

Opportunities for Food Systems Planning in New Zealand

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Abstract

Planners are interested in promoting and facilitating the creation of healthy, liveable, vibrant communities which work toward goals of sustainability, or the potential to exist indefinitely whilst maintaining or improving the social, environmental and economic resource bases they are embedded within. These principles have motivated planners to engage in a wide variety of activities, stepping in to balance market failures or facilitating community development using planning principles. Yet until recently, the provision of a healthy, adequate, sustainable and secure food supply to a city's residents has been left purely up to market forces, despite evidence of several serious market failures.

However, in the past decade, a new field of planning practice, known as food systems planning, has emerged and become well established across North America, Europe and Australia. Food systems can be understood as the processes by which food is produced, processed, distributed, retailed, consumed and the associated waste products disposed of, as well as the associated inputs and outputs at each stage. Food systems planning seeks to utilise planning principles, such as stakeholder participation and the creation of plans and policies, to help facilitate movement of local food systems towards sustainability objectives, ideally whilst also benefiting other elements of the local community.

Food systems planning initiatives have been highly successful overseas, in many cases initiatives have been launched in contexts that are not dissimilar to New Zealand. However, food systems planning methods and frameworks have not as yet been adopted by planners and local governments within New Zealand. This thesis sought to evaluate the opportunities for adapting and implementing food systems planning principles in the New Zealand context. A broad and comprehensive evaluation was undertaken of both food systems characteristics and government frameworks in New Zealand. The results were then considered in the context of food systems planning literature. This thesis presents that research, and identifies significant opportunities for food systems planning principles to be further developed and implemented in New Zealand.

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1 Introduction

1.1 Introduction

Planners are interested in facilitating and promoting the creation of healthy, liveable, vibrant communities which work toward goals of sustainability, or the potential to exist indefinitely whilst maintaining or improving the social, environmental and economic resource bases they are embedded within (Kelly, 2009; Roseland, 2005). For these goals to be achieved, the basic essentials of life must be provided for in an effective and equitable way, giving individuals a greater degree of freedom to pursue their chosen life paths rather than being hindered or constrained by the communities in which they live (Brugmann, 2009). Historically, planners have been extensively involved in the development of plans, policies and projects which address fields as diverse as land use, housing, transportation, environmental management, and economic systems (Pothukuchi and Kaufman, 2000). Along with air, water and shelter, an adequate and healthful supply of food is recognised as one of the basic requirements of life (de la Salle and Holland, 2010). While planners have addressed the former three in great levels of detail for many decades, an involvement with food systems has, until recently, been notably absent from the portfolios of most planning departments around the world, despite the fact that virtually every city relies on a stable and secure food supply for the ongoing health and survival of its citizens (Pothukuchi and Kaufman, 2000).

For the past decade, the potential for planners to engage with food systems at the community level and beyond has begun to be explored and implemented by many planning researchers and practitioners overseas (e.g. Feenstra, 2002; Mendes, 2008; Pothukuchi, 2004). This field of research and practice has now become well established, particularly in North America, Europe and Australia,

and is commonly known as 'food systems planning' (Campbell, 2004). Food systems can be understood as the processes by which food is produced, processed, distributed, retailed, consumed and the associated waste products disposed of, as well as the associated inputs and outputs at each stage (Mendes, 2007). Food systems are closely linked with many aspects of a community's health and wellbeing, including health and nutrition, local economies, resource management, biodiversity, rural and urban landscapes, and amenity values (Pothukuchi and Kaufman, 2000). Planners who engage with food systems generally aim to utilise planning methodologies to help facilitate the creation of food systems which benefit these elements of communities, whilst working towards goals of long-term sustainability and resiliency to external shocks (Allen, et al., 2003; Clancy, 2004; Feenstra, 2002).

The growth in popularity of food systems planning in the past decade has been closely linked with a growing level of public awareness concerning some of the wide reaching impacts of 'conventional' industrialised food production and distribution systems (Sonnino and Marsden, 2006). As industrial agrifood systems became more widespread and well established in the latter half of the 20th century, some of the trade-off's for a bountiful food supply started to become apparent (Herm, 2010). Issues such as environmental degradation, declining nutritional values of processed foods, economic consolidation within large scale food sectors, and concerns around social justice issues within globalised food systems have received widespread attention from a range of research disciplines (Nestle, 2007; Pawlick, 2006). The dependence of large scale industrialised food systems on fossil fuels and other non-renewable inputs, and their vulnerability to projected future climate change scenarios, further emphasise the fact that there are serious issues needing to be addressed within these systems (Kirschenmann, 2010; Larsen, Ryan and Abraham, 2008; Newman, 2009). These problems, among others, essentially amount to market failures of the global industrialised food system. As these problems started to become more

pronounced, and public concern over them continued to grow, some planners recognised that there was the potential for planners to work within communities to address and mitigate these market failures, just as planners have done in other instances of market failure in sectors such as housing, transportation, energy, land use and resource management (Pothukuchi and Kaufman, 2000).

The extent to which food systems planning methodologies have been developed and implemented has varied from city to city and region to region. As described by Eaton (2008), the shape that specific initiatives will take, and the long-term success of them, is highly influenced by the political context in which they emerge. Many of the cities across North America, Europe and Australia which have incorporated food systems planning into local government activities are recognised as being particularly 'progressive', and many of them are working within an 'eco-city' vision (de la Salle and Holland, 2010).

Food systems were recognised as being a "stranger to the planning field" by Pothukuchi and Kaufman (2000: 113) over ten years ago, and since then dozens of cities across North America have adopted formalised food systems strategies and established a variety of focus groups comprised of food systems stakeholders (Schiff, 2008). The progress that the field has made became clear when the American Planning Association recently released a 'Policy Guide on Community and Regional Food Planning' (2007), which lays out an unofficial code of best practice for planners in North America to follow and build upon. Yet despite the widespread interest in food systems planning in these planning circles, the subject of food systems planning remains a 'stranger' to the New Zealand planning field, with the topic virtually unknown to most planning practitioners in this country. The research presented in this thesis sets out to explore the terrain of New Zealand food systems, and to evaluate the opportunities for food systems planning to become a recognised and useful methodological framework for solving problems within local food systems as it has in other countries.

1.2 The Research

Initial scoping work before this research project was initiated revealed a near complete lack of research or data about food systems planning in New Zealand. One research report by Anna Mulqueen-Star (2009) has explored opportunities for planning to support and enhance *urban food production* in New Zealand towns and cities. While her report is highly informative and comprehensive on that topic, its scope is limited to smaller scale, highly urban examples of food production, such as community gardens, composting initiatives, or public plantings of fruit and nut trees. The research did not extend into larger scale or rurally based farming sectors and their associated processing and distribution networks, a limitation which Mulqueen-Star herself acknowledged. Aside from Mulqueen-Star's (2009) research, no published literature could be found on the topic of food systems planning in New Zealand. Thus, this research project set out to increase knowledge and understanding of the potentials for the implementation of food systems planning frameworks in New Zealand, at scales beyond urban food production.

For the purposes of this research, food systems were defined in their broadest sense, considered to incorporate the entire 'life-cycle' of food products from production through to processing, distribution, retailing, consumption and waste disposal, as well as the associated social, environmental and economic inputs and outputs associated with each stage of the process (Campbell, 2004; Pothukuchi and Kaufman, 2000). Due to the lack of pre-existing research in this field within the New Zealand context, it was seen as important to conduct the research from a wide scope, to gauge opportunities for future action in a fairly general sense. The research direction was set to gather information on New Zealand food systems at scales ranging from small farmers catering to local markets, to large scale and export orientated production and processing systems. In addition to this, an evaluation of the present and potential future levels of involvement with food systems was carried out for governments at the central,

regional and district levels within New Zealand.

A qualitative approach was taken for the research, with the aim of eliciting in-depth and specialist knowledge about various elements of New Zealand food systems and governments at different levels. Key informant interviews were carried out with individuals from a diverse range of backgrounds in both the planning sector and from within the food sector itself. The information gleaned from key informant interviews was further supplemented by a survey of local government planning departments around the country on the topic of food systems planning, as well as document analysis of research reports and food industry reviews that have been carried out within individual sectors. Data collection was focused on addressing four research objectives, listed below, and sought to establish a well rounded understanding of food production and distribution systems within New Zealand, as well as evaluating the potential for additional support from governments at all levels in the future. The four primary research objectives were to:

1. Identify the general characteristics of food production and distribution systems in New Zealand, at scales ranging from small scale local to large scale export orientated food sectors
2. Determine the current level of central and local government involvement with New Zealand food systems
3. Identify opportunities for the development and implementation of food systems planning initiatives within both government and the food sector itself
4. Develop a set of key recommendations for the relevant sectors to assist them in carrying out the initial work required to establish a more coordinated, strategic and holistic approach to food systems planning in New Zealand

While the data was collected from a diverse range of key informants, it was analysed and interpreted using a series of key themes which were identified

based on international literature on food systems planning (see chapter two), in order to place the different perspectives within the context of potential future frameworks for these forms of planning.

In addressing research objective one, a thorough evaluation of the characteristics of food production, processing, and distribution platforms within New Zealand was carried out. This initial scoping of the food sector provided the necessary understanding to evaluate the subsequent research objectives. In addressing research objective two, a similarly thorough evaluation was conducted on the levels of involvement of central and local governments with the food sector at all scales. By overlaying the findings about New Zealand food systems with data on the structures, functions and purposes of New Zealand governments, a number of opportunities for the development and implementation of food systems planning initiatives within both government and the food sector itself were identified, thus fulfilling research objective three. Finally, these opportunities were reduced down to a set of 15 recommendations for action, spanning across central government, local government and industry sectors, which was the goal of research objective four.

Overall, the research is intended as an initial investigation into the opportunities for food systems planning in New Zealand, rather than being a detailed 'how-to' guide for planners. Food systems are an incredibly broad field and New Zealand is a diverse country. Specific situations vary from district to district and region to region. Environmental, social, economic and cultural factors are all something that need to be considered by planners engaging in food systems initiatives. There is no one 'right way' to do food systems planning. This thesis aims to introduce planners to the concept of food systems planning, so that they can begin to consider relevant activities through a 'food lens'. Additionally, the research findings emphasise the intrinsically responsive nature of planning mechanisms within New Zealand, and as such, action and engagement driven

from the community level will also be important for the development of sustainable food systems. With this consideration, this thesis is intended to be an informative document for persons involved with food production and processing in New Zealand, whether it be at a commercial or community level, as much as it is for planners themselves.

1.3 The Thesis

After this introduction, Chapter 2 presents a comprehensive exploration of international literature on the emergence, development and current shape of research and practice in the food systems planning field. A wide range of literature was selected to provide for a well informed perspective on the theoretical and practical dimensions of food systems planning, considering that it is a virtually unknown subject in this country. Chapter 3 outlines the methodological frameworks by which the research data was collected, analysed and interpreted for this project.

Chapter 4 characterises New Zealand food systems at a range of scales from local to large scale export sectors. This is followed in Chapter 5 by an exploration on the levels and nature of involvement of central and local governments with food systems in New Zealand. Chapter 6 then goes on to explore a range of industry based initiatives targeted at working towards sustainable food systems in New Zealand. Chapter 7 reviews international case studies and codes of best practice for food systems planning practice as established overseas, in order to stimulate thinking and inform the subsequent Chapter 8 which outlines the identified opportunities for food systems planning in New Zealand and outlines fifteen key recommendations for action. Chapter 9 concludes the thesis, summing up the main findings as well as identifying limitations to the project and opportunities for further research.

Overall, this thesis aims to promote the development of a more coordinated, strategic and holistic approach to food systems planning in New Zealand, as part of a wider vision incorporating the central objectives of planning, which are to create healthy, liveable, and resilient communities which work towards long-term sustainability on social, environmental and economic levels. The challenges that will be confronting New Zealand and indeed the world in the coming years and decades are likely to be extremely difficult ones. We are lucky in that through scientific research we have been pre-warned about upcoming future scenarios regarding energy scarcity, the depletion of natural resources including fresh water and minerals such as phosphate which are used in fertiliser production, as well as likely prospects of extremely volatile global economic markets as a result of these pressures (Cordell, et al., 2009; Heinberg, 2007; Newman, 2009). The impacts of global climate change have already begun to take hold, and they will most likely continue to intensify over the coming years, producing not only more extreme weather events such as floods, droughts and storms, but also an overall lessening in the stability and predictability of weather patterns (McKibben, 2010). These pre-warnings from scientists around the world have given us a precious window of opportunity in which to develop diverse, resilient, low-input and low-impact ways of life, including food systems and beyond, so that if and when these adverse events occur, we will be prepared for them.

2 Literature Review

2.1 Introduction

Access to food is a basic requirement of life, as important as air, water and shelter. Our modern society, through global and industrialised processes, has developed a vast and complex arrangement by which food is produced, processed, distributed and consumed. In recent years, emerging trends within global industrialised food systems have highlighted that there are significant problems that need to be addressed in order for sustainability of these systems to be achieved. This literature review examines international debates, knowledge, and research surrounding the emergence and development of a field known as food systems planning. Food systems planning is inherently multidisciplinary in nature, and as such, literature covering topics such as resource scarcity, sustainable agriculture, local economic development and social equity are also covered where relevant, to place food systems planning within its broader context. Examples of different types of food systems initiatives that planners can work collaboratively with are also described. Together, these elements inform an analysis of the New Zealand context that occurs later in this thesis, and provide a framework to identify possible opportunities for implementing food systems planning practice in New Zealand.

The chapter first addresses the food system in general, in section 2.2. Hendrickson and Heffernan (2002) suggest that understanding the structure, strengths, and weaknesses of food systems helps to position realistic alternatives, and that is the goal of this section. A brief history of major developments in

food production and distribution technologies over the past hundred and fifty years sets the context for introducing several major emerging threats and challenges that are likely to have (or are already having) a profound effect on the way we produce and consume food on a global scale. These issues, which include concerns for social, environmental and economic sustainability of the food system, are summarised and discussed in order to provide an understanding of the reasons for the emergence of new, so called 'alternative' food systems. These alternative food systems have manifested in a variety of forms around the world, often positioning themselves in opposition to the mainstream 'conventional' food system, and claiming to provide a more sustainable alternative. The emergence of and general themes within the alternative food systems movement is discussed at the end of section 2.2. Some theoretical debates around the dichotomy of 'conventional' versus 'alternative' food systems are also discussed later in the chapter.

Section 2.3 moves on to focus in on food systems planning itself. Food systems planning is a systems-oriented approach to addressing food and sustainability issues, and utilises a multidisciplinary framework combined with core planning principles to achieve its outcomes. As such, food systems planning needs to work with both 'mainstream' food systems, which provide the bulk of the food to local populations, as well as 'alternative' food systems, which while producing less food in total, are a site of active engagement with communities, where ideas around sustainability are explored and experimented with on a practical level. Section 2.3 begins with an examination of the emergence of food systems planning as a recognised field of planning theory and practice. This includes a review of some of the 'flagship' papers on food systems planning, by authors who are widely seen to be pioneers in the field. The section then moves on to examine in more detail the theoretical and conceptual foundations of food systems

planning. This includes some of the most active and long running debates in food systems planning literature, the most prominent of which is the debate around the role of scale in a sustainable food system model. While many activists, practitioners, and academics have come to advocate for 'localisation' and decentralisation of food systems as the solution to many of the challenges covered in section 2.2, this notion is hotly contested by many authors who claim that such activists have fallen into a narrow minded or romanticised 'local trap' by which they fail to recognise that scale is not inherently conflated with any particular social, economic, or environmental outcome. Section 2.3 then moves on to examine the various methods by which food systems planning is practised and implemented in different situations. Upon exploring the different elements of planning practice in relation to food systems planning, it becomes apparent that more questions are raised of a theoretical nature. As such, the section also looks at literature which seeks to address the theory-practice gap within food systems planning. Much of this literature seeks to further integrate theory and practice, and strongly promotes the role of research and evaluation in food systems planning as well as an increased level of networking and communication between practitioners, academics, governments, farmers, and other stakeholders within the broader field of food systems planning.

2.2 The Food System

The term 'food system' is widely used in agricultural and planning literature. For the purposes of this research we will use the simple definition of food system provided by Pothukuchi and Kaufman (2000) which describes it as "the chain of activities connecting food production, processing, distribution, consumption, and waste management, as well as all the associated regulatory institutions and activities" (Pothukuchi and Kaufman, 2000: 113), but also incorporating the inputs and outputs associated with these activities which are also considered by

many to be part of the food system, as illustrated by authors such as Campbell (2004). In this case, inputs could include things like water, labour, fertilisers, energy, and so on, and outputs could include the obvious 'food' and associated biproducts, but also the less tangible outputs such as environmental and social effects of food systems activities. This section will review the general characteristics of modern conventional food systems in a generic sense; examine some of the problems and challenges arising out of them; and outline some examples of alternative systems that have developed alongside this mainstream food system as a response to the threats and challenges presented. This overview of the food system provides the context within which the relatively recently formed field of food systems planning has emerged.

2.2.1 The development and features of modern conventional food systems

Since the mid-19th century, unprecedented changes have occurred with regards to human life on this planet (Heinberg, 2007). The industrial revolution brought with it significant developments in technology, transport, manufacturing, and agricultural methods. These changes went on to influence almost every aspect of human life (Cleaver, 1972). Many of the developments of the industrial revolution were attributed with providing a greater quality of life to most citizens of industrialised countries (Cleaver, 1972). These technologies also allowed for a rapid and dramatic increase in the human population, an increase which still continues today (Cordell, et al., 2009). The food system is no exception. Developments in technology beginning in the 18th century have radically transformed the ways in which food is grown, processed, distributed, consumed, and the associated 'waste' products disposed of. Giovannucci, Barham and Pirog (2009) provide a useful synopsis of the characteristics of the pre-industrial food system. Prior to the 19th century, nearly all of the food consumed by populations was sourced from within a very close proximity to where people lived, typically within one days travel distance. Even when some trade in 'exotic' goods such as

tea, coffee, and spices began to occur, these goods were considered luxuries and by no means contributed a significant amount to one's daily dietary intake. The immediate community was in close contact with food and agriculture, with many either growing food themselves or being involved in direct exchanges with farmers. Beyond basic techniques such as drying, salting, or pickling, foods were rarely processed or packaged in any significant way prior to being prepared in the home. Specific diets of populations were seasonal in nature, being based on what was available at any given time from within the local area (Giovannucci, et al., 2009).

Since the industrial revolution, all of this has changed. Global trade has allowed for our relationships with food to move beyond a 'local and seasonal' model. Developments in transport technologies including more frequent, rapid and refrigerated shipping routes have facilitated year round trade with far flung destinations - a system which is highly dependent on fossil fuels and other resources (Francis et al., 2008). Cultural mixing via emigration and media has led to a hugely increased demand for globally sourced foods (Giovannucci et al., 2009). With these developments in the global community, the modern food system was born. This mainstream, industrialised food system is widely referred to in the literature as the 'conventional' food system, as compared to non-conventional 'alternative' food systems. While debates exist around the terminologies of 'conventional' and 'alternative' food systems and the appropriateness of these, for the sake of consistency with the literature these terminologies will be adopted within this thesis (Harris, 2010).

In a broad sense, the conventional food system of today is a globalised network of production, processing, distribution, storage and retail activities that are operated at a large-scale corporate level (Harris, 2010). This dominant agricultural system produces the vast majority of our food and fibre at levels of efficiency that were unknown in pre-industrial times (Feenstra, 2002). This

efficiency has been achieved via 'economies of scale', and technological and logistical developments that could only occur where large amounts of capital investment are involved. This was demonstrated during the 'green revolution' of the 1950's, where agriculture became not only heavily industrialised at a physical level, but also highly consolidated at an economic level (Cleaver, 1972; Hendrickson and Heffernan, 2002). A clear trend in all parts of the food system is high levels of horizontal and vertical integration among food related businesses. Vertical integration involves companies investing at different stages of the food system, for example owning farms to produce grains, owning the flour mills and factories where this is processed in to bread, and sometimes extending as far as owning the retail outlets where this bread is sold, or a fertiliser production plant to provide fertiliser to the farms (Donald, 2008). Horizontal integration involves buying up other businesses at the same level of the food system - for instance buying more grain farms - in order to increase economies of scale and market share, while simultaneously decreasing competition (Hendrickson and Heffernan, 2002). This economic consolidation within the agrifood sector has resulted in an 'hourglass' food system whereby millions of farmers feed billions of consumers through an ever narrowing selection of a few large processing, distribution and retail systems (Harris, 2010).

Several traits characterise the production modes of the conventional food system. They are highly specialised, highly mechanised, and highly routinised (Ikerd, 1993). It is now common for farmers to grow only one crop, whether it is wheat or cows or corn, and in many cases, certain agricultural regions have come specialise in just one or two crops as the bulk of their production (Donald, 2008). This specialisation provides the efficiency and economies of scale required to be able to compete within international commodity markets, where the price per ton of bulk raw product can fluctuate on a daily or weekly basis in relation to global demand (Hinrichs, 2003). In many countries, farming systems are subsidised by governments to the extent that the price that goods such as corn or

grains sell for in commodity markets are below the true price that they cost to produce (Aerni, 2009). Conventional farming systems are also notable for their sometimes heavy use of synthetic inputs in the form of fertilisers, pesticides, and herbicides (American Planning Association, 2007). Within monoculture cropping systems, where only one kind of crop is grown en masse, there is no opportunity for a balance to occur in the farm ecosystem, making crops vulnerable to large scale pest or disease attack. This effect is further exacerbated by commercial crops being bred in conjunction with the use of certain agricultural chemicals, creating a dependency of sorts (Fukuoka, 1978).

Many authors (such as Donald, 2008; Guthman, 2008; and Ikerd, 1993) see the conventional food system as essentially a project of the neoliberal ideologies that have spread across the globe over the past few decades. Neoliberalism is the political theory centred around economics that proposes that "human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterised by strong private property rights, free markets, and free trade" (Guthman, 2008: 1172). The main characteristics of applied neoliberal agendas include privatisation of public resources, reduction of public expenditure, the reduction of regulations seen as a hindrance to business, reduction of labour costs, and the displacement of governance responsibilities away from the nation state (Guthman, 2008). The bottom line is economic gains, and often other 'costs' associated with a production system, mainly environmental, social, or health costs, are 'externalised' in the sense that they are not accounted for within the production system itself but rather are left to be dealt with by government departments or simply absorbed by communities and the environment (MacRae, 1999). Ikerd (1993) suggests that it is this philosophical outlook, which views farming purely as a business and food as a commodity, that draws the clear distinction between

mainstream and alternative food systems.

While many segments of the food system currently operate under a neoliberal paradigm, the implementation has not been as complete as it has in other sectors. Privatisation of land and water rights and the signing of free trade agreements have been widespread, but many governments are still closely involved with issues of food safety and other environmental and health regulations (Guthman, 2008). However, some have suggested that while governments retain control over some segments of the food system, economic power translates to political power and many rules and regulations within the food system are now weighted in favour of large multinational agribusiness firms (Hendrickson and Heffernan, 2002). The conventional food system is therefore both a product of and a driver of neoliberal forms of governance. At the same time, authors have cautioned against blaming globalisation (Hinrichs, 2007) or neoliberalisation (Guthman, 2008) in and of itself as a root cause of the problems emerging from conventional food systems. They note that many other changes and developments have occurred in culture, technology, industry, and society in the past century that also contribute to the complex web of causality for any problem.

2.2.2 Threats and challenges for conventional food systems

While there is little doubt that developments in food and agriculture in the past century have greatly increased the amount of food produced in the world and the efficiency with which it is processed and distributed (Feenstra, 2002; Ikerd, 1993), these developments have come at a significant cost (Donald, et al., 2010). Now that the conventional food system is well established, some of the unforeseen social, environmental and economic consequences of this neoliberal paradigm are now becoming apparent (Francis, et al., 2008). In addition to this,

several emerging threats, including resource scarcity, climate change, and the ever growing human population pose new challenges to the global food system. In many cases, the impacts of these events are complex and heavily intertwined with elements of other social and organisational sectors (Harris, 2010). This section will review the general characteristics of some of the main critiques levelled at conventional industrialised food systems and some of the more urgent challenges that are facing it.

Social Impacts

Social factors, while being some of the hardest to measure (Schönhart, Penker and Schmid, 2009), are among the most widely discussed elements within critiques of the conventional food system. Food systems can influence people's lives in a multitude of ways. Many people are employed within the food and agricultural sectors. Additionally, food is often an essential component of cultural identity and local tradition (Koc and Dahlberg, 1999). Many social activities are also centred around food consumption, whether it is a family dinner at home, going out with friends at a restaurant, or larger scale festivals or events. And, of course, everybody needs to eat, making food have one of the most intimate connections with the human body of any product - and it subsequently has a huge influence on a person's physical and emotional wellbeing (Feenstra, 1997).

