systems of administration mean that the state is still the dominant actor in the policy process (Shaw & Eichbaum, 2008). The state is conceived of as the epitome of collective interest and is distinctly separate from the rest of society, governing by the imposition of law and other forms of regulation (Pierre & Peters, 2000). Shaw and Eichbaum (2008) argue that in the New Zealand context, while a move away from centralised version of hierarchical governance is evident, there has not been a denial of hierarchy as such, just a new variant. In this variant, ascending contracts with the core goals of government inform the budget

strategy, departments, and policy direction. In their work on governance and food policy, Lang *et al.* (2009) agree; to them the state has lessened its control over economic sectors on one hand, while on the other it has sought to extend its regulatory and strategic reach, partly achieved through new governance forms. However, while states seek to regulate the agrifood sector in terms of the health and safety of food (largely to ensure entry and constancy in overseas markets), the environmental aspect of regulation is often ignored as it bears a cost that, more often than not, neither the producer nor consumer is willing to pay.

The disillusionment with the existence of an effective political control centre has directed attention and scholarship to alternative forms of societal governance. Market principles and horizontal self-organisation have been held up as alternatives to hierarchical political control. There are those who would argue that market governance, as it occurs outside of the political institution, is the mode of governance that clearly *is* dealing with economic, societal and environmental problems (Friedman, 1980; Weingast, 1995). Because of the transnational profile of capital and supply chains, market models appear to be the mode of governance best able to deal with the aggregate outcomes of a fragmented but interdependent global economy (Mayntz, 1998). Where previously the nation-state exercised considerable control over the regulation of sectors like agriculture, the rise of transnational corporations (TNCs) in business and global governance agencies – such as the World Trade Organisation (WTO), the IMF, the World Bank, and the co-operation of civil society groups to engineer a form of self-regulatory control, has resulted in a reconfiguration of hierarchical political power (Higgins & Lawrence, 2005). These institutions are significant for a discussion about markets and hierarchies and their struggles for power, and in this context the encroachment of markets, networks and international institutions on the power of the state has had serious implications for the agrifood system.

2.5.2 Market governance

Market governance can be explained as the ordering of actors via the occurrences that take place in financial markets, and markets for goods services and products through prices, competition and contracts. Following the ideological trend of neoliberal reform and economic globalisation, much of the regulation of food and

agriculture has shifted to the private sphere (Busch & Bain, 2009; Higgins & Lawrence, 2005; Konefal *et al.,* 2005; Peine & McMichael, 2005; Hatanaka & Busch, 2008). Market governance is also detectable in the number of private-public partnerships that have increased dramatically since the neoliberal reforms of the 1980s. Not only do corporate firms and business enter into partnership with central and local government to achieve policy goals, they enact their own policy, through their own policy mechanisms. This can be seen in the case of market instruments that interpolate consumer demands onto, or into, the production of a product, meaning the producer must change their behaviour – a policy outcome. Because of the way in which the market ostensibly dominates socio-economic interaction, governance by the market has come to be seen as everything that the hierarchical government is not – efficient, relevant, and immediate. However, this concern with reflexivity is argued by many to be a detriment (Kelsey, 1993; Monbiot, 2012). In his 2006 report on climate change, Sir Nicholas Stern issued the famous admonition that climate change "is the greatest and widest-ranging market failure ever seen" (Stern, 2007: 1). This interpretation sees market governance inherently having an inability to solve long-term and economic problems. The incidences of market failure, perhaps nowhere more visible than with the problem of environmental degradation, mean that the market on its own is now widely doubted, in the political science tradition, to be the best way to solve policy problems (Nakhooda, 2008). However, given the context and theory of this research, the market's role as a regulator is of central importance.

In many countries around the world, agri-business and transnational supply chains have marginalised the producer, i.e. farmers. Agriculture has essentially been transformed into a business activity, thus the market and the global supply chain play a dominant role in influencing the actions and behaviour of producers. Higgins and Lawrence (2005) note that transnational corporations have no allegiance to any state, but a large amount of power, leading to a reorganisation of national economies on a global scale whereby large and highly mobile corporations are force nation states to liberalise trade and social policies in favour of market-driven neoliberal policies (see McMichael, 2005). Importantly, if states seek to resist this pressure by trying to implement regulation to impose costs on either the suppliers to

corporations or to other corporations in their absence, capital is more likely to move elsewhere, seeking to find optimum profitability (Cheshire & Lawrence, 2005). However, markets can also regulate the behaviour of those within their sphere of activity, as will be discussed in section 3.7 on market instruments in Chapter Three.

2.5.3 Network governance

Network is a broad term used in multiple disciplines. In its loosest sense it can be taken to mean any group or actor working in association with another actor. Although the public policy literature on networks is vast, it remains somewhat ambiguous on the purpose and role of a network. Pierre and Peters (2000) talk of networks as informal public-private communication through which the state imposes its will on its external environment. At the other end of the spectrum, Marsh and Rhodes (1992) write of networks powerful enough to resist state influence. However, 'policy network' is the term applicable to this work, and a policy network is taken to mean a constellation of communities and interest groups with an aim or problem in common, working together either with governmental departments, or to influence government, in order to solve a problem (Rhodes & Marsh, 2006). A policy network comprises different actors exchanging resources, information and services. Moreover, a self-governing policy network influences actors by providing regulation itself, for instance, actors wishing to protect a particular waterway will engage with their local council, business groups, individuals and other stakeholders, with the goal of changing local government policy, bypassing the state altogether. According to Marsh and Smith (2000: 6), "Networks involve the institutionalisation of beliefs, values, cultures and particular forms of behaviour. They are organisations which shape attitudes and behaviour."

Keeping this conception of policy networks as constellations of interest groups that work to solve policy problems in mind, it is possible to distinguish between three ways of thinking about network governance. Firstly, the idea that networks participate in decision making stems from the well-known discussions on power in the 1960s (see Dahl, 1961) and agenda setting (see Kingdon, 1984), which were subsequently adopted in British research on policy communities and policy networks in the 1980s and 1990s (Rhodes, 1988; Marsh & Smith, 2000). Secondly, networks are regarded by others as less associated with power and the agency of

actors at accessing the hierarchy, than as vehicles for service delivery and implementation: "it assumes that organisations need resources from other organisations for their survival and therefore interact with these organisations (and thus networks emerge)" (Klijn & Koopenjan, 2012: 588).

The third conception of network governance falls largely under the public administration tradition. It focuses on solving public policy problems through and in networks, and can be seen as a kind of 'network management'. It stresses the complexity of the decision making involved in achieving policy outcomes that satisfy all actors (Mayntz, 1998). This research emerged in the 1970s, focusing on existing networks' policy initiatives and implementation, and on reconstructing and improving the networks and decision-making processes taking place within them (Kaufmann *et al.,* 1986; Marin & Mayntz, 1991; Kooiman, 1993). The policy networks tradition focuses on the relationship between the state, interest groups, networks as service delivery vehicles, and implementation and coordination in delivering public services.

In the work by Rhodes and Marsh (1996), networks emerge as tight relationships between UK government departments and interest groups. However, Rhodes went on to describe them as self-organising, interorganisational networks that are typically interdependent, while enjoying significant autonomy from the state (Rhodes, 1997). Rhodes (2007) argues that governance by networks is the defining characteristic of governance, "in sum, governance means governing with and through networks" (Rhodes, 2007: 1246). However, Wilks and Wright (1987) believe that policy networks are best seen as personal relations of small groups of political actors, rather than visualising networks as part of wider explanations of the nature of the modern state. Marsh and Rhodes (1992), on the other hand, want to integrate policy network analysis with theories of the state, seeing it as a "meso-level" theory (Dowding, 1995). Dowding attacks the idea of network analysis as capable of answering high-level questions about the changed nature of governance by introducing ideas of 'epistemic communities' or 'advocacy coalitions'. They will fail, he argues, because network theory deals with characteristics of components within networks, rather than characteristics of networks *per se* (Dowding, 1995). Dowding's scepticism stems from the triviality of most of the

findings derived from network analysis, and by triviality he means such findings that merely demonstrate what most would intuitively believe from more casual, non-formal observation.

Holliday (2000) further criticises the idea that policy networks are the mechanisms by which core actors play leading roles in reaching out to and managing other parts of the state, and adds that these networks are hard to characterise in any general way: "some are very specialised and tightly constructed; others have much wider concerns and are considerably looser" (Holliday, 2000: 162). Holliday's point is that networks are substantially run from the 'core' and thus he rejects Rhodes's claim that the British core executive has broken down and has largely relinquished its governing capacity to networks.

Networks are a core component of the governance theory in the Anglo-governance school. Marsh and Smith (2000), however, argue that the German and Dutch literature is more ambitious in their use of networks, treating them as new forms of governance – alternatives to markets and hierarchies – while Anglo-American literature is narrower, focusing on the role networks play in the development and implementation of policy. Dowding (1995; 2001) is highly critical of the placement of networks at the centre of the governance theories of Marsh and Smith (2000), Marsh (1998), and Rhodes and Marsh (1992), and it seems that Fawcett and Daugbjerg (2012) and Dowding are correct in their assertion that policy networks are employed as a meso-level theory in British policy network analysis to explain structural change. This is not to say that Fawcett and Dowding do not believe that networks have a role in shaping policy, however, networks and network theory cannot explain the altered way in which governing is undertaken in contemporary society.

Networks and network theory *do* have utility for describing the often immeasurable exchanges between actors and government and within autonomous societal associations, although for various reasons they can be problematic. Jordan and Richardson (1983) argue that the depth of the communities and actors making up a network may vary across policy domains. This, it seems, is the case between policy

networks that populate, for instance, the policy domain of justice, compared with the policy domain of the environment. Furthermore, governance as networks assumes that outcomes and performance result from interactions between a variety of actors rather than from the actions and policy of one actor alone (Klijn & Koppenjan, 2012). Moreover, Mayntz (1998) points out that networks typically emerge not where power is dispersed among agents in a policy field, but where co-operation is necessary for the sake of effectiveness. As the various public and/or private agents in a policy field typically have different interests, this poses the problem of how to agree on an effective problem-solution without shifting the cost this implies to outsiders (Scharpf, 1993 in Mayntz, 1998). Mayntz (1998) criticises networks as a means of consistently solving policy problems. She points out that where state actors participate in policy networks, they are a very special and privileged kind of participant; they retain crucial means of intervention, and this holds even where decision making has been devolved to institutions of societal self-government. In particular, the state retains the right of legal ratification, and the right to authoritative decision where societal actors do not come to a conclusion, for example, in negotiations about the right to intervene by legislative or executive action where a self-governing system fails to meet regulatory expectations (Mayntz, 1998). Thus, hierarchical rule and societal self-regulation are not mutually exclusive.

2.6 Spatial reckonings of governance

The 'modes of governance' used to describe the new way that governing is done are useful tools for differentiating between key groups involved in governing. The use of these modes elucidates the structure and processes of governance and illustrates the major ways (i.e. by the market, the hierarchy, networks) in which governance is carried out. However, it doesn't allow for the complex interactions of actors between networks, informal coalitions, and the power displacement of the state within this spatial arena. This movement of power is the critical nexus of the weakening of the state and a move to a governance perspective. Pierre's and Peters's (2000) typology of 'governance occurring at three levels' illustrates the notion that power has moved from the state to other locations. For example, hierarchical governance is located not only at the traditional level of the nation state

but has moved 'above' the nation state, to the level of intergovernmental, institutional meetings. In the case of hierarchy, states surrender part of their sovereignty to transnational arrangements in the assumption that there will be co-benefits, for example favourable trade agreements, or collaborative problem solving in the case of the environmental or legal disputes. The other levels of governance are 'below' the state, at the level of region, localities and communities (Pierre & Peters, 2000), and to the side, where the activities of NGOs, corporate companies and the market are dominant. This is the second theoretical construct that emerged out of the governance literature review that links theory to data in this thesis.

2.6.1 Governance moving up

Pierre's and Peters's (2000) scholarship is admittedly 'state-centric'; their objective is to link the political system, with the state at its core, to the environment around it. Pierre and Peters explain the centrality of the state in their work in that governance moving up can be seen in the actions of states co-operating to achieve solutions to problems that by their very nature are not confined to individual states, including environmental problems, arms control, and serving as a counterweight to private capital. The WTO replaced the General Agreement on Tariffs and Trade (GATT) in 1995. The criteria for states to join include demonstrating subscription for free trade in policy as well as action, and non-state intervention in private industry (Hoekman & Kosecki, 1995). The establishment of the WTO coincided with global market integration, and a move from national government to international governance. Peine and McMichael (2005) argue that the WTO's dispute-settlement mechanism is an expression of the new forms of governing; states internalise market rule by negotiating free-trade agreements that privilege corporations over citizens, and by applying corporate measures to the delivery of public goods. The natural environment continues in its historical role as supplier of subsidies not included in the end price of the product, as the profit-making nature of global capital seeks to find the cheapest raw products to add value to in the supply chain. A further explanation for the ceding of power upwards is provided by the literature on the globalisation of private capital and corporations (see McMichael 2005).

The ceding of control to local and transnational pressures is argued by some to be a conscious strategy rather than surrender (Pierre & Peters, 2000). Peine's and

McMichaels's (2005) argument is not dissimilar; they see current forms of agricultural regulation in the global economy as politically created and managed. New Zealand functions as a highly neoliberal state, due in part to its reliance on exports, particularly agricultural exports. At the international level, New Zealand works to expand its markets and seeks the deregulation of others, including by joining the Cairns Group, a coalition of states committed to free trade, working together to reduce trade barriers at the international level. A dilemma for central government in New Zealand is the perceived incompatibility of providing financial support for farmers to help them solve environmental problems that arise from farming. The view held by New Zealand and other Cairns Group nations is that this would constitute a thinly disguised 'non-tariff barrier' and would therefore be contrary to WTO regulations (Potter & Burney, 2002 in Dibden & Cocklin, 2005).

Such new actors are a challenge to the assumption of power by the state, and the obvious question is, why do states surrender their sovereignty to transnational institutions? The answer lies in the kinds of problems these institutions are addressing, which are not defined by national borders. Although international meetings, organisations, summits, and negotiations indicate an alleviation of nation-based policy solutions in the realm of global public problems, recent meetings have demonstrated that nation states can stifle the progress of such meetings and fail to make binding or 'good' decisions. The 2009 Conference of the Parties (COP) on Climate Change is the foremost example of the failure of international organisations to find solutions to pressing policy problems. Nation states, as the constituents of such negotiations, can shoulder a large part of the blame. Furthermore, Weiss (1998) argues that the strengthening of international institutions and the idea of 'globalisation' more generally gives states a convenient excuse not to address predominant political problems. Pierre and Peters (2000) would counter that by proposing that governance does not bear a zero-sum relationship to government. Thus, while governance is, in some cases, moving upwards, there is still a dearth of good governance decisions to address complex global policy problems. This includes initiatives such as the Agenda 21 project formulated at the 1992 Rio Summit. Agenda 21 was based on the idea that

subnational governments, not states, are targeted as lead actors to develop programmes of sustainable economic development (Pierre & Peters, 2000).

2.6.2 Governance moving down

The movement of power down from central government to regional authorities and local institutions is a major displacement, and one that has received more coverage in the literature than the movement of power upwards (Marsden, 2000). The devolution of political power has meant that local and regional governments have gained both power and autonomy in recent decades. A major driver of the move of governance downwards is the ability to curb the growth in public expenditure of the central government. This wave of decentralisation has been driven by a response to structural changes such as the continued urbanisation and agglomeration of cities (Pierre & Peters, 2000). For many scholars, one of the most significant developments of decentralisation is the changed role of local government (Goodwin & Painter, 1996). Because of its ability to interpret legislation as it sees fit, to implement policy, and to work in conjunction with certain actors to implement their projects, local government has become an attractive target for political groups. Thus, not only have local governments been strengthened by the devolution of the power of the state, corporate actors respond to incentives for partnerships, and governance becomes multi-level and multi-layered (Pierre & Peters, 2000).

Local government is increasingly a significant actor in countries such as New Zealand. Its jurisdiction has increased markedly in the last 20 years, and it is responsible for administering a variety of services as well as law making. Shaw and Eichbaum (2008), however, question whether this means there has been a power shift of a zero-sum nature from central to local government. They point out that the relationship between the two is hierarchical, with central government defining what it is that local government can do. This would again suggest that the state is not involuntarily losing power but ceding it in the name of targeted, multi-level governance. Pierre (1998) argues that public-private partnerships work especially well in enhancing the capability of institutions at the local level, as councils find themselves increasingly unable to finance important projects such as economic development. Notably, environmental policy has been increasingly left to local governments, especially in developed neoliberal economies, where rather than

targeted policy at the central government level, there are general policy goals and directions that local governments can interpret in whatever way they see fit.

To Stoker (1998), governance moving down can be seen in the rise of networks. The establishment of self-governing networks can lead to opportunistic and uncertain outcomes, but to Stoker, self-governing policy networks are the ultimate partnership and act of power. Self-governing networks involve not only the influence and pressure of government, but the adoption of the business of government (Stoker, 1998). Networks are arguably not located at any level – they can easily span all three. For instance, a policy network seeking to achieve a policy goal on climate change can utilise a network reaching from the grassroots level to the international and supranational levels. Thus, governance moving down is best seen in the newly acquired power of local governments and of individual actors.