Several authors (Feagan, 2007; Feenstra, 2002; Pothukuchi, 2004) have put forth the argument that the conventional food system in its current form has profoundly altered our personal experiences of life in a detrimental way. The loss of direct connections with the sources of our food and the processes by which it comes to be a 'product' are said to contribute to physical and psychological 'distancing' from our food (Pothukuchi, 2004). The source of our food has

shifted from a regionally based and physically tangible 'hinterland' to a distant, unknown and anonymous 'global hinterland', making a full knowledge of where our food comes from and the impacts that it is having nearly impossible to achieve (de la Salle, 2010). This distancing effect of long distance distribution networks has been a topic of concern for many researchers in food systems planning, particularly in its ability to significantly reduce corporate accountability and responsibility for social, environmental or economic damages done in distant places (Kloppenburger, Hendrickson and Stevenson, 1996). As Feenstra (2002: 100) puts it, the modern conventional food system

...has led to the disintegration of the social and spiritual fabric - critical connections - that are part of a community's food system. People have become disconnected from the sources of their sustenance - the land, the farmers, and the taste and quality of the food itself. They have become passive recipients in a rather homogeneous system of nutrient distribution in which real food is almost considered a luxury - for upper and middle-class eaters. For these and other reasons, the long-term sustainability of the current food system is in question.

This physical and psychological distancing within the food system has also been described by some as a 'disembedding' of food from its attachments to any specific place (Winter, 2003). Feagan (2007) describes how as food chains become stretched further and in ever more complex ways across space and time, disconnection grows between the general public and the social and environmental consequences of the food being grown and eaten (Feagan, 2007). This, in turn, erodes people's connections between food and place as well as cultural identities associated with food (Schönhart, et al., 2009). Another effect of distancing and the industrialisation of agriculture is the loss of traditional or 'lay' knowledge about local environments, farming practices, or traditional ways

of preparing or preserving locally grown crops. Fonte (2008) describes how the modernisation of the food industry, which is largely driven by export-oriented agro-industrialisation, marginalises the traditional lay knowledge of local farmers, classifying it as outdated or obsolete. Because of this marginalisation of lay knowledge, it has not been allowed to properly develop alongside, and be integrated with, technical knowledge. As such, local specialist knowledge which does not fit within the agro-industrial model of the conventional food system is being lost in some areas (Fonte, 2008).

The social impacts of conventional food systems can be even more pronounced in rural areas that are involved in agriculture and food processing (Harris, 2010). During the 20th century, rural landscapes have dramatically shifted from being comprised of small to medium sized, diversified, family owned farms to large-scale, specialised, monoculture growing operations. As a result of heavy mechanisation and economic consolidation within the agricultural sector, agricultural production has increased while the numbers of farms and farmers have decreased (Hinrichs, 2003). In many cases, the diversity of crops grown in some areas has decreased to the extent that entire regions specialise in just one or two crops destined for export markets. For example in Mexico, thousands of varieties of corn which have been acclimatised to various environmental niches for millennia are now being displaced by a select few highly modified varieties, most of which do not have the same pest and disease resistance as naturalised corn (Feagan, 2008). At the same time the proportion of food imported into agricultural regions to feed the farmers and other citizens living there has also increased dramatically due to a lack of diversity in the foodstuffs grown in these areas (Hinrichs, 2003). Also, with an increasing level of complexity in food distribution and processing channels, and the increasing power of large agribusiness firms, has meant that the share that the farmer receives of the retail

value of a product has been decreasing, making quality rural livelihoods ever more difficult to achieve (Starr, 2003). These difficulties have been driving many people to move from rural to urban areas, leading to a collapse of entire rural communities, for example when the number of children decreases below a level at which a local school can remain functional, or decreasing populations making other businesses and services in rural areas non-viable (Feenstra, 2002).

Public Health

Public health is also frequently included in discussion of the social impacts of food systems (e.g. American Planning Association, 2007; Pothukuchi, 2004; Rayner, Barlin, and Lang, 2008). Changes in the way that food is distributed and the places that it is distributed from have altered accessibility to wholesome, nutritious and affordable food (Campbell, 2004). Since the 'green revolution' of the mid-20th century, crops have been bred for their physical durability during transport and their long shelf-life, rather than for their nutritional qualities or flavour, resulting in many examples of bland, watery, yet good-looking items of fresh produce (Kloppenburger, Hendrickson and Stevenson, 1996). The rise in fast food and convenience outlets has resulted in a phenomenon known as 'food deserts', in which supermarkets and fresh produce markets are only sparsely distributed in urban areas compared to 'ready to eat' or 'junk food' outlets (Pothukuchi, 2004). The changes in diet that have occurred as a result of the widespread availability of low cost, highly processed foods have been clearly linked to contributing to a large increase in diet related diseases such as obesity, diabetes and some types of cancer in industrialised countries (Harris, 2010; Rayner, et al. 2008). At the same time, hunger and malnutrition is still occurring in some societal sectors in developed countries despite an overall abundance of food (Pothukuchi, 2004). The mainstream food system has been criticised for producing and promoting foods that are high in fats, sugars, salt, and other

additives and residues of agricultural chemicals. While some countries have implemented additional labelling requirements on certain foods, this is still only a small step towards increasing the nutritional quality of foods that are available to the general public and in particular those from a lower socio-economic status (Rayner, et al., 2008).

Of equal significance to the social side effects of conventional food systems, are the environmental impacts that they have at the various stages of production, processing, distribution, consumption and waste disposal (Frances, et al., 2008; Pothukuchi, 2004). These environmental effects include pesticide, herbicide and nutrient leaching into soils and waterways, water shortages due to high levels of irrigation, loss of biodiversity in agricultural regions due to habitat loss, pollution, and monoculture based 'agricultural deserts', as well as significant emissions of greenhouse gases coming from agriculture, food processing and distribution systems (Harris, 2010). In addition to this, many products of the conventional food system come in plastic containers or wrapping, contributing to city waste problems (Pothukuchi and Kaufman, 1999). Few, if any, of these environmental costs are accounted for within the food system itself, and are instead left to be dealt with by governments, communities, or the environment itself, in effect becoming 'externalities' of the conventional food system (Aerni, 2009; Campbell, 2004).

Several serious challenges also lie on the horizon for the global food system and humanity as a whole. These include climate change, increasing scarcity of non-renewable resources, and an increasing global population (Rayner, et al., 2008). Recent events in global food markets, including an international 'food crisis' in 2008 involving price spikes and shortages of staple food supplies in some areas, are thought to have been triggered by these factors (Peters, et al., 2008). Climate

change, occurring as a result of increasing levels of greenhouse gases, as well as other large scale anthropogenic environmental alterations such as deforestation, has already begun to be observed around the world, and is forecasted to worsen in coming decades (Mendes, 2007). This includes more unpredictable weather events including increased incidents of droughts and flooding in certain areas, a phenomenon which has potentially significant effects for farming and agriculture (Frances and Doran, 2010). In the United States, the diversity in the number of crops grown has decreased by 93% in the last century, and figures are similar for many other countries (Giovannucci, et al., 2009). This leaves the entire agricultural sector vulnerable to climate change, since the few crops that are left are bred for the existing temperature ranges and weather patterns.

Resource Scarcity

Many authors also describe resource scarcity as one of the major threats to humanity in the coming century (e.g. Cordell, Drangert and White, 2009; Frances, et al., 2008; Ikerd, 1993; Rayner, et al., 2008). The most obvious of these is the heavy dependence of conventional food systems on fossil fuels as a primary source of energy at every stage of production and distribution (Harris, 2010). Not only is this use of fossil fuel contributing to climate change and global warming, but it is also inherently unsustainable given the limited supply of fossil fuels left on the planet (Mariola, 2008). The issue of 'peak oil' has motivated many to question whether humanity can continue to rely on foods that are produced and distributed within extremely energy intensive globalised systems (American Planning Association, 2007). The challenges for agriculture in the face of fuel scarcity is compounded by the fact that one major alternative to fossil fuels is 'biofuels' which are primarily derived from agricultural crops, and as such will be increasingly competing for land resources (Peters, et al., 2008).

Another less talked about, but equally significant resource shortage that will be confronting industrialised agriculture system in the next 50 to 100 years is a shortage of phosphate, a non-renewable mineral resource that is a key ingredient in most fertilisers used in conventional agriculture. Cordell, et al. (2009) have clearly warned of an imminent phosphorous crisis, which they have termed 'peak phosphorous'. Based on collated data from around the world on geological reserves of raw phosphate and current and projected rates of global use of phosphate fertilisers, they predict that global phosphate reserves will be completely depleted in 50-100 years. To add to this, much of the phosphate that is included in this estimate is of low quality and is difficult to extract and will most certainly raise the price of phosphate considerably when those reserves have to be used. The primary reasons that phosphate is depleting is because it gets removed from the land either via runoff, or within the crops that are taken from the land and subsequently end up in human waste treatment plants, usually being pumped out to sea or otherwise stored in ways that is inaccessible to agriculture. Cordell, et al. (2009) describe measures that can be taken to preserve or retain current phosphate supplies, including decreased consumption of meat and dairy products, a change in farming practices to reduce demands for fertilisation and prevent runoff, and, most importantly, the potential for recovering nutrients from municipal sewerage systems. They cite a "lack of institutional fit" (Cordell, et al., 2009: 302) for phosphate and other resource related threats as the cause of most stakeholders seeing the issues as peripheral and not their responsibility to deal with.

When trying to establish the underlying reasons of why conventional food and agriculture systems have ended up in these situations, most explanations seem to arrive at conclusions based around concepts of market failure and the narrow focus of governments and policymakers (MacRae, 1999; McClintock, 2010;

Rayner, et al., 2008). Donald, et al. (2010) have postulated that the market-driven conventional food system has failed to effectively provide a sustainable, nutritious and equitable supply of food to the world's population. If the market is focusing on the economic bottom line, and legislative or industry based regulations are not in place to mitigate the adverse consequences, then adverse outcomes will continue to occur. MacRae (1999) argues that attention to these problems within the food system are extremely fragmented, both conceptually and also in the way that they are practically addressed by various agencies. Policies, plans and programs are organised to support specific industries, or to target isolated environmental or social issues. In addition to this, responsibilities of any given agency are vague and often uncoordinated at an inter-agency level, and there are few voices speaking to the need for systems approaches to policy making (MacRae, 1999). This issue can be even more pronounced when novel situations arise. In the example of nutrient recovery from human waste, initiatives such as urine recycling have "no clear institutional or organisational home" (Cordell, et al., 2009). McClintock (2010) argues that this lack of an overall systems perspective on problems within food production and supply chains has led to the creation of many "solutions" which actually just move an issue to another location, or delay the inevitable consequences of unsustainable use of non-renewable resources. Francis, et al. (2008) describe how the narrowly focused evaluations on measures of sustainability may show that systems are adapting adequately in the short term, however they are usually not comprehensive enough to determine the true sustainability of our modern food systems. Illustrating this narrowness of focus, Rayner et al. (2008) observe that many of the problems and challenges faced within the agricultural sector have received considerable policy attention, challenges within food processing and distribution sectors which are equally as significant have received little attention. As such they argue strongly for an interdisciplinary, holistically focused and

long-term approach to evaluation of problems and potential solutions (McClintock, 2010; Rayner et al., 2008).

2.2.3 'Alternative' food systems as a response to the mainstream

Many of the characteristics of conventional industrialised food systems, as discussed in the previous sections, have raised concerns among many communities, particularly in North America and Europe (Feenstra, 2002). As a result, many so-called 'alternative food initiatives' have appeared around the world in various forms in recent decades (Allen, et al., 2003). The overall goal of most alternative food initiatives is to provide a functional food system model that is "more environmentally sound, more economically viable for a larger percentage of community members, and more socially, culturally, and spiritually healthful" (Feenstra, 2002: 100). The ways in which groups aim to achieve this goal are diverse. Examples include farmers markets, 'community supported agriculture' systems, organic food movements, 'fair trade' buying and certification programs, urban gardens, community kitchens, 'buy local' campaigns, and a plethora of variations on these general themes (Starr, 2003). One of the main unifying characteristics of alternative food initiatives is that the majority of them frame themselves as "opposing the global by reconstructing the local" (Allen, et al., 2003: 61), and their goals and objectives usually centre around reversing the processes of industrial food systems that they perceive as being harmful (Guthman, 2008). Another common element is the inclusion of 'community democracy' by encouraging people to become active 'food citizens' (Feenstra, 2002).

The emergence of alternative food initiatives began to occur in the 1960s and 1970s in the form of fair trade, organic, and 'back to the land' movements (Starr, 2003). Around the same time, 'community supported agriculture' models began

to be implemented in Japan and Europe, with the aim of strengthening connections between local farmers and consumers (Starr, 2003). As food systems became more globalised, featuring a homogeneous selection of processed or chemically treated foods, various movements arose which aimed to increase consumers appreciation of locally sourced, seasonal, whole foods and their use in traditional as well as innovative cooking styles (Mariola, 2008). The most well known of these is the 'Slow Food' movement which originated in Europe in the 1980s (Mariola, 2008). Many other movements or initiatives have also encouraged consumer awareness of the environmental, social, and health impacts of the products of the conventional food system (Fonte, 2008). This trend in select sectors of food production and consumption systems is commonly known as the 'quality turn' (Feagan, 2007).

Some alternative food initiatives are based on an 'oppositional' philosophy by which they aim to achieve their goals by pitching themselves in direct opposition to the established conventions of the mainstream food system (Allen, et al., 2003). Other initiatives are implemented as more of an 'alternative' system, designed to operate alongside conventional food systems and fill gaps where those systems are seen to be failing (Allen, et al., 2003; Cox, et al., 2008).

These initiatives in their various manifestations have not been immune from political and academic scrutiny. Many authors have stated that these so-called alternative food initiatives can be equally as fragmented, narrowly focused, and vulnerable to undesirable outcomes as the very systems which they seek to oppose (see Hinrichs, 2003; Sonnino and Marsden, 2006). One of the challenges facing alternative food initiatives in the past two decades is the risk of appropriation by conventional corporate business models. An often discussed example is the organic movement, which in some places, such as California, has

become so large scale and industrialised that it operates under virtually the same structures and frameworks as the conventional food system, the only difference being an 'organic' sticker on the produce or packaging (Allen, et al., 2003; Guthman, 2008). A more recent example of the appropriation phenomenon is the cooptation of the marketing tool of 'local foods' by large agribusiness and retail firms, through new and innovative distribution and processing channels (Donald, 2008). This has presented a moral dilemma for some local foods activists, because often the larger businesses can deliver local foods effectively and efficiently, yet the profits of such activities are often going out of the region or offshore to wherever the shareholders may live (Carnes and Karsten, 2003).

Another notable critique of alternative food initiatives is that they have had a heavy emphasis on creating small scale, highly localised 'niche' food systems alternatives, but have failed to enter into agri-politics at scales which will catalyse positive changes for the bulk of large scale agriculture and processing sectors (Guthman, 2008). Because of these issues (and others), authors such as Hinrichs (2003), Pothukuchi (2004) and Francis et al. (2003, 2008) have called for a more interdisciplinary, strategic approach to theorising and managing the complexities of food systems, and they emphasise the urgent need to agree on key challenges and identify common goals if progress is to be made towards a truly sustainable food system for everyone.

The academic debates and theoretical foundations of alternative food initiatives are discussed further in section 2.3 of this literature review, and more specific examples and case studies of a variety of different alternative or sustainability-oriented food initiatives are covered in detail in Chapter 7, for the purposes of illustrating the types of groups and organisations that planners may work with when attempting to implement more strategic, holistic and coordinated food

systems planning practices. The problems and challenges seen within conventional food systems and the alternative initiatives created to oppose this present a wide range of opportunities for new and innovative forms of food systems planning.

2.3 Planning for Sustainable Food Systems

It is well known that food is one of the basic essentials of life, along with air, water and shelter. Historically, planning has addressed the latter three of these in great detail, yet food has been notably absent from planning agendas around the world (American Planning Association, 2007). Planners have sought to address problems of market failure in these sectors into their agendas, for example by regulating emissions into air and water, zoning land for different uses to help create functional and efficient urban and rural environments, and providing social housing when the market fails to provide adequate shelter to all people in society (Pothukuchi and Kaufman, 2000). Yet elements of the food system, which when viewed through an objective lens could most certainly fall within the planning portfolio, have been almost entirely ignored by planners (Clancy, 2004). It is only within the past decade that planners have begun to recognise the true significance that food systems can have in contributing to the success or failure of the broader goals and objectives of planning, such as enhancing quality of life and the functionality of society whilst working towards sustainability objectives (Mendes, 2008).

The adoption of food systems consideration into planning agendas has been patchy, and while food issues are now being extensively addressed by planners in some cities across North America and Europe (American Planning Association, 2007), other planning agencies around the world still fail to acknowledge food as a planning issue (Mendes, 2008). This section explores the emergence of food

systems planning as a new field of planning theory and practice, as well as examining some of the theoretical foundations and debates within food systems planning literature, ways in which food systems planning is practised, and problems and challenges facing food systems planning.

2.3.1 The emerging field of food systems planning

Planning is focused on enhancing the quality of life and practical functionality within communities, whilst working towards sustainability objectives. It is inherently multidisciplinary, focusing on the interconnections between different facets of a community such as transport, housing, industry, economy, the natural environment, and air and water quality (Pothukuchi and Kaufman, 2000). The food system is interconnected with many of these elements and more, yet food issues have traditionally been absent from the bulk of planning theory and practice (Clancy, 2004). There are a few exceptions to this, the most notable being Ebenezer Howard's 'garden city' concept detailed in his 1902 publication 'Garden cities of tomorrow' (Howard, 1965). The garden city concept sought to unify town and country, with the inclusion of a systematic attention to food production networks. It provided a nearly self sufficient agricultural model including in-built infrastructure for the processing and distribution of agricultural goods (Howard, 1965). However, Howard's concept failed to catch on in the mainstream, and the green revolution of the mid-20th century extinguished any perceived necessity for planning attention to food issues, because the problem of supplying food to the masses was seen to have been solved by new advances in agriculture (Campbell, 2004). Planners have also touched on food systems issues in more recent times, but only indirectly or in a single-issue sense, for example farmland preservation by restricting urban sprawl, or zoning for the location of supermarkets and other food outlets with consideration of food access within urban environments (Pothukuchi and

Kaufman, 2000).

When some of the problems of conventional food systems started to become apparent in recent decades, a few planners, human geographers, and sociologists began to more seriously consider the role of the food system in a wide range of contexts, and question whether the market on its own was succeeding in providing a nutritionally adequate, affordable, safe and sustainable food supply to urban populations (Peters, et al., 2008). Ikerd (1993) suggested that while a linear approach focusing on individual problems within the food system may have been appropriate in the early stages of the industrialisation of agriculture, a more holistic 'systems' based approach will be required to negotiate the complex social, environmental and economic challenges presented in the post-industrial agricultural landscape. Kloppenburg, Hendrickson and Stevenson (1996) addressed many of the shortfalls of conventional food system management techniques by developing the idea of 'foodshed analysis'. Foodshed analysis utilises the concept of a 'watershed' but applied to food systems, to more fully understand the physical, social and economic flows of food and other inputs and outputs within the food system in a particular locality. Foodshed analysis can be used as both a tool for understanding the current status of any given food system, and a framework for envisioning potential alternatives (Peters, et al., 2008). Around the same time, some of the more forward thinking cities in North America including Toronto and San Francisco, began to include considerations of food systems in their planning agendas, in the form of dedicated 'food policy councils' within municipal organisations (Feenstra, 1997).

Around a decade ago, attention to food systems within planning circles began to gain significant traction. Pothukuchi and Kaufman (2000) in their landmark paper 'The food system: a stranger to the planning field' clearly drew connections between the stated aims and objectives of planning institutions around the

world, and the food system in its various stages from land use and farming through processing, distribution, consumption and waste disposal. The connections are numerous and diverse. In a broad sense, planning aims to improve human settlements and the quality of life within those settlements, and the food system is clearly linked to many of the processes going on within communities (Pothukuchi and Kaufman, 1999; 2000). This idea can be fleshed out with many more specific examples, which were further developed by other authors like Allen, et al. (2003), Clancy (2004) and Feenstra (2002). The connections between the food system and planning are best summarised in the American Planning Association's 'Policy Guide on Community and Regional Food Planning' (2007: 3) which was produced by their organisation in response to the growing interest and involvement by their members (including the authors mentioned above) with food systems issues. The primary reasons for linking food systems with planning practice include, but are not limited to:

- Food systems activities take up a significant amount of urban and rural land
- The food system represents an important part of community and rural economies
- Food produced via conventional systems requires a significant amount of fossil fuels to produce, process, distribute, and dispose of the waste
- Farmland near metropolitan areas, and therefore the ability for metropolitan areas to produce food for themselves, is being lost at a rapid rate in some areas
- Pollution of ground and surface water and surrounding environments from the use of agricultural chemicals and industrial farming practices can pollute waterways and damage biodiversity of some areas
- Many households spend a significant portion of their weekly income on food

- Food waste is a significant proportion of the household, commercial and industrial wastebasket
- Many problems of illness and disease, ranging from hunger and malnutrition to obesity and diabetes, can be traced back to diet
- Transport related to the food system, whether it is the bulk distribution of goods or household and individual trips to supermarkets, comprise a significant portion of a city's vehicle traffic

With the reasons for including food in planning agendas becoming clearer, researchers set out to understand why these perspectives had not been considered by the majority of planning departments around the world. Pothukuchi and Kaufman (2000) surveyed several dozen planning agencies to determine the primary reasons for planners to resist considering food as being within the scope of planning interest. They found that not only were there ample excuses given for not engaging with food systems, but also that even in cities where a food policy council existed, there was minimal involvement with this subject by planning staff. Authors like Allen et al. (2003), Campbell (2004), Clancy (2004), Feenstra (2002) and others began to explore these issues in more detail. Some of the most common reasons given by planners for their lack of focus on food systems include: it does not fall within the scope of planning; it's a rural issue, not an urban issue; the food system is a private sector and market forces naturally provide for needs; planning agencies are not funded to address food systems issues; the food system is not 'broken' so why try to fix it; there is a lack of public pressure to engage in food systems issues; and that planners do not know enough about food systems to effectively address problems within them (Pothukuchi and Kaufman, 2000).

Clancy (2004), Mendes (2008) and Pothukuchi and Kaufman (1999; 2000), among others, have reflected on these attitudes within the planning profession to determine ways to increase the level of attention paid to food systems by planners. Clancy (2004) argued that in many cases, mandates do exist at different levels of governance that apply to food systems, although not explicitly. They found that it is often the way in which policies and objectives are interpreted by planners which prevent food systems from being included. As such, they encourage advocates and others engaging with planning departments on food topics to help planners understand the connections between the food system and the other areas of their interest (Clancy, 2004), or, as Mendes (2008) put it, to put food issues 'in plain sight' of governments and citizens. Most planners surveyed by Pothukuchi and Kaufman (2000) said that a clarification of plans and policies with regards to food, or inclusion of new specific food systems planning objectives, would greatly increase the likelihood of planners engaging with food systems. These authors are essentially calling for increased communication with planners on well targeted topics to illustrate that food systems planning can be conducted within existing planning frameworks without any radical changes to their departments. De la Salle (2010) describes the actions of planners who are advocating for food systems planning as attempting to "infuse planning and design practice with a renewed food and agriculture consciousness" (de la Salle, 2010: 12).

From these early works on the relationship between planning practice and food systems, a picture of a new field of planning - food systems planning - began to emerge. As definitions and conceptual frameworks began to evolve around the idea of food systems planning, support for the idea began to solidify (Donald, 2008). More and more planning theorists and practitioners began to view food systems through a planning lens, and incorporate these ideas into their practice.

Special journal issues have been devoted entirely to articles on food systems planning, and in 2007 the American Planning Association released a new guide for planners as mentioned earlier, entitled 'Policy Guide on Community and Regional Food Planning'.

Food systems planning could now be considered to be a fully fledged 'subfield' of urban and regional planning practice (Donald, 2008). With official recognition and practice guidelines from the American Planning Association, accessibility of information on food systems planning has increased for planners in North America and beyond. The essential ethos of food systems planning could be seen to be a blend of 'food security' and sustainability objectives. The Food and Agriculture Organisation of the United Nations defines security as being "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (Food and Agriculture Organisation, 2006: 1). Sustainability has been defined in a variety of ways but a commonly accepted broad definition can be found in the 1987 United Nations publication 'Our Common Future' also known as the 'Brundtland Report', which defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (Brundtland, 1987: 16). Food systems planning aims to achieve both of these objectives by implementing policies, plans and programmes that approach the food system in a holistic fashion by identifying strengths, weaknesses, threats and opportunities within current food systems, and the interconnections between various groups and organisations that could be further utilised for more sustainable processes within food systems (Campbell, 2004).

A key development of the solidification of food systems planning as a discipline

was the provision of seven general policies for planners to follow when pursuing food systems planning goals, as outlined in the American Planning Association's Policy Guide on Community and Regional Food Planning (2007). These policies can be interpreted in a variety of ways and are intended to be broad in scope and general in nature, but they represent the main general ideas expressed by food systems planners up until that point. They are:

1. Support comprehensive food planning process at the community and regional levels.
2. Support strengthening the local and regional economy by promoting local and regional food systems.
3. Support food systems that improve the health of the regions residents.
4. Support food systems that are ecologically sustainable.
5. Support food systems that are equitable and just
6. Support food systems that preserve and sustain diverse traditional food cultures of Native American and other ethnic minority communities
7. Support the development of state and federal legislation to facilitate community and regional food planning discussed in general policies 1 through 6.

(American Planning Association, 2007: 2)

2.3.2 Theoretical and conceptual frameworks of food systems planning

As described in earlier sections of this literature review, actions and initiatives that attempt remedy the problems of conventional food systems have been in existence for several decades. But the cohesive and recognised field of food systems planning evolved more slowly. Hinrichs (2003) describes that until recently, theory and practice in the field of food systems has been highly fragmented, often focusing on just one aspect of the overall system. In addition

to this, the bulk of attention has been given to the agricultural element of the system, with little focus on subsequent stages like processing and distribution. A holistic focus on the entire food systems from 'farm to fork' and beyond is what distinguishes food systems planning theory from earlier forms of food and agriculture theory. Donald, et al. (2010) reiterate this imbalance in focus on agriculture, but they view the existing literature as a useful resource for uncovering underlying assumptions in this field of discourse. Anderson and Cook (1999) questioned whether food systems planning was a case of 'practice in need of theory', and they found that there was indeed a lack of consensus over the most fundamental goals and definitions of food systems planning within literature and practice. The past decade has seen a large amount of material published on various theories surrounding food systems planning, and some heated and long-running debates about some of the most fundamental tenants of various food movements, including the concept of 'localisation', the appropriate level of governance in food systems, and the ways in which food systems planning should fit into the specific contexts of particular areas. The more that these issues have been debated, the more it has come to be revealed that early food systems planning initiatives were based on assumptions which when examined more closely are often nonsensical or contradictory (Born and Purcell, 2006). This 'teething period' for food systems planning theory has presented some serious difficulties for practitioners trying to defend their actions in various initiatives, but it has ultimately resulted in a more solid foundation from which food systems planning can move forward in a tangible way by establishing a common language and identifying shared goals and objectives (Pothukuchi, 2004).

The range of perspectives presented within food systems planning discourse is varied. At a fundamental level, theory is based around the notion that planning

is a useful tool for facilitating change toward sustainability, and authors attempt to decipher the best ways that planning mechanisms can be used in a food systems context. Some theories are directed at utilising current mainstream food systems frameworks in a more effective, sustainable and socially just way. Others claim that the problems evident within conventional food systems are inherently and deeply embedded within their frameworks and ideologies and that a new alternative system needs to be created to replace the current ineffective ones. Anderson and Cook (1999) examined some of the earlier food systems planning literature and argued for a need to create a consensus vision of a desirable food system, and a common language for food systems scholars to engage within. They stressed that the political philosophies and underlying assumptions about food policy need to be made explicit, in order to determine whether differences in perspectives arise from genuine differences in the broader vision for food systems sustainability, or whether they are instead artefacts of a person's underlying political beliefs (Anderson and Cook, 1999). Given that food systems planning is a subfield of planning as a whole, the American Planning Association has determined that most theory in this field will be based on some of the fundamental themes that thread through most planning discourse. These include:

1. The importance of community participation in all aspects of planning
2. The usefulness to all general policies of common planning activities in research, plan-making, plan-implementation, conflict resolution, and consensus building.
3. Recognition that all planning occurs in a political context and that political support may be garnered more easily for some issues than others.
4. The existence of tensions between and among general policies, which will require dialogue among stakeholders in particular communities and regions to resolve.

(American Planning Association, 2007: 7)

With regards to food systems planning in particular, some of the common goals are seen in the literature regardless of specific political outlooks and attitudes include ecological sustainability, social justice, democracy, better nutrition, food security, freshness, and quality (Born and Purcell, 2006). To some extent these themes represent the beginnings of identifying common goals as called for by Anderson and Cook (1999). It is the way that different strategies seek to achieve these goals that separate the different perspectives in food systems planning theory. Another of Anderson and Cook's (1999) suggested requirements for successful outcomes in food systems planning theory is closer attention to what is specifically meant by ambiguous terms such as 'community', 'local', 'sustainability' or 'social justice'. Much of the discourse on food systems planning centres around strengthening communities or localising food systems. But how is a community or 'local' defined? While the terms seem simple at first, closer examination finds that the boundaries are extremely fuzzy, with both community and local being socially constructed concepts with no clear physical boundaries. While a consensus on a clear definition of these terms does not yet exist, following on from Anderson and Cook's (1999) ideas, planners engaging in food systems activities should at least attempt to define what they mean by terms like this in their own specific context.

One of the big challenges for food systems planning theory has been to find a direction which not only works towards normative goals of environmental, social and economic sustainability, but also is realistically implementable in today's society. Unsustainable practices have become so deeply ingrained in day-to-day human life that any ideas that actually move towards remedying these problems may be viewed as overly radical or unrealistic (Allen, et al., 2003). Any

change within an established system as large as the food system are going to have impacts on a wide range of stakeholders. When some of these stakeholders are multinational agribusiness or food retail chains with a large amount of economic power and political influence, changes that aim to move away from the conventional industrialised food systems model may be extremely difficult to implement (Mendes, 2008). As such, many food systems planners have opted to take an incremental approach to theory - gently guiding society towards sustainability by creating plans and policies that will take a step in the right direction and open up opportunities for further progress (Kloppenburger, et al., 2000).

2.3.3 The role of scale in food systems planning

Scale, and more specifically 'the local', has played a central role in food systems planning literature and practice to date. Localisation of food systems has been promoted as a method by which communities can overcome the unwanted effects of conventional food systems, in essence "opposing the global by reconstructing the local" (Allen, et al., 2003: 61). Surveys have shown that consumers perceive 'local foods' as safe, pure, natural and fresh (Edwards-Jones, et al., 2008). What exactly is meant by 'localisation' has been at times ambiguous and quite variable within the literature. In cases where physical boundaries are drawn around the 'local', the size of local regions can vary from municipal boundaries or even individual suburbs, to entire national territories (Edwards-Jones, et al., 2008). The general idea of food system localisation is the idea of a city or region becoming more self-reliant in its food supply, by linking production and consumption around particular sites and aiming to achieve systems where the entire production, distribution, consumption and waste disposal process of a food product occurs within a given territorial boundary (Born and Purcell, 2006). In some literature this is described as 're-localisation'

because of the fact that prior to the industrial revolution, virtually all food systems were local food systems (Schönhart, et al., 2009).

Proponents of local food systems initiatives such as farmers markets, community supported agriculture, farm-to-school programmes, or local food networks claim that localisation reduces the environmental impact of food systems, supports the local economy, reduces carbon emissions, increases social justice and equity in the food system, and strengthens communities (DuPuis and Goodman, 2005). Others have argued that because different regions have different 'carrying capacities', sustainability should be regionalised (Sonnino, 2009). Hinrichs (2003) was one of the first to explicitly describe the dangers in creating a 'local' versus 'global' binary in which 'local is good' and 'global is bad', and whereby all negative outcomes in food systems are attributed to global capitalist models and all good outcomes are attributed to localised, community based models. Hinrichs (2003) also identified two distinct forms of localisation that were emerging. One of these is 'defensive' localism, in which regions desire to become more self reliant for the purposes of protecting a region against outside forces of 'otherness'. The other is 'diversity-receptive' localism, which views the boundaries between regions as permeable borders rather than barricades, and differences and exchange between different regions is expected and capitalised on. Advocates promoting a diversity-receptive form of localism aim to "amplify the richness of a place while keeping in mind the rights of a multi-faceted world" (Hinrichs, 2003: 37). In a similar way, Fonte (2008) distinguishes between localisation efforts that aim to produce food for the local area itself, as compared to localisation initiatives which focus on 'terroir', or the production of goods from the local area that are said to have additional qualities because they are from this area, and marketing those goods to distant consumers. DuPuis and Goodman (2005) warn of a romanticised notion of the local which

under the surface maintains the same societal inequalities and production inefficiencies as the globalised food system, providing only a cosmetic solution to the problems at hand.

Critiques of the theory of localisation have been numerous. One of the most well known discussions on this subject is Born and Purcell's (2006) article 'Avoiding the Local Trap', in which they go into detail about the troubles with assuming that localisation is going to inherently lead to any specific outcome. They describe the tendency for many advocates and practitioners to 'confuse a means with an ends' and think that it is the act of localisation in and of itself that will lead to environmental, social or economic sustainability outcomes. They describe this tendency as 'the local trap'. Born and Purcell (2006) argue that scales are not independent entities with their own inherent outcomes, but rather that scales are strategies used by certain actors to carry out a particular agenda, and that it is the nature of that agenda, not the scale itself, that leads to certain outcomes such as sustainability or social justice. On top of this, they point out that focusing only on one scale misses the crucial relationships between scales that result in a functioning multi-scalar system. One example of this is that case studies have shown that people engaged in local food movements are less likely to consider viable progressions toward sustainability at larger scales, for example national level policies or even broader options such as EU-wide laws mandating sustainable agricultural production (Born and Purcell, 2006).

DuPuis and Goodman (2005) illustrate several examples of how localisation can result in negative or 'zero-sum' outcomes for sustainability and justice goals. One example is that localisation can simply reinforce social elites and retain an inequitable distribution of wealth within the local system, at the expense of other local people. Due to smaller farms and smaller quantities of food involved

in catering for local food systems, localisation can also be less efficient in many ways, and result in unproductive inter-regional competition. Finally, localisation is not necessarily incompatible with globalisation and it is vulnerable to cooptation by existing large agribusiness and food retail firms in a similar way to the conventionalisation of organics that has already occurred (DuPuis and Goodman, 2005). Other authors have provided more examples of the potential for localisation to backfire. Local farmers may not necessarily be better environmental stewards, because they may lack the knowledge, money, or resources to implement sustainable farming practices as compared to larger scale farming operations with more capital and research capabilities (Hinrichs, 2003). Schönhart, et al. (2009) describe how a shift to local production can incur a new set of inefficiencies, for example if heated greenhouses, imported feed or fertilisers, or increased irrigation are required to produce crops locally that are normally imported. Mariola (2008) argues against the 'food miles' concept that proposes that food travelling shorter distances is more environmentally friendly than long-distance food distribution. He suggests that there are many ways that localisation can have the opposite effect, including many farmers taking small amounts of goods to markets in smaller vehicles, or more small processing plants which produce a smaller amount of goods. These localised systems will find it incredibly hard to compete with the highly efficient production and distribution systems of conventional large-scale food supply chains.

In order for a true comparison for the environmental impact of local versus import based supply chains, a whole 'life cycle analysis' of products which considers all inputs and outputs along the way, including social, environmental and economic effects, must be conducted (Edwards-Jones, et al., 2008). At present there is a lack of comprehensive life cycle analysis on local products so it is difficult to evaluate whether localised supply chains truly do reduce carbon

emissions and environmental impacts (Mariola, 2008). Schönhart, et al. (2009) suggest that while local systems may currently be inefficient, this may be because there is not the same level of infrastructure devoted to localised production chains as compared to specialised national or global scale distribution networks. An example of overcoming this could be for clusters of farmers in particular areas to combine the transportation of their goods in a single large truck, or to share farm equipment such as ploughs and tractors amongst farmers. The question remains of whether local systems would have the capital resources or the volumes of goods required to implement more efficient distribution systems.

Another of the key questions when evaluating 'import substitution' in localised supply chains, is what *kinds* of crops are being attempted to be grown locally that are normally grown elsewhere? Bellows and Hamm (2001) highlight that if crops such as tomatoes are grown in winter in temperate climates for the purposes of food system localisation, the energy use required for heating and lighting may well be higher than simply importing them from a warmer area that does not require these inputs. This suggestion raises broader issues including that if a shift to localised food systems is to have true environmental benefits, the diets of consumers will also have to change towards eating crops that can be grown naturally in that area in any given season. Another critical component of successful localisation is a move away from fossil fuel based production and distribution methods towards more sustainable options (Mariola, 2008). It may be sensible to retain lower population densities in highly productive agricultural regions, and transport food to urban centres via efficient distribution networks, than it is to try and base as much agricultural production as possible in close proximity to urban centres on small, inefficient farms, or in areas that do not have adequate amounts of arable land. Localisation is also claimed by many to increase the 'resiliency' of a community's food system (Feagan, 2007; Seyfang,

2006). Schönhart, et al. (2009) point out that localisation could in fact increase the vulnerability of a food system to large-scale natural events such as droughts or floods, and at the very least networks should be established and plans in place for regions to supplement each other's food supplies should the need arise.

These arguments are just some examples of a large amount of literature involving debates around the merits or otherwise of food system localisation. One of the clear outcomes from over ten years of discussion on the topic is that the concept of localisation is not as simple or innocent as it may first appear (DuPuis and Goodman, 2005). The other message from the literature has been that there is a need for more research in to the subject, and the actual effects of food system localisation need to be measured and evaluated in comparison to other models. Schönhart, et al. (2009) have described three main perspectives found in the debates around localisation: the optimistic view of localisation which has been referred to as the 'local trap'; the 'economic inefficiency' view which states that local systems can never be as efficient as larger scale systems (a 'global trap' of sorts); and a new emerging form of scalar discourse which advocates for 'reflexive localism', or viewing local systems in the context of a multi-scalar food production and distribution system whereby specific segments of food systems may be localised on a rational basis. Even some of the harshest critics of localisation theory (such as Born and Purcell, 2006; DuPuis and Goodman, 2005; and Hinrichs, 2003) have stated that their aim is not to discredit localisation in and of itself, but to encourage a more critical approach to it. They all accept that localisation, if implemented correctly, could indeed yield many social, environmental and economic benefits over current global industrialised food systems. The key task is to evaluate the trade-offs and the actual effects of switching to localised systems, and to perceive localisation as a strategy by which to achieve goals, rather than as a goal in itself (Schönhart, et al., 2009).

Current trends in thinking about localisation appear to be pointing towards a 'network theory' approach in which local food systems can recognise the importance of place and engage in import substitution activities where appropriate, while also acknowledging that inter-regional trade could be a part of a functional sustainable food system model (Feagan, 2007). In a recent article, Donald, et al. (2010: 172) describe that network theory involves a model which deals with "flows, processes and relationships rather than static or monolithic structures and systems", and establishing linkages and interdependencies within local networks as well as at other scales. The simplistic dichotomy of 'local' and 'global' needs to be abandoned in favour of an inclusive and reflexive conceptual framework that has no inherent assumptions about the outcomes associated with any given scale (DuPuis and Goodman, 2005). As far as what scale these systems would best be *managed* at, a growing body of literature supports the idea of conceptualising food systems within 'regional' contexts, which could potentially mirror 'bioregional' models which are natural regions based on climate or other geographical measures (Donald, et al., 2010; Feagan, 2007). Globally sourced products in the local food basket could be replaced with sustainably grown local produce where appropriate, and a stronger focus on the links, synergies and substitution possibilities should be given to the broader food system, rather than isolated analysis. Some degree of inter-regional trade will always be present if we are to retain some elements of our diets that have come to be norms, such as coffee, bananas and so on, and in these cases focus should be on acquiring these goods through sustainable, ethical and socially just sources (Schönhart, et al., 2009).

2.3.4 Food systems planning in its relevant context

The context in which food systems planning initiatives occur is another topic of key interest within the literature. All initiatives occur within a particular social, political, economic and historical context (Feagan, 2008). The extent to which initiatives are shaped by these contexts, or the way that these contexts determine which initiatives are implemented as opposed to rejected, is a subject that has received some attention in recent years (Clark, Munroe and Mansfield, 2010; Mendes, 2008). DuPuis and Goodman (2005), Fonte (2008), Rayner, et al. (2008) and others have observed marked and distinct differences in the characteristics of sustainable food systems activism in North America as compared to Europe and the UK, differences which are thought to emerge from the particular historical, social and political climates of those places. Aerni (2009) compared public debates around sustainable agriculture in both Switzerland and New Zealand. He found that the form that these debates took in each country tended to be shaped by dominant political stakeholders with a particular agenda. These political agendas simultaneously contribute to and are shaped by the formation of public opinion. It has been noted that many western nations around the world are currently operating under various forms of neoliberal structures of governance.

Eaton's (2008) analysis of alternative food movements in the city of Niagara, Canada from 1990 to 2007, traced changes in the characteristics of these initiatives across changes in the political inclinations of local governments. She found that during the first period, from 1990 to 1995, a social democratic government displayed strong support for local sustainable agriculture initiatives. During this time there were concerted efforts to link local people with access to local food, and initiatives were targeted at increasing the wellbeing of society as a whole, in the view that citizens' quality of life is at least partially determined by the health of the communities in which they live. In 1995, a progressive

conservative government was elected to local government and they pursued strongly neoliberal agendas. With many state supports slashed from sustainability or community oriented projects, many practitioners within the alternative food initiatives were forced to pursue more market-led, entrepreneurial style takes on their ideas (Eaton, 2008). Aerni (2009) has also described how some projects for sustainable agriculture advocacy have been abandoned due to changes in political or economic climates of the places in which they are based.

Allen, et al. (2003) and others have observed that in many case study examples, advocates and activists engaging in projects which set out to oppose neoliberal structures of governance, end up replicating or reproducing these forms of governance within their own organisations. The ideas of political activism through purchasing decisions, voluntary labelling schemes like fair trade and organic, or attempts to strengthen local food sectors are all examples of neoliberal frames of thinking being used within alternative food movements. Guthman (2008) postulates that the shift to neoliberal forms of governance in many countries has transformed the range of political rationalities and techniques of governance in such a way that they make some of these new forms of activism possible. She views neoliberal agendas to be as much of an opportunity as they are a threat to the emergence of sustainability initiatives. Sonnino (2009) does not see neoliberalism as a barrier for sustainable food systems either, pointing out the fact that there is no characteristic of neoliberal systems that make them inherently unsustainable. Activists and advocates in many areas of food system sustainability have come to accept these forms of governance as largely unchangeable in the short term, and many now seek to achieve change outside of the state through entrepreneurial, independently supported projects, rather than relying on the state as provider of services or

regulator of externalities (Allen, et al., 2003; Guthman, 2008; Harris, 2009). These forms of activism could even extend into the corporate world, by helping industries to find ways to implement industry based regulation or certification schemes for measures such as sustainability or social justice, and identify how these systems could be economically sustainable or even enhance profit for the industries involved (Fonte, 2008). This is an example of advocates taking an open minded approach to their activities, abandoning preconceptions about who are the 'good guys' and the 'bad guys' and instead keeping the true goals of sustainability as primary concern - reflexively utilising existing political and economic frameworks to move towards sustainable food systems (Harris, 2009).

The role of the firm (Donald, 2008) and the attitudes of consumers (Fonte, 2008) are also critical contexts within which food systems exist, and they determine whether changes to any given food system will be a success or a failure. No initiative will ever get off the ground without businesses supporting it and consumers buying the products that are produced. The ways in which large multinational firms interact with local firms in a multi-scalar food systems model also has a great influence over the outcomes of any particular reshuffling of these dynamics (Donald, 2008). These attitudes are in turn shaped by diverse historical geographies of a place (Eaton, 2008).

Another key area in which food systems planners must consider context is when attempting to find a 'balance of governance' for their activities, in other words to determine the extent to which their actions will be reactive or proactive, top-down or bottom-up (Mendes, 2008). This is a critical question for food systems planners and given the complexity of the contexts that these initiatives exist within, it is not an easy question to answer. The specific outcomes will of course depend on the particular directions that any given city or planning agency is

going in, and the best that planners can do is to attempt to be aware of the context that they are operating in to try and find the most appropriate way of utilising planning principles for specific food systems projects or policy-making.

2.4 Conclusion

The literature reviewed here has demonstrated both the scope and the complexity of food systems at all scales. It has also shown some of the pressing challenges within food systems today, and future challenges looming on the horizon, such as resource scarcity, climate change, persisting economic inequities, and social issues which can be linked closely with activities within food systems. The literature review has also shown that in recent years, food systems have gained the attention of scholars and practitioners within the planning field, particularly in North America and Europe. Food systems are now well recognised as fitting within the scope of fields that planners should be engaging with, and the literature makes it clear that planning principles can be applied to food systems to help guide the overall systems toward a more socially, economically and environmentally sustainable mode of practice. These principles include stakeholder collaboration and networking, data collection and analysis, and working within governments or other organisations to translate the outcomes of participatory processes and data collection into actionable plans, policies and programmes which will facilitate and support the transition of food systems stakeholders towards sustainable practice.

Because food systems span such a wide range of industry sectors, from farming and agricultural research and development, through to processing, distribution, retailing, consumption and disposal of wastes associated with the food system, a multidisciplinary approach is crucial for planners engaging in this field. Authors

have identified that successful food systems planning initiatives require leadership to come from people who understand these multiple sectors and how they interrelate. One of the key tasks of food systems planning initiatives is to balance the needs of stakeholders to maximise efficiency and sustainability whilst minimising compromise for stakeholders where possible. As with other sectors transitioning to sustainable practices, tensions and conflicts are sure to arise between different stakeholders, and this is where planners need to engage their training in conflict resolution, mediation and consensus building to facilitate stakeholders in reaching outcomes that are based on well informed perspectives and clearly defined and agreed goals and objectives.

This literature review has served to illustrate to the New Zealand reader the potential for planners to incorporate considerations of food systems issues into their agendas. The range of contexts that this form of planning has been developed in overseas shows that there is opportunity for food systems planning to occur in virtually every situation. No food system is perfect and there will always be challenges. These challenges are closely linked with the subjects that planners have strong amounts of involvement with, including resource management, local economic development, rural and urban land use planning, and the promotion of community well being. The rest of this thesis will explore the ways in which the theories and practices of food systems planning which have developed overseas can be adapted to the social, economic, political and environmental contexts of New Zealand.

3 Methodology

3.1 Introduction

This chapter outlines the methodologies that were utilised for information gathering, analysis and interpretation for the research presented in this thesis. The research sought to evaluate the opportunities for adapting food systems planning frameworks to the New Zealand context, for the purposes of enhancing the resiliency and sustainability of food systems in New Zealand whilst incorporating community development objectives outlined by central and local level governments. The goals for the research were more clearly specified by four stated research objectives (See Table 1). The information required to achieve the research objectives was gathered from several sources. These were key informant interviews, a survey of local government planning departments, and document analysis of key publications from government organisations and industry bodies within New Zealand. These data sources were supplemented with academic literature drawn from both New Zealand and international sources, for the purposes of positioning the research within the broader theoretical and practical frameworks of food systems planning. Given the broad scope and the qualitative nature of the information gathered, limitations were encountered within the research framework. These limitations are discussed later in this chapter in order to show the confines of the research and the context in which it should be evaluated by the reader.

Table 1. The aim and objectives of the thesis

Aim	To evaluate opportunities for adopting and implementing food systems planning into New Zealand planning frameworks
Objective 1	Identify the general characteristics of food production and distribution systems in New Zealand, at scales ranging from small scale local to large scale export orientated food sectors
Objective 2	Determine the current level of central and local government involvement with New Zealand food systems
Objective 3	Identify opportunities for the development and implementation of food systems planning initiatives within both government and the food sector itself
Objective 4	Develop a set of key recommendations for the relevant sectors to assist them in carrying out the initial work required to establish a more coordinated, strategic and holistic approach to food systems planning in New Zealand

3.2 Qualitative Investigative Approach

In order to gather the necessary data to achieve the research objectives outlined in Table 1, a qualitative research approach was utilised. Guided by the research objectives, this thesis aims firstly to understand the nature of food systems in New Zealand and the ways that governments can interact with those systems, and secondly, to identify opportunities and provide recommendations for the application of food systems planning principles to those systems and government structures to support and enhance the sustainable development of those systems into the future. These opportunities and recommendations are based on perceived areas of need as well as each individuals interpretation of the goals and responsibilities of whichever organisation they are associated with. A qualitative research approach is the most appropriate for this task, as illustrated by the functions of qualitative research described by Patton (2005: np)

Qualitative research analyses data from direct fieldwork observations, in-depth, open-ended interviews, and written documents. Qualitative researchers engage in naturalistic inquiry, studying real-world settings inductively to generate rich narrative descriptions and construct case studies. Inductive analysis across cases yields patterns and themes, the fruit of qualitative research.

This research project utilised a mix of the techniques outlined in the above quote, with the goal of obtaining a diverse range of perspectives which could then be juxtaposed against the research objectives to develop the results and recommendations of the research, a methodology described by Creswell (2008). The recommendations given in this thesis are intended to be applicable by councils or industry stakeholders around New Zealand. As such, a detailed understanding of the dynamics of the various sectors involved was important, and was best obtained through in-depth key informant interviews with people from a range of relevant backgrounds (Creswell, 2008).