In their research on agricultural restructuring, Cheshire and Lawrence (2005) argue that occurrences of local government working with stakeholders are examples of network governance. However, the context of Cheshire's and Lawrence's (2005) study was the uptake of sustainable farming practices in Australia. The focus of their research on networks in agriculture is largely due to the Australian Landcare programme, a partnership between the community, government and business to carry out environmental protection in Australia. However, Landcare is a not-for-profit, non-political organisation that cannot lobby or conduct advocacy as an umbrella association, and is thus not an example of a policy network. It is more an extension of government services or a 'roll-out' of the state. In the New Zealand context, farmers have been similarly reconstituted as 'active citizens' responsible for their own environmental behaviour, but a rural stakeholder-based programme has not been able to implement agri-conservation schemes of the type seen in Australia.

2.6.3 Governance moving sideways

Pierre and Peters (2000) paint a picture of forms of governance moving to the periphery under the auspices of corporate companies, groupings of private businesses and, importantly, non-governmental organisations (NGOs). NGOs have moved from an adversarial position, lobbying government to enact policy, to

delivering change themselves. Moreover, their relationship with the private sector has co-evolved to reflect the terminology of governance in 'collaboration' and through 'stakeholders'. The private sector and NGOs have both been reconstituted as stakeholders, and thus, they must facilitate policy, to reflect their needs and wants. However, the notion underlying governance, that 'policy' is not necessarily state based and state sanctioned, does not mean that disparate groups always, or even often, work together. Therefore, there is still a sizeable element of power politics involved in governance that occurs 'to the side'. Moreover, groups targeted by a particular state intervention often try to resist regulation of their behaviour. These can be sub-systems that gain large amounts of autonomy, that are self-referential and which have a high degree of closure, resist centralised political control (Rhodes, 1996; Kjaer, 2004).

Kjaer (2004) argues that one way to deal with such governance failure is to further decentralise authority and empower local authorities. This would imbue local authorities with a better ability to adapt to changing environments (Kjaer, 2004). However, Kjaer's support of decentralisation becomes problematic when there is a need for centralised regulation due to market failure, for example, in ecological degradation within a nation state. Local authorities interpret policy according to their regional jurisdiction. However, there remain cases where centralised policy is required to address a public policy problem. It has been argued that the effect of agriculture on the environment is one such area (Gliessman, 1998). Questions remain about whether the state yields sufficient power to implement such policies, whether this is the state's role and whether, in particular cases, the state even desires such outcomes.

2.7 Governance at three levels: what this means for state sovereignty

The use of Pierre's and Peters's (2000) typology of governance moving up, down or out lends complexity to the assumption that market and network governance continue to be the dominant modes of order and influence in the early twenty-first

century. Governance, however, cannot be reduced to a singular logic or actor, such as the state or capital (Higgins, 2005).

Although network governance and governance from below constitute a significant part of the functioning of society, they are not necessarily the solution to the weakened nation-state in such complex sectors as agriculture, where governance demands a wide-reaching, all-encompassing and longitudinal solution. The problem-solving capacity of public/private networks and of societal self-regulation can be limited. Hill and Lynn's (2005) effort at the meta-analysis of 800 empirical studies of 'governance' revealed a striking tendency toward hierarchical explanations of public service delivery and of the consequences of public policies and programs – a finding at variance with the view of governance as increasingly networked and community driven. Smith (1999) observes that central governments may have given up some of their traditional roles but are still "more highly resourced in terms of authority, finance, and control over coercion than any other domestic institution. Therefore, its centrality and control of resources means it "continues to have dominance over other organisations and networks" (Smith, 1999: 253). Moreover, it is important to consistently locate the state in the discourse about governance. In many cases, the apparent ceding of sovereignty upwards, downwards or sideways, has been a state-driven process. That this has been in the interest of economic development at the expense of other societal interests is a significant point, though one that is beyond the scope of this thesis. However, the perception of economic growth is changing, as witnessed by the evolution of the 'sustainability' discourse. Although sustainability has become a term so widely used it is almost devoid of meaning, at its core remains the notion that growth relies upon a healthy and functioning resource base. Equilibrium is essential for continued growth and development. Thus, addressing which modes of governance and structural locations of governance advance sustainable agriculture is significant. This brings us to the issue of agrifood restructuring under governance.

In the context of a thesis concerning the governance arrangements influencing the practices of farmers in New Zealand, the purpose of this chapter was to establish

two constructs crucial to the research design: firstly, the modes of governance (hierarchy, markets and networks); and secondly, Pierre's and Peters's up/down/sideways configuration of the locations where this governance now takes place. These constructs lend conceptual and empirical shape to the rest of the thesis: that is, they underpin the discussion of the published record on agrifood (the subject of the next chapter), and the generation and analysis of data. In short, these constructs are the conceptual tools that help bring governance theory and empirical data together in order to address the core research question.

Chapter Three: Agrifood governance: regulation through markets, networks and government

3.1 Introduction: Agricultural governance, with New Zealand particulars

This chapter uses the language of governance and insights from the review of governance literature in Chapter Two, to (a) describe and then (b) to analyse agricultural arrangements in New Zealand. It will situate governance within the literature on agricultural restructuring and the opportunities for sustainable agrifood production. The various conceptions of the term 'governance' have been explored in detail in the previous chapter. Here, however, it is appropriate to make brief reference to the arrangements through which sustainable agriculture is conducted in New Zealand. This chapter examines the evolution of agriculture in New Zealand, where the empirical work for this research was undertaken. Against the background of the political, economic and social forces of globalisation and neoliberalism, the term 'governance' has come to describe and embody the new way the ordering and regulation of society is achieved. I will accordingly investigate the governance environment surrounding agriculture, both globally and in New Zealand. Finally, I will look at devolution under neoliberalism in New Zealand, and what this means for agriculture and the possibilities for sustainability in that country.

The intensification of agriculture and the concomitant increase in pollution has occurred during a time of significantly altered governing arrangements. Governance under neoliberalism in regard to agriculture and the environment is characterised by few regulations from central government. Muirhead and Campbell (2012) argue that the success of the neoliberal orthodoxy paired with the continued resistance towards any restructuring that might reduce farmer control of the industry has resulted in environmental vulnerability because of the prominence given to productivity gains. In line with international governance trends, natural

resource management in countries such as Australia and New Zealand is increasingly viewed as less of a responsibility of the central or federal government, and more of a negotiated arrangement between members of a given regional community (Wallington *et al.,* 2007). As such, it is local institutions, businesses, socio-political networks and regional governing bodies that are now viewed as important players for improved environmental outcomes (Eversole & Martin, 2005).

Under governance, regulation can come from non-state organisations responding to and attempting to anticipate the global commodity market, for instance, Zespri or Fonterra, and the consumption behaviour of individuals who, in turn, are trying to shape the behaviour of such organisations. Furthermore, regulation can come from the networks forming the linkages between these groups and can provide a united policy front. With growing public demand for ethically produced, environmentally friendly, healthy and, perhaps most importantly (for the consumer at least), demonstrably *safe* food products, some farmers have been able to marry their own interests in low-input or biological farming with a niche for their products. However, there are major impediments to a broader uptake of such practices; market governance plays a role in these impediments – due to the economic model which favours cheaply produced food, and maximum agrifood yields – yet so does governance from the state (due to its facilitation of the dominant economic model, its strict regulations concerning the sale and processing of food, and its lack of environmental regulation). Given that it is imperative that the resource base and ecosystem services be protected and maintained, it is necessary to question which mode or combination of governance mechanisms can produce the best outcomes for sustainable farming.

By employing a governance perspective on farmer behaviour, it appears that instead of governance emanating from above or below, governance has moved out to the sides, away from the regulatory and collective decision making of the state, away from micro-level forces at the local level, and instead to the workings of the

market. In the absence of direct intervention by the state, a common understanding is that the financial market has the largest impact on the actions of individual actors in New Zealand in the era of globalisation. However, this apparent trend needs empirical testing. Work has been done by Le Heron (2003), Higgins (2005), Dibden and Cocklin (2005), and Hatanaka (2010), however, only one of these studies took place in New Zealand, and none specifically looked at the governance of sustainable agriculture with an emphasis on the modes of governance that 'biological' farmers are operating under. Most governance literature – either theoretical (Chapter Two) or applied (this chapter) focuses on states, networks and organisations, not on the agency of individual farmers. This thesis complements the dominant research emphasis by exploring the governance of sustainable agriculture from the point of view of New Zealand farmers. The following section deals with the evolution of agriculture and the growth of sustainable agriculture in that country.

3.2 The evolution of agriculture in New Zealand

Despite social and political interest in sustainability, the agri-industrial model of agriculture remains persistent in many countries, both developed and developing. In New Zealand, the Parliamentary Commission for the Environment's (PCE) *Growing For Good?* report in 2004 called for a 'redesign' of New Zealand Agriculture (PCE, 2004), but there has been no apparent progress or even suggested mechanism to trigger such a major transition (Campbell *et al.,* 2012). This has been in part because calling for changes to the New Zealand agricultural sector is a sensitive subject, as agriculture and agri-processing contribute more than half of New Zealand's merchandise exports (around NZ$15 billion), around 10 per cent of GDP and 12 per cent of jobs nationwide (Ministry of Foreign Affairs and Trade, 2012). Furthermore, Dibden and Cocklin (2005) argue that the current economic and political agendas in developed nations such as New Zealand promote a globalised food system, mass food markets, competition and efficiency, coinciding with, and reflective of, what governance scholars refer to as the "hollowing out of the state" (Rhodes, 1997; Jessop, 1997).

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The combination of neoliberal economic policies and the reliance on agricultural exports for GDP in New Zealand has triggered a drive for production and efficiency without incorporating the externalities that are then passed onto the environment or society. Thus, the problems that are part of the productivist agriculture regime require some sort of regulation in order to mitigate current externalities as well as future threats. However, what is significant about the forms of governing that guide behaviour is that they are not necessarily state-based, but comprise a mix of private and public coordination (Higgins & Lawrence, 2005). For example, regulation can derive from industry-driven environmental standards, which are a consequence of consumer preferences creating demand in the market (Haggerty *et al.,* 2009). The question remains, who and what is regulating and influencing farmer behaviour in New Zealand? In other words, what are the governance arrangements that apply with respect to farmer behaviour in that country? In order to address this question, it is necessary to look back on the political and economic developments that have affected its evolution.

It is argued that New Zealand is a primary example of an economy that has followed the tenets of neoliberalism and is thus a proponent of free trade and globalisation (see Kelsey, 1993; Le Heron, 2003; Rosin & Campbell, 2012). This economic approach is applied to agriculture. New Zealand had lost its privileged access to Britain's markets in 1973 when the UK joined the European Economic Community (EEC). The following years saw instability and crisis and resulted in continued government intervention to stabilise agriculture, culminating in the adoption of radical neoliberal reform across the whole economy in 1984 (Campbell *et al.,* 2012). The once-dominant sheep and beef farming sector was forced into a period of de-intensification and cost-cutting when subsidies were cut in the 1980s (MacLeod & Moller, 2006). From the 1980s in New Zealand, the politics of agricultural protection (via subsidies paid to farmers to ensure the continuation of their produce) were quickly replaced by the politics of deregulation (Green & Wilson, 2005 in Cheshire & Lawrence, 2005). On top of the removal of subsidies

and the dismantling of agricultural producer boards, central government efforts have supported the extension of flexible employment relations, increasing openness to international developments in trade, production and investment, and an economic and institutional environment facilitating exploration of links into the globalising world food economy (Le Heron, 2003). In order to try and further its trade opportunities, New Zealand has argued at numerous international meetings for the removal of subsidies and tariffs by other countries.

Almas and Campbell (2012) argue that New Zealand provides the strongest example of the diminished relevance of national policy settings relative to the arrangements that have emerged in particular agricultural sectors. The dairy, sheep and horticulture sectors have all taken particular development pathways since deregulation in the 1980s. Each pathway has resulted in a vastly different ethos and forms of regulation. Rosin and Campbell (2012) argue that there has not been a universal tendency towards productivism across sectors in New Zealand; the sheep and beef sector and the horticultural sector have confounded expectations from both the political left and the right that the introduction of neoliberal reform would result in unprecedented productivism. The sheep and beef sector has not developed an over-arching body to administer, process and export their produce. Furthermore, rather than intensify stocking rates, sheep and beef farmers have generally improved livestock health and quality (Haggerty *et al.,* 2009). However, a diminishing hold on the export market has meant that the conversion of former sheep and beef farms in areas such as Southland, Canterbury and Hawke's Bay to dairy has been considerable. The kiwifruit industry has also undergone a rapid change, brought about when residue was found on fruit in an important export market in 1991 and the product was subsequently denied access (Darnhofer *et al.,* 2010). The industry grouped together under the exporting company Zespri and changed their growing practices to cope with the demanding nature of the global supply chain.

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Despite state deregulation of the agricultural sector in 1985/86, dairy farm production remains regulated by requirements related to animal health, milk hygiene, occupational health and safety, and financial recording systems (Jay, 2007). Many of these standards come from Fonterra itself, but some are the result of regional council stipulations, a small number come from the state, and others are the result of top-down governance from international institutions and agreements. Intensification and environmental degradation has escalated with the conversion of sheep and beef farms to dairy from the early 1990s. It is necessary to unpack the features that have played a part in this narrative.

3.3 Intensification

The FAO (2004: 5) defines agricultural intensification as "an increase in agricultural production per unit of inputs (which may be labour, land, time, fertiliser, seed, feed or cash)". New Zealand agriculture has a history of intensification of land use and production attributed partly to changes in the political economy of trade relations and also to the opportunities that have presented themselves on the world market for different products. The first phase of intensification began around 1920, enabled by the application of new soil science, fertilisers, and improvements in plant and animal breeding (MacLeod & Moller, 2006). Between 1920 and 1970, the area of sown pasture remained relatively stable but the number of stocking units increased by about 150 per cent (Molloy, 1980). The latter phase of intensification started in the 1980s and reflected the changed political economy and the rise of new markets and technology. Dairy farming was the new panacea and the conversion from sheep and beef farming brought about fundamental changes in land use.

Agricultural organisations and economists have long expounded New Zealand's key competitive advantage as low costs of production permitted by an equable climate and year-round grass growth (Jay, 2007). The dairy exporting co-operative Fonterra has, as its mode of operation, continued low-cost production: "Fonterra's strength is the ability of our farmers to maintain low-cost production structures

while continuing to grow milk supply by an average three per cent year-on-year" (Fonterra, 2005: 8). However, the point has been made by scientists, politicians, private business and many others, that New Zealand's true competitive advantage does not lie in low-cost production, which many other countries can achieve more cheaply by exploiting resources, including human and natural capital, at a rate unacceptable to the New Zealand public, courts of law, business groups, and international agreements. The advantage lies rather, in the 'clean and green' or '100% Pure' reputation of its environment and the natural capital that creates food and fibre products which in turn carry significant economic benefits. A Ministry of Environment (MfE) report found that if New Zealand's environment was perceived as being degraded, on average, consumers surveyed would purchase 54 per cent fewer products, and the estimated potential annual loss would vary between $241 million and $569 million (MfE, 2004). Continuing to degrade natural capital and with this the services the environment provides is therefore not in the economic interests of New Zealand. Exporters and producers have an important stake in reassuring consumers that products are ethical and environmentally friendly; ultimately agricultural goods must be sustainable. This is being reflected in the purchasing decisions of major foreign food corporates which are interpolating their own agri-environmental audit systems onto producers, for instance the EurepGAP, a common standard of 'good agricultural practices' for farming practice created by several European supermarket chains. The intensification of agriculture in New Zealand has occurred with the help of synthetic inputs that have accompanied the huge increases in world-wide agricultural productivity – it is worth looking at their impact on the New Zealand environment.

3.4 Inputs

Dairy farming requires significantly more fertiliser than other land-use types, especially potassium, nitrogen, and urea. The most common fertilisers used in New Zealand include lime, phosphatic fertilisers such as phosphate, potassic fertilisers, nitrogenous fertilisers (mainly in the form of urea), and compound fertilisers such as di-ammonium phosphate (DAP) (Mulet-Marquis & Fairweather, 2008).

Synthetic fertiliser and pesticides use natural gas and oil in their production – nitrogen fertiliser production alone accounts for about half of the fossil fuels used in primary production globally (FAO, 2009a). The huge increases in dairy conversion rates have had devastating effects on waterways in New Zealand due to increasing application of synthetic nitrogen fertiliser, and the excretion of urine by dairy cows (McGechan & Toop, 2004). Nitrogen is highly mobile and can easily enter waterways by flowing into streams and creeks or by leaching through the soil into groundwater and ending up in lakes, rivers and coastal waters (PCE, 2004). New Zealand rivers and lakes are becoming nutrient enriched through the process of eutrophication (Salmon, 1999; Joy, 2002).

The high use of fertiliser for dairy farming is explained by those in the dairy industry as the need to remain competitive by producing milk at high levels, which requires intensive grazing and therefore good pasture growth. The increase of fertiliser use is due to increased production in the dairy sector, achieved partly by increasing the number of dairy cows per hectare (Moller *et al.,* 2008). The amount of nitrogen fertiliser used in New Zealand has increased about 10 times since 1985 and has doubled since the mid-1990s (Mulet-Marquis & Fairweather, 2003; PCE, 2004). The total amount of liquid pesticides (including herbicides, insecticides and fungicides) aerially sprayed on farms quadrupled between 1960 and 1985, and pesticide use is estimated to have tripled between 1993 and 2001 (MacCleod & Moller, 2006)

3.5 Governance as hierarchy, with New Zealand particulars

In this section on governance as hierarchy, the extent to which the state is active in using its legislative monopoly to support sustainable agriculture is examined. Fairweather and Campbell (2003) point out that at a general level in New Zealand, there is support for 'sustainable farming' but there is no subsidisation of agri-conservation activities, no legislation against excessive inputs (there is only regionally-based legislation concerning outputs, including the disposal of effluent), or any other public policy-imposed incentive structure for achieving 'sustainable

farming'. There is very little centralised policy treating agriculture and the environment as co-dependent entities in New Zealand. There has been some discourse about 'sustainability' and 'agriculture'; the Ministry of Agriculture and Forestry (MAF) (now the Ministry for Primary Industries (MPI)) has defined 'sustainable agriculture' as: "the use of farming practices which maintain or improve the natural resource base of agriculture, and any parts of the environment influenced by agriculture". The Sustainable Farming Fund (SFF) exists to financially support sustainable farming initiatives. But such funds must "deliver economic, environmental and social benefits to New Zealand's primary industries" (MPI: 2012), meaning that projects which cannot promise considerable financial return are not considered for the fund.

The New Zealand government has in theory recognised the importance of sustainable management of the country's natural and physical resources in the Resource Management Act (RMA) of 1991. In the Act, sustainable management means "managing the use, development, and protection of natural and physical resources", to ensure the well-being of both current and future generations through safeguarding the life supporting capacity of air, water, soil and ecosystems, and by avoiding, remedying, or mitigating any adverse effects of activities on the environment (RMA: Part II, Section 5). The Act places the responsibility of sustainable soil and water management on local and regional councils. Throughout its history, the Act has received widespread criticism from both conservation groups and farmers in its approach to the management of resources. This is due to the many interpretations that the document leaves open. The definition of sustainable management, in Section 5 of the Act, is ambiguous, as it places the fulfillment of certain development objectives alongside a set of environmental objectives, without a clear indication of which has precedence. Furthermore, the Act is frequently criticised for being time-consuming and costly (Pawson, 2001). In the context of sustainable agriculture, the RMA is a form of management rather than a tool to enable the reduction of synthetic inputs and other wide-reaching components of sustainable agriculture.

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3.6 Governance as networks, with New Zealand particulars

Various actors, some with more power than others, influence the governance of agriculture. Public policy from central and local government can involve regulation, but the result of lobbying by non-state actors (who may interpret a particular policy as harmful to their interests) often means regulation is prevented. This interplay between non-state actors and the government is an integral part of the public policy process (Pralle, 2006). Groups and organisations exercise the avenues available to them and act to set the political agenda to best suit their goals. Coombes and Campbell (1998: 131) argue that the "disproportionate political strength of the farming lobby is a shibboleth of rural studies". In the case of farmer groups, this disproportionate strength has largely been manifested by the absence of environmental regulations or policy outcomes that would add further costs into behind-the-farm-gate practices. In New Zealand, the Agricultural Political Organisation (APO) Federated Farmers lobbied against agriculture's inclusion in the Emissions Trading Scheme (ETS). This contributed to delaying the scheme and the way emissions would be measured (Federated Farmers, 2009).

In another example of lobbying by APOs to attempt to prevent regulation, Federated Farmers and Fonterra have been vehement in their criticism of agri-environmental legislation. The 2012 Environment Court's decision on the Manawatu-Whanganui One Plan[2] judgement stipulates that, among other things, riparian margins and nitrogen leaching regulations will be imposed in that region. Fonterra and Federated Farmers appealed the decision and were said to have misjudged the mood of the court in regard to the desire of the New Zealand public to see the quality of waterways restored (Morgan, 2012).

Scholars argue that the ability of rural producers to establish and maintain rural lobby groups and strong linkages to political parties makes them one of the most politically astute stakeholder groups in developed nations (Pritchard & McManus,

[2] The One Plan tackles the region's four key issues – declining water quality, increasing demand for water, unsustainable hill country land use and threatened native habitats, providing a road map for the management of the region's natural resources.

2000 in Cheshire & Lawrence, 2004). However, in relation to the devolved regulation of the state, Coombes and Campbell (1998: 131) argue "the more international trade in agricultural products is liberalised, the more threatened are both farmers in importing countries and consumers in exporting countries, resulting in their politicisation". This is a significant argument as it positions policy networks as key determinants of farmer behaviour in response to market governance.

Despite the different conceptions about what a network is in political science and in the agrifood literature – the two theoretical areas of interest for this thesis – in both there is a shared convergence on horizontal co-ordination mechanisms between actors (mostly organisations). In one of the few examples of empirical research that has investigated the correlation between networks and changes in producer behaviour, results have indicated that networks are important drivers. Lubell *et al.,* (2008) examined whether networks between agricultural producers and local agencies/organisations increased the rate at which producers adopt environmental 'best management practices'. They found that programs sponsored by policy networks helped move the viticulture industry in California towards sustainable practices. However, the research dealt with a very broad conception of a 'network', which could be interpreted as a social network rather than a policy network. In the New Zealand agrifood system, policy network governance exists, but is arguably less dominant in shaping behaviour than market governance.

3.7 Governance as markets, with New Zealand particulars

It is a widely held view that agriculture's role in the provision of ecosystem services depends critically on the incentives available to farmers (FAO, 2009a). Notwithstanding the neoliberal project of removing regulation, as regulation constitutes a trade barrier, governance in a neoliberalising space can, in the right circumstances, encourage sustainability and innovation through markets. Markets allow for a more direct interpolation of consumer values with the values and practices of agricultural producers (Haggerty *et al.,* 2009). Audit system schemes reflecting consumer demands born of concerns about food safety, the environment

and welfare, can influence agricultural production systems and have done so, to a small extent (Campbell & Le Heron, 2007). Rosin and Campbell (2012) use the case of the self-regulation of the horticultural sector in New Zealand under extreme neoliberalism to point to the capacity for market-led governance to improve environmental practices. Integrated management (IM) became the standard required by the authority responsible for export sales (Zespri), and organic techniques became established as a viable niche mode of production (Darnhofer *et al.,* 2010). As well as being 'resilient[3]', such practices, which reduce the amount of synthetic inputs, can have beneficial effects for environmental services such as biodiversity. Combined with the kiwifruit industry's success developing and marketing a world-class product, the sector has been enabled by devolved governance and the flexibility of the private sector, to instil environmental regulation onto horticultural practices. These practices were centred on sustainable methods that thereby increased the value of the product:

> To achieve the goal of 'no detectable residue' on the fruit, the principles of integrated management were developed. Coincidentally and fortuitously, integrated management also lowered the production costs. Environmental considerations thus became more prominent, in both production and marketing. This was reinforced by the fact that organic production appealed to a wider group of kiwifruit growers, so that organic and integrated management techniques were developed in parallel (Darnhofer *et al.,* 2010: 188).

Campbell and Coombes (1999) argue that the phenomenon of the greening of New Zealand agriculture (through the conversion to organics, audit systems and adoption of IM and biological practices), seems to be borne of economic and trade necessities rather than corporate commitment to green values. Darnhofer (2010 *et al.,* 2010) points to another important driver of sustainability via market governance – the ability of farmers to significantly reduce costs (through reduction of off-farm

[3] Resilience indicates the capacity of an agricultural system to withstand shocks and retain essentially the same structure, feedbacks, and identity. The kiwifruit export sector has adopted resilient growing mechanisms which mean it will better cope with the shocks that looming energy cost rises and climate change could deliver.

inputs) and therefore increase their profit margins. This consideration is significant and will be dealt with in detail later in this study.

When paired with neoliberalism and competitive productivism, market governance may appear to encourage unsustainable agriculture systems, but the ability of producers to respond to the demands of the market through retailer-driven quality assurance (QA) schemes (and even to create demand in the market) means regulation can be implemented in the form of audits (external evaluations of a system, process or product). Numerous publications (see Busch & Bain, 2009; Campbell, 2005; Campbell & Le Heron, 2007) have discussed the link between neoliberalism and the emergence of an industry-driven 'audit culture' of agri-products. Such market-based mechanisms have emerged as key gatekeepers for protecting high-value markets (Rosin & Campbell, 2012). The divergent path of the horticulture sector has allowed it to move towards a 'high-value/sustainable' strategy.

3.7.1 Market instruments

As some state functions wither, the emergence of agrifood value chains and differentiated products as important sites of action in agricultural relations becomes confirmed (Campbell *et al.,* 2006; Higgins, *et al.*, 2007). Le Heron (2003) argues that market-based instruments are part of a widespread movement towards a specific regulatory politics in neoliberal economic spaces. Third-party certification (TPC) has emerged as a significant regulatory mechanism in the global agrifood system, reflecting a broader shift from public to private governance (Hatanaka, *et al.,* 2006). Agrifood standards and the correlating set of monitoring and enforcement mechanisms and institutions are emerging as a primary means for public and private participants to manipulate the character of the agrifood system (Bain *et al.,* 2010). For example, national governments have exporting and importing codes to regiment the biosecurity standards of foods; retailers have formed EUREP (Euro-Retailer Produce Working Group) to establish audit and quality assurance checklists for labour, environmental and health standards, culminating in EurepGAP; and there are countless labels to inform consumers of

provenance, animal welfare, food safety, and environmentally benign processes. It should be noted that while in some instances market instruments encourage sustainably produced agricultural products, sometimes they function as a trade barrier to producers from the global South (Bain *et al.,* 2005), so rigorous appraisal of the system must continue.

Another way that the market has influenced the practices of farmers is via organic agriculture. Of course, organic farming did not originate with the market. Until approximately a century ago, all agriculture was basically organic (i.e. it was grown without the inputs of synthetically derived fertiliser and pesticides). However, since the 1970s, with the publication of such key texts as Rachel Carson's *Silent Spring* (1962), and associated food safety threats, there has been increasing demand for certified organic produce, largely because of concerns about human health as a result of the use of chemicals in agriculture.

Hatanaka *et al.* (2012) assert that there are now sustainable agrifood standards covering nearly every aspect of production from farm to plate. On top of this, there is an emerging organisational structure, which Locanto and Busch (2010) have called a Tripartite Standards Regime (TSR)[4], in which standards for the production of agricultural products are developed and implemented. Organisations such as Fair Trade, sustainable fisheries, free range, and organic food are part of a TSR. In their TSR analysis of alternative agriculture in the United States, Hatanaka *et al.* (2012), define governance as a network-based form of regulation where the state shares regulatory functions and responsibilities with non-state actors including corporations, industry associations, social movement organisations (SMOs) and supranational governing bodies (Rhodes, 1997; Stoker, 1998; Marsden *et al.,* 2000; Jessop, 2002; Swngedouw *et al.,* 2002; Higgins & Lawrence, 2005; Peine & McMichael, 2005; Ponte & Gibbon, 2005; Marsden *et al.,* 2010). Evidence of this shift towards governance can be seen in the use of standards, certification, and other market-based forms of regulation to advance the sustainability of biological or

[4] Tripartite Standards Regimes are a complex governance system that involves multiple organisations. It consists of a standards-setting sub-system and conformity-assessment sub-system, both characterised by three tiers.

organic producers, rather than relying on hierarchical control of the state (Campbell *et al.,* 2006; Mutersbaugh *et al.,* 2005; Hatanaka, 2010).

Marsden (2003) asserts that powerful interests, supported by regulatory and social networks, have been successful in upholding an unsustainable agrifood system, but policies that seek to entrench the agri-industrialist model increasingly clash with pressure from sustainable agriculture and environmentalists, who seek to influence regulation and governing in respect of the environment. However, Hatanaka *et al.* (2006) found that while market instruments reflect the growing power of supermarkets to regulate the global agrifood system, they also offer opportunities to create alternative practices that are more socially and environmentally sustainable. In a later study, Hatanaka *et al.* (2012) found that although governance mechanisms are a potentially powerful tool for advocates of sustainable agrifood, their efficacy may be constrained by science-based requirements, an agri-business countermovement, and a captured state.

The various forms of market-driven ecological behaviour appear to be ways methods of applying a bandage to a wounded system. But, in the absence of total systemic change, there are ways that farmers can and *are* marrying their interest in preserving and protecting the environment while continuing to be economically viable. What is interesting is how these pressures, and their relationship with modes of governance, are shaping decisions about land use and resource allocation. Dibden and Cocklin (2005) argue that regulation seeking to incorporate good environmental behaviour is at odds with agricultural policies seeking to entrench the agri-industrial model. This translates to a dilemma for farmers in responding to unfettered markets, with the economic buy-in that such behaviour entails, while simultaneously satisfying increased social expectation and regulation from different modes of governance (Dibden & Cocklin, 2005).

To recap, governance by markets, hierarchies, and networks is the primary theoretical construct underpinning this thesis. The second theoretical construct is the idea of governance occurring in locations other than at the level of central

government. These are the spatial locations where governance of the agricultural and agrifood industries occurs – governance up, governance down and governance sideways – and these new locations indicate the restructuring that has evolved with the project of governance.

3.8 Governance up, with New Zealand particulars

Productivism has been established as state-based policy combined with a broad objective involving an interdependent relationship between government and industry. While the New Zealand government is a fierce advocate of free trade, this does not meant it does not play a significant role enabling international market access for New Zealand's agriculture, food, forestry and related products, and in representing the interests of the New Zealand primary sector in international trade policy and standard-setting forums (MPI, 2012). The role of the Ministry of Primary Industries (MPI), working alongside the Ministry of Foreign Affairs and Trade (MFAT) is, among other things, to "fend off threats to existing market access and negotiating new and improved opportunities [...] and to advocate trade liberalisation" (MPI, 2012). However, in the global economy, dominated as it is by TNCs, power has shifted upwards to supranational bodies. This places limits on the ability of any single state to intervene in the workings of the global system (Cheshire & Lawrence, 2005: 39). In the case of New Zealand, domestic economic growth is believed to be heavily predicated on increased exports, and given that agricultural production is historically entrenched as the primary exporter, it follows that the New Zealand government is willing to cede some of its power to supranational authorities where deregulation goals are the stated objective (Pierre & Peters, 2000). New Zealand has fought over the last two decades to enter into trade agreements in the hope of acquiring more favourable access for goods, particularly agricultural products.

There are several further reasons why the central government of New Zealand is hands-off when it comes to regulation of the agricultural sector. Inputs, management techniques and final products could certainly be susceptible to

regulation from the central government, but the likelihood is, given the governance model of such a neoliberal economy, legislative public policy measures will not be utilised that internalise the cost of environmental externalities onto the producers (Dibden & Cocklin, 2005). Such measures, it has been argued, would inhibit New Zealand's so-called competitive advantage – the ability to produce low-cost agricultural commodities on the world market. Secondly, farmers and rural communities form a strong and vocal constituency and the agricultural sector has a strong lobby with considerable power. Therefore, measures to promote sustainability which may mean a cost for farmers can be diluted or even vetoed by the representation of the farmers lobby. Lastly, such a position (of regulating against unsustainable behaviour) would undermine New Zealand's reputation on the world stage as a stalwart of free trade – an exemplary neoliberalising space (Le Heron, 2003). This is a feature of neoliberal globalisation: the ability of governance from international organisations to effectively dilute or remove state-imposed regulation.

3.9 Governance down, with New Zealand particulars

Such devolution has resulted in the growing concern of community groups and other non-governmental organisations about the damage caused to the natural environment. They have begun to work in "partnership" with the state to achieve their goals (Cheshire & Lawrence, 2005). Lawrence (2005: 145) argues that in Australia there are various experiments in governance being witnessed that "cut across, challenge and undermine existing decision-making structures, because of the perceived failure of older forms of governance to deliver sustainable development". Much of this changed governance is occurring in regionally driven projects and regulation. In New Zealand, the case of the regulation surrounding nitrogen trading in the Waikato is an example of network governance and multi-level governance at the local level. A target has been set by Environment Waikato to reduce the nitrogen load in Lake Taupo by 20 per cent. Farms occupy only 18 per cent of the land, but contribute more than 90 per cent of the manageable nitrogen input to Lake Taupo (Rutherford & Cox, 2009). At a sub-state level, there has been

an increase in the use of public-private 'partnerships' within the agrifood industry as they are seemingly a more efficient way of governing (Lawrence, 2005). These are examples of the governance environment in which farmers in New Zealand are operating.

Many academics and political actors have criticised regional governance for its lack of general application (Joy, 2012). There are, for instance, demands for a nation-wide consensus on acceptable levels of pollution for New Zealand waterways. Furthermore, individual actors are forced to internalise the costs of environmental behaviour, they provide public goods and pay for them. The devolution of regulation and the influence of globalisation means there is pressure put onto agricultural producers not only to expand the economic efficiency and productivity of their enterprises (Gray & Lawrence, 2001), but they are also expected to accept new roles as green entrepreneurs – that is, as providers of rural or ecological goods and services (Anderson *et al.,* 2009).

3.10 Governance sideways, with New Zealand particulars

The transfer of competencies (including regulation, influence and control) sideways from central government to autonomous bodies such as Fonterra and Zespri can be seen in the agrifood sphere in New Zealand. The sheep and beef sector has gone one way, developing its own mechanisms for adjusting to the globalised and open supply chain – mechanisms which translate into much looser internal regulation for sheep and beef farmers than for than farmers and growers who are members of Zespri and Fonterra. Zespri has tighter internal regulation for its growers in terms of the drive for no visible residue on exports. Regulatory behaviour in the dairy sector is an example of governance moving sideways away from central government, as the dairy sector has become a form of extremely intensified pasture-based production, facilitated by a mega-co-operative (Fonterra) and partly driven by a strongly productivist farm and industry culture (Jay, 2007). The governance regime of the dairy sector reflects global trends of the 'roll out' of centralised government. Hence, while members of the co-operative Fonterra must comply with

various local council regulations, internal directives from Fonterra itself are the principal regulators of the dairy sector (Campbell & Le Heron, 2007). Thus, governance of major agriculture industries now rests largely with the governing industry body, rather than a strong central government.