3.2.1 Participants

Key informants were defined as people whose knowledge and experiences could help build a detailed picture of New Zealand food systems and/or government activities and frameworks which would contribute to evaluation of the research objectives. Representatives were chosen from a diverse range of backgrounds. Participants were sought based on the types of individuals identified by Schiff (2008) as the kinds of stakeholder that commonly sit on food policy advisory boards or other community based food systems initiatives. Schiff's work identifies having a broad stakeholder base as a crucial factor in achieving balanced and sustainable outcomes in the long term. Participants were drawn from sectors including planning and policy positions in district and regional councils, local economic development, farming, food processing, food distribution and retailing, community based policy advocacy groups, organic certification organisations, food orientated crown research institutes, and

university based academic research. A total of fifteen key informants were interviewed and a full list of their organisational positions can be found in Appendix I. Participants were selectively chosen for their representative positions within their organisations. Where possible, participants with an experience and knowledge base which was the most representative of their sector and/or relevant to food systems research were chosen. One of the constraints of the research was that due to budgetary and time constraints of the research, long distance travel was not a practical option. As such, 12 out of the 15 key informants were interviewed in Dunedin, New Zealand, the home town of the researcher. A further three interviews were carried out via recorded telephone conversations with participants in the North Island.

3.2.2 Key Informant Interviews

Information was gathered through one-on-one semi-structured interviews with key informants, which were conducted in the months of August and September 2010. Exact questions were not predetermined, allowing new conversations to arise from the conversation. Given the diverse range of participants, the exact topics covered within each interview were quite variable. However they were all centred around the subject of the participants current involvement with food systems related issues, and their thoughts and opinions on potential options for future engagement, networking and collaboration within the food sector and/or local government.

The variability in the exact subjects covered in the different interviews was a limitation of the research. Interviewing a broad range of participants involved the trade off of not having a high sample size from any one sector. However, considering the context of this research as being the first investigation on this subject within New Zealand, a diverse range of perspectives was seen as more important than an in-depth probe into any one sector. The goal of this thesis was to gauge the general attitudes and levels of support for food systems planning in

New Zealand, which can then be followed up by more specific research if desired or necessary. Thus, the limitation in sample size from each individual sector was a limitation which also allowed for a strength in the research with its diverse base of participant backgrounds.

3.2.3 Survey of local government planning departments

Because of the small number of key informants who were from a planning background (5 of the 15 key informants were in professional planning or policy roles: four within councils and one independent), as well as the geographic restriction of these key informants (4 out of 5 of these key informants were based in Dunedin), it was felt that some supplementary data was needed to further evaluate the ideas and attitudes of council planners around New Zealand towards opportunities for food systems planning. As such, a survey was constructed which evaluated a range of key topics regarding food systems planning, and was sent to the planning departments of every council in New Zealand. A copy of this survey is attached in Appendix 4. Surveys were sent with an accompanying letter giving background information sufficient to contextualise the questions contained in the survey within the broader concept of food systems planning.

Although being seeking responses from a sizeable pool of respondents, the survey was intended to be used as a tool for qualitative, rather than quantitative analysis. Response options for questions were entirely open ended and did not involve any scales, rating systems or the requirement for a 'yes/no' answer. This was an intentional element of the survey because the goal was to establish general ideas, attitudes and perceptions of respondents towards the concept of food systems planning, and a rating system was seen to be a potential limitation on the scope or creativity of the participant's response. No statistical analysis was run on the resulting data, but rather the specific responses of individuals were utilised to provide examples of different perspectives of respondents. On some

questions, responses were coded into their general response type and the ratios of these response types are provided with some of the survey results as presented in section 5.5.4.

Of the 73 territorial authorities that the survey was sent to, a total of 16 responses were received - 14 from district or city councils and two from regional councils. A further seven councils responded to say that they did not feel that food systems were an area that falls within the scope of local government's responsibilities and as such declined the opportunity to take part in the survey. Thus, the total response rate was 31.5%, or 21.9% if the blank returns are excluded. The councils that did respond were well spread throughout the country, with eight respondents each from the North and South Islands.

This low response rate, as well as responses from councils declining to participate on the basis of food systems not being perceived to be an area that councils should be involved in, is in itself an indicator that awareness of the potentials for food systems planning is low in New Zealand.

3.2.4 Secondary sources

To supplement the key informant interviews and survey results, a number of secondary sources of data were utilised in order to gain a greater level of detail on certain topics that are not easily covered in interviews, for example statistical data. Documents used as secondary sources were drawn from official publications of government departments or institutions, reports from various industry groups, statistical information from Statistics New Zealand and other sources, and newspaper articles which highlighted public concerns on various topics relating to New Zealand food systems.

3.3 Ethical Considerations

An awareness and consideration of ethical issues associated with social science research allowed, as much as possible, for their mitigation and management while designing, conducting and presenting this research. Collecting and using participant data comes with an ethical responsibility not to mistreat that information, or the informants providing it, for the purpose of the research. In accordance with standard research practice, the project proposal and methods were viewed and passed by the University of Otago Geography Department Ethics Committee, well before participants were sought.

At the outset of contact with research participants the project was explained and participants received a written information sheet (see Appendix 3). Participants were given the opportunity to have any questions answered, and were aware of their right to withdraw from the project at any stage. Contact details for future communication were included as part of this information, to allow participants to obtain answers to any questions arising after the interview had passed. Participant comfort and perspectives were respected at all times during interviews. Throughout the presentation of results in this thesis, every effort has been made to preserve the anonymity of the research participants.

3.4 Conclusion

This section has outlined the methodological frameworks used for the research and provided justification for why these methods were chosen as the most appropriate options to achieve the research objectives. A qualitative approach was adopted, combining the information from 15 key informant interviews, 16 local council planners survey responses, and document analysis from secondary sources including government and industry reports and newspaper articles, in order to evaluate and develop the research objectives. The information gathered through these processes was collated and thematically coded in terms of the four

research objectives, which were then turned into sections of the thesis. While all care was taken in designing the research structure and methodology, time and budgetary constraints of the research, as well as its inherent nature as a piece of preliminary investigative research with a wide scope, meant that there were limitations with the research. Overall the methodologies utilised in this research succeeded in providing the necessary information to address and answer the four research objectives. The results of this research are now presented and discussed, starting with a chapter characterising New Zealand food systems.

4 Characterising New Zealand Food Systems

4.1 Introduction

New Zealand's low population density, temperate climate, fertile soils, relatively abundant fresh water supplies and other features of its natural environment and resource base makes it a desirable setting for agricultural activity (Campbell, et al., 2009; Sharma, 2009). These physical characteristics, combined with the country's long history of research and innovation in agricultural production and marketing, have allowed New Zealand to become a highly productive agricultural nation, providing for both domestic needs and significant export markets (Campbell, et al., 2009; Statistics New Zealand, 2010a). Food and beverage is New Zealand's largest productive sector, employing one in five workers and generating over half of our export earnings (Ministry of Research, Science and Technology, 2007). This chapter provides a general picture of New Zealand's food systems and food economies at different scales. A general understanding of this type of knowledge is an important step for planners, policy makers or other practitioners who may be interested in incorporating food based strategies within their organisations but do not have sufficient background knowledge of the New Zealand context.

4.2 The basics of New Zealand food systems

New Zealand produces a diverse range of food products, including meat, dairy products, fruit, vegetables, honey, grains, and shellfish (Federated Farmers, 2010). Specific crops grown vary from region to region, with many parts of New

Zealand specialising in growing large quantities of crops which are suited to their local climate. For example, pipfruit, stonefruit and grapes are grown in hotter drier areas such as Central Otago, Hawkes Bay, Nelson and Marlborough; Oamaru and Pukekohe are well known for their potato growing; grains and a wide range of vegetable crops are grown in Canterbury; while warmer northern regions including Northland and Bay of Plenty produce crops such as avocado, kiwifruit, feijoa and kumara (Plant and Food, 2009). Fertile pasture lands with adequate irrigation are increasingly being converted to dairy farming throughout the country, while more marginal dry hill country is often utilised for sheep and beef farming, which is less intensive (Federated Farmers, 2010; Parliamentary Commissioner for the Environment, 2004a).

4.2.1 Food distribution and retailing

In New Zealand, food is distributed and retailed via systems familiar to most industrialised countries. Food is retailed through supermarkets, convenience stores, green grocers, and the hospitality industry including restaurants and cafés (Sharma, 2009). Supermarkets make up the bulk of retail food sales, and 97% of the supermarket sector is controlled by just two companies - Progressive Enterprises and Foodstuffs (NZ) Ltd. (Sharma, 2009). This situation has caused concern among consumer watchdogs (Otago Daily Times, 2009), and there are often debates in the media over whether it is this "cosy duopoly" that has contributed to New Zealand having higher food price rises than other countries, as well as farmers receiving low prices for their produce (Scherer, 2010). Declines in the profitability of some agricultural sectors, especially fresh fruit and vegetables for domestic markets, has been reported by the Ministry of Agriculture and Forestry (2009) and in some cases average returns are no longer enough to cover the costs of production. In 2008 the Green Party called for a commerce commission investigation into potential price fixing activity between Progressive and Foodstuffs. This has not yet taken place, and both companies deny engaging in illegal pricing practices. Formal investigation is difficult to

initiate as most laws surrounding the subject relate to monopolies rather than duopolies (Green Party of Aotearoa New Zealand, 2008). However, fresh allegations continue to surface in the media from producers, processors and independent grocers about Progressive Enterprises and Foodstuffs (NZ) Ltd. leveraging their duopolistic power in questionable ways (e.g. McNelly, 2010). The Greens are now campaigning for New Zealand to adopt a supermarket code of conduct to protect the rights of growers and consumers and ensure that a fair price is paid. Similar systems are already in place in the UK and elsewhere (Green Party of Aotearoa New Zealand, 2010b).

These various food retail outlets sell a mixture of fresh and processed products of both domestic and international origin. Overall, New Zealand produces a net surplus of food. In 2009, our total food exports were \$20.4 billion, while total food imports were only \$3.8 billion (Statistics New Zealand, 2010b). New Zealand imports a wide range of raw ingredients for use in local industry including as sugar, coco, fruit juice concentrates and so on, as well as importing a significant amount of shelf-ready processed foods (Statistics New Zealand, 2010b). New Zealand also imports significant quantities of fresh produce, with fresh fruit and vegetable imports alone totalling over \$1 billion per year (Plant & Food Research, 2009). Australia is our single largest trading partner, and in 2009 we imported over \$300 million worth of Australian fresh fruit and vegetables. We also imported significant quantities of fresh produce from the United States, Philippines and China (Statistics New Zealand, 2010b). Most imported fruits and vegetables are either of varieties which are not widely grown here, such as pineapples and bananas, or to supplement domestic production during the off season (Plant & Food Research, 2009).

4.2.2 Food safety

New Zealand is widely recognised as a world leader in food safety, with stringent requirements for virtually all food handling businesses being required

to abide by legislation outlined in the Food Act 1981 (currently under review) and the Animal Products Act 1999. The main organisation responsible for food safety in New Zealand is the New Zealand Food Safety Authority (NZFSA). Day to day monitoring, inspection and enforcement of food regulations within individual businesses is carried out by local councils through their environmental health departments. These comprehensive measures for food safety and their associated auditing requirements have resulted not only in New Zealand having low incidence of food borne illnesses, but our reputation for safe food has also put us at a competitive advantage in certain international export markets (New Zealand Food Safety Authority, 2010; New Zealand Trade and Enterprise, 2010d). It is clear that the issue of food safety has been well addressed in New Zealand and as such the subject is not explored further within this thesis, apart from the role of local council environmental health officers being responsible for auditing food businesses to ensure compliance.

4.2.3 Food access and food security

Food access in a physical sense is not seen as a problem in New Zealand - most towns and cities are well stocked with food supplies via commercial distribution channels (Key Informant 11). However, with rising food prices at the supermarket, including recent jumps in the price of fresh fruit and vegetables (Timaru Herald, 2010), food access is increasingly becoming a problem in an economic sense, particularly for low income households (Key Informant 11).

It is also important to note that current industrialised food production and distribution networks are heavily dependent on fossil fuels and other non-renewable resources at virtually every stage of the food chain, from the fertilisers, machinery and energy inputs involved at the farm level, through to immense amounts of energy and physical resources being used in the processing, packaging, distribution and retail sectors (Mariola, 2008). The depth of the vulnerabilities created by this dependence are profound, and could be the subject

of several theses in and of themselves. The extent to which food systems incorporate fossil fuels goes far beyond simple transport chains. For example, the vast majority of nitrogenous fertilisers, the primary nutrient input of agricultural systems world wide, is produced from non-renewable petrochemicals. This was highlighted as an issue of serious concern in the Parliamentary Commissioner for the Environment report 'Growing For Good: Intensive Farming, Sustainability and New Zealand's Environment' (2004a:85), which highlighted that

...today, around the globe, more than half the atoms of nitrogen that are incorporated into green plant material come from fossil fuel energy subsidised fertilisers, rather than from natural biogeochemical processes.

This fact illustrates the point that a great proportion of the world's population are in a sense literally eating fossil fuels, and indeed we depend on these synthetically fertilised foods to sustain the global population at its current levels.

While these production and distribution channels may be viewed as 'efficient' in present day scenarios, energy security or ongoing availability of mineral based fertilisers is by no means guaranteed (Cordell, et al., 2009). Many food systems researchers and activists believe that now is the time to begin building resiliency into our food systems through diversification and developing low-input agricultural systems, rather than waiting for price shocks or supply shortages to force a system transition that could potentially be abrupt or chaotic (Heinberg, 2007). The true fragility of the international food security and supply was brought into sharp focus with the world food crisis of 2008. The crisis saw rapid inflation in the price of basic foods on international markets, and resulted in food riots in several countries, followed by many nations re-evaluating their fundamental food security status (McMichael, 2009). The crisis was thought to stem from

a long term cycle of fossil fuel dependence of industrial capitalism, combined with the inflation-producing effects of current biofuel offsets and financial speculation, and the concentration and centralization of agribusiness capital stemming from the enabling conjunctural policies of the corporate food regime. Rising costs, related to peak oil and fuel crop substitutes, combine with monopoly pricing by agribusiness to inflate food prices, globally transmitted under the liberalized terms of finance and trade associated with neoliberal policies (McMichael, 2009: 281).

Many agricultural scientists and food systems researchers saw the 2008 food crisis as providing an undeniable mandate and obligation for the global policy-making community to finally begin to address its long running neglect of serious global food security issues (Headey and Fan, 2008).

These types of discourse reflect a growing level of unease about global industrialised food systems. Within New Zealand, awareness is growing around food systems issues, and the first hints of the recognition that a fundamental shift from a 'business as usual' mentality is required are beginning to show. In 2004 a Parliamentary Commission for the Environment Report entitled 'Growing For Good' was released, which was a thorough examination of the characteristics of farming systems in New Zealand, their impacts on the environment, and potential future directions. The report called for a redirected and reconfigured agricultural endeavour back towards a more "harmonious relationship with nature and its limits" (Parliamentary Commission for the Environment, 2004a: 31). Following on from this, the government formed an advisory body known as the Food and Beverage Task Force. They conducted a review of the threats and opportunities for New Zealand agricultural systems and their associated social and economic dimensions in light of current global trends. Their resulting report, 'Smart Food, Cool Beverage' (2006), while primarily focused on New Zealand's food and beverage exports, provided some clear messages about New Zealand's food system in general. They identified that

while prospects for export markets in Asia look good, due to their continued growth in population and economic wealth, several significant threats loom on the horizon for the food and agriculture industry. These included a declining availability of land, water, and wild fish stocks; consolidation of global retail chains leading to narrowing of profit margins; rising food safety and traceability compliance costs; as well as the stark forecasts of potential serious climate change in New Zealand and elsewhere, as described by the United Nations Intergovernmental Panel on Climate Change (Food and Beverage Task Force, 2006: 16; IPCC, 2007).

Notably absent from this list of threats was the forecasted price increases and decline in availability of both fossil fuels and other non-renewable food system inputs such as fertiliser which are projected to be emerging over the next few decades (Hirsch, Bezdek, and Wendling, 2005). Denial of the true realities and implications of these problems appears to be widespread among government and agricultural sectors in New Zealand, and the subject is often not covered in strategic documents relating to agriculture and global trade, as was highlighted by several interviewees for this research (Key Informants 1, 3, 4, 5, 8, 9, 10, 12). With regards to forecast shortages of phosphate based fertilisers as covered by Cordell, et al. (2009), Key Informant 1, who engages with farmers on a regular basis, commented "I think people know about peak phosphate but I haven't heard a lot of people taking it too seriously. It's the same with oil, you know, the "we'll just keep going till it runs out" attitude". Other interviewees felt that energy issues were not going to be immediate threats, with Key Informant 7 believing that New Zealand has ample stocks of coal in Southland to continue providing us with fuel and fertilisers for decades to come. These attitudes have been observed to be common in government and industry, where dealing with the fundamental underlying issues of long term sustainability are often allocated to the 'too hard' basket, and long-term strategies are potentially stifled by the three to four year timeframes found in politics and business (Key Informant 5). Most high level strategies for New Zealand food and agricultural sectors

continue to promote ongoing increase in export earnings and production volumes, and these goals rest on assumptions of ongoing availability of cheap energy, stable global economies and consistent weather patterns - a scenario which energy and climate scientists, economists and even energy companies around the world openly admit is highly unlikely (Heinberg, 2007; Hirsch, et al., 2005; Mann and Kump, 2008).

In 2009, the University of Otago in association with the Centre for the Study of Agriculture, Food and the Environment (CSAFE) hosted its annual Foreign Policy School. The topic was 'Dimensions of the Global Food Crisis'. At this conference, delegates from around New Zealand and the globe presented research on many of the problems surrounding large scale agriculture and a globalised food system. Tim Lang, a researcher known for coining the term 'food miles', pointed out that New Zealand is efficiently overproducing the 'wrong foods', in that we are aiming to produce dollar unit values, rather than strategically evaluating nutritional return per unit of energy, water, and other environmental capital invested (Lang, 2009). He thought that we should think more laterally about its land use and strategic futures for agriculture in New Zealand. Jules Pretty, another delegate, suggested that we need to increase our means of producing food where we live, via new farming practices and changing land uses. More recently, the New Zealand Government's chief science advisor, Sir Peter Gluckman, expressed an urgent and growing need for New Zealand to become truly innovative at more fundamental levels, rather than focusing on 'superficial' innovation in efficiency gains and so on. He suggests industry and government needs to increase investment in research and development if we are to successfully overcome the multitude of present and future challenges facing the nation. He believed that politicians and policy makers have been well aware of this for some time, but it is now necessary to pay more than just lip service toward fostering New Zealand's innovation potential (Gorman, 2010). There is the potential to develop new frameworks for food systems here in New Zealand that will have relevance and applicability in other places around the world,

potentially even in developing countries, as well as addressing our own problems and challenges.

4.3 Large scale and export-orientated food production in New Zealand

New Zealand's food production is largely destined for foreign markets, with around 91% of domestic production being exported offshore (Federated Farmers, 2010). Food exports are an integral part of New Zealand's economy, with over \$20.4 billion of food products exported in 2009 (Statistics New Zealand, 2010b). Dairy products are New Zealand's highest export earner, with around \$11 billion worth of dairy exports in 2009, mostly in the form of milk solids, cheese and butter (Federated Farmers, 2010). Fonterra, a dairy farmers cooperative which controls the majority of the dairy industry in New Zealand, is the country's largest company and is the world's largest exporter of dairy products (Food and Beverage Task Force, 2006). Meat products are New Zealand's second largest agricultural export, bringing in over \$6 billion export dollars in 2009 (Statistics New Zealand, 2010b).

The horticultural industry is also significant for New Zealand exports, with pipfruit, stonefruit and kiwifruit being grown extensively in suitable regions. Horticultural exports topped \$3.9 billion in 2008, with kiwifruit, New Zealand's highest value plant crop, contributing \$871 million to that figure (Plant & Food Research, 2009). Seafood is another significant food industry, with \$1.35 billion worth of seafood exported from New Zealand in 2009 in the form of both farmed and wild caught fish, shellfish and crustaceans (New Zealand Trade and Enterprise, 2010b). Shrinking wild fish stocks are of concern to New Zealand fishing companies, and quota management systems are in place (Food and Beverage Task Force, 2006). However the aquaculture industry, including the cultivation of New Zealand Greenshell Mussels in sheltered waters around the

coasts is a growing market and shows promise as a sustainable production method for high quality mussels, which are high in protein and nutrients (New Zealand Trade and Enterprise, 2010b).

Increasing competition from regions which have recently boosted their agricultural exports, such as Asia and South America, are an emerging threat to New Zealand food exports. As such, research and development in the food sector continues to build on New Zealand's reputation for producing high quality, innovative, food products with excellent food safety and traceability measures in place, in order to retain our positioning as a producer of premium or speciality foods on the international market (Ministry of Research, Science and Technology, 2007). It is now widely recognised that it will be increasingly difficult for New Zealand agricultural sectors to continue to increase their output volumes as we have already made most of the 'easy' efficiency or land use intensity gains (Corolis Research, 2004). Therefore maintaining New Zealand's position as a 'premium' producer through increased innovation in product development and marketing techniques is a crucial element of the New Zealand food industry's export growth strategy (Food and Beverage Task Force, 2006).

Table 2. Summary of groups and organisations with involvement in large scale and export food sector in New Zealand, and their core functions.

Group or Organisation	Purpose and Functions
Government Organisations Ministry of Agriculture and Forestry (MAF) Ministry of Fisheries (MoF) New Zealand Food Safety Authority AgriQuality New Zealand New Zealand Trade and Enterprise (NZTE) Ministry of Foreign Affairs and Trade (MFAT) Local governments	• Create policies and legislation which regulates various aspects of New Zealand food systems • Ensure compliance with rules and regulations • Provide quality assurance and traceability services • Monitor and report on the status of industry and resource bases in food related sectors • Provide funding to assist sustainable development of rural and urban communities and industry
Crown Research Institutions Plant & Food Research AgResearch Landcare Research National Institute for Water and Atmospheric Research (NIWA)	• Industry based scientific research • Product innovation • Plant and animal breeding programmes • Commercialisation of innovation • Promoting NZs unique market positioning in speciality foods • Focus on sustainability
Producer Cooperatives Fonterra Zespri PPCS Alliance Meats Ltd. NZ Honey Producers <i>etc.</i>	• Provide a unifying force for a single industry sector • Overseeing processing, distribution and marketing of products • Coordinating large numbers of individual farmers • Spread risks and provide a degree of stability for commodity farmers • Share the costs of developing new products or new markets
Industry Groups DairyNZ New Zealand Beef and Lamb Organics Aotearoa New Zealand Horticulture New Zealand Pipfruit NZ Federated Farmers New Zealand Seafood Industry Council New Zealand Kiwifruit Growers Potatoes NZ New Zealand Avocado Growers NZ Buttercup Squash <i>etc.</i>	• Represent a particular industry sector • Disseminate latest research and information to members • Facilitate communication and networking between members • Advocate on behalf of members in government policy making processes • Assist growers in dealing with compliance requirements • Collect commodity levies for specific crops or products • Interface with central government in the event of biosecurity outbreaks

4.3.1 Producer Cooperatives

One of the distinguishing features of New Zealand agriculture in an international context is the complete absence of agricultural subsidy systems (Aerni, 2009). Since subsidies were removed in the mid-1980s, New Zealand agriculture has been fully exposed to international markets, a situation which is largely attributed with catalysing the internationally recognised levels of efficiency, responsiveness and high product quality within New Zealand agricultural systems, due to the need to compete in international markets with subsidised products from other countries (Federated Farmers, 2010; Parliamentary Commissioner for the Environment, 2004a). This exposure to competitive environments has forced New Zealand farmers to innovate not only in their production methods, crop breeding and product development, but also in their organisational and business structures. Four of the five largest food and beverage companies in New Zealand are producer cooperatives: Fonterra, Zespri, PPCS and Alliance Meats Ltd (Food and Beverage Task Force, 2006). These cooperative organisations have the growers as their shareholders and they serve the purpose of dispersing the risks associated with weather fluctuations, commodity price and exchange rate volatility, as well as providing opportunity for bulk buying power of inputs such as fertilisers, the ability to undertake large scale research and development projects, and a more coordinated entry into and presence in overseas markets (Food and Beverage Task Force, 2006).

4.3.2 Crown Research Institutes and associated organisations

The New Zealand Government provides support for large scale and export orientated agricultural industries in several ways. Research and development is provided by the Crown Research Institutes AgResearch, which covers animal products including meat and milk, and Plant & Food Research, which covers plant based horticulture as well as product innovation and marketing and some work on post-harvest seafood products (Key Informants 13 and 14). Both of these

organisations work with industry groups from various agricultural sectors, and often conduct research and development work on a commission basis. They engage in activities ranging from plant and animal breeding, research about farm monitoring and methods including irrigation, innovation in distribution, processing and marketing of agricultural products, through to health and nutrition research, transfer of innovation to the marketplace, and a strong commitment to fostering 'sustainable' growth in New Zealand's food and beverage industry (Plant and Food Research, 2010; AgResearch, 2010). Two other Crown Research Institutes, Landcare Research and the National Institute for Water and Atmospheric Research (NIWA) also have significant overlaps with New Zealand's food and agriculture industries, providing research on sustainable use of land and water resources.

While they are government owned, Crown Research Institutes are expected to turn a profit, and as such the work that they engage in needs to have the potential to produce high returns. Considering the expense involved in research and development, most of the work is centred around export orientated, large scale agricultural systems, although Plant & Food Research does undertake some work on domestic fruit and vegetable crops (Key Informants 13 and 14).

In addition to Crown Research Institutes, several universities and private research institutes throughout New Zealand engage in research around the topics of food and agriculture. Massey University, University of Otago, University of Waikato and Lincoln University all have dedicated agricultural research departments which together span all aspects of agribusiness in New Zealand. Other departments within these universities and others, for example schools of business, food science, geography or human nutrition, also undertake research in food systems related fields from time to time (Key Informants 11 and 12). Funding for university based research in these fields can come from a variety of sources, both public and private. Sometimes, Crown Research Institutes commission research within university departments (Key Informant 11), and

universities also make research and funding proposals to various government departments on a regular basis as well as engaging in privately sponsored research projects. Some independent research institutes, such as the Cawthron Institute in Nelson, are closely involved with the Crown Research institutes and also do commissioned research for them.

4.3.3 Industry Groups

The New Zealand agricultural landscape is also characterised by a large number of industry groups catering to specific crops, regions or production systems. They usually exist for industry sectors which engage in export activity and are of a large enough size to justify the extra administrative costs of such an endeavour. These groups exist for the purposes of representing the interests of their members in contexts ranging from planning and resource management through to commissioning research and development work (Key Informants 7 and 9). They also facilitate networking and communication between individual farmers, as well as disseminating information about the latest developments and innovations within the industry to their members, through newsletters, meetings and so on. This is an important function of industry groups, as often individual farmers can be too busy to source this information independently (Food and Beverage Task Force, 2006).

The overall goal of industry groups is to increase the financial viability of the industry for its members, whilst working towards long term goals of sustainable industry producing high quality products. Most industry groups are funded by a combination of membership fees and commodity levies on crops, and additional funding may come from government for specific projects (Key Informant 14). In some cases, a grower could belong to more than one industry group, for example if she was an organic orchardist growing both pipfruits and summerfruits. Some industry groups are 'umbrella groups' for a collection of smaller groups. For example Horticulture New Zealand is an umbrella group which represents all of

New Zealand's plant based industry groups at a national and international level (Food and Beverage Task Force, 2006).

4.3.4 Unifying strategies in the export food sector

Overall, large scale and export orientated agribusiness in New Zealand could be said to be extremely well supported, with many organisations operating at different levels to provide services relating to the safe, sustainable and economically viable production, processing, distribution and marketing of New Zealand produced foods. However, of notable absence is an overall strategic outlook on New Zealand food systems. There is considerable 'siloing', not only within individual industries but also within organisations which govern food industries (Key Informant 5; Food and Beverage Task Force, 2006). For example, organisations associated with dairy farming are aiming to increase the profitability and sustainability of dairy farming, by continued increases in production, efficiency gains or increased value-adding before the product is sold. In the same way, pipfruit growers are aiming to sell more pipfruit, onion growers to sell more onions, and so on. Industry groups are aimed at promoting the growth and sales of their specific product, rather than helping farmers figure out whether dairying, for example, is even an appropriate farming type for the area, and if not, what would be the best crop type(s) they could be growing for long term security, profitability and sustainability. There is at present no policy at the central government level which outlines an overall long term food strategy, nor does New Zealand have a local 'extension agency' to provide advice to farmers as is found in many other countries. The lack of a unifying direction and vision for the New Zealand food sector as a whole was recognised in the Food and Beverage Task Force publication 'Smart Food, Cool Beverage' (2006: 22), which argued that

The sector as a whole needs to establish structures and systems that will allow it to work more effectively as an integrated unit. That is important not just for the collaborative market development

initiatives that might be undertaken, but also to derive best value from the sectors assets. This can be achieved by better aligning research with the commercial needs of industry, training to skills needs, and regulation for the practical realities of business.

The final point of this statement, of more closely aligning regulation with the 'practical realities' of business, illustrates where planning and policy-making could have an important role to play in the future shape of holistic food systems strategies. The request hints at the idea of deregulation of the agribusiness industry so that farmers and processors can continue to meet growth targets. This could be a reflection of farmers desires for a loosening up of Resource Management Act based requirements for environmental protection. One of the central functions of planning is to evaluate the positions of various stakeholders and to evaluate different options and their potential outcomes for social, environmental and economic sustainability, and as such, if any reshaping of policy was to take place, facilitation from a planning perspective could be invaluable in the process of redesigning policy frameworks to reduce barriers to the food industry, whilst still retaining a strong focus of environmental protection and positive social outcomes. The need for this more unified, strategic, 'NZ Inc' approach is becoming ever more urgent as increased competitiveness in world economies, along with increasing energy prices and unstable world economies are causing a narrowing of profit margins for exporting companies, and provide potential motivation for price wars in overseas markets that would ultimately be disadvantageous to New Zealand agribusiness (Food and Beverage Task Force, 2006).

4.4 Domestic food systems in New Zealand

The production, processing and distribution food within New Zealand for domestic markets occurs at a range of scales, from small scale, localised growers and processors, through to products sourced from the large scale export

orientated industries and redirected for domestic sale, along with a large chunk of imported foodstuffs (Key Informants 9 and 14; Statistics New Zealand, 2010b). Inter-regional trading is highly developed, with a wide variety of fresh and processed goods being distributed via road, rail and sea based freight channels. New Zealand's compact size, along with innovation in freight logistics in New Zealand companies (Key Informant 12), have made these distribution networks relatively efficient for domestic trade of foodstuffs. Good inter-regional trading networks, combined with our isolation from other parts of the world and the crop type specialisation of individual regions, contributed to several key informants (Key Informants 4, 12, 15) views that with regards to food systems, we could potentially consider 'local' to mean 'within New Zealand', rather than a strictly region or district based definition. However, others (Key Informants 5, 8, 9, 10) believed that there is value in utilising geographically smaller boundaries of 'local', particularly with regards to local economic development, future resiliency in post-oil scenarios, as well as the perception that working at this smaller scale and engaging with city and district councils is easier and more effective than trying to spur change at a national level. These differences in opinions of the best way to define 'local' are common around the world, and as Born and Purcell (2006), Mendes (2007), Harris (2010) and other authors have illustrated, scales are social constructs which exist within one another. Any given scale is embedded in another, and we need not confine ourselves to a single and authoritative definition of what 'local' really is. After all, as Born and Purcell (2006) argue, we must not confuse an ends with a means, and to keep in mind that localisation can be a strategy we use to achieve certain goals, but is not an outcome in and of itself.

4.4.1 Production for domestic markets

Much of the produce grown in New Zealand is grown via 'conventional' agricultural systems, that is, those which involve mechanisation and the extensive use of off-farm inputs in the form of fertilisers, herbicides, pesticides, patented

seed varieties and so on (Sonnino and Marsden, 2006). Only around 1%, or 124,000ha out of New Zealand's 12,500,000ha of productive agricultural land, is certified organic (Coriolis Research, 2005; Organics Aotearoa New Zealand, 2010). In many cases, for example with meat and fresh fruits, the produce and sold domestically comes from the same origins as those for export. Although often, the lower grade produce is kept for domestic markets while the highest quality produce is exported to fetch top dollar overseas.

In recent times, there has been public concern over the high price of food in New Zealand, with our food prices having increased over 42% since the year 2000, a rate much higher than inflation (George, 2010; Harward, 2010; McBeth, 2010). Some media reports have demonstrated that New Zealand products are often much cheaper to buy in locations as far away as the UK than they are in New Zealand (George, 2010), leading to accusations of a 'rip off' mentality among the New Zealand retail sector, fuelled by the duopolistic situation in supermarket ownership (Harward, 2010).

4.4.2 'Alternative' food systems in New Zealand

In the past ten years, farmers markets have emerged as an 'alternative' channel for distribution and retailing in New Zealand. There are now over fifty farmers markets operating around the country, with an estimated \$30 million worth of produce being sold through them annually (Fox, 2010). The rise in popularity of farmers markets and 'buying local' has occurred alongside a growing public awareness of the social, environmental and economic impacts of conventional food systems (Fox, 2010). As such, these local food distribution hubs are seen by many as a point of resistance to industrialised food systems and as a form of consumer empowerment (Key Informant 9; Farmers Markets New Zealand, 2010). In addition to farmers markets, a small number of direct marketing initiatives have been established by small to medium scale growers (Key Informant 8). These are usually 'box schemes', where subscribers pay a weekly fee

and have a box of mixed produce delivered to them each week by the farmer. These schemes have had mixed success and are generally seen as being difficult to keep viable in the long term, due to the logistics of making many small orders and deliveries, as well as the difficulty in farmers being able to grow a consistent year round supply of a variety of vegetables (Key Informant 8). These alternative food initiatives are covered in more detail in chapter six.

4.4.3 Home Scale Gardening and Urban Agriculture

While it is not a topic which is covered in depth in this thesis, home scale and urban agriculture is worthy to note when discussing New Zealand food systems. Vegetable gardening is a long established hobby in New Zealand, and many homes have at least a small vegetable plot in their back yard. With recent food price increases and growing public concern over various elements of mainstream food systems, vegetable gardening has had a surge in popularity of late (Key Informants 3, 5, 10). Urban agriculture projects, including community gardens or 'guerilla gardening' experiments have also begun to surface in many urban centres around the country. The potential for food production within urban areas should not be underestimated. There are now groups operating in many urban centres which aim to increase the levels of urban food production and share information among members on how to do so (Key Informant 10; Mulqueen-Star, 2009). Urban agriculture will almost certainly play a significant role in future sustainable food systems, and also has multifunctional values in promoting awareness of food related issues and fostering community development. For an excellent evaluation of opportunities for fostering and developing agriculture initiatives through planning in New Zealand, see Mulqueen-Star (2009).

4.5 Conclusion

New Zealand's reputation as a bread basket for the world is backed up by the statistics - we produce a significant amount more food here than what is consumed by the domestic population. Around 92% of New Zealand grown produce is exported to overseas markets (Statistics New Zealand, 2010b). The agricultural sector is not only one of our biggest export earners, it's also a closely interwoven element of kiwi cultural identity (Campbell, et al., 2009; Parliamentary Commissioner for the Environment, 2004a). The bulk of agriculture in New Zealand is comprised of 'conventional' agricultural methods with varying levels of farming intensity. Only around 1% of the country's arable land is certified organic. Scale is an important factor in New Zealand agriculture, with a 'bigger is better' mentality found throughout various levels of the agrifood sector. While some smaller scale or more 'localised' farmers and food processing businesses are emerging in New Zealand, there exists a large gulf between the 'big guns' and the 'small players' in New Zealand food systems. The lack of a 'mid-size' component in the sector was noted as a significant weakness by the Food and Beverage Task Force (2004). New Zealand imported over \$3.8 billion worth of food in 2009. Most if not all of these imports could be seen as luxury products (tropical fruits, out of season vegetables, fancy biscuits, etc) as opposed to being necessary for our nutritional intakes, which could, if necessary, be provided for from within our own land mass. In short, food security per se is not a huge threat to New Zealand at present. However, the vast bulk of the food grown here is grown via agricultural practices which use non-renewable resources, and in particular fossil fuels and non-renewable (not to mention environmentally toxic) fertilisers, herbicides and pesticides. The supplies of these inputs is by no means guaranteed into the future.

These factors, combined with global economic instability, increasing levels of climate change, and the depletion of our soil and water resources, indicates that New Zealand planners and policy makers should reconsider long-term strategies

for food systems within New Zealand and how they fit in to potential future scenarios. More research needs to be undertaken on options for agricultural systems which can operate with heavily reduced levels of fossil fuels and other non-renewable resources. Some work has already been done. For example, Barnaby (2004) conducted an investigation into the possible agricultural uses of biprouducts of New Zealand's mussel industries. She found significant potential for crushed mussel shells and other mussel processing biprouducts for use in agriculture in place of non-renewable resources like limestone and synthetic fertilisers. But this is only a small part of the problem, and the volumes produced by the mussel industry could only service a small portion of New Zealand's farmland (Barnaby, 2004). A closer examination of future resource scenarios by governments may reveal that we take more for granted than is immediately obvious. As the Parliamentary Commissioner for the Environment (2004a) and others have made clear, that while research on these subjects is being undertaken in many universities and research institutes around the country, the results so far have not begun to address the problems at a pace and at the scale to adapt the system in time for projected resource shocks.

5 Government Involvement in New Zealand Food Systems

5.1 Introduction

This section utilises a mixture of literature sources and document analysis, along with information gleaned from key informant interviews and a survey of local governments within New Zealand, to evaluate the current status of government involvement with various aspects of the food system and at different scales. It then goes on to identify gaps in current government involvement. The recommendations for action based on this evaluation are then presented in chapter seven.

New Zealand is widely recognised as one of the most pronounced examples of 'neoliberal' governance in the world (Aerni, 2009; Larner and Craig, 2005), with the general ethos of allowing social structures to grow 'naturally', and business structures and industry characteristics to be market driven to as high a degree as possible, with government only intervening where absolutely necessary (Guthman, 2008; Larner, 2005). Implementation of such practices alter the definition of 'governance' away from the formal idea of state institutions and hierarchies, and toward the broader concept of the overall coordination of social relations, regardless of the source of actions (Larner, 1997). Although the degree to which New Zealand expresses neoliberal characteristics can change from year to year and from government to government, neoliberal tendencies have been

present for several decades, and New Zealand has a reputation internationally as being an 'experiment' in applied neoliberalism (Larner, 1997). The recent reforms implemented by the National government, including changes to the Resource Management Act and proposed changes to the Local Government Act, are a clear sign that neoliberalist governance is still a popular theme in New Zealand. While many critics, in particular those from left leaning political ideologies, have denounced neoliberalism, evidence suggests that a new form of neoliberalism involving the emergence of community based initiatives and social enterprise, often in partnership with government organisations, is beginning to take shape and have positive effects within New Zealand society (Larner and Craig, 2005). Recognising and embracing the potential for new forms of civic engagement through neoliberal governance will be a crucial element in the development of food systems initiatives in New Zealand.

5.2 Structure of New Zealand governments

Governance in New Zealand occurs at two levels: central and local. Central government is the principle form of government when dealing with matters which affect or are significant to the nation as a whole. Central government is responsible for setting the broader strategic directions for New Zealand, and in creating legislation which is then implemented or 'given effect to' by regional and district or city councils at the local level (Local Government New Zealand, 2010). All governments in New Zealand are democratically elected through elections occurring once every three years. Under the Mixed Member Proportional (MMP) voting system used for central government, voters are given two votes - one for their preferred party, and one to choose a representative from their 'electorate' or local area.

5.3 Core planning legislation

Planning in New Zealand is guided by multiple pieces of legislation. Most planners will be familiar with these and it is not the purpose of this thesis to go in to depth on this topic, however the main legislation which planners work within is worthy of mention here. The two pieces of legislation which essentially outline the framework for governments to provide resource management and sustainable development services, are the Resource Management Act 1991, commonly known as the RMA, and the Local Government Act 2002, commonly known as the LGA. The general nature of these acts are probably best described by their own stated purposes. Section 5 of the Resource Management Act 1991 outlines its purpose:

5 Purpose

- (1) The purpose of this Act is to promote the sustainable management of natural and physical resources.
- (2) In this Act, **sustainable management** means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—
 - (a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
 - (b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
 - (c) avoiding, remedying, or mitigating any adverse effects of activities on the environment

(Resource Management Act 1991)

This definition of purpose outlines the underlying principles of the RMA. As can be seen from the wording, the key function is to balance social, economic, environmental and cultural needs, through the lens of sustainability. This led to some planners colloquially referring to the RMA as 'the balancing act', and many

acknowledge that while the core ideas within the RMA might be simple, the practical application of them can be incredibly complex.

The existence of local governments is mandated by the Local Government Act 2002, and through that they are given the power to implement the principles set out in the RMA. The purpose of local government in the broadest sense is found in section 10 of the Local Government Act 2002:

10 Purpose of local government

The purpose of local government is—

- (a) to enable democratic local decision-making and action by, and on behalf of, communities; and
- (b) to promote the social, economic, environmental, and cultural well-being of communities, in the present and for the future.

(Local Government Act 2002)

As with most legislation, the way in which these acts are interpreted varies between different councils, judges, planners and policy-makers. Depending on which way the interpretation goes, food systems and their associated properties could be seen as irrelevant or central to the implementation of the acts, or somewhere in between. It is clear that land use and farming has an impact on the land, air and water where it occurs, and the environmental protection elements of these acts in their most basic forms are fairly clear cut. But when interpreting the less tangible elements of the acts - the consideration the long-term impacts for social, economic and cultural factors - reveals the true depth and complexity of the task which planners and local governments are given.

In addition to the RMA and LGA, central government has the ability to create more specific legislation which guides the interpretation of the acts when matters of national significance are involved. One example of this is the creation of national policy statements. As described by the Ministry for the Environment

(2010:np), "national policy statements are instruments available under the RMA to help local government decide how competing national benefits and local costs should be balanced". At present, national policy statements have been implemented or at least drafted in the fields of energy, water management, coastal management, flood risk management and urban design (Ministry for the Environment, 2010). As yet, no national policy statements relating to food systems have been created, however there is significant potential to develop one in the future. At the local level, local governments create a series of policy and planning documents, which outline the specific ways in which they have interpreted the RMA and the LGA and guide resource management and decision-making in their region. Many of these documents set out the long term strategic directions of a region, and the goals and priorities of each individual council. These documents include district and regional plans, regional policy statements, long term council community plans (LTCCPs) and strategy documents, among others.

The subsequent sections of this chapter explore the extent to which local and central governments have influenced food systems, as well as evaluating the gaps in their activities and the potential for further development of food systems objectives through government frameworks.

5.4 Food systems involvement at a national level

There are a number of ways in which central government involves itself with food systems within New Zealand. As was outlined in section 4, a number of government departments exist which have a role in regulation and monitoring of agricultural and food processing and retailing industries in New Zealand. These organisations include the New Zealand Food Safety Authority, the Ministry of Agriculture and Forestry, Trade and Enterprise New Zealand, AgriQuality, and others (See Table 2). Research and development services are also provided for through central government, primarily through the Crown Research Institutes

AgResearch and Plant & Food Research.

Several high level, government commissioned documents and reports have recently investigated the New Zealand food and agricultural sector and evaluated its strengths, weaknesses, threats and opportunities. These documents include 'Growing for good: Intensive farming, sustainability and New Zealand's environment' (Parliamentary Commissioner for the Environment, 2004a), 'Smart Food, Cool Beverage' (Food and Beverage Task Force, 2006), as well as annual reports by the government departments and crown research institutes outlined above, for example Plant & Food Research's annual publication 'Fresh Facts: New Zealand Horticulture' (Plant & Food Research, 2009). These reports, among others, reveal that at a national level, support for the food industry is strong. There is a clear recognition of the need to transition to more sustainable farming practices, and there are many groups and organisations working at many stages of the food system to develop new and innovative farming techniques, crop varieties, processing methods, product types and distribution and marketing channels. However, these reports and the organisations which they talk about almost exclusively focus on large-scale, export orientated farming systems and processing and distribution chains. The focus of these organisations has not shifted away from continued growth and increasing exports year after year. Several key informants acknowledged that these goals of growth and sustainability were often conflicting and it was a difficult task to implement both simultaneously (Key Informants 5, 13, 14).

Many of the reports explore the strongly neoliberal political climate of New Zealand and its implications for development and innovation in the food system. For example, Smart Food, Cool Beverage made clear that at the end of the day, change has to come from the 'bottom up' in the food and beverage sector:

Although the government has an important facilitative and macro-policy setting function, in the end it is at the level of the individual

firm that this strategy will succeed or fail. It is firms that decide whether to invest, when and what in, what to produce, where to sell it and how to brand it (Food and Beverage Task Force, 2006: 22)

This statement suggests that central government is more likely to respond to existing industry based projects and initiatives by building support frameworks around them than it is to proactively initiate coordinating strategies within New Zealand food industries. It would appear that New Zealand business and industry has embraced this concept as evidenced by the activities of the various food industry groups (See Table 2). Key Informant 5, a professional planner who has engaged in contract work for central and local governments as well as the private sector, firmly believed that industry, as well as communities, will be leading the drive towards a transition to sustainability. She felt that the long timeframes involved in changing plans and policy at a national level, and the tendency of the bureaucratic process to 'water down' projects, plans and policies, meant that it was often more efficient and effective for groups and organisations to simply go and do things independently. However, as Donald (2008) has pointed out, increased levels of privately funded, industry based initiatives can sometimes result in governments further withdrawing their responsibilities, thereby putting increased risk onto industry itself.

At present, there are no overarching plans and policies at a national level which specifically address the sustainability of food systems and associated factors. Only one political party, Green Party of Aotearoa New Zealand (2010a), has developed policy around this topic. They have a comprehensive food policy which addresses many of the challenges that the food industry is presently facing or is likely to face in the near future. However the Green Party only holds a small number of seats in parliament, and many of the bills they have put forth during their time in parliament have been snubbed by the larger political parties or discredited as being too leftist. Therefore, while the Greens food policy is an excellent example of a political party recognising food issues and attempting to

promote them at a national level, the chances of these policies being adopted in the short term are probably slim. The core principles of the Green Party food policy (2010b:np) are listed in their food policy statement:

Key Principles

The Green Party's key principles in relation to food affordability, sustainability, democracy, safety and nutrition include:

1. Encouraging healthy eating amongst New Zealanders, especially children, and ensure that consumers in all income groups have access to affordable, healthy and nutritious food.
2. Regaining control of our food supply by producers and consumers.
3. Ensuring that New Zealanders are fully informed about what it is our food, know where it comes from and are able to exercise informed choice about the food we consume, including the impact of food choices on the environment
4. Cleaning up our food supply to reduce food-related risks from pesticides, antibiotics, growth hormones, food additives, and food-borne disease.
5. Ensuring our food is sustainably produced with minimum harm to the environment

Key Policy

The Green Party will establish a Food Commission to:

- help improve access to highly quality, nutritious, locally produced and affordable food;
- reduce the carbon footprint of the food we consume ;
- reduce the environmental impact of food we consume;
- support the development of vibrant local food economies by providing support and funding for community initiatives to establish and run community gardens, public fruit orchards, farmers markets, community supported agriculture;
- develop and oversee a food security strategy; and
- protect the genetic diversity of vegetable seeds and fruit trees.

5.4.1 Crown Research Institutes

Two of the key informants interviewed were representatives of Crown Research Institutes: one was from AgResearch (Key Informant 13) and one from Plant & Food Research (Key Informant 14). The purpose of the interviews was to further examine the roles of these institutions, and to evaluate their potential role in a more coordinated, holistic and strategic approach to food systems planning in New Zealand.

Crown Research Institutes, while owned by the crown, are essentially run as businesses, and are expected to turn a profit on any activities that they undertake (Key Informants 13, 14). So, while their objectives are to develop more sustainable food systems, they are required to do this in a way which is financially profitable. This usually involves the development of patentable cultivars or other technologies, and then developing products or production processes which use those intellectual properties in a way that can be legally protected (Key Informant 14). The institutes draw funding from a number of sources, including a handful of different research grants, for example the Sustainable Farming Fund which is administered by the Ministry for Agriculture and Forestry (Ministry for Agriculture and Forestry, 2010), as well as commissioned research from industry bodies. Much of the work of these institutions is carried out in close partnership with industry groups or producer cooperatives, for example DairyNZ, Fonterra and Zespri. Through these partnerships, the institutes are closely networked with industry and attempt to align research with their needs and wants, as described by Key Informant 14

It is quite usual for members of our team to be meeting with the industry regularly, and by regularly I mean once every two or three weeks, so we'll be sitting in say Pipfruit NZ's offices or Pipfruit NZ will be sitting in our offices on a regular basis, just sharing things that we're doing, interests, concerns, those sorts of things. And that would be the same for many of the industries that we work for. I'm not saying that it's perfect in every way, but in general I'd say we have

a fairly close working relationship with the industry. They share their strategies and the issues that they are facing with us, and we share our strategies, and often that's the trigger to developing things like sustainable farming fund projects, or responding to industry needs, either in our FRST [Foundation for Research Science and Technology] program, or in doing some work that they fund us to do, and I'm assuming that they fund us to do work because they think that we'll be able to deliver an answer to a problem that they are facing, because we wouldn't get ongoing funding if they didn't think we were delivering something of value.