3.11 The paradigm of sustainable rural development

In their development of a governance model that situates agrifood in a paradigm according to its spatial location, Marsden and Somnino (2005) argue that agrifood has become a battlefield of knowledge, authority, and regulation. The basis of this battleground is three different social, political and scientific paradigms competing for primacy in the policy development process (Marsden, 2003). The agro-industrial paradigm is associated with the large-scale globalised production of food commodities, and with deregulation of international markets. Lastly, the paradigm that Marsden and Somnino call sustainable rural development is equated with multifunctionality[5] in the literature, and could be interpreted as resilience agriculture or alternative food production. It emphasises agro-ecology, the inherent worth of the ecosystem, and rural communities. This model emerges at the regional level rather than at the national or international, and it stresses the embeddedness of food chains in a particular place, and with a particular focus on quality. Rather than the focus on quality and place being a factor of marketing, it is part of the core function of the food itself. Sustainable rural development is a rejection of the commercial and industrial mode of agrifood, and with that the dominant modes of governing and regulatory rationalisation of production sites, techniques and market operations (Marsden & Somnino, 2005). It is worthwhile noting that Marsden and Somnino operate from a European context, where the battleground is different than that of neoliberalised economies (Australia and New Zealand) where agriculture is still a major export activity. Thus, the sustainable rural development paradigm, while helpful as an over-arching normative model for the trajectory of sustainable food systems and rural livelihoods, is predisposed towards a Northern Hemisphere agrifood discourse. In New Zealand, where the empirical fieldwork for this research

[5] Multifunctionality refers to an agricultural system with multiple functions other than producing commodities, including environmental protection, landscape preservation, rural employment, and food security.

takes place, such a rejection of the commercial mode of the agrifood regime by farmers is not widespread. This is due, in part, to matters of export reliance for agricultural products. Sites of 'alternative agriculture' tend to be small-scale biological, biodynamic or organic farms, still operating within the mainstream supply chain.

This thesis employs the term 'sustainable agriculture' to indicate what has come to be known as alternative agricultural practices embedded in ecological ideals, as well as market-based initiatives seeking to reform industrial agriculture. While I am aware that this sustainable/alternative versus conventional binary does not capture the proliferating patchwork of sustainable to unsustainable agrifood practices (Konefal & Busch, 2010), for the purposes of this thesis, 'sustainable agriculture' serves as an heuristic device for categorising agricultural practices looking to counter and/or reform industrial agriculture.

3.12 What does the retreat of the state mean for the farmer on the ground?

The literature on the governance of agrifood is wide-ranging, but at its core there is an emphasis on restructuring, due largely to the forces of globalisation and neoliberalism, and it is primarily concerned with regulation, scale, value chains, and represents the work from scholars in numerous fields (Burch, *et al.*, 1996; Le Heron, 1993; Marsden, 1990; Cheshire & Lawrence, 2005). According to McMichael (1994) the unifying theme in the literature on agrifood governance is that of declining national regulation. A result of this theme of agricultural restructuring is the pressure placed on agrifood producers by social forces and actors who must improve their productivity and efficiency or lose agency to the profit-making interests of multinational agri-businesses. At a supra-state level, the privatisation of governing is evident through the growing influence of TNCs and international non-governmental organisations (INGOs).

Goodwin (1998) argues that there has been an increasingly noticeable silence concerning the ways in which rural areas are governed. This corresponds with

Cheshire's and Lawrence's (2005) argument that farmers have been made 'active citizens' by the retreat of central government. They have become responsible for achieving their own agendas, sustainability on their farms, for example. The use of governance theory to analyse environmental and agricultural policy in New Zealand can shed insight on the behaviour of citizens who are seemingly largely 'autonomous' from the 'rolled back' neoliberal state. Farmers' interactions with central government are, if not non-existent, then certainly unobservable. However, behaviour and behavioural changes do not occur in a vacuum, they are *always* shaped and regulated by complex interactions with the international market, public opinion, networks, and regional and central government.

There is considerable supposition that in the case of a sector such as agriculture, contingent as it is on shifts in global markets, the state is not able to regulate its activities, nor does it want to. However, the absence of any direct policy or legislation promoting the environmentally friendly behaviour of farmers (Fairweather, 1999) does not indicate that the state has been wholly subsumed by market forces, as it was the state itself that removed subsidies and positioned New Zealand as an exemplary neoliberalising space (Le Heron, 2003). Several authors have supported this notion that nation states led the deregulation and subsequent globalisation of private capital, and thus linkages up towards transnational institutions and downwards toward subnational government can be thought of as state strategies to reassert control (Peters, 1997; Pierre & Peters, 2000). Le Heron and Roche (1999) argue that agricultural restructuring and deregulation in New Zealand has not removed regulation, instead agriculture has been re-regulated in a potentially more complex way, through market disciplines, with certain kinds of political intervention, that Dibden and Cocklin (2005) call 'rhetorical action' – action taken with the intention of persuading or influencing.

3.13 Conclusion: agrifood restructuring in New Zealand

The influential role that business and civil society groups play in governance has not been without controversy. Some believe that only the state can act in the public

interest. Yet others see all actors as motivated by self-interest, and in this context, believe that the market ensures the best outcomes (Cocklin, 2009). The literature on governance presses the importance of markets, networks, and the new locations where governance is administered. While there has been some backlash to the assumption that the core executive has been hollowed out, in the context of agrifood restructuring in New Zealand, it is clear that central government regulation does not feature heavily in the governance of farmers.

The objective of this thesis is to examine the governance arrangements influencing the practices of farmers, and the spatial locations of these arrangements. Chapter Two has examined the applied literature on the governance arrangements affecting sustainable agriculture in New Zealand. In this chapter, the applied literature on agricultural governance in New Zealand has been reviewed. The next chapter outlines the epistemology and ontology of this research and sets up the framework with which the in-depth interviews of biological farmers in New Zealand took place. Furthermore, the implications of these governance arrangements for the future uptake of sustainable agriculture are considered.

Chapter Four: Methodology

4. 1 Introduction

In this chapter, the structure within which I undertake the research and the methodological thinking used to address the question: "How do farmers perceive the governance arrangements which influence their behaviour, and where are these arrangements spatially located?" are discussed. It is also where the theoretical constructs developed in the preceding two chapters are developed into a table which will provide intellectual scaffolding for the organisation and analysis of data. Punch (2000) identifies a number of factors to attend to when considering research methods, including the choice between quantitative or qualitative data, or using both; the research strategy that will best generate the data needed for the research (i.e. the research design); and the research participants, (who or what will be studied?). In the words of Miles and Huberman (1994: 27): "you cannot study everyone everywhere doing everything," and the research design ensures this is not the case. Data collection, including instruments, procedures, analysis, and ethical issues are also discussed in detail below.

Bryman (2001) adds epistemology and ontology into the framework of factors that must be addressed in a thesis methodology. Furlong and Marsh (2010) argue that epistemology and ontology are "like a skin, not a sweater; they cannot be put on and taken off whenever the researcher sees fit". Epistemological issues concern the question of 'what is knowledge'. Ontological issues address the question of whether the world is regarded as external to social actors or not. Hall (2003: 374) argues that "ontology consists of premises about the deep causal structures of the world from which analysis begins and without which theories about the social world would not make sense". As Stoker (2010: 181) points out, "questions about how we understand our world are never far out of the frame" and, as such, it is important for a researcher to develop a methodology that explains why certain methods are used and what the assumptions held about the social world imply for

the research.

Once the broad theoretical research tradition is established, this chapter deals with matters of research design. Finding and choosing research participants can be challenging, and in this instance the Association of Biological Farmers (ABF) was approached to provide the sample population. I then consider how the data was collected and managed. Data analysis is an important part of any empirical research, and the techniques applied to the data are detailed in the fourth part of this Chapter. The ethical considerations of the research are explained, and finally the limitations that accompanied this particular methodology are outlined.

4.2 Ontology

Ontology concerns understandings of the fundamental nature of the world, and involves the debate over whether social entities should be considered objective entities that exist externally to social actors (a foundationalist ontology) or whether they are socially constructed through the perceptions and experiences of actors (an anti-foundationalist position) (Bryman, 2001). Foundationalism is commonly termed objectivism, while anti-foundationalist is called constructivism or relativism (Furlong & Marsh, 2010). My understanding is built on an anti-foundationalist ontological approach. This approach sees social reality as not existing independently of human conceptions and interpretation – reality is actively constructed. As Furlong and Marsh (2010) point out, this does not mean that anti-foundationalists do not acknowledge that there are chairs or trees and so on, rather, they contend that this 'reality' has no social role/causal power independent of the actor's/group's/society's understanding of it. This position therefore posits that we can never really know what is 'real' or 'fact' and therefore actors construct meaning and ways to interpret events and things.

4.3 Epistemology

If an ontological position reflects a view about the nature of the world, an epistemological position reflects the view of what we can know about the world, and how we go about creating that knowledge – it is a theory of knowledge (Furlong & Marsh, 2010). The central issue within epistemological debates is

whether the social world can be observed according to the same principles and procedures used in studying the natural world. The epistemological position adopted in this research assumes that there is no 'real world' 'out there', independent of our social and discursive construction of it. Constructivism is an approach to research that is characteristic of a particular philosophical worldview. Schwandt (1994: 118) describes constructivism (and interpretivism) as "sensitising concepts" steering researchers towards a particular outlook: "Proponents of these persuasions share the goal of understanding the complex world of lived experience from the point of view of those who live it." An epistemology effectively determines how the researcher approaches a research problem, and in the case of this research, my approach is to seek understanding. Farmers are the focus of this research and access to their accounts of their motivations and practices are best provided by a qualitative, social constructivist approach.

A positivist would argue that the social world is akin to the natural world in that it is directly and objectively observable. In this tradition, the aim of social science is to make causal statements about relationships between phenomena (Furlong & Marsh 2010). A constructivist would deny such causality and the possibility of objectivity. In this tradition, observation is never objective but always affected by the social constructions of 'social phenomena' (Furlong & Marsh, 2010). This brings about criticism of employing an anti-foundationalist ontology and constructivist epistemology, stemming largely from the positivist epistemological approach (see Sanders, 1995). This problem is the double hermeneutic: "the world is interpreted by actors... and their interpretation is interpreted by the observer" (Furlong & Marsh, 2002). However, Furlong and Marsh find in the work of Bevir and Rhodes (2003) that research is created and influenced by historically produced norms, rules and conventions, while the content has a certain narrative that gives meaning to the studies. Therefore, although the double hermeneutic is a relevant consideration, the grounding of research in relation to other studies adds validity.

After taking into consideration the anti-foundationalist ontological and constructivist epistemological positions that are worn "like a skin, not a sweater" (Furlong & Marsh, 2010), it becomes clear that a qualitative research design is the

most appropriate method for carrying out the fieldwork. Where quantitative research emphasises quantification in the collection and analysis of data, and typically uses a deductive approach, hypotheses, and is linked to objectivist ontology (Bryman, 2001), qualitative research typically emphasises the interpretation of the subject being researched and uses a constructivist (or interpretivist) ontology (Vromen, 2010). Moreover, the method behind the research question was conceptualised as qualitative from the initial stages of the research proposal. The research question shaped the choice of data gathering technique; in this case, in-depth interviews. Denzin and Lincoln (1994) argue that qualitative data constitutes, at its most fundamental, descriptions of routine and problematic moments and meanings in people's lives. Studying farmers who have implemented sustainable mechanisms on their farms provided insight into how these farmers construct their world and give meaning to things. By analysing these complex social constructions, there is the possibility of adding to the literature on farmers' decision making and how structures of governance affect these processes.

4.4 The research design: research participants

Sampling is the process by which research participants are selected according to specific criteria. Qualitative samples tend to be small in size for three main reasons. Firstly, if the data analysis is satisfactory, a point will arrive when little new evidence can be obtained from each additional participant – there is a diminishing return where increasing the sample size no longer contributes new evidence (Ritchie *et al.,* 2003). Secondly, statements about generalisability or prevalence are not the domain of qualitative research, and therefore the sample did not need to be of a sufficient scale to draw statistical inference. Thirdly, the data sought in qualitative research is rich in detail, and therefore a small number of participants enabled deep data collection (Ritchie *et al.,* 2003). The sample in this research constituted eight farmers who implemented sustainable methods in their agricultural practices, primarily the reduction of nitrogen-derived fertiliser in pasture and fields. They were also reducing the chemical pesticides used in pest control and were implementing other agri-conservation measures around their farms.

A two-step process was used to select the participants. They were identified with the assistance of a key social network in sustainable farming, the ABF. This method of finding participants was a useful way for generating a frame for groups scattered or too small to be easily identified through a household screen. A household screen involves approaching households in the study area to ascertain whether the household contains an individual who belongs to the study group (Ritchie *et al.*, 2003). The ABF was approached because it simplified the recruitment process: potential participants belonging to the organisation had effectively identified themselves as 'biological farmers'. The organisation itself identifies members as biological. The principal spokesperson of the ABF was given a clear specification of the types of people sought, and asked to approach people who met the research criteria to inform them about the study. If individuals were willing to participate, the spokesperson was asked to pass on participant consent forms and an information sheet about the research (see Appendix 1.2). The final eight case studies were chosen from these members. These participants were chosen to reflect the four major agricultural sectors in New Zealand. However, there was only one full-time dairy farmer who identified himself as 'biological' and who was willing to participate. The other farmers came from horticulture, viticulture, and sheep and beef farming. Participants were located in different parts of New Zealand (four were located in the South Island, and four were located in the North). All of the participants were men. The interviews took place over a two-month period. The exact time of individual interviews were dependent on the working schedule of the participants. The interviews were all conducted on the individual farm of each participant.

4.5 Data generation

The primary research question was "how do farmers perceive the governance arrangements which influence their practices, and where are these arrangements spatially located?". The underlying, second question focused on the implications of these governance arrangements for the uptake of sustainable agriculture. These questions seek an explanation of meaning (how and why farmers have implemented sustainable practices) and so research design facilitating understanding of the linkages between action (sustainable methods) and structure (governance) is

fundamental. Generically, the research strategy was by case study using semi-structured interviews. A case study is an intensive analysis of an individual unit (e.g. a person, group, or event), stressing developmental factors in relation to context (Flyvbjerg, 2011). A case study approach provided a systematic way of looking at events, collecting data, analysing information, and reporting the results. Lewis (2003) points out that one of the most important features of case studies is the multiplicity of perspectives, grounded in a specific context, or in a number of specific contexts if there is more than one case study. Data can be collected using a single method from people with different perspectives on what is being observed.

The data was generated through interviews, as opposed to the observation and collection of naturally occurring data. Lewis (2003) observes that generated data collection gives participants a direct and explicit opportunity to convey their own meanings and interpretations through the explanations they provide. While the participants' own understandings were critically important, after the data was generated and collected, it was managed and data analysis techniques were applied to link the findings to the wider body of literature. Semi-structured interviews were undertaken because the process was exploratory: the interviewees were asked a series of questions relating to the governance of sustainable agriculture in New Zealand, and a pre-determined interview schedule ensured that set topics were covered (see Appendix 1.2 for the interview schedule). The sequence of questions was occasionally altered as the interview took place. Arthur and Nazroo (2003) point out that data collection and the structure of qualitative research cannot always be strictly planned in advance, as specific interest in an unanticipated topic can emerge in the interview. Furthermore, a fixed structure was not necessary, because the research design did not attempt to standardise and combine a qualitative and quantitative approach.

The qualitative research interview seeks to describe the meanings of central themes in the life world of the subjects. The main task in interviewing is to understand the meaning of what the interviewees say (Kvale, 1996). I deemed in-depth semi-structured interviews to be the most suitable data collection method for the following reasons: firstly, in-depth interviews generally take place at a location of

the participants choosing and are thus more accessible to potential participants. This research involved participants from different areas and regions, and the constraints on farmers to leave their farms and travel to another location gave further weight to the use of in-depth interviews. Secondly, understanding motivations and decisions generally requires the detailed personal focus permitted by in-depth interviews (Lewis, 2003). Thirdly, highly detailed data was sought in order for the data analysis to be rich. In-depth interviews provided the opportunity for detailed investigation of each person's personal perspective, for exhaustive subject coverage, and broad understanding of the personal context within which research phenomena were located. The interview questions were the vectors through which I linked the literature and data.

4.6 Data management and analysis

The raw data comprised audio recordings of the interview sessions, which were transcribed into verbatim transcripts and accompanied by observational notes. Prior to data management, transcripts were emailed back to the participants to ensure their accuracy. Following a few minor changes, the data was reduced from its verbatim form, but carefully handled so that the original terms, thoughts and views of the participants were not lost. Once the data had been systemised into a manageable format, familiarisation began. The process of familiarisation involved making a careful selection of the data to be reviewed, re-examining the sampling strategy and the profile of the achieved sample to highlight any potential gaps or over-emphasis in the data set (Ritchie *et al.,* 2003). The transcripts were colour co-ordinated into 14 categories and from these categories recurring themes or ideas including attitudes, behaviours, motivations and views were identified. These 14 categories were condensed into six key themes in light of the conceptual scaffolding that emerged in the theoretical and applied literature reviews. These six key themes comprise Chapter Five and largely consist of quotes from the participants. For the researcher to be able to move through the data to find such characteristics, there must be patterns across different cases, associations between phenomena within one case, and associations in phenomena between groups of cases (Spencer *et al.* 2003). As Richards and Richards (1994) note, the task of qualitative research is always theory construction. Naming and classifying is not

enough. "We need to understand the patterns, the recurrences, the whys" (Miles & Huberman, 1994: 67).