Both key informants acknowledged that the work of their organisations was largely export orientated, however a good portion of the work done on vegetables by Plant & Food Research was utilised by local farmers producing for domestic markets, albeit on a large industrial scale. Both of the organisations do an extremely wide range of work, from breeding programmes and farm research through to the processing, distribution and marketing of those products. There is at present a strong and growing focus on moving away from low value commodity markets and towards higher value niche markets for value-added products. The topic of sustainability ranked highly on both institutions research agendas, with many different research projects occurring to optimise the efficiency of different cropping and farming systems, for example

With regards to phosphorous scarcity, we're aware of it and we've been doing some work around forage crops which are more phosphorous efficient, because there is inefficiency in the way that some plants get phosphorous out of the soil. Because at the end of the day you have to give plants phosphorous. But we're not doing any research into new sources of phosphorous or fertiliser alternatives, that's not really our game. From our point of view it tends to be around how to get plants that are more efficient. And also look at ways of minimising phosphorous leakage out of the system so that you don't have to put as much in (Key Informant 13).

Efficiency based research was the most common type of research undertaken by

the institutions, however the Parliamentary Commissioner for the Environment (2004a) referred to these types of activities as 'weak sustainability', whereby various environmental, social or economic objectives are addressed but the underlying prevailing socio-economic systems which lead to unsustainable behaviours and practices are not questioned or addressed in detail. Increasing efficiency may increase the amount of time that a non-renewable resource will last for, but it does not address the fact that the resources remain non-renewable and will run out eventually. This contrasts with 'strong sustainability' which does address the underlying social, cultural and economic reasons that rest behind environmentally unsustainable practices, and aims to readjust these factors at a fundamental level. However, as was highlighted by the key informants, these organisations have to work within their abilities and also cater to the needs of their clients. As such the focus is presently on addressing the more pressing environmental issues of agriculture, and a closer examination of deeper sustainability issues may come in time.

Key Informant 14 explained how, as a result of the Crown Research Institutes being operated on a for-profit basis, doing work with smaller scale local growers was not a practical option at present, due to the high costs involved in research and development compared to the small size of local scale industries:

The way that we're currently structured is to deal with industry bodies, rather than individuals and collectives. But if that is the way that the world goes then we would need to work out ways that we could better interact with collectives. I guess one of the other things is there are economies of scale for everyone, and research is no exception. So sometimes the economies of scale of working with collectives make it quite expensive to do so, so I think there would have to be a good and valid reason to put more resource into working with collectives, because I'm not sure you'd get enough bang for your buck. If there was a small farmer collective and we could interact with a small farmer collective then that could possibly work, but if the expectation was that you would interact with each of those small farmers, then that's not a very efficient way of doing

business or doing research.

Key Informant 14 also pointed out that independent local horticultural and agricultural consultants are a good resource to local farmers in most areas and they could be an appropriate port of call for smaller scale work and advice.

The institutes also engage in research which directly relates to local council activities or farmers interactions with local councils. Key Informant 13 explained one example:

We also do quite a bit of work in what I would call rural urban commenity, so this whole rural urban conflict, there's different expectations. When urban people think about rivers they think about fishing, tourism, the landscape, the beauty and the social uses of that river, whilst the rural community might be thinking about irrigation as well as some of those other things. So how do you merge those two expectations of a natural resource. So we do that work with various councils around the country.

The institutes are also involved in research projects that may help to increase the ease and efficiency of resource management on farms, from both a council and a farmer perspective, as explained by Key Informant 14:

For example, we're doing a sustainable farming fund project where we're trying to develop an irrigation calculator for industries such as apples, grapes, those sorts of industries to use to work out how much irrigation water they need to apply for in their resource consents.

These examples are just a few of the ways in which the research undertaken by crown research institutes can contribute not only to export orientated industry, but also to enhance and improve the lives of farmers and rural communities, and integrate science and technology with resource management in New Zealand, which was one of the key objectives outlined in the Parliamentary Commissioner

for the Environment report 'Missing Links: Connecting science with environmental policy' (2004b).

The key informants from these institutions both heavily emphasised the fact that any changes to the way things are currently done will only be uptaken by industry if it makes sense to do so, and as profit based enterprises, 'making sense' translates to contributing to the profitability of the industries involved. It was clear from the interviews that change toward sustainability will be supported by government, research institutions and industry, is ultimately driven by consumers, as illustrated by Key Informant 13:

We have to recognise that we are going to be selling to an ever increasingly discerning market, and they're going to be making their decisions based on a whole bunch of things, so I think that a whole food systems approach is going to have to be the way of the future, just simply in terms of maintaining growing markets. Because those markets are going to be much more picky. And as the worlds resources become more scarce, that's going to amplify that.

Overall, Plant & Food Research and AgResearch can be seen to be doing a wide array of research and development that is contributing to the efficiency, profitability and sustainability of New Zealand food systems at a large scale. As has been explained, under their current structures as 'for-profit' research enterprises, it is difficult for them to translate this work into the local, smaller scale context due to inefficiencies involved in dealing with smaller players. However, based on the research of these institutions that has been reviewed as part of this research through their various publications as well as the key informant interviews, it is clear that while the specific research and innovation is often targeted at large scale and export orientated industry sectors, many of the principles and products developed may be adapted to the smaller scale or local level. As such, significant opportunity exists for increased levels of communication and networking between Crown Research Institutes and local

governments. An equal opportunity exists for smaller scale farmers to form groups or cooperatives through which to approach and network with Crown Research Institutes in a way that is economically viable and worthwhile for all parties.

5.5 Food systems involvement at a local level

The primary focus of this research was to evaluate opportunities for planning to support sustainable food systems initiatives in New Zealand. Considering that most planning activity in New Zealand is carried out at the local and regional levels, a key focus of this research is the extent to which local governments are involved with, or have the potential to be involved with food systems within their districts and regions. To evaluate this, a survey of local council planning departments around New Zealand was conducted which asked them questions relating to their knowledge and awareness of food systems, and their organisations current, as well as potential future support for food systems initiatives. To supplement this data, key informant interviews were conducted with several staff members of councils at both the district and regional levels, to get some more in depth perspectives on the potentials or otherwise for food systems planning activity in New Zealand. The subject of local government was also explored in interviews with key informants who have had interactions and involvement with local councils. These key informants were from a range of organisations involved with different aspects of planning and food systems, including planning consultancy, Chamber of Commerce, farmers markets, food production and processing, and policy advocacy groups.

Local government is the level of government which has the most interaction with businesses and landowners. It is the 'human scale' of government which is concerned with matters which affect the day-to-day activities of members of the local community, and it is an accessible level at which citizens can get involved with governance, to voice any concerns they have and to have input into

participatory processes (Mendes, 2007). Thus, many food systems planning authors and researchers have identified local government as the level with the most potential for meaningful progress to be made, through interactions, participation and partnerships between local government and the community, including the local business community (Allen and Guthman, 2006; Feagan, 2007; Larner and Craig, 2005).

The research conducted for this thesis has indicated that, while the local level probably has the most potential for effective food systems planning activity, food systems are not currently an area that local body governments around New Zealand are addressing in any kind of coordinated fashion. There can be seen to be two primary kinds of planning in New Zealand. The first is the basic, traditional, legislation based forms of planning which focus on physical resources and the built environment. This views planning as serving a 'regulatory' function, which runs proposed activities through the 'filter' of the Resource Management Act and other legislation or planning documents. The second is a more recent manifestation of planning principles, which is a more active and creative engagement with the community on levels beyond the more cut and dry regulation based planning modalities.

5.5.1 Land use and environmental management

One of the main ways that local governments interact with the food system at present is through their roles in land use regulation and environmental management. The most obvious aspect of this is in the farming sector, where concerns over irrigation, fertiliser and effluent run-off into water ways, biodiversity protection, and erosion are just a few of the issues addressed at the local council level on a day-to-day basis. Regional councils are responsible for the bulk of physical resource management, with water, air, soil and coastal management being the key focus of their activities. Territorial authorities (city and district councils) are responsible for land use zoning aspects of farming. This

affects food systems in a multitude of ways including the location and density of housing in rural environments, the permitted land uses for any particular zone, as well as impacting on subsequent stages of the food system through planning decisions such as the location of food industry premises, including distribution warehouses, supermarkets and farmers markets.

Key informants were easily able to relate many of these types of activities to the food system. At the regional council level, water allocation and groundwater quality requirements profoundly affect the shape of local agriculture, because they restrict the amount of water and fertiliser that can be applied to the farms, which under conventional agricultural systems is generally correlated with productivity, particularly in drier areas or those with marginal soils (Key Informant 1). At a territorial authority level, the ways that council affects food systems as a whole was found to be more complex, due to the range of activities that local councils engage in, and the mix between rural and urban activities. Key Informant 3 outlined some ways that she saw the land use and resource management aspects of council activity affecting local food systems:

In terms of our district plan, we zone the rural area for rural activities, which obviously includes agricultural production, which would be I guess the main part of a food system. We don't necessarily promote it that much, so what we do is we recognise that the rural area is the most appropriate place for it [agriculture], and also what we call rural processing, so the processing of rural products, whether it be meat or through to timber production. So it is specifically provided for but not necessarily promoted as such in any specific policies. We do protect high class soils, they're recognised in the plan and there are rules around removing topsoil and things like that. Unfortunately we don't necessarily protect those areas from housing development and lifestyle development, which is an issue for us looking forward. And that's one of the issues that we want to better manage coming up in the future, as we are totally aware that food production is an issues and food security for Dunedin, and we have the Taereai plains which is a great food producing area and yet not a lot of food is produced there. I'm not

quite sure how we as planners do that, but one part is to actually start recognising that specifically in policies, and to prevent the chopping up of that area and putting it into lifestyle development.

Further concerns over lifestyle development were mentioned by several key informants, however it was clear that a solution to the problem is not obvious or simple. New directions in thinking around New Zealand agriculture are beginning to incorporate 'multifunctional' land use concepts which view many types of activity beyond farming as being able to provide economic, social or environmental benefits which hold value in their own right (Campbell, et al., 2009). Subdivision of land into lifestyle blocks, rural tourism, and other related activities have the potential to contribute to rural economies and rural communities through increased rural populations, greater social networks in rural areas, biodiversity enhancement, and so on. At the same time, these new rural land uses are in some cases driving the prices of properties so high that farming is no longer an economically viable option in certain areas, or it makes entry into farming extremely difficult for the younger generations who have little or no capital available. Another consideration, as raised by several key informants (Key Informants 8, 9, 10), was that the allowable density of rural dwellings may have to increase in order to use non-mechanised or low energy input farming systems in resource-scarce scenarios. Key informant 8, a small scale organic farmer who has also been involved in campaigns to protect high class soils in his area, shared his thoughts on the complexities of the matter.

Getting some land is a huge barrier [for farmers]. Property prices have gone up and it's all been nailed by lifestylers, which has created the value of that land. And then the mortgage is a handicap because you just have to have a certain amount of money at all times. And that's where planning could help considerably. But its a catch 22, because you might need to increase allowable housing density in rural land to encourage intensive human scale production, yet that is something that we've also been trying to protect against, with the lifestyle blocks locking up good land, so you'd need a way of ensuring that the land was used productively. I don't know how

you'd do it, but yes. There's also possibilities that parts of lifestyle blocks could be leased out to small scale farmers, but I don't know how realistic that is. There's some six hectare blocks around here, and activity could easily be going on in the back halves without it being too intrusive on the owners. So that could be quite novel. The other thing is some of these developments have had buildings located in a kind of a village with land radiating out beyond them, and then that becomes more accessible to using it in a cooperative way. So there are mechanisms, I'm not sure how practical they are, but its possible. It could be that they have a rural residential, or some kind of zoning when you've got to have the land used productively

Key informant 7, a representative of Federated Farmers, also acknowledged that the issue of agricultural protection and soil preservation around the urban fringe was not always a clear cut subject.

...around Outram for example, there's lots of traditionally good vegetable growing areas out there, and they've been putting subdivisions and houses and things out there. But the other thing is that housing isn't permanent. And once you've got a lifestyle block, it doesn't necessarily take it out of production. Those areas that are out of use now could still be switched back into production in the future. And just in terms of food systems planning, maybe concentrated groups of lifestyle blocks with shared land is a more sustainable way of working, and provides for less transport needs into town and so on. So yeah its something to consider for planners, but it's got to be considered in the wider context of what we're trying to achieve. And I think to be honest some responses to subdivision policy and high class soils have moved on from that whole mentality of protecting rather than providing for sustainable development.

This issue and the difficulty by which it could be addressed was also acknowledged by Key Informant 3, a senior planner and policy-maker.

...with smaller blocks you could potentially be more intensive with

your production. Those people can produce their own food, but the problem is that they don't, and what you end up with is areas that aren't being used for any kind of productive capacity and it's just growing weeds or used for a couple of llamas and that's it. So its about achieving some balance between providing for those people and encouraging them to actually undertake productive use of that land. It's still something that's quite difficult to put into policy and particularly into resource management. So it probably would need to be done in both a regulatory sense in protecting that area and recognising what its main values are, and some non regulatory incentives somehow, I don't know maybe through our economic development unit, or even rating, or getting links with the university or Invermay agricultural centre to look at research for food productive crops that are appropriate for the Taerei plain area.

She also made clear the Council would be seriously re-evaluating their approach to land use in their upcoming district plan review, and planned to incorporate considerations of multifunctional land uses and a wider variety of values that could be associated with rural landscapes

We are totally aware that we need to promote [sustainable food systems] more and it needs to be up front in our district plan, and that's one of the things that we want to put into our new second generation plan, is to basically say that rural land is for productive purposes, as one thing obviously, its also about conservation values, landscape protection, biodiversity and so on.

From the key informant interviews it became clear that the 'effects based' perspective as advocated under Resource Management Act planning frameworks is a favoured model of evaluating land use. Most interviewees found it more important to consider the broader or more long term strategic implications for land use changes, and keep an open mind as to potential new and creative ways of managing land use which catered to a variety of needs and wants in a variety of different ways.

5.5.2 Local economic development

Another area with significant overlap between councils and food systems is in the area of local economic development. One of the primary goals of local councils, and in particular territorial authorities, is to foster and support local economic development. If they are successful in this and the directions are well chosen, a healthy and resilient economy can have significant beneficial spin-offs for social, cultural and environmental factors within the community. The topic of local economic development was covered in several key informant interviews, which revealed several gaps in the current approaches taken by economic development units, as well as opportunities for a more integrated and holistic approach to economic development projects at different levels. In some places, including Dunedin where the interview with key informant 4 was held, the local economic development unit is owned by and operated within council. In other centres, the units are often technically independent, but all are highly networked and largely funded by local councils.

Developing a stronger local food system can be closely linked with economic development. Locally owned farms, processing plants or distribution networks equate to more local people being employed, as well as the profits of those enterprises being retained within the local economy. Local economic development units serve the function of supporting local business through providing services such as networking and business education, as well as resources such as start up funding or business incubator space for new businesses to have a premises to operate in while they get established. Key Informant 4, of the local economic development unit in Dunedin, said that their unit has had varying degrees of involvement with the food sector, however the focus was almost exclusively on businesses which had the intentions of exporting out of the Otago region.

Well we have a number of sectors that we support, and food is one of them. We have primarily focused on helping businesses that could

bring money into the city. So in the end, in terms of growing the economic base of the city, to us the primary goal is to increase the amount of money that comes in to the city, so we put effort into encouraging businesses to see external markets to help them get into markets, whether they're selling to Christchurch or Calcutta I don't mind, because its about them bringing some money into the city.

This strategy is based on the idea of increasing the flow of money into the city, yet it does not address retaining the money within the city by supporting smaller local businesses which can absorb and recirculate the money once it has entered the local economy. Many of the currently successful examples of sustainable food systems initiatives overseas have strongly supported the concept of smaller scale, locally owned farms which cater to local populations (Feagan, 2007; Hinrichs, 2003). Key informant 4 believed that with the resources available to their department, it was difficult to spread their focus too wide, and so they remain focused on larger scale businesses. The local business incubator service is one of their main initiatives for driving business development in the city.

Well, the incubator is the one that we put the most money into. And that is focused on high growth potential businesses, so this is businesses that have the potential to turn over millions of dollars rather than hundreds of thousands. So its pretty tight, but then if you're going to spend money on start up businesses you need to be focused, and the reality is there is never enough money for start up businesses, so that's the line they draw they say look this has got to be able to have realistically international potential. And by default really, they've ended up with mainly IT based businesses, because you're not having so ship product around the globe, we're a long way from anywhere so if you can move your ideas rather than move a product then you're better off.

Some key informants believed that planning for future sustainable food systems will require local governments to rethink their core purposes and functions, and to re-evaluate the modes by which they aim to catalyse change. Several key informants suggested that 'siloe'd' project thinking which addresses single issues

with highly tangible individual projects which are easily measurable may have to be replaced by a more systems orientated approach, which may be harder to define and measure but can have better long-term benefits, as summarised by Key Informant 5

I think there's a huge role for strategic brokerage kind of roles within projects, the people whose job it is to connect up all the dots and actually move between different segments of a project, its just a matter of project coordinators recognising the value of that. But with soft skills like that, its very hard to come up with some kind of performance indicator to measure whether they're successful or not, because what they're doing is stimulating change over a long period of time. So until we think about some ways to actually understand the roles that they play and the value that they have.

Key Informant 5 saw value in keeping an open mind about how projects could be supported and catalysed, and believed that often simple, inexpensive support services could go a long way in catalysing growth in the small-to-medium scale business sector. Key informant 4 was not opposed to this idea either, stating that smaller scale support services are considered if there will be a tangible benefit from the support given - a crucial aspect to consider when using taxpayers money to support local ventures.

Another gap that was identified in the strategies of the local economic development unit was that some ideas or possibilities were potentially being written off too soon, based on an incomplete understanding of the situation. For example, Key Informant 4 did not see a huge scope for diversification of farming in Otago beyond what was already being grown here, based on the assumption that the land is not good enough to do much with.

In a Dunedin sense, we actually haven't got a heck of a lot of productive land. The Taieri plains are there, but the rest of the land that is around the city is pretty marginal, so I don't think we've got a lot of choices. We're not like Canterbury where they've got a massive

piece of dirt there that is productive alluvial flood plains, it's a bit like a blank sheet of paper and they can do what they want, we don't have a lot of that, the reality of Dunedin is that we're pretty hilly and a lot of the land is pretty dodgy.

However, as was pointed out by Key Informant 10 and is covered by many dozens of authors on sustainable agriculture (e.g. Fukuoka, 1978; Herm, 2010), the potential to utilise land and build healthy soils in places that may not be expected by conventional agriculture is huge. Most models for sustainable agriculture involve a hugely increased proportion of human based work as opposed to machine based work. Terraced hillsides can be easily cultivated by hand where a tractor or rototiller may not be appropriately used.

Key Informant 4 believed that one of the big hurdles for them to overcome with regards to fostering local economic development within the food sector, was a lack of the population size and motivated and ambitious individuals required to reach the critical mass to really get a project off the ground.

We have struggled to kick stuff off with the food sector here. There are a few players, but what you need for a good industry cluster to work is some players that are big enough to be able to see beyond day to day, you know, they're not totally immersed in their business. And who have a collaborative bone in their body. Because you get some people who are just worried about their own business and they don't really give a stuff about industry wide issues or anybody else. So you've got to have that combination of people with a bit of spare head space, and the willingness to use that headspace in a collaborative, wider good kind of way, thinking along the lines of if what I do is good for you then ultimately it will be good for me as well. And in the food industry here there are a few people like that, but there's not a huge number of them, there's a lot of people who are just getting by.

The goals and directions of local economic development units can be seen to be 'walking the line' between ideal scenarios or what council is aiming for, and the

realities of the business world, which may not be as receptive to new ideas as some advocates for sustainability may hope. Overall, from the interview with Key Informant 4 as well as the experiences of other key informants with local economic development issues, it is apparent that there are many opportunities for improvement and innovation in the way that local economic development initiatives are implemented in the future. A parallel focus on wealth retention could be beneficial alongside a focus on wealth generation. And an openness to systems orientated thinking which has the capacity to recognise the valuable roles of smaller players in the industry could indeed be beneficial in scenarios which aim to be resilient in the long-term, where current scales of industry and global trade may no longer be feasible modes of operation (Francis, 2003).

5.5.3 Future resiliency of local communities

In theory, all councils should be aiming towards communities which are resilient to changes in the physical, social and economic contexts that they are embedded within, as this is an inherent aspect of sustainability (Newman, 2009). With increasingly uncertain futures ahead of us, communities need to prepare for unpredictable changes in climate, resource availability, and economic conditions. Many different strategies have been proposed by countless authors and activists about the best ways to increase the level of resilience of a community to external shock (e.g. Edwards, 2010; Fonte, 2008; Heinberg, 2007; Newman, 2009; Rayner, et al., 2008). Common themes include diversification of local agricultural systems, increasing the number of social and economic connections among a wider range of community stakeholders (spreading risks), supporting agricultural methods and cropping systems which require less irrigation and are more adaptable to unstable weather patterns, and creating efficient localised distribution networks for food and other products which do not rely on large amounts of fossil fuels. These issues and more were brought up in key informant interviews, and it became clear that while most stakeholders are aware of emerging problems and the impacts that they might have, the complexity of the

issue makes it extremely difficult to address. The role of local government in supporting the development of resilient communities was one topic of conversation. Key Informant 5 highlighted the opportunity for utilising newer forms of systems thinking to encourage civic engagement and enhance the level of integration between council and community.

I don't think we really quite know what governance actually means for something like food systems planning, I think we think governance means government and government departments, or local government doing it, but there's certainly other ways of doing it, and you see it in the UK, there's all sorts of little social enterprises that get set up, and they might be seed funded by government and I think there's a huge role for that, but they're the ones who go out and you know they'll set up local energy companies and run them, or they'll set up local food networks and run them, so I think that some work around some of those different models of governance would be really useful. I've just done some work with Waitakiri around New Lynn and one of the things I was doing was exploring the role of social enterprise to really run that place.

Similar themes were covered by Key Informant 10, who saw the supportive role of local governments having the most potential to facilitate strong action towards sustainability within communities

I think local government has a very important role to play. They're not going to make decisions on how, they're going to support people in doing it. Number one they don't have the man power or the money, especially in this city, to do what needs to happen, and similarly the people of Dunedin don't have either the tools or the support or the know-how, so there's an awesome partnership to be had between local government and the citizens to achieve those goals. Say if the council said right, Harbour Cone, up for sustainable food production, we'll get in a certain number of tools and here's the rules. Or they could rezone rural land and allow people to put a small, semi-permanent dwelling on a block of land to be able to manage that area more intensively. So I think we can't give up on local government, but we also need to forge on ahead with methods

and techniques of actually physically doing what needs to be done, but then hitting them up for support if its needed.

Key Informant 3, a city council planner, recognised the need to be responsive to the communities wants and needs, as well as giving effect to the higher level strategic objectives of the council and the city as a whole

[Mandate for food systems planning] would have to come from a more strategic level than the district plan. It should come from the community plan or an overall strategy within the city, whether its an economic development strategy or, dare I say it, a sustainability strategy, but it should come from the top level of the city and the district plan is there to implement that direction. And I guess its just part of the RMA, in terms of sustainable management, is social, economic, environmental and cultural so as far as I'm concerned the district plan has those elements in it already. Maybe it comes down to recognising the desire of communities for local areas where they may want to establish local markets or industry that will produce or process what they produce, so I guess it's about recognising that and making sure it's provided for in some form.

Significant opportunity to increase the level of localisation within the food system was identified. Key informant 15, an owner of a local food processing company in Dunedin which distributes around New Zealand, said his company had a policy of buying local where practicable, however he often encountered dilemmas when implementing this policy. For example New Zealand grown and milled flour from Canterbury was of a much lower grade than what could be imported from Australia, which he believed was due to the scale that they can process the flour on in Australia making better flour mills more viable. He also found that buying fresh local spinach was so expensive in both cost and added preparation time compared to buying pre-blanchd frozen spinach sourced from Auckland, or in some instances Europe, that it was simply not economically viable to include locally grown spinach as no pre-prepared spinach was available from local sources. Key Informant 15 felt that there was a huge potential for

council to support localised supply and distribution channels to help local businesses gain the necessary client base and economies of scale to make local processing viable again.

However several key informants also questioned the true value behind the concept of 'localisation', and brought up ideas similar to those of the 'local trap' as outlined by Born and Purcell (2006). Key informant 14, of Plant & Food research, believed that

Under a localisation model, it gets harder to attract skilled and specialised workers, I think that production mentality just misses out on some of the expertise associated with larger scale production. So maybe sometimes its just better to provide efficient distribution networks and pull in crops from the places where they are the most appropriately grown, rather than trying to do everything yourself.

Key Informant 4 thought that the values of specialisation and economies of scale in the food and agricultural sector were too good to be discarded any time soon by cities and regions

I think that specialisation is never going to go away. I think that transporting product will get more expensive, but I don't think we'll stop doing it, I think we'll get clever about how we do it. So I think that it will be more challenging but I can't see us going back to a completely localised economy. I think the whole localised production thing, in the end, you know Otago for example cannot be a grain growing area. There's stuff that we can do really well and stuff that we're always going to struggle with, and that will be the same with anywhere in the world. The reality is we could do some stuff here that would mean that we wouldn't import it, but we would do it really inefficiently, and use more resources. When you see the whole picture and see that the transport bit is usually a very small portion of the total energy used on a product, is that its better off for somebody to be doing it well somewhere, than people to be doing it inefficiently everywhere. Its like trying to grow grapefruit in Dunedin. Well you probably could if you had a glasshouse and heat

system and stuff, but you'll end up growing a \$20 grapefruit when in fact they fall off the trees in Bay of Plenty.

Key informant 9 felt that often, local food systems models were viewed through too narrow of a lens, with critics not adequately considering the wider reaching spin-off benefits of fostering a local food chain. He spoke about this with relation to farmers markets

I think there is a sense out there that farmer markets are a cute local activity run by amateurs that really have no impact and frankly no real importance economic or otherwise. Well officials could not be more wrong. There is a community of customers and supporters of farmers markets that would number in the hundreds of thousands. And the economic impact of employment, cash generation, families remaining on land, land remaining in production, is huge. Overseas they know this and study it, and yet New Zealand appears to be absolutely uninterested in it which is a great shame.

Additionally, Key Informant 10 believed that people too often judged sustainability initiatives in the context of the present, without seriously considering the future scenarios which they are aiming to pre-empt and prepare for. "I don't think that sustainability has truly sunken in with local governments, not at all. Sometimes you find it overwhelming, the very small grasp that people have of these issues". This belief led key informant 10 to become active in driving community food systems initiatives independently of council as he felt that the slow pace of progress within councils on sustainability issues was "too little, too late" with regards to the scope and depth of the challenges looming on the horizon for his community and indeed, humanity as a whole. Similar ideas have been expressed in high level, government commissioned reports, yet the extent to which they have been heard by government is questionable. Growing for Good (Parliamentary Commissioner for the Environment, 2004a) highlighted that New Zealand, while recognising issues of sustainability, has had a slow and uncoordinated response.

We cannot continue to respond so slowly and in such a piecemeal fashion. A much more strategic, long-term approach is needed. Such an approach should be developed from a wide stakeholder base, be sharply focused, and have clear goals to advance the sustainability of New Zealand's farming and food industries. We highlight the need for a forum for dialogue between all of New Zealand's farming, food and fibre stakeholders. (Parliamentary Commissioner for the Environment, 2004a: 6)

With a variety of perspectives from a diverse range of key informants, the picture painted of local governments progress towards fostering and supporting resilient and sustainable communities was mixed. Overall, it seems that most stakeholders are aware of the challenges at hand and the need to address them in one way or another. However, clear and coherent ideas and strategies about how exactly that can be done are not easily found. There is an obvious divide in opinions between those who assume a future which will be similar to the past century, of continued growth and ever increasing abundance, and those who believe that fundamental changes need to take place at the deepest levels of social and economic structures within society. Most key informants recognised the need for a stronger systems approach to addressing these issues, and several acknowledged the inadequacy of polarising issues as being, for example, 'local' or 'global'. The more likely reality will be a hybrid of the two, and there is significant potential for utilising planning principles to evaluate trade-offs and harness the best elements from each particular possibility wherever possible.

5.5.4 Survey of Local Governments

As part of the research, a survey was sent to the planning departments of all local governments in New Zealand. The survey asked planners about their organisations current levels of awareness of and involvement with local food systems, as well as their views on the potential to further incorporate food systems planning into their agendas. A further two questions were asked about

their perceptions of broader threats to their local area, such as climate change and resource scarcity, and whether this corresponded to a need to build increased resiliency into local food systems. A full copy of the questionnaire can be found in Appendix 4. Considering the fact that food systems planning has not been researched in New Zealand beyond the scope of urban agriculture (See Mulqueen-Star, 2009), the survey was intended to gauge the general attitudes of local governments and planners towards food systems issues, rather than to be a comprehensive and specific analysis of strategies and options for local councils.

Overall, responses to the survey were mixed, with some planners having an enthusiastic and positive reaction towards the prospects of and potential for council based food systems planning, while others rated addressing problems within food systems as an extremely low priority for council to address or could not even imagine them addressing them at all. Even the planners who did respond positively related to food systems in physical terms, through concepts such as waste minimisation, land zoning, or traffic management. These planners did not expand their consideration of food systems into the less tangible but equally important realms of social sustainability or long-term resiliency of their city or district. A small number of respondents had a more comprehensive understanding of the social, cultural, economic and environmental dimensions of food systems and their potential linkages to council process. Two of these respondents were from councils implementing an 'eco-city' approach, and saw food systems as being a crucial element of the bigger picture of what an eco-city should encompass.

Response rate and sample distribution

Of the 73 territorial authorities that the survey was sent to, a total of 16 responses were received - 14 from district or city councils and two from regional councils. A further seven councils responded to say that they did not feel that food systems were an area that falls within the scope of local governments

responsibilities and as such declined the opportunity to take part in the survey. Thus, the total response rate was 31.5%, or 21.9% if the blank returns are excluded. The councils that did respond were well spread throughout the country, with eight respondents each from the North and South Islands.

This low response rate, as well as responses from councils declining to participate on the basis of food systems not being perceived to be an area that councils should be involved in, is in itself an indicator that awareness of the potentials for food systems planning is low in New Zealand.

Current levels of food systems involvement

The first part of the survey sought to determine individual councils current levels of awareness of and involvement with issues relating to local food systems. Only one out of the 16 councils surveyed considered themselves to have policies, plans or programmes in place which directly support or enhance the sustainability of the local food system. This council had implemented programmes in a number of areas relating to the food system, many of them were community based and targeted at improving personal health and community development within Maori and pacific island communities. They had also begun to work with food sector businesses on sustainability objectives, and the respondent reported that the council intended to expand their levels of involvement in this area. This council's action on food related issues had been motivated by outcomes of community based workshops which focused on long term outlooks and strategies, which found that many communities supported a far greater level of food self-sufficiency. Out of the remaining 15 councils, four reported that their organisations have discussed food systems issues and considered implementing programmes or plans surrounding food, but they had not as yet actioned these ideas.

The survey also sought to evaluate the degree to which existing council policies

and plans could potentially be linked to food or interpreted through a 'food lens'. For example a sustainability strategy or a local economic development strategy may outline goals and objectives that could be achieved through action within local food systems, if they were to be interpreted in such a way, even if the policies themselves do not explicitly state their relation to food systems. From these questions, eight respondents thought that their council had policies that could potentially be linked to food, three were unsure, and five did not see any connection between existing policies and food systems. When asked whether these potential linkages were currently being recognised and acted upon, only three of the councils were found to be engaging with food systems through policy, and even in these three instances the involvement was indirect and 'incidental' rather than focused and deliberate. The types of activities included working with businesses, including food businesses, on issues of sustainability, supporting 'buy local' campaigns, waste minimisation services for businesses, or biodiversity enhancement.

The survey also covered questions surrounding support given by council for community and industry based initiatives which related to the food system. With regards to community based initiatives, five out of the 16 councils reported that they supported community gardens, usually through provision of land for community gardening activities, but also through networking services, such as connecting willing gardeners with private land owners or organisations such as schools or churches which were willing to allow gardening activities on their land. Several respondents reported that their councils have implemented specific community gardens policies. Community gardens policies were invariably a recent occurrence, with most being adopted within the last two years. Other respondents mentioned that community gardens did exist in their areas but they were not linked with or supported by council. Eight of the councils also supported community composting initiatives, which aimed at reducing the amount of organic waste going to landfills, either by being composted at municipal facilities, or by encouraging and enabling households to do their own

composting at home and to use the compost in their gardens. A small number of respondents also mentioned other community based projects, such as subsidised 'healthy living' classes for local residents which encouraged home gardening or buying local produce, but by and large the two main forms of community based food initiatives supported by councils were community gardens and composting initiatives.

With regards to support from council for industry based food systems initiatives, farmers markets were the most widely supported form of activity. Seven of the 16 councils supported the existence of local farmers markets, however the degree of this support varied from council to council. Some councils provided a site for the farmers market but charged them rent for the site, whereas others provided market space for free. Some councils felt that simply 'allowing' a farmers market to exist constituted as 'support', whereas other councils actively supported the markets and made an effort to connect with individual stallholders to investigate ways that they could assist them further. Following on from this, six of the councils reported that they support local food businesses through various projects and programmes targeted at supporting local enterprise and local economic development. While some of these projects did not target food businesses or address sustainability issues directly, respondents made clear that food businesses can and have been supported through such initiatives. The remaining nine councils which did not claim to support industry based food initiatives did not extensively elaborate on their reasonings behind this, however the general attitudes of some of the less supportive councils were well summarised by one of the responses: "We do not provide support - we have a regulatory role only - ensuring any food produced or sold onsite is safe and subscribes to the relevant legislation and guidelines."

Potential for further involvement in local food systems

The second goal of the survey was to establish the extent to which respondents

saw potential for their councils to become more engaged with various aspects of the food system in the future.

Seven of the sixteen councils saw potential for their council to further link existing council policies to food systems issues or to interpret existing policies through a food lens. Some respondents elaborated on their answers, for example this respondent, from an 'eco-city' council, felt that the wider attitudes within council would be hurdles to overcome:

Yes, I see a lot of potential, [our council] has only scratched the surface. However the predominant council view is that there isn't a food issue in [our region]; certainly not one that can be solved by local production

Another respondent highlighted potential connections to energy issues:

there are definitely more opportunities to explore food systems issues, particularly when we are wanting to increase efficiencies in transport and achieve energy savings in processing of food.

A further four respondents saw some potential in this but ranked it as being 'not a priority'. The remaining five respondents saw no potential to further link council policy with local food systems issues.

Another question in the survey asked councils if they saw potential for their organisation to further support community or market based initiatives that work towards sustainable local food systems. The range of responses were again quite varied. Seven councils were in favour of ideas to increase attention to food systems within their organisations, however some respondents were unsure about the willingness of the council as a whole to support such activity. One respondent answered "I think there is definitely scope for this - personally anyway, not sure if this is something that the organisation is wanting to support

at present though". Other respondents felt that increased council involvement in this area would need to come from the bottom up: "I do not know if Council has ever been approached. Council does not have the capacity to initiate this sort of thing. There needs to be community support first". Some respondents were not as optimistic, and highlighted the consumer driven nature of food systems and the difficulty with which they are influenced:

Not while we have a market dominated by two supermarket chains who demand (rightly or wrongly) all products at all times of the year forcing the importing of out-of-season fruit and vegetables. Individuals have a key role to play in waste reduction, in the choices they make when purchasing and using products.

Four respondents ranked further involvement with food systems as not a priority, while five were not interested in further pursuing the issue, usually for reasons of resource constraints or the perception that there is not an issue, for example "Council is under pressure to return to core business, not this sort of thing. It is likely that all businesses could be assisted, not just food. We have an abundance of food here to the extent that there is considerable waste". Smaller councils were less likely to be supportive as well: "It's not feasible for a Council of this size. There are much higher priorities and not enough staff to provide this sort of support". Some respondents again hypothesised that a lack of support within councils was based on the opinions of council staff who may not be fully informed of the issues: "A key problem here is the lack of understanding of why local food has benefits. Most initiatives are community driven and only weakly supported by Council."

Most respondents felt that local food businesses could be further supported alongside other businesses through local economic development programmes, enterprise initiatives, and rural and urban development strategies. Some respondents did not see a role for local council in the food sector:

There are not many small producers here. The supermarkets deal with big operators, and Fonterra takes all the milk. Kiwifruit goes to the packhouses. Very few people are involved in direct sale of produce.

Several respondents saw a need for more initiative coming from central government. "[food systems planning] involves influencing personal choice and should be driven by central government. Need to provide a consistent, nationwide response rather than acting in isolation". Several respondents again highlighted the current "tight economic times" as being a barrier to implementing initiatives beyond core basic services.

In today's economic climate, start-up funding is unlikely. This would be classed as a "nice to have" not a "need to have." It would require an increase in rates and our ratepayers are likely to be very against this. In terms of information, networking services, etc. this could be done through our Environmental Health team or our Community Development team.

Several respondents believed that increasing support for the food sector was necessary but that the job would be best done by organisations other than theirs. Overall, around half of the councils were interested in the idea of further focusing on food as a special area of interest for community health and resiliency, while the other half of councils did not see food as being any more of a special interest than other aspects of community and economic development.

A final question of this section of the survey explained to participants the concept of a food policy council (See section 7.3.1) and asked about their views on the potential for their council to participate in such a group, which aims to bring together stakeholders from a wide range of backgrounds and from all stages of the food system from research and development to farming, distribution, processing, retailing and waste disposal as well as community

members, council staff and member of other organisations (such as Chamber of Commerce). Only six of the 16 respondents felt that their organisation would be interested in sitting on a food policy council, two were unsure and a further eight were not interested in the idea. There was a wide range of explanatory comments accompanying the answers to this question. Some were positive but hesitant about food policy councils: "I think it's a good idea but I don't think this is something we would direct resources at, however it may be something that the local body politicians are interesting in participating on". Others again emphasised the need for community demand for such initiatives: "Maybe, if it was driven by the food sector. Council's approach is to support initiatives driven by the relevant sectors, rather than try to force initiatives upon them". Of the respondents who did not wish to participate in food policy council activities, several felt that it was the role of other organisations more than council, for example "No - It's not our core business. We are a regulatory body. Community and educational and facilitatory roles in this kind of initiative is seen more as a central government responsibility." Some respondents were more open to the idea and allowed themselves to consider the potentials. "In terms of the establishment of a Food Policy Council, [our council] would be well-placed to provide a range of environmental information that could support decision-making, for example, on water and soil quality and farming systems".

Local food systems in the context of sustainability

The final part of the survey was intended to evaluate respondents general attitudes towards some of the bigger challenges on the horizon, and whether they see addressing problems within food systems as being an important part of building resiliency to challenges such as climate change, energy and other resource scarcity, and unstable global economies. Overall, participants were found to have a high level of awareness of emerging global issues and the threats that they pose for their local area, however they had varying degrees of optimism about the extent to which this knowledge would be acted upon by

councils in the short term. However most respondents were supportive of the idea of further resilience building within their communities:

Most definitely. [Central] Government is driving climate change legislation without much regard or support for communities who will be on the receiving end of this - I am of the opinion that the role for preparing communities and ensuring the right systems and infrastructure is in place is a central government one - but it would appear that not much thought has been put into this.

Several respondents saw these issues as being presently under addressed within their organisations, and felt that while interest and awareness was slowly growing, that it would probably take some form of 'crisis event' or increasing fuel prices to really spur things into action.

Obviously the transition to less oil will reduce transportation, so we need to be more self sufficient. But it is a chicken and egg problem. Until the price of fuel goes up, people just buy stuff with high food miles. Courses on growing your own stuff can be good, and garden centres can take an interest in doing this. This type of stuff must be driven by the politicians (Councillors) and if they are not interested then nothing will happen. The community must also demand it, but the status quo prevails at the moment.

Other respondents acknowledged that the current council plans and policies did not adequately address these issues, however many councils are either currently or about to start reviewing their plans and creating second generation plans, and several respondents made clear that their organisations would be strongly increasing the level of attention to sustainability and resiliency issues within their new plans:

Our district plan was written in the mid 1990's when issues such as climate change, sea level rise, use of sustainable building materials, and energy consumption were not prevalent. Therefore there are no

policies in the district plan in place to address these issues. Our council is looking to address these issues, in particular climate change and energy consumption, in the district plan in upcoming reviews.

These responses indicated that awareness is building around issues of sustainability and resiliency within local communities, however it is clear that the 'inertia' of the attitudes of the organisations as a whole is taking some time to change, and will potentially not undertake meaningful action to address these issues until such a time that it becomes immediately and pressingly obvious that action is needed.

Summary of survey findings

The survey revealed a broad spectrum of perspectives and attitudes towards food systems issues within local councils. In many cases, the individual respondents, who were planners and policy-makers, were aware of challenges and opportunities within local food sectors, however often they were sceptical about the level of potential buy-in and support from the wider council as a whole. Of the councils that were currently supporting food systems initiatives, the most common activities that they supported were the likes of community gardens and composting initiatives, and a minimal level of support for farmers markets, usually through providing locations for farmers markets to take place at. There was only minimal evidence of the respondents or their organisations viewing food from a systems perspective, and its potential connections with many aspects of the community including public health, community vibrancy, local economic development, future resiliency, waste and nutrient cycling, biodiversity, regional identity, tourism and so on. In general the respondent councils have tended to focus on small and tangible elements of the food system, but have assigned taking a broader, strategic and holistic approach to food systems issues as being in the domain of other organisations (including central government), or have simply moved it to the 'too hard' basket. This problem was recognised by several

key informants, and was well described by Key Informant 5

...we do that in New Zealand all the time, we really do go for the low hanging fruit and we think that that's enough. When I was doing my PhD that was one of the really strong findings, that we're really good at the low hanging fruits, we do these projects that are really easy to do, like writing an urban design protocol. Well that's great, but then they stop and think that's really enough. I think we struggle to tackle the really difficult things. I don't know if its the lack of leadership, you know politicians are worried about not getting voted in so they don't want to push for the really hard stuff, but it is a huge issue I think we have across all of New Zealand.

The survey shows significant gaps in both the knowledge and awareness by local councils of food systems issues, and significant opportunity for councils to more closely evaluate the role that food plays in their locality and the potential ways in which council actions could help move these systems toward sustainable and resilient futures.

5.6 Conclusion

This chapter has explored the ways in which local and central governments in New Zealand influence and interface with food systems at all scales. At the national level, strong support from government for large scale food systems is evident in the form of the many government departments and Crown Research Institute projects which are targeted at maintaining a strong export economy in the agrifood sector. While these support services also incorporate sustainability objectives, some analysts have questioned the strength of these objectives when considering long-term time horizons in light of the emerging threats and challenges facing globalised trade sectors and industrial scale production methods (Parliamentary Commissioner for the Environment, 2004). Another gap which was identified within the large scale and export orientated food sector was the lack of an overall unifying vision which incorporates perspectives from

all elements of the food system. Significant 'siloing' is evident within each industry sub-sector, and there is a near total absence of a coordinated, cross sectoral and holistic strategy guiding the long-term direction of the food sector as a whole.

At the local government level, attention to food systems issues was identified to be even more uncoordinated and piecemeal. With regards to physical resource management, regional councils have a clear role to play in regulating and monitoring water use for irrigation as well as point and non-point discharges to water, air and soil. Looking beyond these measurable physical parameters, a deep level of confusion exists among local councils when considering food systems. Based on key informant interviews and a survey of local councils on food systems topics, the huge variation in responses illustrated that there is a lack of clarity and coherency in how councils can interpret plans and legislation such as the Local Government Act 2002 with regards to food issues. There was no evidence of clear strategies surrounding protection of high class soils and productive agricultural land, with conflicting views even within individual research participants about the ways in which rural land use should be managed. Even though high class soils are technically protected within policies of many local councils, there is apparent confusion about the practicalities of managing this, and the long-term implications of different land use decisions for the future productivity of rural areas.

Territorial authorities were generally uncertain about the degree to which they can and should address aspects of food systems beyond the physical aspects of land use and associated resource uses and discharge requirements. The Resource Management Act 1991 and Local Government Act 2002 both clearly outline the need for planners and local governments to consider and provide for environmental, social, cultural and economic needs of local communities through planning and resource management activities. At present, planners seem to be poorly equipped to address the non-physical elements of these systems, and

are lacking in creative strategies to help facilitate a move of food systems toward more resilient and sustainable production and distribution frameworks. Within the councils surveyed, there was a moderate level of support for some community based food initiatives, mainly community gardens, composting initiatives and some support for farmers markets. These initiatives can definitely have beneficial outcomes in many aspects of the local community, but in terms of the food system as a whole, they are very small scale and only delivering a very small proportion of the total food consumption of any particular town or city.

Overall, government involvement with food systems in New Zealand has been shown to be highly polarised. While there are strong levels of support for large scale export based agriculture at the national level, and likewise a reasonable amount of support for very small scale, community based projects within local governments, there is an overall lack of support or coordination or strategy surrounding the mid-sized farming and production sector. In terms of the development of sustainable food systems, as observed in case study materials and articles about initiatives in North America and Europe (e.g. Allen, et al., 2003; Cox, et al., 2008; Donald, 2008; DuPuis and Goodman, 2005; Mendes, 2007), it is this mid-scale sector which produces at a scale large enough to be efficient but still retaining elements of 'human scale' agriculture, that has perhaps the most potential in future scenarios. As such, it is seen as highly important for both central and local governments in New Zealand to re-evaluate their approaches to this sector, and considers options for enhanced coordination and strategies in the future.

6 Industry Based Sustainable Food Initiatives

6.1 Introduction

The role of the firm cannot be underestimated in within the bigger picture of a transition to sustainable food systems (Donald, 2008). The vast majority of the environmental, social and economic impacts of today's lifestyles can be linked to consumable products at one point or another, and those products are produced and distributed by businesses. Whether it is in the destruction of forests to make way for more grazing or cropping land, pollution of waterways by fertiliser or effluent run-off, contribution to climate change through fossil fuel emissions, damaging public health through highly processed foods laced with synthetic chemicals and stripped of meaningful nutritional value, or the inequitable treatment of farm labourers in distant and unknown shores, it is clear that the food system is no exception to the potential for industry to generate harmful effects. Indeed, the list of negative side effects of global industrialised food systems is overwhelmingly long, with effects so far reaching and deeply penetrating that they are difficult to even fathom, let alone concisely summarise (See Herm, 2010; Nestle, 2007; Pawlick, 2006; Shiva, 2000). It is suffice to say that there are many elements of food systems at all scales which are not only unsustainable, but are actually actively destroying the very environments, societies and economies which they are nestled within and depend on (Herm, 2010).

The sheer scale at which industrial food and farming systems operate on means that even 'small' imbalances in farming systems or production chains can be

amplified to result in serious environmental damage. These resource depleting practices would be bad enough on their own, but when continually rising global populations (Gilland, 2002) and forecasts of serious global climate disturbance (Mann and Kump, 2008; IPCC, 2007) are added to the equation, many researchers are left wondering if there is any chance at all of humanity avoiding some kind of cataclysmic and catastrophic event, where the hangover from the past hundred and fifty years of rampant resource exploitation and toxification of environments with synthetic chemicals and fossil fuel emissions finally catches up with us (McKibben, 2010).

People have been aware of many these serious problems within the global agribusiness sector and other industries for as long as the industries themselves have existed (Heinberg, 2007; McKibben, 2010). Yet driven by the hope of increased profits, and vested interests within unsustainable production systems, change has been extraordinarily slow to come about (Nestle, 2007; Parliamentary Commissioner for the Environment, 2004a). However, the past decade or so has seen a marked change in public awareness and concern for issues surrounding sustainability, and changes in public awareness usually equate to changes in consumer demand. Along with the power of industry to damage and destroy ecosystems, communities and economies, is the ability of firms, and industry sectors as a whole, to take action and develop new production modalities which seek to reduce social, environmental and economic harms associated with their industries, and work towards systems which are truly sustainable in that they could continue in perpetuity whilst maintaining or improving the resource bases which they draw upon (Mendes, 2007; Smith, 2007; Starr, 2003).

The Parliamentary Commissioner for the Environment (2004a: 22) highlighted a significant barrier to industry transitioning to a true model of sustainability, one in which human societies learn to "live off the 'interest' of natural capital, instead of using up or degrading the natural resource base". That barrier is the commoditisation of inputs for farming, both in a physical sense and in process

technology. The key point that they noticed was that many of the 'inputs' associated with sustainable agriculture do not have a high commodity potential - they are knowledge based solutions which enable the farmer to best make use of resources and methodologies on-farm so as to decrease or entirely eliminate the need for external inputs. Many of the products and practices of 'conventional' agriculture which are widely recognised as unsustainable, such as fertilisers, sprays, machinery, patented seed stocks and energy intensive practices, have a high commodity potential. Because it is easy to buy and sell goods and services with a high commodity potential, there are usually strong economic incentives for business to develop and market these products. The report highlights that all sectors of the food industry, from research and development through to information systems, physical infrastructure, financial and capital markets and even rules and regulations have evolved over time to support a commodity based production model (Parliamentary Commissioner for the Environment, 2004a).