In order to provide a robust level of analysis, Ritchie *et al.* (2003) advocate 'conceptual scaffolding' via a framework or index that draws upon key concepts from the literature review and recurrent themes in the answers to the questions. A close reading of the literature identified two key constructs for analysing the data in relation to the theory of governance. These constructs acted as tools – derived from the literature – that I used to make to make a particular sense out of what the participants had to say. The key constructs enabled me to link the data to the literature and consisted of the new modes of governance whereby regulation is enacted (e.g. governance by hierarchy, markets and networks) and the new locations where governance emanates from (e.g. governance moving up, down and sideways). Each response was grouped into one of the three modes of the way governing is done. The resulting table had a y axis with categories indicating hierarchical governance, market governance, or network governance (see Table 2, below). The table's x axis included categories indicating the spatial location of governance – governance moving upwards, governance moving out, and governance moving down. This thematic framework identified links between the results and the governance literature. Concepts referred to the substantive meaning of the data and included terms influenced by the literature. This identification of key themes, concepts or categories is a dominant feature of qualitative research.

Table 2: Governance modes and locations

	Hierarchy	Markets	Networks
Up			
Down			
Sideways			

Qualitative research proposes the goal of generating a substantive theory with the phenomenon being studied. Such an approach to analysing data from in-depth case study interviews involves the researcher *interpreting* data to show how we can

better *understand* the reasons why participants did a certain thing (Vromen, 2010). The interviews were analysed for coherent patterns of values and to seek behaviour motivations with regard to governance. For instance, what factors (including policy networks, regulation or lack of regulation, market forces or institutional support) enabled farmers to implement sustainable practices? Reflexive reading of the data sees the researcher as part of the data generated, inevitably and inextricably implicated in the interpretation. Holistically, the data analysis aimed to understand and report the views of those being studied and how their socially constructed understandings of the world affected their farming.

4.7 Ethics

Ethical considerations for this research were judged to be low risk. Therefore, ethical approval for the research was secured through Massey University's low-risk notification pathway. Participants were able to choose to be a part of the study or not (that is, informed consent was granted), and there was no covert observation of participants. Confidentiality is the central concern of the university's ethical considerations. Participant identities were protected in the research by referring to participants by a number from one to eight, and factors that might identify participants were removed. Safety is another important consideration for the researcher, when going into people's homes. I established with two key people the time I entered each farm, and I communicated with the nominated parties to let them know when I left the research situation safely.

4.8 Conclusion: methodological process

The research question this thesis addresses is: how do farmers perceive the governance arrangements which influence their practices, and where are these arrangements spatially located? This question is concerned with the conditions that farmers face on the ground and is associated with the question: What are the implications of these governance arrangements for the uptake of sustainable agriculture? These questions suggested a qualitative methodology in which data was generated through a series of in-depth interviews and analysed via a thematic analysis that, while shaped by constructs taken from the political science literature

on governance, was also sensitive to themes that emerged in the context of the eight interviews undertaken with farmers.

The chosen methodology outlined above provided the most appropriate means for addressing the research question. In the next chapter, the results generated from the methodology and the empirical fieldwork, are set out.

Chapter Five: Results

5.1 Introduction: Situating governance

The primary aim of this research is to identify – from the point of view of farmers – the governance arrangements that farmers in New Zealand are operating under, and what this implies for the uptake of sustainable farming practices. Fourteen explanatory categories emerged from the preliminary analysis of the interview transcripts, and from these categories six findings were central to the research question.[6] These key findings include the participant's definitions of what constitutes sustainable agriculture, the opinions of the participants on organic agriculture, participants' perceptions of government's role in sustainable agriculture, the role of the market, the role of networks or associations involved in implementing sustainable agriculture, and information and education about sustainable farming. These key findings are examined in this chapter (and for a table indicating the categories used refer to Appendix 1.1).

5.2 Definitions of sustainable agriculture

Defining sustainable agriculture is not only a challenge in the academic literature, the research participants had different conceptions of what exactly 'sustainability' meant. When asked for their definition of sustainable agriculture, a future-focused perception of sustainability was emphasised by seven out of eight participants. They mentioned how they maintained the environment they farmed in or tried to improve it. Sustainable farming was equated with reducing chemical fertiliser inputs by six out of eight of the farmers. One participant, however, did not equate sustainable farming with the reduction of inputs or organic farming. He matched his level of non-synthetic fertiliser use with inputs from conventional methods. He

[6] The 14 original categories were condensed into six main themes for analysis. The majority of the information from the 14 categories fitted into the six themes explored in this chapter. However, some information was considered to be irrelevant to the results and subsequent data analysis. This mainly consisted of the scientific techniques and knowledge of the farmers surrounding their biological practices. This information was not included, as it did not relate to the purpose of the thesis. Another category that was not included in the results and analysis – given the qualitative nature of the research – was demographic information concerning the farmers themselves.

perceived it to be important to his farming practices not to let inputs drop. This participant was the sole dairy farmer, who while expressing an understanding of sustainable agriculture, believed making that happen was not related to the reduction of inputs, but rather the substitution of inputs:

> Sustainable farming would be to be able to farm making a living and keeping the integrity of your soils, waterways, atmosphere, the way you found it or better. You could really improve all water and air if you took all animals and inputs away but that's not sustainable. It's got to go both ways. (8[7])

Another participant dismissed the idea that sustainable farming implied lower inputs. He interpreted biological farming as "precision management". (7)

The participants were unanimous in their perception that sustainable farming did not or should not entail a drop in yield or production, as this producer described:

> Sustainable farming definitely doesn't mean a step backward in any way, shape or form. The responses we've [ABF] got from pastoral farmers are showing the opposite, they're increasing in weight gains or in milk solid content. The same milk production from less cows with less inputs, they're still meeting the criteria of being highly productive but their [sic] not doing it in a system where their cows fall sick all the time, or their bank balance is forever under pressure to keep the inputs going or they or their staff have a shit lifestyle, milking twice a day. (5)

The same participant believed that the normative sustainable agriculture model for New Zealand should be based upon exporting high-value, sustainable products:

> New Zealand can't double our production. We don't have the land, infrastructure, or the people and we've got the distance from the markets where apart from milk powder – which is light and lasts forever – we've got to have value added not volume. This involves producing higher value products and reducing costs, and having more effective returns. (5)

Six out of eight participants stated that being financially sustainable was an important consideration for them, because "if we haven't got an income we can't do things to look after the farm".

[7] The numbers at the end of each quote identify the participant.

Every participant perceived the integrity of the environment to be important. However, only two participants viewed the environment as important in its own right. The other six did not view the environment as separate from their agricultural livelihoods. The former two participants perceived the economic aspect of sustainability as providing a less important reason for having changed their farming practices. This was in line with their general approach to the notion and practices of sustainable farming:

> A sustainable agriculture and a sustainable planet are meeting the needs of the current generations without diminishing the opportunities of future generations... sustainable agriculture for us is around nutrient cycles, around social and environment and economic... but I do question the economic part: it's operating within the boundary of a totally unsustainable economy, it's going to change. (4)

Another participant described how he viewed the environmental aspect of his families farming practices: "It's first and foremost about leaving this farm better than we found it and respecting and healing the land." (3). This position indicates a future-focused view of farming consistent with the definition found in the sustainable farming literature.

5.3 Scepticism about organic agriculture

Initially, a question about organic agriculture was not included in the question schedule, but after the first interview it became clear that biological farmers had a desire to express their opinions about it. Five out of eight participants were very opposed to the idea of organic agriculture as a way of farming. They viewed the processes involved as "too prescribed" and as not necessarily being more sustainable than biological farming. The participants perceived that to not use a product that could sustain plants or that would help an animal with health problems was not a sustainable form of farming. Moreover, four participants viewed organic farming as problematic because they perceived that organic certification often required the farmer to spray more pesticides or use more fertiliser (albeit organic applications). Four participants held the view that using holistic farming practices was seen to be a superior way of farming than organics. These participants said of

organic producers: "Their general standpoint is chemical inputs are all bad, so basically we can't use them, it's basically a form of ignorance." (2)

In a similar vein, the following individual noted the 'rigidity' of an organic system – in this case referring to the BioGro certification programme: "I'm saying that the BioGro people are of the view that if you've got no way of obtaining a product organically or in a form that they approve of then you don't use it." (1)

Organic production *per se* was not seen as providing a sufficiently wide range of options, nor was it seen as necessarily being a 'whole solution':

> Nothing is a silver bullet, and that's why we're trying to pick the best out of all those things again. If you're talking about vegetable production, organic doesn't necessarily mean that it is nutrient rich, healthy food, it just means that it hasn't been sprayed with pesticides or chemical, so organics can be part of the solution, but it's not whole solution. (4)

One participant perceived the only benefit of organics to be the premium associated with them, and since he believed that New Zealand agrifood produce was viewed as being generally organic in overseas markets, obtaining organic certification would be a waste of time. "To try work towards being organic would be stupid because everyone else's perception overseas is that we're organic anyway. We're clean, green and everything." (7)

Three participants believed organic agriculture to be a form of marketing by which companies persuade the consumer that agri-produce farmed with synthetic chemical pesticides and fertiliser is damaging for health and depleted of nutrients. The following producer describes his views of organic production as clever marketing that plays on the notion of human health:

> Organics is a wonderful piece of marketing. You don't need to persuade very hard, all these health issues people have, you know, with cancer, everybody knows somebody with cancer, something's causing it, so it must be the chemicals in the food, whether that's right or wrong, nobody really knows. Organics is clever marketing. (2)

Furthermore, two participants believed the premium associated with organic produce to be volatile: "They do pay a pretty good premium, but it goes out the window when the price itself is too dear. They struggle with the organics when things are tight. The consumer decides, 'this is too dear'." (7)

However, the two farmers who showed the most interest in organics were those who were most critical of premiums and the market. One was in the process of converting to organic certification: "I used to think 'wow isn't it restrictive', but as we've got into it, it's not actually that restrictive at all. If it aligns with your philosophy then that's great, if it doesn't align with your philosophy, then don't do it." (3)

This participant's philosophy or motivation to farm biologically and organically stemmed from a human health consideration – his close relative had died from leukaemia and he linked the contact with chemicals on the farm and in food to her illness. His other deeply held motivation was to "heal the land".

One participant ran his personal farm (sheep and beef) organically, but in his full-time role as vineyard manager he used biological methods and viewed the use of organic methods as unnecessary.

> Organic wine – there's no premium for, in certain markets that we sell to, it's almost seen as a detriment. Organic wine in the US is seen as a poor cousin, because wine is a premium, luxury based product. You're selling the perception of something, and organics doesn't fit into that and I can't see that changing in the short term. (5)

The overwhelming response from those interviewed was that farmers converted to organic agriculture because of the premiums associated with organic produce. Therefore, marketing was seen to be the main factor behind the consumption of organic produce (seven out of eight participants). Six out of eight participants believed that biological farming was more sustainable than organic farming:

> [We] have to swim against the tide of the organic growers because there's for example, a fertiliser firm that has got the name, or not the name, it's a sort of subtitle 'Beyond Organics'.

> That makes the organic people really uneasy, they think they've got the higher ground morally and Beyond Organics is actually a higher place and they don't like that. I think that a biological grower has actually got to move against the organic thinking as well as against the conventional thinking, in a sense they've got both persuasions trying to drag them to a different position. (1)

Along with doubts about organic agriculture, participants were doubtful about the efficacy of central government policy in advancing a more sustainable agricultural industry based on the reduction of synthetic inputs. This is addressed in the following section.

5.4 Farmer perceptions of government policy: a role for hierarchy?

Three participants perceived central government regulation or legislation to be irrelevant to the uptake of sustainable farming practices. However, there was some support for the role of central government as a broad facilitator of sustainable practices.

Overwhelmingly, participants believed that local and central government policy relating to agriculture is designed by bureaucrats with no real understanding of the agricultural industry and farming (seven out of eight participants). There was distrust of government, and in particular of the capacity, knowledge and ability of governmental officials to work with farmers in order to attain environmental outcomes. The perception was that local and regional councils were out to make money by way of fines, rather than help farmers achieve environmental goals.

One participant offered reasons for why farmers don't like regional councils:

> We pay rates to fund them. Rules in plans can often be pedantic. Fees charged for consents and the time taken can be exorbitant. The biggest problem is they have considerable power and can remove property rights without compensation. (2)

This was reflected in the view that those imposing regulation did not have an understanding of what it was like to farm: "People who start work at 9am and go home at 4.30, they're from a different planet, they haven't got any knowledge that's useful to me and they've got the power to impose regulation which I don't like." (2)

Three participants believed the government had a role in supporting sustainable agriculture by subsidising sustainable agricultural conferences and visiting speakers.

> Even Australia is leading New Zealand. They were subsidising some of the sustainable agriculture training courses – say if the likes of Joel Salatin came and did a two-day workshop, they charge $700, the government would fund that plus some travel and I think you could do two of those courses a year. And around carbon farming and soils and stuff, I think Australia has been a whole lot more proactive with that. (4)

This desire for the government to act as a facilitator, in a role of financial support was backed up by a second participant:

> If science is going to have to be the backing of proving sustainable agriculture works, then the question is, who's going to fund it? So if we're truly into making New Zealand clean and green and our image what it's supposed to be, then I think central government should definitely be funding some of the peer reviewing of all this information. Unless you can put it in a nice little package and apply for funding (because we cover so many different fields and so many industries) it makes it hard to access. (5)

Participants' perceptions of what influenced farming behaviour *did* relate to the three modes of governance established earlier in this thesis as an important construct, via the theoretical literature review. There was continued reference to the lack of central government regulation, the heavy-handedness of local government, the pressure on farmers from changes in the export market and the ability of farmers to respond to demand in the market with products proven to be sustainably produced.

One participant expressed the view that the deregulation of agriculture in the 1980s had meant that New Zealand was "far ahead" of farmers in Europe who rely on subsidies from government and who are paid to implement conservation schemes:

> The thing about New Zealand is that with government interference, we've been working under market economics for over a generation and we're so far ahead of those guys... I understand your question about trying to get outcomes by

> government. I don't like it. Any kind of interference is not welcome or acceptable. (8)

The majority of the participants perceived themselves to be mostly unsupported in their pursuit of sustainability. One participant interpreted the different paths that dairy and sheep and beef have taken as being due to the intrinsic nature of the farming type. He saw 'cockies' (sheep and beef farmers) as less likely to belong to a network or co-operative because their type of farming and geographical isolation makes them 'individual' in nature:

> Cockies are very individual, they do not work as teams, not like dairy farmers who can supply one outfit, sheep and beef cockies would not do that. (7)

Three participants strongly believed in the role of government to fund more independent scientific tests of the results of sustainable farming practices.

> I'm sure in the '80s when the subsidies came off; everyone thought that the world had ended. It didn't. There were some very tough times, and strife. But we're now in a system, not like Europe where it's propped up and artificially held in place, so I don't think you can ever go back, but I still think they [government] have got a role in scratching the surface and allowing some of the stuff to come out, because we're a small enough country that we can adopt things quickly. I don't see why the government can't be involved in facilitating some of the roll out of sustainable farming, if it answers some of their questions about New Zealand and sustainability and greenhouse gases, and about our image. (5)

One participant perceived that 'policy' entailed regulation or legislation and he did not support that. He did believe that increasing sustainable farming practices relied upon funding from government:

> The danger of policy is how can we be sure that we're going to get it right? It's fine having good intentions, but sometimes the road to Calvary is paved with those intentions. What it needs is public-funded science – independent tests. (3)

Four out of eight participants dismissed outright the ability and reach of government in changing behaviour.

> I actually think that most government policy is largely irrelevant because as it does exist we have the impression that it is designed by bureaucrats. The type of marketing analysis that Zespri does is a much better medium with a much more persuasive call to growers than a government designed programme. (1)

One participant overtly criticised the current government in its approach towards agriculture:

> [...] central government is doing the exact opposite of what we should be doing. John Key with his financial background, totally embraces the corporate model and big farms, big corporates, extraction of all sorts of resources in a totally unsustainable way, I'm not necessarily saying he's bad, but it's a religious belief which totally sort of trumps any sort of understanding of sustainability. (4)

Three out of eight participants expressed anger at the so-called expectation of those in urban centres demanding environmental action from farmers. This related to the perception of local and regional councils having, in the words of one participant, "lost sight of their rural constituents":

> Our local river here has improved vastly in the last five years or so that we've been trying to get our head around it, you can't expect ditches and rivers round an agricultural area, where people are living and where industry is going on, farming industry, to be the same as the rivers that are running straight out of the bush or straight out of the snow in Central Otago. (8)

The participant went on to describe what he perceived to be double standards in the treatment of farmers. He said he had received a graph from his council showing that the E. coli in the local river came primarily from the outfall from the town sewerage. His son added, "And they continued in the booklet about all the things that *farmers* need to be doing to improve the water..." The participant continued: "And I believe the town got a renewal of their consent to discharge the water in exactly the same way. Those are the things that get the farmers' backs up. It's not fair." (8)

The majority of participants put the blame on the intensification of dairy in lowland areas as the main driver of environmental damage in New Zealand (six out of eight). There is a significant amount of evidence suggesting that the intensification

of dairy is the major driver of pollution, however, participants acknowledged that all agricultural activity has some effect on the environment – they did not remove themselves from culpability. This point relates to the idea that many of the participants wanted to preserve the environmental value of their own farms without making change across the sector.

Another participant was anticipating regulations to be imposed by his council and was implementing sustainable practices to avoid future costs. This participant viewed the council as existing to make money. He perceived the cost of complying with regulation as threatening his ability to continue farming:

> [...] the way councils are talking at the moment, it's going to become harder and harder for us to continue farming. At the moment we've thrown away the mole plough, which is going to have effects in trying to keep the place dry. It's definitely an issue for us...Yeah we've sort of gone overboard, we've gone much bigger than we need to go with our waterways and effluent system, we're expecting it to get harder and more costly in the future. (7)

This participant was referring to the underground system of drainage that he formerly used to drain his fields. He believed that his regional council was going to tighten up the environmental regulations surrounding dairy on the low, wet areas of west Dunedin. The main driver behind many of his sustainable projects was avoiding meeting the costs of these new (potential) regulations. He was implementing his environmental farming practices over a period of time and using an organic fertiliser to reduce his on-farm carbon and nitrogen inputs.

The perception that regional councils were trying to make money from regulation was found in the opinions of two out of three farmers operating within the jurisdiction of the same regional council:

> Rather than fine the farmer $30,000 for pouring some effluent somewhere and not having enough storage pond, why don't they say 'well, you fix that up within two months or you'll be fined $60,000'. There's no leeway, a farmer's spent his $60,000, but you've still got to find another 30 to fix his pond up, so there could be more incentive. The regional council says 'we've been telling you this for the last five years and you haven't done it';

> there could be some incentive I think for those who are lagging behind to do it in a hurry... Because the farmers think [that for the council]... this is just a moneymaking business.

This participant did acknowledge the possibility that having to comply with legislation could incentivise farmers to change their behaviour. "If they're [Otago Regional Council] already putting restrictions on how much nitrogen farmers can use, then that's going to force farmers to start looking at other ways to do things." (8)

The majority of participants believed that urban dwellers were hyper-critical of the environmentally damaging behaviour of farmers. However, two participants believed people in urban centres were supportive of sustainable agriculture. They were optimistic about creating linkages between urbanites and farmers to garner more support for their own biological farming efforts:

> I think town people get it a whole lot more, because they talk about the breakdown between town and country and a lot of town people are quite critical of dirty dairy, etc. Obviously it's not that simple, but town people would like to see better environmental care. (4)

This perspective was supported by another participant:

> In terms of when you look in the media, and see the perception of farmers that is out there, obviously more dairy than anything else, even if people are not that knowledgeable of what goes on, on the farm, there seems to be a lot of support for sustainable agriculture. (8)

There was a large amount of distrust of existing and potential hierarchical governance, which comes from central government. On the other hand, though, there was support for market-based regulation in the form of market instruments such as third-party certification and auditing.

5.5 Belief in market governance

If the dominant theme of the preceding section is scepticism about the capacity of government – as hierarchy – to work in farmers' interests, participants tended to take a different view on the second of the core modes of governance: markets. In

fact, participants' perceptions that the market and its mechanisms for changing farming practices were the best way to increase sustainable farming in New Zealand predominated:

> Governmental means of solving the problems has no show – they don't even understand it, the first person they'll go to is Lincoln or Massey to try and find the answer, they're like the fertiliser companies still back in the '50s. The best way forward for the environment problems that we're facing in New Zealand is through the market, through marketing, making the most of our high value products. (8)

Two participants were working on their own methods to try and associate a premium with the sustainable farming methods they were using. One of these, a sheep and beef farmer, had established relationships with a major exporting company and a top-tier British supermarket. He planned to independently test his results (including yields, and grass growth) and market his products as high value:

> We've just applied for a sustainable farming fund grant... if it goes through it's going to be here, in the Mackenzie Country, Arthur's Pass, Molesworth, and it's all about nutrient retention and sustainability We've got no nutrient run off on this farm and if we can prove that to the world, we'll be in the money. (8)

This participant viewed his sustainable practices as helping him to demand a premium for his exports. He perceived sustainable farming as equating with high-value end products, and pointed out that the majority of producers could not and should not be trying to attain premiums. Thus, his perception of what constituted sustainable agriculture was very much tied up with utilising the market to further his individual profitability.

This contrasted with the following participant who professed the most holistic view of all (out of all the participants) in relation to sustainable agriculture. He explained that his motivation to farm in the most sustainable way was due to his belief that everything was connected. By producing food in an honest and wholesome way he was living and contributing to society in a positive way:

> It goes back to our broken economic model, largely. The whole thing [that] this comes down to – the big issue for me – is that people are disconnected. This gets into spiritual stuff: people feel disconnected from the earth and from each other, but in reality we're not, and that change is slowly happening around the world in people reconnecting with where their food comes from. If people realise we're all connected and we're all in this together and so the solution is as a people look inside their own hearts and realise that we do have responsibility to future generations and it's just the right thing to do. (4)

Another participant thought that in addition to implementing sustainable practices now to "keep ahead of the game by pre-empting the high costs of doing it later", having sustainable practices under way meant they were well positioned for a premium if it were to come along. He added, "The farmers have to want to do it, to understand and believe in the soil biology… but possibly if there was a premium on your product, milk or meat, as in organics – that would be an incentive as well." (4)

Support for markets was not universal. Two of the participants said the market had no impact on their implementation of sustainable farming practices and the reduction of their nitrogen fertiliser and pesticide use. However, one of these participants believed he was in the minority of farmers who implement sustainable practices due to concerns about the health of the environment for its own sake. He suggested that for the typical farmer, changes in behaviour stem from the notion of profitability. If more farmers could see evidence of profitability in sustainable farming practices, there would be more uptake of these practices.

This participant perceived the economic model under which he was operating to be broken, and any changes associated with marketing a high-value product with components of sustainability tacked on to be perpetuating the system and failing to address the root causes of the problem.

Another participant associated his environmental practices with maintaining his key asset – his farm. However, he cited the case of sharemilkers in the dairy industry as not owning the land and therefore not having a vested interest in 'looking after it': "…we look after the land, it's our asset, but that's where the danger lies, in the dairy industry [because] they come in [sharemilkers] and make as much money as

they can, because half of them want to get their own farm, but the old money can dictate what you do, whether it's environmentally friendly or not." (7)

This participant was implementing several measures of sustainable farming although he was motivated to do so by the requirements of his contract with the English supermarket Waitrose. He explained the audit checklist given to him by Waitrose and his meat exporting company. It comprised:

> soil treatment, fertilisers, waterways, bird count, end fertiliser, emissions, fuel usages, amount of diesel we're buying a year, they're reflecting that back to what we're using. Plants and habitat, native plants, shelter belts, water access to stock, nutrients, animal welfare is a big one with them, animal health... The big new thing we're doing at the moment is tailing length, while at the moment it's not compulsory; we ourselves have left them longer. We're going to have to do it one day – it's an animal welfare thing it goes through – if you're going to fight an animal welfare thing you're barking up the wrong tree. Stream health: we're checking them for insect counts [so] if you're picking up rocks and there's a heap of them the stream is healthy. I wouldn't mind going a wee bit further and getting the council to test our streams too, I'm thinking of going that way. (7)

This participant perceived the majority of sheep and beef farmers to be environmentally minded. He blamed the deterioration of waterways, and moreover the environmental reputation of farmers in the media, on dairy farming.

A further consideration of this farmer was implementing sustainable practices to avoid later costs. His implementation of practices involving keeping lambs tails longer and incrementally fencing off his waterways was also to "keep ahead of the game", or to invest in practices likely to be imposed by regional councils at a later stage. He described his "next big project" as shelterbelts for stock and "probably trying to get our waterways protected. We've got to start now because in five years or so the council will demand it, so I might as well be chipping away. Some of them [farmers] will say I'm mad". (7)

Another sheep and beef farmer participant used tail lengths of lambs as an example of the market (or the demands of the public filtering through to farming practices):

> Absolutely the market dictates what we do. An example is with our fat lamb production: the market perceives that it's cruel to cut the tails off, so we're under pressure to leave the tails longer and it makes the shearers unhappy because life's more difficult. (2)

He perceived the extra cost of keeping the tails longer as something passed onto the farmer rather than paid for by the consumer.

Half of the participants cited the reduction in input costs as a motivation to use sustainable practices. These farmers could increase their profitability by using less and thus paying less for inputs such as nitrogen and pesticides.

Three out of eight participants had not used any chemical fertiliser for several years and three more participants had managed to dramatically decrease the amount of inputs they had been using when they were farming conventionally. Three participants cited the incentive associated with reducing input costs and increasing profit margins as a driver behind their continued sustainable farming practices. One participant cited it as one of his primary motivators, but the rest of the participants who perceived it to be part of biological farming saw it as just one of the benefits.

One participant had incurred a high financial cost using organic fertiliser on his farm when he changed from synthetic fertiliser. He had resolved to change practices due to the loss of as many as 30 cows in one year. He could not prove that the cow deaths were related to non-organic fertiliser, but after the transition, the losses abated dramatically.

In a similar case, one participant switched to organic fertiliser after he was approached by a representative of an organic fertiliser company. In the farmer's opinion, the representative seemed to have a good grasp of the problems that were occurring on the farm without actually having seen the farm. Costs were incurred at the outset in changing fertiliser programmes. However, these costs were recouped by the farmer as a result of his trade deal with a top- line English supermarket. This

participant was the strongest advocate of market-based agreements driving sustainable agriculture.

The participant who was the most critical of market governance as a way to solve environmental problems did perceive that high-value agrifood production could be a way towards a more sustainable agricultural system. He said that he would:

> [...] love to see NZ as the best producer of quality food in the world, because it can be done, adding to the whole story of clean green NZ and tourism and quality food and being the Switzerland of green agricultural produce and it would be so true, because it would make it a better place for our kids. (4)

Although this participant blamed the capitalist system for agriculture's problems, he perceived that utilising the market to produce high-value products with less detrimental effects on the environment was a way to improve sustainability.

5.6 Support mechanisms: networks in sustainable agriculture

The task of implementing sustainable agricultural practices, in the view of all the participants interviewed, lay solely with the individual farmer. The participants did belong to various associations, however in six out of eight cases the participants believed they had little or no support from any group or government body when they began implementing their sustainable practices. The umbrella group, the Association of Biological Farmers (ABF) was perceived as being important as a good facilitator, but as it was only two years old, several participants had already commenced biological programmes when they joined and did not see the association as a major source of support. Several participants did, however, see ABF as a linking tool, rather than a lobbying committee or network with a strong policy goal. Furthermore, the ABF does not work with other actors to regulate the behaviour of its members or associated members.

The perception that autonomy was important came through strongly in all the interviews. The notion emerged that the participants viewed themselves as pioneers in sustainable agriculture because of the niche nature of biological and organic farming.

There was a mixed response regarding the role of biological farmers in fostering further implementation of sustainable practices. One participant did not see the point in trying to convince others of the merits of biological methods:

> We aren't going to go evangelical on this... we'll just concentrate on our own bit of dirt and concentrate on learning for ourselves. (3)

Two of the participants had more visible links to non-governmental actors concerned with the environment. They belonged to a large number of groups as compared with the rest of the participants. One of these participants was on the board of ABF and the other was the participant most deeply committed to green farming and lifestyle practices. This participant described the array of groups that he was a member of, noting that nonetheless, the plan was to try and do more themselves:

> We're trying to do a lot more ourselves but we're still obviously buying products or inputs at this stage, but we're members of a whole lot of groups the Biodynamic Association, Organic Dairy Pastoral Group, Treecrops Association, Farm Forestry, groups about sustainability, obviously ABF, AcresUSA, and the Theosophical Society, groups we keep in contact with around holistic management, permaculture groups, we get a lot of emails and a lot of magazines. (4)

The same participant had secured funding from Air New Zealand to plant native trees on his property. He described his motivation as both environmental and social:

> We approached [Air NZ] with the realisation that we pretty much lived in a green desert out here. Our farm starts at the lake and heads out behind us. The trees are pretty much all behind us, but that's been cool, it's also allowed us to have 50 people come down and have a weekend camping on the farm for the last three years, and those town people just love it – the peace and quiet – and so that's been really good. [It's] given the opportunity for people to experience farming and where their foods coming from, and understand some of the issues. (4)

5.7 The need for more information and education

All participants believed that one of the major impediments to the uptake of sustainable agriculture by other farmers was the lack of information available about alternative methods. They blamed this on the influence of representatives from agro-chemical fertiliser and pesticide companies who have a large presence in a farmer's life and who needed to sell their products. Seven out of eight participants believed the so-called 'agricultural universities' of Lincoln University and Massey University were 'against' sustainable farming. The participants believed a reason for this was the major agro-chemical companies funded a significant amount of their research. One participant proposed that it all started with the "agricultural colleges", because:

> That's where the paradigm everyone operates under comes from. If the college wants to teach about crop pests and diseases they will go to Bayer or the corporation and they will set a lot of the course material; it will be their identification photographs, their manuals. They send their field reps out, they say 'this is what mildew is' and 'these are your spray options', and that is how it's taught. That's the conditioning that goes right through the system. (3)

Similar perceptions were expressed regarding the relationship between agricultural universities and financial interests:

> Over the last 15 to 18 years I've been re-examining a lot of precepts that have been held unquestionably in regard to dumping on fertiliser and pesticide. I'm not satisfied that I had the right understanding or that the authorities at Massey or Lincoln do. Because agri-chemical firms make money via the educative process being slanted towards their particular interest. (1)

5.8 Conclusion: key responses

The results show an interesting and even unanticipated array of responses from the biological farmers who were interviewed. The perception that central government regulation is unwanted and unnecessary was widespread. However, participants did not disregard the role of central government outright; rather, they called for the involvement of government in 'soft policy' approaches such as funding for

independent tests of their biological farming methods, information and education about sustainable farming, and facilitation of sustainability within supply chains.

The purpose of this chapter was to categorise and set out the major empirical findings from the research. In the chapter that follows these findings are brought together with the governance literature, supported by the conceptual framework guiding my research.

Chapter Six: Discussion and implications

6.1 Introduction: perceptions and opinions

The purpose of this chapter is to address the central question guiding this research. This will be achieved by analysis of the data set out in the preceding chapter, and by using the conceptual framework set out in Chapter Two. The farmers who participated in the interviews perceived that their behaviour was most influenced by the market, indicating the extent to which modes of governance are manifest in regulating farmers. There was evidence of spatial governance occurring at locations other than the central government level with governance that had moved down to the local level in the form of local government regulation. Such regulations affected the uptake of sustainable farming practices, however, in numerous cases; such practices were implemented in expectation of changes to policy rather than existing regulations. Hierarchical governance displayed little hold over the actions of farmers in implementing sustainable practices, although there were calls for central governance to facilitate and support sustainable agriculture. The influence of policy networks was not greatly visible in the results and this is a departure point from the theoretical and applied literature.

The purpose of this research was to establish the extant governance conditions that farmers are operating under in New Zealand, and to establish a case for the kinds of modes or spatial locations of governance that will aid the uptake of sustainable practices. This chapter will directly address both aspects of the over-arching research question. It explores how the findings compare with what the assumptions from the governance literature, and what the theory predicted would be uncovered. Differences between predictions made after a comprehensive reading of the literature and results are explored. The implications of the findings for the future uptake of sustainable agriculture will be discussed and explanations for unanticipated results are considered. These implications relate to central and local government, to policy networks, and to market instruments.

Chapter Six: Discussion and implications

6.2 Governance and agriculture

Governance has been identified within the agrifood literature as being a crucial concern for the capacity of the sustainable agriculture paradigm to increase its influence. The literature on the modes and spatial locations of governance are essential organising components of this study. Therefore, in this chapter, the perspectives of respondents have been analysed according to their location in the conceptual framework (see Table 3 below). Data could feature simultaneously in any two of the categories. For instance, a reference to a trade agreement with a transnational corporation would be both governance moving sideways, and market governance.

Table 3: Modes and locations of governance populated by data

	Governance moving up	**Down**	**Sideways**
Networks	Green Acres USA (4[8]) Holistic Management (2) Joel Salatin (1), (3), (4)	Conferences with Allan Savoury, John King, Joel Salatin (1), (3), (4) Field Days (5), (6), (7) Farm Forestry (4) Organic Dairy Pastoral Group (4) Neighbours (support and ridicule) (3), (5), (6), (7)	Air New Zealand (tree fund) (4) ABF Biodynamics Association (4) CSAFE (7) BioGro (1) (3)) University (1) (2) (3) (7) Bio Ag Leadership Group (5)
Markets	Waitrose (6) (7) Belief in high value export (1) (2) (4) (5) (6) (7) NZ's clean and green image (2) (4) (5) (7) Broken economic model (4) QA Schemes (1) (6) (7) Audit Schemes (5) (6) (7) Organic Premium/Marketing (1) (6) (7) Demand for longer tails (2) (7) 'Switzerland of ag-produce (4) Organic detriment in US (5) Belief in dairy industry	'Keeping ahead of the game' by trying to guess what market will do next (6), (7) Using naturally derived, small-scale, inexpensive fertiliser (5), (8)	Healthy Soils (6) (7) (8) Zespri (1) Marketing, consumer values (1) (5) Interest in own premium label (6) Interest in other biological premium labels (5) (8) Fonterra, environmental record (8) Hort NZ (1) (5) Beef and Lamb NZ (5) (6) Silver Fern Farms (6) Eco Tourism Venture (4) Less input costs (1) (2) (5) (7) Fertiliser comps (2) (3) (6) (7)

[8] The number in brackets refers to the participant associated with a particular point.

	NZ's GDP (8)		
Hierarchies	UN approval of NZ lamb practices6) EurepGAP (5) Deregulation in 1980s because of EEC etc. (2) (5) Comparison with ag governance in Aust. (4) (5)	Council (1) (4) (5) (8) (7) Distrust of regional/local council (all) Hawkes Bay Water rights group (5) 'Keeping ahead of the game' by predicting the regional council regs that will be passed. (7) (8) Effluent storage checks (8) Riparian fencing (1) N Caps by regional councils RMA (1)	Facilitation by government of independent testing (3) (5) (6) (8) Desire for more involvement by central government (4), (5), (6) Sustainable farming fund (5) (6)

6.3 Governance by hierarchy

Improved information and public policy regulation sponsoring an ecologically friendly behaviour or practice can influence farmers' on-farm practices (FAO, 2007b). The results of this research, however, show these factors were not common and a close reading of the New Zealand-specific literature shows these two components are not widespread in the New Zealand context. However, a surprising finding of this research was the views of farmers around the role of hierarchical governance in supporting sustainable agriculture. Instead of the 'heavy-handed', top-down manner of the governance literature, participants wanted a 'light-handed', revised hierarchical form of governance to support their sustainable farming endeavours. In analysing the responses from participants, the modes of governance that were driving behaviour that was *actually* occurring were different from participants' ideas of what *should* drive behaviour. In six cases, the farmers believed central government needed to support sustainable agriculture with funding. This is consistent with the notion that only the state can truly act in the interest of the public and involving what is essentially a public good, i.e. the environment.

Cheshire's and Lawrence's (2005) argument that neoliberal governments have reconstituted farmers as 'active citizens' responsible for achieving their own goals

is evident in the empirical data collected. Discourses of 'self-help' featured highly in the interviews. Farmers perceived themselves to be autonomous and responsible for making changes on their own land, for their own prosperity, and by themselves. Interestingly, the notion that central government should finance farmers to change their agricultural practices from high input to low input was rejected by the majority of participants. While participants called for central government to play a role in the promotion of sustainable agriculture, at the same time, the overwhelming perception was that difficult public policy measures such as regulation should under no circumstances be introduced to try to resolve the policy problem of environmental degradation resulting from conventional agriculture. This indicates the extent to which the central government is viewed as redundant in a regulatory sense in the governance of sustainable agriculture. The idea that central government was 'too big' to deal with the problems of agricultural environmental degradation was reiterated several times. Many of the participants said government, both local and central, along with associated bodies and groups, did not have the expertise to work with farmers to promote better environmental behaviour. They believed this expertise could only come from practitioners' themselves. Thus, there were widespread calls for the government to fund independent tests so that biological farmers could prove to conventional farmers that their methods worked and that yield decreases were not an issue.

Participants bought up the issue of the non-interventionist role of the government in terms of the so-called reliance of New Zealand on agricultural exports for GDP, and the reluctance of the central government to create policy that would harm such returns. This view about the current role of the state is related to the neoliberal ideology of the New Zealand government. States that follow neoliberal economic policy commit to facilitate global capital requirements. This means the orthodox approach to regulation is arguably more responsive to the imperatives of capital and markets than to the regulation of economic activities by central governments (Moriera, 2003). The state promotes the connection of global capital to producers, and if the state restricted the behaviour of farmers, this would act as a deterrent to such relationships (Moriera, 2003). Thus, although there is an expressed desire for

state to have a greater role in solving the policy problems of the environmental degradation associated with agriculture, the likelihood of this occurring is debatable.

Half of the participants raised the problem of New Zealand's 'clean and green' image being at risk due to the declining state of its natural environment. A number of participants believed central government has a key role in maintaining this image by turning away from its unmitigated support of agriculture that is conventional and intensive in nature. This reflects the orthodoxy of the perception that market governance (via the clean and green brand) is a necessary part of New Zealand's agricultural export industry.

6.4 Governance by markets

Participants generally gave more weight to the perception that the market is the biggest driver of behaviour. The findings supported the trend in the literature of market influence toward agricultural governance, especially in Antipodean countries (see Lawrence, 1996; Dibden & Cocklin, 2005; Campbell *et al.,* 2006). Much of the agrifood literature finds that agricultural governance by the market continues to entrench an agri-industrial model, and such a model stands increasingly in contrast to regulation and governing in respect of the environment (Dibden & Cocklin, 2005). However, the work in agrifood restructuring does acknowledge the myriad cases where market instruments and quality assurance schemes have incorporated elements of sustainability into the practices of individual farmers (Higgins, 2005; Hatanaka, 2010). Campbell *et al.* (2012: 7) allege that "QA schemes have become elaborated around a range of environmental and food safety criteria, and have come to constitute the main conduit to establishing more environmentally-friendly practices among food exporters".

Many of the participants saw incentives provided by the market as being the most likely way whereby those whom they viewed as being 'conventional' farmers would change their behaviour. Three participants attested that the influence of market instruments was not the main reason *they* originally changed practices. The

major factors for this change were largely the perception that they were damaging their land. Participants thus changed practices out of a 'respect and love for the land'. However, given that six of the eight participants perceived the 'land' as being indivisible from making a profit; it seems that the 'deep ecological' behaviour often associated with organic farmers and environmentalists more generally was not typical of this particular set of farmers.

A further cited incidence of market governance was the practice of keeping lamb tails long because farmers in the UK generally applied this practice because of consumer demand. Although several participants stated they did not believe in the practice (because it meant that sheep were more receptive to infections), they were undertaking the behaviour because their lambs were to be exported to British supermarkets that stipulated that this practice be adhered to. Another reason for not wanting to keep lambs tails longer was because it annoyed the shearers, who charged more for their services. This indicates the constant presence of profit in participants' explanations for their behaviour.

Another incidence of governance moving to the side was evident in the relationship between the participants and major agro-industrial companies. The consensus among the participants was that they were rejecting the governance of such companies. Such governance included advice on which chemical products to use and how often, and the realisation that such advice was potentially related to the corporate agenda of the company rather than what was best for the land, and the local topography and ecology.

A way to understand the continuous feature of market governance as a major driver of sustainable practices is the neoliberal context the participants are operating within. The commitment of the core executive in New Zealand to free-market principles accounts for some of the dominance of the market as a force in influencing behaviour. Another reason for the so-called ascendancy of market governance is that it is vastly more visible than central government policy in the area of agriculture. Establishing an agreement with an elite foreign supermarket to

supply 'sustainable' produce, with associated audits and third-party certification is a salient example of self-regulating market governance. Compared with 'soft' policy initiatives – for example, information-sharing networks facilitated by a government-owned research institute – market instruments are a potent force.

6.5 Network governance

Previous research in the governance tradition suggested that policy networks would be a major driver in the behaviour of actors. However, my findings show that such networks are not immediately as evident as a significant mode of governance in comparison with the other two modes: hierarchies and markets. Undoubtedly, the participants were connected to other actors in the sustainable farming body by social networks (the kind of networks that underlie all human interaction). However, a policy network is a different entity as established in the literature review (see Chapter Two). Networks are undoubtedly influential vehicles for governing; for example a NGO with a specific single issue or a broad area of concern works in partnership with government, and/or business and other groups to resolve a policy problem. Or, they utilise their collective will to influence the policy process (Kingdon, 1984; Rhodes, 1998). However, six out of eight farmers worked infrequently with more than one group on any one issue pertaining to their biological farming operation and those groups' interactions with government and the private sector did not indicate that they were cohesive policy networks. There are various self-appointed groups who work 'on behalf of the natural environment' as advocates (e.g. Forest and Bird, Greenpeace). However, these groups are often devoid of resources and access to policy-making channels. It would be disingenuous to suggest that vague associations between actors with a similar goal of sustainability in farming constitute policy networks.

Furthermore, it is possible that policy networks that do exist in the agricultural sector are influential in maintaining competitive productivist behaviours rather than promoting sustainable practices. This is because the agricultural sector is a dominant player in New Zealand's socio-economic activities; the general ideology of productivism underwrites conventional agriculture. Therefore, actors within an

agriculturally based policy network are less likely to be facilitating environmentally benign or beneficial practices.

Networks in the agrifood sphere have largely been built around a focus on 'the local' (Marsden, 2003). Sustainability is implicit in the reduced environmental impact of food produced and sold locally; in the social aspect of stronger communities; and in the economic impact of sustainability itself; maintenance of environmental and social spheres will allow food production to continue into the future. This emphasis on local food production implies a short supply chain (Fonte, 2006) and a reimagining of rural spaces as important places to live. Local food networks entail strong relationships between the producer and the consumer (Renting, *et al.,* 2003). These networks can become policy networks when they influence local or central government policy or when they become self-regulating. It was not evident, though, that participants in this research were able to connect with these agrifood networks, as all the participants exported their entire farm product. This is another example of how the contextual factors of biological farmers in New Zealand challenge the assumption that networks are the new panacea of agricultural regulation. It is worth noting that 90 per centof New Zealand agricultural produce is exported (Moller *et al.* 2008) and thus, the fact that no participants sold food locally is an accurate reflection of agrifood supply chain relations.

Notwithstanding the absence of cohesive, localised networks, two participants were more actively involved in supporting biological farming than the others. One was in the late stages of turning his farm into an eco-tourism venture[9], secondary to farming. This participant was actively encouraging city and town dwellers to camp on the farm and experience rural life. In his view, visitors would see how his biological principles worked, and feel connected to the kind of place their food came from. In a sense he was facilitating his own social network. He also received support from a corporation, Air New Zealand, to plant native trees on his property. This participant was himself connected to numerous groups, and was part of a

[9] This participant stated his aim for food produced on his farm to be sold in the restaurant of this 'eco-venture'. This had not arisen at the time the interview was conducted.

loosely aligned policy network attempting to promote the significance of biological and organic principles, and to garner support from central government. Thus, we see the capacity for policy networks to instigate change.

The second participant was more clearly connected to networks, both social and political. He was on the board of the ABF. The ABF is a type of 'soft' policy network, to which all the participants were loosely connected. It functions as an information portal, but is only in its infancy, so has not to date established the type of agenda-setting capability or self-regulating ability of a policy network in the traditional sense. This participant was also part of a Biological Agriculture Leadership Group that was trying to access central government to make the case for policy support of biological farming. He regularly held field days at his farm to educate other farmers about the ecological benefits and cost savings of biological farming. Again, the capacity of policy networks to bring about change is latent (Pralle, 2006), if not yet fully realised in the cases of those involved in this research.

Although the participants were connected to different actors via 'social networks', policy networks were less dominant. This could be explained by the relative isolation of several of the farms and the feeling that they just wanted to make a difference on their own patch of land and not "evangelicise", as one farmer put it. This notion of autonomy and responsibility to a small area, rather than a socially orientated motivation to farm sustainably might say something about the dearth of effective policy networks in the sphere of sustainable farming.

Now we move into the spatial dimension of the new way that governing is done in regard to the uptake of sustainable practices in New Zealand.

6.6 Governance moving up

In the governance literature, it is frequently asserted that power has moved 'upward' to transnational corporations, which are arguably so powerful that nation states have difficulty regulating their activities (Cheshire & Lawrence, 2005).

Under conditions of deregulation and economic globalisation, producers link directly with corporate firms under contract arrangements. This intersection of governance by the market and governance from above erodes a significant amount of power from the state. However, in the case of New Zealand's neoliberal approach to agriculture, it seems likely that the state aids relationships between capital and producers and cedes power to international institutions (Moreira, 2003). In other words, if there has been any ceding of power from the state to transnational entities, it is a process the state appears to have willingly engaged in.

International institutions and their associated agreements, negotiations and subsequent policies were not commonly referred to in participants' responses. Indeed, it is to be expected that this high level of governance would hardly be a main concern of food producers behind the farm gate. However, decisions made at the international level do have a trickle-down effect onto national governments and this, in turn, affects the on-ground activities occurring in the production and processing of farm outputs. The position of the New Zealand government at the Doha Round of WTO negotiations indicates the strong commitment to free trade from the core executive.

6.7 Governance moving down

Governance has moved down to local government to a large extent in New Zealand agriculture. Regulation by local councils – particularly via the provisions of the RMA – was a motivating factor in the conversion from conventional agricultural practices to biological practices in three cases. This perception of local government as a proximate source of control reflects Cheshire's and Lawrence's (2005) argument that key government programmes are constructed between state agencies and producers that enable policies to be channelled into local rather than state agendas.

The potential for local council regulation and the associated cost of compliance was a factor in the uptake of sustainable practices by several farmers. For example, the probable need to fence all waterways in one region saw one participant stagger the

implementation of fences over many years in order to be able to afford the whole project. There was very little trust or respect from participants towards their respective councils. This was largely because the regulating tendencies of councils were perceived as unsupportive of sustainable farming itself. There was concern about the interpretation of central government directives by individual councils. Participants believed that a 'one size fits all' approach to, for example, riparian planting did not reflect the differences in polluting behaviour between different farm types. Neither were such approaches perceived to acknowledge differences in land type and the expenses of sustainable behaviour.

Several participants had very little interaction with their local or regional councils. They saw themselves as being too remotely situated, with a land-use type (i.e. sheep and beef) that did not draw undue attention from local and regional councils. However, they still viewed local level government as the most proximate source of government regulation.

6.8 Governance moving sideways

The power displacement of the state is an important concept when discussing the new way that agricultural governance is performed. Formerly the concern of central government, methods of deciding on supply chains, trade relationships, and the activities occurring on the ground, has largely moved out to the side, away from the centre or the hierarchy. This came through strongly in the research.

Three farmers highlighted the importance of auditing by domestic and international food companies. EurepGAP is a form of global agrifood governance demonstrating a strong relationship between the new audit cultures that mark the changing approaches to farming, and neoliberal forms of trade regulation (Campbell, *et al.,* 2006). Forms of governance similar to EurepGAP can be attributed to the changes in behaviour of two participants, and the continued practice of biological farming by two additional farmers. This can be interpreted as an instance of governance moving sideways, to supranational, market-based bodies, and also governance by the market. This trend is identified in the literature, where work by several

researchers (Higgins, 2005; Campbell *et al.,* 2006; Campbell, 2005; Hatanaka *et al.,* 2012) indicates an emerging 'audit culture'. Under such agreements, strict accreditation of sets of procedures emerges as the basis for certification of goods and therefore entry to certain markets and associated premiums. These relationships indicate the trend towards private-sector standardisation and assurance schemes and provide an example of the growing importance of supermarkets in influencing behind-the-farm-gate activities (Campbell *et al.,* 2006).

The horticulture company Zespri and its policies for kiwifruit growers was one of the principal determinants in one participant's behaviour. Similarly, Fonterra was a major influence in regulating practices of the dairy farmer involved in the research. Sheep and beef farmers, however, were not directed to any great extent by their association, Beef and Lamb New Zealand, due to the circumstances following the dissolution of New Zealand's favourable trade relationship with Britain in the 1970s. This implies that sheep and beef farmers have not aligned under a co-operative, like dairy. Similarly, there was no guidance or regulation from the viticulture industry and the viticulturist participant said that generally there was little financial incentive associated with biodynamic, biological or organic grapes. However, the reduction in costs of growing biologically was substantial.

Fonterra intermittently checked the environmental behaviour of one participant and this farmer viewed this as a type of regulation enforcing a level of behavioural consistency amongst members of Fonterra. However, the behaviour that Fonterra was checking amounted to correct handling of effluent, rather than reduction of inputs or waste or agri-environmental behaviour. Fonterra could use its jurisdiction to reject the products of any farmer who did not comply with its internal environmental regulations. Jay (2007) found a similar level of internal regulation in her work on the political economy of a productivist dairy sector in 2007. However, the consistency with which Fonterra enforces its environmental jurisdiction has not been much publicised. This farmer was also subject to regulation from his local council, seemingly more than any other participant. This was due to his location on the lowland plains near Dunedin and also because of his land-use type.

Two participants showed an interest in developing their own label that would indicate quality and environmental care, and would therefore obtain a premium – another incidence of audit-based sustainability. These farmers already operated under audit agreements with international supermarkets, but saw the development of their own label as removing a further layer of the supply chain. They planned to conduct analysis of the values consumers sought, and incorporate these values into their product. This shows the market was a strong driver in the self-regulatory behaviour of these farmers.

A key driver of implementing sustainable practices involved a reduction in synthetic nitrogen-derived fertilisers and pesticides costs. For those who held this to be a major component of their changed practices, the lower costs came only after one to three years of farming biologically. The delayed financial return was a much discussed factor.

6.9 Towards sustainability?

Consistent with the notion that sustainability lies in a local rural development paradigm is the view that changes to agriculture via market instruments are hardly transformative and are prolonging the system within which environmental degradation is so widespread (Foster, 2002). The beneficiaries of sustainable farming practices such as organics or quality-assured products are largely elites in first-world countries. The environment also benefits, but arguably in piecemeal and uneven ways, while market instruments create premiums for a minority of farmers who implement sustainable practices. As one participant observed, premiums only occur when others receive no premium and it follows that sustainable agriculture based on third-party certification and market governance is not a transformative approach to protecting the productive capacity of the environment as the resource base and for its own, intrinsic, sake. Furthermore, the perception among the majority of participants that farming could only be sustainable if the financial return was sufficient to make a livelihood reflects the context in which they are operating – a highly neoliberal economy.

Chapter Six: Discussion and implications

Such critique of market governance focuses attention on the capability of the altered configurations of governance to solve policy problems. The state, it is argued, is the only arena where accountability and non-marketable problems can be addressed, or, at a meso level, where policy networks can regulate the behaviour of citizens. Through this theoretical and practical coalition of governance and agrifood literature and empirical case studies, it has become apparent that there is a dearth of work seeking understanding of which modes of governance influence 'biological' farmers in the New Zealand context.

The opinions of those behind the farm gate are vital when assembling a picture of the forces that influence and control the behaviour of the grassroots producer. The analysis of the empirical results and subsequent discussion indicates that the governance of sustainable agriculture has moved away from central government. Firstly and most significantly, governance has moved out to the sides and to the market. Secondly, it has moved down to the bottom, to interest groups and local government. Finally, it has moved up to international agreements and the machinations of TNCs and global supply chains. However, despite the alleged redundancy of the core executive in enabling sustainable agriculture to gain a foothold in New Zealand, there remains the necessity of policy support, facilitation, and funding – and these are roles which the centre is especially well placed to undertake.

The findings of this research have implications for the potential uptake of sustainable practices. It is clear that market governance in the guise of market instruments have a major influence on the practices of farmers. The capabilities of the market can be expanded by the implementation of robust third-party certification schemes and stronger relationships between producers and buyers who demand sustainable products. These prospects do rely upon consumer demand.

One of the problems discussed in this thesis is the environmental degradation inherent in conventional, intensive farming. The solution put forward is low-input

farming as a form of sustainable agriculture. The question posed was how do we move from the problem to the solution – or by which mode or modes will this movement best occur? What is happening on the ground according to my research points to a very different understanding of events than the understanding being played out at the central government or international government level in terms of solving policy problems. Farmers have been reconstituted as 'active citizens' and perceive themselves as thoroughly removed from central government, and as removed as they possibly can be from local government. The influence of local government regulation was important in governing the behaviour of farmers, but it was the market that was playing the most significant role in promoting sustainable agricultural practices among the participants of this study. However, this is largely due to the diffusion of power away from the state under the project of neoliberalism. While market instruments encouraging sustainable farming practices are beneficial, it is not likely that audit and third-party certification schemes would change the entire system from conventional to sustainable. Thus, there exists a conflict between the power of the market to promote sustainability and the power of the market to limit sustainability. Furthermore, it is clear that markets and states fail in different ways; markets fail when the allocation of goods and resources is not efficient and this gives rise to policy problems, and states fail when a policy does not achieve its goals and externalities occur. One practical response to this situation is to combine modes of policy making and vary their relevance over time, thereby shifting the forms in which tendencies to 'failure' manifest themselves and creating room for manoeuvre (Offe, 1975 in Jessop, 2002).

In order for sustainable methods (including organic and biological) to become widespread, there must be facilitation by central government in terms of information, independent testing and sponsorship of visiting experts in the various fields of sustainable farming. Although the central government works hard to promote New Zealand agricultural exports, there is a need to strengthen partnerships between market and hierarchy in investigating and promoting sustainably produced agricultural exports. The government has a role in encouraging sustainable agricultural practices in New Zealand. While it is clear that

governmental regulation of inputs is unlikely to be forthcoming, central government can develop more stringent guidelines on outputs, for example, water quality. Local councils then would have the capacity to work with interest groups and stakeholders to interpret these guidelines. Policies such as the Manawatu-Wanganui region's *One Plan* which regulates the environmental behaviour of farmers in the region is an example of interest groups and a council working together to achieve a legislative agreement.

The influence of networks is surprisingly indistinct, yet they remain important. The implications from the opinions of participants suggest that support by the way of politically astute networks is desired. Policy networks must be strengthened and partnerships established between interest groups, local council and farmers to access funding from central government. This would capitalise on the demand for central government to provide funding, given its control of resources. Strong networks could also access the agenda and link the disparate groups contesting the productivist agricultural paradox in order to make deep-seated change.

6.10 Conclusion: discussion and implications

In this chapter, the data set out in Chapter Five were linked to the theoretical literature on governance and the empirical literature on agrifood in New Zealand. The findings have been discussed in relation to the primary research question: How do farmers perceive the governance arrangements which influence their practices, and where are these arrangements spatially located? The secondary research question concerning the implications of these governance arrangements for the uptake of sustainable agriculture has also been considered. In the next, final chapter an account of the thesis journey and a reflection on its key findings, is offered.

Chapter Seven: Conclusions - Towards sustainable agriculture in New Zealand

7.1 Introduction: On Reflection

Globally, agriculture is constrained by the need to produce more food with fewer environmental subsidies on existing agricultural land with a limited capacity to expand. In New Zealand, the agricultural sector is affected by environmental organisations, research networks, and academics to discontinue practices that pollute waterways, threaten biodiversity and emit greenhouse gases. However, these calls are compounded by the demands of industry and government for farmers to continue their role as a key supplier in a supply chain that spans industries and is based on a high-output, low-cost production model. Researchers, farmers and policy makers are now challenged to understand the best compromise between continuing food production while minimising negative impacts on biodiversity, ecosystem services and society (Pretty *et al.* 2010). There is debate regarding which mode of governance is best for securing these conditions and where these modes are located. The research question that guided this thesis was: How do farmers perceive the governance arrangements which influence their practices, and where are these arrangements spatially located? This question is concerned with the conditions that farmers face on the ground and gives rise to a secondary question: What are the implications of these governance arrangements for the uptake of sustainable agriculture? This chapter reflects on the course of the thesis and its key findings, and concludes with several general reflections.

7.2 The thesis journey

The process whereby I sought to address the thesis question involved constructing a methodology encompassing distinct and apparently disconnected areas of interest: sustainable agriculture, governance theory, and the perspectives of farmers practising biological farming as a form of sustainable agriculture. I investigated the influence of governance on the uptake of sustainable agricultural practices by farmers. It was necessarily a qualitative investigation, due to the anti-foundational

approach adopted from the outset. This approach sees the world as socially and discursively constructed and knowledge as dependent upon time, culture, and history (Furlong & Marsh, 2010). The focus of this research was the context of biological farmers operating under a restructured agrifood system in New Zealand. To find out the conditions influencing the behaviour of biological farmers across different agricultural sectors, the governance and agrifood literature informed in-depth interviews.

Governance theory was used to make sense of the contexts in which sustainable agriculture takes place, due to its ability to describe the complexities populating the social, economic and political spectrum pertaining to agriculture. I agree with Marsden *et al.* (1993: 20) that "current notions (of agricultural restructuring), emerging as they have largely from a political economy perspective, tend to retain an excessive economism and set of 'top-down' structuralist assumptions about the nature of change". The governance perspective methodologically reinforced my thinking and fieldwork on biological agriculture practices and enabled me to look from the bottom up. Farmers' situation as the producers situated hierarchically at the grassroots level of the agrifood system further supports the relevance of the governance perspective in this thesis.

7.3 Major findings

The two major constructs that guided my research were reflected in the major findings. Broadly, it has emerged that governance arrangements within sustainable agriculture, similar to governance arrangements in other areas of economic and social life, have changed according to the mode by which governance is executed, and subsequently, the level at which such governance takes place. Several relationships were perceived between farming practices and modes of governance. Firstly, participants perceive the market to have a major impact on their behaviours. Secondly, participants perceive the activities and actions of central government to be largely invisible and unimportant in their actual practices. Thirdly, the majority of the participants did not identify strong linkages to established policy networks.

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In terms of the second core element of the conceptual framework used here, it emerged that governance in the agricultural sector has moved away from the 'centre'. The results from the empirical fieldwork demonstrate that in the case of individual farmers, governance from below and from the side are the most influential; however, the role of governance from the centre (or hierarchical governance) still has the potential to be important. These key findings are explored in greater detail below.

The significance of market governance in influencing farmer behaviour, the current redundancy of the state in regulating negative environmental externalities, the lack of strong networks in sustainable agriculture in New Zealand, and the desire of the participants to have central government support and facilitation (rather than regulation) featured prominently in this work. In reality, as much as the paradigm of sustainable agriculture is desirable in order to improve the ecological footprint of agriculture, the farmers in this research remained concerned with their ability to remain financially viable, and indeed to make a profit. Thus, market governance, by way of market instruments and third-party certification schemes, is the mechanism by which sustainable agriculture is being expanded. If a farmer can foresee that there will be a buyer for a sustainable product, they are more likely to undertake the risks that occur when converting from a conventional farming method to a biological method. The majority of the participants viewed market governance as the best way to encourage conventional farmers to farm sustainably.

The displacement of state power has been a key issue of this research. The analysis of the results illustrates a governance scenario where the state has been dislodged in terms of its authority, influence and control of the agricultural production aspect of the agrifood chain. The governance literature offers explanations for the reduced presence of the core executive by positioning networks and markets and hierarchical governance from the international level at the forefront of the ordering of society. This research demonstrates several of those points, particularly with regard to the importance of markets as a mode of governance. However, the inference that networks are *a* key, if not *the* key manifestation of the displacement

of the authority of the state (and thus a driver of sustainable agriculture) is not supported by the results of this research. Rather, the research suggests that it is the market, and not networks, that most heavily influences the actions of those behind the farm gate. Participants' responses suggest that demand for sustainable products is most likely to encourage conventional farmers to consider converting to biological farming.

Although the participants themselves advocated market governance as the strongest conduit for sustainable practices, it remains doubtful whether the market alone can solve the vast problem of environmental degradation. Participants themselves acknowledged that one of the key drivers in the uptake of sustainable farming practices is the premium associated with audits and quality-assurance schemes and relationships with top-tier European supermarkets. Accordingly, participants also acknowledged that, due to the underlying economics of premium products, the majority of farmers cannot attain premiums. While market forces can substantially account for the current progression towards sustainable farming in its many forms, it is uncertain whether market governance alone can solve the widespread policy problems outlined in Chapter One. This research has found that market governance encourages the uptake of sustainable agriculture, but its ability to encourage holistic and widespread sustainable farming is somewhat restricted.

7.4 Reflections

The role of government in regulating, ordering and influencing socio-economic interactions has changed considerably, and there is a new way that governing is undertaken. In relation to agrifood and sustainability in New Zealand, this is characterised by the deregulation of economic activities and the reconstituting of actors such as farmers as active citizens, responsible for their own environmental behaviour. Farmers mediate the respective influences of the market, governmental policy that supports the agri-industrial model, and societal pressure, which results in important decisions over land and resource use. For some, these decisions result in behaviour that mitigates some of the environmental degradation that is an increasing problem for agriculture worldwide. In reflecting upon the responses of

the farmers who took part in this research, it is clear that the position of the farmer is an extremely difficult one, and support from both local and central government and social and political networks is necessary if we are to see the change in environmental behaviour that will limit nitrate leaching, greenhouse gas emissions and declining biodiversity.

This research set out to answer the question: How do farmers perceive the governance arrangements which influence their practices, and where are these arrangements spatially located? The perceptions of farmers of the governance arrangements with a role in shaping their on-farm practices were many and varied. They offer much to established theory on the governance of sustainable agriculture. The governance literature in political science, both theoretical and applied, largely focuses on states, networks and organisations, not on the agency of individual farmers. Therefore, this thesis has complemented the dominant research emphasis by exploring the governance of sustainable agriculture from the point of view of farmers.

A secondary question concerned the implications of governance arrangements for the uptake of sustainable agriculture. In this respect, the research has established, firstly, that the potential for a wider uptake of practices lies in the strengthening of market instruments by the private sector. It found, secondly, that central government facilitation of and support for sustainable farming – rather than coercive regulation – is likely to reduce polluting behaviour by farmers. Thirdly, networks that exist in the sphere of sustainable agriculture are typically social networks, and policy networks that enable policy change at the local and central government levels and internal regulation must be built and strengthened.

In short, while governance may explain much about the new environment for sustainable farming in New Zealand, there remains a central role for government – albeit one which must be sensitive to new realities.

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Appendices

Appendix 1.1
Interview Schedule

Questions

1. When did you begin implementing sustainable practices on your farm and what first influenced you in doing that?

2. Can you tell me about the practices you used before taking up sustainable/biological practices; what are the practices that you use now?

3. Do you have any concerns with conventional farming, if so, what are they?

4. What have the benefits of biological agriculture been to you; can you tell me about some of the changes you have seen around your farm?

5. Has there been anything that has aided you (for example, technology extension, support from university programmes, consumer demand, farmers' markets, public support, government policy) in implementing practices around the farm?

6. What are the groups relating to sustainable farming that you belong to, or the communities that you go to for advice on sustainable farming?

7. Has there been anything that has hindered you in implementing such practices?

8. Do you think there is enough support for farmers who want to change their farming practices; what are some of the risks and challenges you have had to overcome?

9. What is your view of organic certification; is this a viable option for you?

10. Do you receive a premium for the biological aspect of your produce? If so, how important is this in the maintenance of your practices? If not, do you hope to attain a premium in the future?

11. Who are the local and central government agencies that you deal with?

12. Do the regulations that come from your local or regional council have an effect on the farming practices you use?

13. What is your opinion of the governmental support that exists for sustainable agriculture?

14. What do you think needs to happen for more farmers' to be able to implement sustainable practices?

15. What, in your mind, is sustainable farming?

Appendix 1.2
Information Sheet

Massey University

The Drivers of Sustainable Agriculture in New Zealand
Information Sheet

The research
My name is Kate Beecroft, and I am completing an MA (Politics) at Massey University. I would like to invite you to participate in my research, the purpose of which is to find out what drives the adoption of sustainable farming practices in New Zealand.

Participant selection
I am interested in the views of farmers who implement sustainable agricultural methods in food or fibre production. The Association of Biological Farmers – an umbrella organisation that self-identifying sustainable and biological farmers can belong to – has helped me with the processes of identifying and approaching such farmers.

What will be required
I hope to interview eight farmers. Each farmer will be asked to participate in a single in-depth interview of approximately 1.5 hours duration; a series of open-ended questions will be used to facilitate discussion. Interviews will take place at a time and place of each participant's choosing. Ideally, they will occur at the farmer's property, as I would be keen to see the farms that research participants would be discussing.

Each interview will be recorded and transcribed. Participants will have the chance to verify the transcripts of their interview. Transcripts will be kept confidential to myself and my supervisors, and pseudonyms will be used to protect farmer identities. Other potentially identifying factors will be altered where necessary. Transcripts will be stored in a secure space, and destroyed within three years of the interview. The information collected from interviews will be used in writing up my thesis, and may be used for conference presentations and journal articles.

Your rights
You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

Decline to answer any particular question;
Withdraw from the study at any time up until interview completion;
Ask any questions about the study at any time during participation;
Provide information on the understanding that your name will not be used in the thesis or other research outputs;
Be given access to a summary of the project findings when it is concluded;
Ask for the recorder to be turned off at any time during the interview.

Contacts
If you have any questions about the research, please contact either myself (kateabeecroft@gmail.com; PHONE) or one of my supervisors: Dr Corrina Tucker (C.Tucker@massey.ac.nz); Dr Carolyn Morris (C.M.Morris@massey.ac.nz); or Associate Professor Richard Shaw (R.H.Shaw@massey.ac.nz).

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 named above is responsible for the ethical conduct of the research. If you have concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor John O'Neill, Director, Research Ethics (06 350 5249; humanethics@massey.ac.nz).

Appendix 1.3
Table of categorisation for 14 key categories

Classification	Example of categorisation
Demographic information	Age, Sex, Ethnicity, Farm Type, Export/Import, Region.
Broad reasons for turning to biological farming	Death of cows, thought it related to fertiliser.
Concerns with conventional farming and the type of conventional practices formerly used.	Takes the knowledge out of farming, you just obey what the industry representatives tell you and throw on litres and litres of toxic chemical.
Benefits from biological farming	Healthier and happier animals.
Groups and organisations member of/associated with	ABF, Canterbury Meat Packers, Healthy Soils.
Motivations for changing farming practices – local government regulation	Council are always trying to make money off us by coming up with a new regulation no matter if it's actually going to make a difference.
Motivations for changing farming practices – support for biological farming from groups, information, campaigns, neighbours, field days.	It's mostly just from what I've read in a few books and on the internet, haven't heard of any big movement to farm more sustainably, excluding organics. It's basically just me, on my own.
Motivations for changing farming practices – influence of markets (audits, relationships with supermarkets, meat packers, QA schemes, profit, premiums)	The audits that come out of agreements with exporters or supermarkets are a big one. They are serious on all-round environmental behaviour.
Influence of costings of low input farming/precision management	High inputs are basically the conventional system. You have to pay a lot for the stuff, with biological you're basically taking that stuff out.
Perception of central government (regulation, role)	Central government have no role in sustainable farming. They're one of the causes of the broken model.
Thoughts on organics	Organics is all about marketing.
Scientific explanations/processes and yield	The mycorrhizal layer is the foundation of farming.
Perception of conventional agrifood supply chain	I'm saying we need to get into that next tier of Beef and Lamb and HortNZ, because they have some influence in the supply chain, not all of it good, obviously.
Opinions on the need to strengthen relationships between sustainability and industry	If more farmers were going to be sustainable, there would need to be more incentive. Regulation that costs us money is not going to do it.