Key Informant 12, a researcher in the field of sustainable enterprise, saw a strong role for industry based change, however she believed that it was only one factor in the bigger picture of the widespread change that is required:

...you've got those three drivers. You've got your consumer, your industry and your government. The government wants to get re-elected every three years and don't want to do anything that's really going to start to annoy everybody. And moving beyond that, you've got your multilateral agreements which don't seem to end up having any teeth but will have to at some point in the long run. And then you've got your industry and then you've got your consumer. And the consumer will drive a certain amount of industry change, but in a way all three of them work together, and it will be a combination of those that ends up bringing about change.

One of the key issues that surrounds the topic of transitioning the large scale and export orientated New Zealand food industry to sustainability, is the parallel goals of ever increasing exports and growth, and sustainability - two goals which

many authors (e.g. Edwards, 2010; Heinberg, 2007; Herm, 2010) consider to be mutually exclusive at a fundamental level. Some of the Key Informants interviewed (Key Informants 4, 7, 12, 14) admitted that there was often implicitly conflicting goals within organisations, with 'sustainability' on the one hand, and continued growth and competitiveness within international markets on the other. Yet most of these interviewees believed that these conflicting goals were often more perceptual than actual, and that sustainability objectives have the potential to be implemented in a way that is also economically beneficial. This was explained by Key Informant 13

People talk about a conflict between maximising profitability and minimising environmental footprints, and we encounter that all the time. But I'm not convinced that it's always a conflict. If you take methane and nitrous oxide just for argument sake. Now ruminants produce a lot of methane and nitrous oxide as by-products of an inefficiency in the way they digest their food. They're very efficient with fibre but they're very inefficient with protein, and as a consequence of that you get a lot of nitrous oxide, and methane is a by-product of that digestive system as well. So if you work with systems to improve the efficiency of the ruminant, to limit methane and nitrous oxide, you can also end up increasing the animals productivity. So in fact what might appear as a conflict actually in some instances can be compatible.

However it was also acknowledged that change will have to be piecemeal, as it will take time for businesses to adjust not only their operations, but also their mindsets, to the ideas and practices of sustainability (Key Informants 4, 13).

6.2 Industry based certification

In the past decade, businesses have increasingly begun to incorporate sustainability objectives into their core modus operandi (Key Informant 12). While many have made a conscious and targeted attempt to exploit new 'eco' or 'ethical' market niches (the 'ethical consumer' movement, see Clarke et al., 2007),

a growing number of firms are employing sustainability objectives even if it compromises their economic bottom line, for the sake of practising ethical business and corporate social responsibility ideologies. These new forms of business are referred to by a multitude of terms, the most common of which include 'green business', 'ecopreneurship' and 'social enterprise', and they are beginning to emerge more prominently within New Zealand (Key Informant 12).

Developing alongside the ideologies of ethical business has been the need and the desire to provide assurances to the consumer that the product meets set criteria on whatever measures it is promoting, whether it be social, environmental or other factors (Clarke, et al., 2007). This has resulted in new forms of 'industry based regulation' emerging in the past twenty years or so, with the number of these initiatives growing more rapidly in the past five years (Key Informant 12). Two well known and long running examples of green business or social enterprise are the 'fair trade' and organic movements which have occurred at a global level (Raynolds, 2000), and have had a strong presence in New Zealand markets for a number of years. Key Informant 12 has been researching the emergence and characteristics of ecopreneurial businesses in New Zealand for several years. She saw there being many challenges for businesses considering sustainable practices, and thought that some of the more 'pioneering' ecopreneurs were potentially breaking the ice and making easier for other businesses to follow suit

It's a struggle for small people because sometimes its important for them to be as green as possible, but its about them knowing what to do and finding out what to do, and then they've got so many other compliance issues, and no time to do it. So there's a real struggle for those small businesses in New Zealand, because there's already a whole heap of stuff that they've got to do, and this just adds to it. And a lot of them don't even know what to do as basic steps because they haven't got time to stop and think about it. But the ecopreneurs are really different, because its their passion and they build their

whole business on it and they're strongly committed to the environment, so there is that sector as well.

One of the other significant things we found with our ecopreneurs was how they were starting to change industry and peoples perceptions of things, and that was one of the biggest ways that they were actually making a difference towards being sustainable. So in some cases when an eco business starts up, other players in the industry have to adopt green practices as well in order to compete, which might not have otherwise happened if the ecopreneurs had not been there. So they start to change peoples perceptions, and people start to realise that you can have an environmentally friendly business and still make money.

Fair trade and organic certifications are examples of initiatives which have international recognition yet can be adopted and implemented at small scale, localised levels. However there are also many smaller, more localised industry based certification systems in place around the world, which seek to monitor product life cycles and provide assurance to consumers through various auditing and evaluation systems (Higgins, et al., 2008). Many of these initiatives are intended to promote the ecologically sound production methods used for their products, or to verify the specific origin of a product to ensure its authenticity in cases where regional significance or 'terroir' is an important aspect of the food product, while some certifications are based on proximal criteria to determine the 'localness' and supposed subsequent energy footprint of a product (Fonte, 2008; Higgins, et al., 2008; Smith, 2007).

Some of these certification or assurance schemes span across whole industry sectors and are carried out by third party accredited auditors, while others operate on a smaller scale and rely more heavily on consumer trust (Fritz and Scheifer, 2008). In addition to this, there are a large number of companies which incorporate 'eco' branding with absolutely no evidence or assurance of the legitimacy of this claim. This practice is common in the field of organics, for

example, says Key Informant 8, who claimed that many unscrupulous producers can label their products as 'organic' even if they are not organic, relying on the fact that the majority of consumers do not understand the difference between 'organic' and 'certified organic'. This has led industry groups such as Organic Farm New Zealand and BioGro to campaign for stricter government regulations about what can and can not be legally labelled 'organic' (Key Informant 8). Regulations surrounding this exist in places such as Europe, but at present in New Zealand, virtually any food product can legally be labelled as 'organic', regardless of the quantity of synthetic chemicals it contains or unsustainable farming practices it was produced by (New Zealand Biological Producers & Consumers Council, 2010).

6.3 Direct marketing initiatives

Compared to other countries, New Zealand has had a relatively light uptake of industry driven sustainability initiatives (Key Informant 12). With regards to food, one area that has gained popularity in recent years is through direct marketing initiatives (Key Informants 8 and 9). Direct marketing initiatives are centred around the idea of produce going directly from producer to consumer, eliminating the costly and inefficient 'middle man' element and usually by default, shortening the physical distance of the supply chain (Key Informant 8). The most common forms of direct marketing initiatives found in New Zealand at present are farmers markets and producer driven 'food box schemes', whereby the farmer delivers boxes of produce directly to subscribers who pay a weekly or monthly fee in exchange for the produce. Farmers markets are "a food market where local growers, farmers' and artisan food producers sell their wares directly to the consumer. Vendors may only sell what they grow, farm, pickle, preserve, bake, smoke or catch themselves from a defined area." (Farmers Markets New Zealand, 2010:np), and they have seen an explosion of growth in New Zealand in the past ten years. There are now over fifty farmers markets operating around the country, with increasing numbers of consumers shopping at the markets all

the time (Farmers Markets New Zealand, 2010). Key Informant 9, who is closely involved with the Otago Farmers Market in Dunedin, believed that there was good reason for their popularity

There's two sides to the coin. On the one side we've got the seller who's supplying the customer direct, there's no middle man charges, there's no outside transport charges, there's no storage charge, the only cost to them is their time and running their vehicle to the market. From the customer point of view, we never promote farmers market food as cheaper, although the expectation is that there should be some shaving off of the margins because its direct supply, but we have no input on pricing. They tend to purchase on the basis that its fresh rather than that its cheap. And some people do it because they want the market to survive and they want the vendors to survive, and the regular customers have their favourites and they support the people that they like. It's also a social situation, people meet people, they go there to meet people, families gather there, they have breakfast, meet for coffee. Generally people seem to look happier than they do at the supermarket.

Farmers Markets New Zealand is an organisation which represents all farmers markets in New Zealand, many of which are charitable trusts or run on a not-for-profit basis. They have recently introduced a new form of industry based certification, which is centred around 'certified authentic farmers markets', the criteria for which is that at least eighty percent of stall holders at each market are 'certified local' producers or processors. These certifications have been introduced to further the underlying goal of farmers markets, which is "to support the sustainability and viability of farming in the local region" (Farmers Markets New Zealand, 2010:np).

Key Informant 9 saw farmers markets as influencing a wide range of community values, from local economic development through to public health and nutrition, to supporting rural communities, and increasing rural-urban linkages. Key Informant 8, an organic farmer, had found the farmers market to be an easy and effective way of selling produce, as compared to a box scheme which was not

viable in the long term

It's very difficult to grow your stuff and to sell it, well very time consuming, doing everything is bloody hard. The farmers market is quite good in the sense that you can grow your stuff and then once a week you can bag it up and sell it. And that's just half a day and it's done. But driving around restaurants and dropping off a bit here and a bit there is hard yakka. And of course the standard that's required is high, and not unreasonably, but it takes a lot of doing. So the easiest that I've experienced would be the farmers market. I ran a box system for 20 or 30 customers for a few years, that was pretty good, that was carting to just two collection points for them. So that wasn't too bad, it involved a bit of extra packaging, but it worked pretty well. One thing I found a bit difficult was that at the start of the season you'd have one or two things and at the end of the season you'd have one or two things, but people were very understanding and very loyal I found.

Although farmers markets are currently considered very popular, and are the principle method of selling produce for a good number of local small scale farmers, the market segment is still relatively small. At the Dunedin farmers market, which is considered to be a very popular farmers market, an estimated 5,000 to 8,000 customers shop there each week (Key Informant 8). This equates to around 5 to 8 percent of the population of Dunedin attending the market one day out of seven. As such, it is clear that the food volumes sold at the farmers market will only comprise a very small percentage of the city's overall weekly food consumption. Additionally, key informants 8 and 9 both reported that many of the smaller scale 'local' growers struggle to make a living from their farming, and for many the farming is more of a supplement to their day job. Given that farmers markets are the single most prominent form of alternative food network in New Zealand at present, with box schemes coming a distant second, it becomes clear that while initiatives such as farmers markets are highly visible, they have by no means managed to provide a 'mainstreamed' sustainable food supply as yet.

6.4 Conclusion

Industry sectors, including businesses at all stages of food value chains, have been identified as having huge potential to implement sustainable practices and evaluate business decisions on triple bottom line (social, environmental and economic) criteria rather than primarily economic factors as has been the norm for the past century (Key Informant 12). The development of these 'ethical business' practices has been extensive overseas, especially in Europe (Clarke et al., 2007; Fonte, 2008; Higgins, et al., 2008; Smith, 2007). In New Zealand, ethical business has seen a surge in popularity in the past five years or so, with several companies or industry groups gaining high profiles in different markets via their branding as 'organic', 'fair trade', 'local' or 'eco friendly' products. However, while highly visible, the product volumes sold through these channels still only represent a small proportion of the total food consumption of New Zealand. While they can be seen to be a crucial step in the transition towards sustainable systems, and have a valuable role in shifting public and industry perceptions towards new modes of thinking about the ways we live and do business, there is still a significant leap to be made for sustainable enterprise to move from the niche into the mainstream. Realistically, it is likely that the most effective way for green industry to achieve this is to find ways to be economically competitive whilst also meeting triple bottom line sustainability objectives (Key informant 12).

7 Adaptable frameworks for food systems planning

7.1 Introduction

Over the past ten or so years that food systems planning has become a more active field of planning interest overseas, a methodology has been built around ways in which planners can apply these theories in practice. This chapter evaluates the different forms of applied food systems planning practice that have been successfully utilised in other countries, for the purpose of developing ideas for the opportunities and recommendations for food systems planning in New Zealand, as found in chapter eight. Many of the types of food systems planning practice outlined here have significant potential to be applied within the New Zealand context, and indeed we are lucky enough to be able to evaluate over ten years of developing methodologies to help guide the implementation of food systems planning in this country. This chapter examines applied examples of both governmental and non-governmental food systems planning initiatives. In reality, the two are usually interconnected, with communities and industry influencing government planning process, and governments aiming to facilitate and enable action at the community level. The research presented in this thesis shows a significant gap in attention to these issues in New Zealand, and there are many different ways that action could be initiated. This chapter is intended to provide an idea of the different options for food systems planning practice,

which can of course be adapted by the reader to their own particular local context.

Many of these methodologies involve standard planning practices applied in the context of sustainable food systems or community food security. In the broadest sense, planners are concerned with actioning overarching goals such as healthy communities, quality of life, sustainable practices and social justice within communities (Pothukuchi, 2004). Planners involved with food systems issues overseas have aimed to facilitate the creation of a sustainable and secure food supply whilst moving toward these broader goals - the ever familiar 'balancing act' that characterises all planning practice (Anderson and Cook, 1999). In many cases, the social, political or economic cultures of a place can be barriers to the implementation of innovative or novel initiatives. Feenstra (2002) describes how planners must attempt to create the social, political, intellectual and economic 'space' through actions such as networking, communication, conflict resolution, and policy advocacy, in order to overcome these barriers and allow new progressive ideas to become actionable in communities. Pothukuchi (2004: 357) views community as an "indispensable unit of solution to food problems", because it is the community level at which most planners work, and it is communities which planning practice seeks to benefit.

7.2 Food Systems Planning in Practice

There are multiple ways that planners can approach food systems planning activities in a more specific sense. Because of the multidisciplinary nature of food systems planning and the broad spectrum of stakeholder groups involved, the process is inherently multi-layered and collaborative (Mendes, 2007). Networking, communication, and transdisciplinary research are key elements of practice in this field. The planner serves as a facilitator of exchange between

different stakeholders and experts from different fields of speciality, and various levels of government (Campbell, 2004). This complex arrangement of stakeholder groups also means that food systems planning is highly contextual, and the planner will need to utilise their knowledge about the specific place that they are operating in, in order to establish what courses of action to take (Pothukuchi, 2004).

In her article evaluating the strategies and methods employed in several practical examples of food systems initiatives, Feenstra (2002) has outlined 'Three P's' which she sees as the cornerstones of food systems planning practice: public participation, partnerships, and principles. Public participation is a key element of all forms of community planning. Giving stakeholders and the public genuine decision making power results in better outcomes for those stakeholders. Partnerships are another key element that all planners will be familiar with. Planners can utilise partnerships within projects and initiatives in order to help with access to resources, evaluation and direction-setting, and placing projects within the broader community context both practically and conceptually. The third 'P', principles, refers to the need for planners and stakeholders involved in planning processes to be deeply committed and genuinely interested in furthering community development towards social, environmental and economic sustainability (Feenstra, 2002). One of the biggest challenges for planners in this field is to identify actions and outcomes which will result in the greatest number of beneficial outcomes for a wide range of stakeholder groups, whilst maintaining cost effectiveness and efficiency (Anderson and Cook, 1999). A large part of this involves identifying options for policies, plans and programmes which have 'multifunctional' outcomes (Mendes, 2008).

Multifunctional agriculture is a field of agro-politics which seeks to identify and

promote agricultural practices and rural land uses which produce multiple benefits in addition to commodity production - for example environmental protection, landscape character preservation, or social benefits for rural and urban communities (Blandford and Boisvert, 2002). Pothukuchi (2004) encourages planners to extend this concept to entire food systems, by attempting to foster action which will not only increase sustainability and security of the food supply, but also contribute towards other community objectives. Similar conceptualisations are expressed by Francis, et al. (2003) through their discussions on 'agroecology', which is the concept of viewing the entire agricultural and food production system as an ecological system with both material and non-material inputs and outputs. They reiterate the importance of interdisciplinary communication and collaboration if food systems planning activities are to be successful incorporating holistic practices for holistic outcomes (Francis, et al., 2003).

Pothukuchi (2004) sees planners as being uniquely positioned to effectively facilitate these information exchanges, and they can also function as an interface between non-political stakeholders and local and regional governments. She sees a crucial role of planners as being to evaluate both the positive and negative roles of local government, and identifying situations in which actions of local government may in fact be hindering food systems planning processes, or perhaps instances where direct involvement from local government is not the most effective option for an initiative (Pothukuchi, 2004).

Food systems planning practice is highly integrative. It relies on the planner creating linkages between stakeholders, local governments, and researchers or other practitioners in various fields (Mendes, 2008). Methods outlined in most literature on the topic usually fall into one of three broad categories:

Networking, communication and collaboration; data collection, analysis, and interpretation; and interfacing with local government with regards to creation of plans and policies. These three components of practice are overlapping and are centred around core planning principles, as illustrated in Figure 1 (see Chapter 8). These three types of practice, and their interrelations, are discussed below.

7.2.1 Networking, collaboration, and communication

Food systems planning is a field where planners' training in facilitation, communication and networking are of critical importance. The range of stakeholders is broad, and the issues are often complex. The role of the planner is to ensure that effective communication is occurring between stakeholder groups, and to assist those groups in forming connections between their disparate fields of interest to form tangible goals and directions for food systems projects and initiatives (Campbell, 2004). This role involves facilitation at a variety of different interfaces, involving multi-directional exchanges between stakeholder groups such as food businesses, non-profit organisations, consumers, community members, local government, researchers, and educators (Mendes, 2007). Communicating the existence and outcomes of these projects with the general public and other planners is also highly important (Pothukuchi and Kaufman, 2000). In an emerging field such as this, knowledge sharing networks between departments, institutions, or even across national borders could help make more efficient use of the information that is available and to avoid 'reinventing the wheel' of food systems planning in multiple locations (Francis, et al., 2008).

Networking and coalition building between sustainability-oriented food businesses, both horizontal and vertical, can assist in the construction of more functional business relationships and the establishment of more efficient supply chains (Ahumada and Villalobos, 2009). Anderson and Cook (1999) saw three

main streams of practice converging during the emergence of food systems planning: community nutrition and education; agricultural research and grass roots activism; and community development and anti-hunger research and activism. Utilising the expertise of practitioners in these different disciplines is useful in both informing stakeholders and policy-makers, and monitoring and evaluating the effects of policy implementation (Anderson and Cook, 1999; MacRae, 1999). Effective communication channels between these stakeholder groups are essential for the synthesis of well-rounded and robust goals and objectives (Feenstra, 1997). Campbell (2004) has suggested that planners could utilise techniques from the environmental disputes resolution field, including stakeholder analysis, scoping, consensus building and various forms of impact assessment, to assist in participatory processes in food systems planning.

7.2.2 Data collection and evaluation: closing the theory-practice gap

The practice of data collection and evaluation serves an indispensable role in the planning process, particularly in a field as complex as food systems planning, where general trends, correlations, or system weak points may not be immediately obvious (Clancy, 2004). Data collected on food systems related measures can be useful in informing both stakeholders and decision-makers. It can assist in identifying priority areas and can provide useful support for funding applications, or can identify conflicting goals within the agendas of food systems planners (Campbell, 2004). Another key use of data is in the monitoring and evaluation of the outcomes of policy changes or community projects. This is useful for determining the degree to which planning outcomes have a genuine and tangible effect in the communities they seek to benefit, and aids in the improvement of future programmes (Pothukuchi, 2004). In essence, by identifying data sources that are indicators for community food security or other

measures, planners can engage in a more scientific approach to their practice by creating falsifiable hypotheses about the outcomes of a project, and compare differences in data pre- and post-implementation (Anderson and Cook, 1999). For the planner, where in-depth data analysis may not be a field of speciality, their role may be more about sourcing data or recommending the collection of new data, and collaborating with researchers within universities and other institutions who have the ability and the interest in analysing this data (Campbell, 2004; Feenstra, 1997). For data to be effectively collected and interpreted, a clarification of terms and agreement on what specifically should be measured is required (Anderson and Cook, 1999). As with any research, collection a full set of data of all of the relevant factors is not feasible, and as such a selection of 'indicator variables', which are thought to provide good measures of the status of food systems related issues within a community, must be chosen (Campbell, 2004). The determination of what these variables are at present an imprecise science, however as more research is undertaken on community food systems, a more comprehensive model of effective indicator variables may emerge. Anderson and Cook (1999: 147) provide some suggestions for the types of data food systems planners could aim to collect and interpret. These include:

- Measures of nutritional status of residents
- Nutrient intake and food consumption
- Related food practices (e.g. cooking practices, breastfeeding)
- Food and nutrition knowledge and attitudes
- Social capital in relation to the food system
- Food system descriptors (availability, quality, education)
- Economic/social system descriptors that affect capacity for change

Data collected can be qualitative as well as quantitative in nature. Feenstra (1997:

32-33) provides some examples of more qualitative measures that can be considered, including:

- Conducting historical reviews of agricultural production in the region to determine what foods can be produced
- Estimating the regions present self-reliance in food
- Identifying local and seasonal foods and developing guides to them
- Conducting local marketing studies of producers and consumers
- Understanding urban agriculture and the connection with local food policy or planning councils.
- Understanding social, cultural, recreational and other human values in the context of the food system

Data collection and analysis will assist in identifying areas where improvements are most needed or can be most effectively implemented. Historical analysis of crops that have been grown in the region in the past, as Feenstra (1997) suggested, may identify opportunities for reintroducing some crops which have fallen out of production under circumstances which have now changed. As an example, smaller scale farmers cultivating potatoes for local markets may not have been able to compete with large agribusiness under a traditional model, but with new community food systems initiatives in place such as more efficient distribution of local produce, machinery sharing systems, or new marketing opportunities from 'buy local' campaigns, local potato production may again be practical and economically viable. Another example may indicate that farm land that was converted to one particular farming style, say dairying, during times of high dairy prices on commodity markets, may be more economically, environmentally and socially productive if converted to alternative crops if commodity prices fall for a sustained period of time, or new legislation such as emissions trading schemes make high-emission agriculture like dairying less

financially viable.

Another practice that has emerged with regards to using data in the context of food systems planning is the conceptual tool of 'foodshed analysis'. Similar to the concept of a watershed, a 'foodshed' represents the geographic area from which a population derives its food supply. Foodshed analysis is a technique that has been employed by researchers to trace the flow of food from 'farm to fork', to assess areas of inefficiencies and to evaluate different possible alternatives for a more environmentally, socially and economically sustainable food supply (Kloppenburger, et al., 1996). In this sense, a foodshed analysis is both a *tool for understanding* the flow of food in the food system, and a *framework for envisioning* alternative food systems. The term foodshed was first used by W. P. Hedden in his 1929 book 'How great cities are fed', which he wrote after concerns of the impacts of a proposed nationwide railways strike might have on food supplies for New York city, and the realisation that no one had conducted any kind of coherent assessment of exactly how food supplies reach urban centres (Kloppenburger, et al., 1996). The term, and the idea, faded into obscurity for some decades before being revived by permaculturalist Arthur Getz in his 1991 article 'Urban Foodsheds' (Getz, 1991). Getz's work was picked up on by Kloppenburger, et al. (1996) who expanded the concept and brought it more clearly into the context of urban planning and environmental management.

Kloppenburger, et al. (1996) advocated for foodshed analysis from a normative standpoint - they wanted to see foodsheds become localised for the purposes of countering the perceived negative side effects of the globalised food system. However, in light of debates on localisation and 'the local trap' in the past decade, modern foodshed analysts such as Blum-Evitts (2009) and Peters, et al. (2008) prefer to take a more objective and strategic approach to foodshed

analysis, whereby cost-benefit analysis is conducted for various scenarios to find optimal solutions in growing a mixture of specialised export crops and crops which serve the immediate nutritional needs of the people living within the region. These cost-benefit analyses are conducted not only for economic factors but also for environmental and social factors. In some instances, it may only take the conversion of a small percentage of the available agricultural land to growing local food supplies, while still allowing for a strong export economy.

Foodshed analysis is but one example of how conceptual frameworks for interpreting data may help bring more tangible elements to debates around topics such as localisation. Data analysis can help determine which types of localisation strategies have meaningful outcomes versus those which are only cosmetic or are a hindrance to the system as a whole. As this section has described, data collection is a useful tool for both designing effective programmes and initiatives, as well as for the monitoring and evaluation of post-implementation project performance, for the purposes of identifying successes and failures of certain techniques in order to further improve the methods of food systems planning into the future. However, data should not be used without careful consideration to the contexts from which it came. Webb et al. (1998) suggest to planners to ensure that appropriate data is collected in a professional fashion, for example ensuring that representative samples are obtained or that unreasonable correlations are not being drawn from data taken out of context. Feagan (2008) reiterates the need for food systems based research to be closely dovetailed with the goals and objectives of communities and organisations so as to provide useful and relevant results. Authors also warn against premature analysis of post-implementation data, highlighting that some projects may take several years to have their full intended effect and collecting assessment data too soon after the implementation of the project may show it to be ineffectual when

actually it has just not had time to mature (Webb, et al., 1998).

7.2.3 Policy advocacy and the role of governance

One aspect of food systems planning in which the planner's specific skill set is particularly important is in the development of food related policies, plans and programmes within government agencies (Mendes, 2007). Authors exploring the field of food systems planning have described several ways in which planners can provide an interface between stakeholders, the public, and government agencies (e.g. Donald and Blay-Palmer, 2004; MacRae, 1999; Pothukuchi, 2004). Planners can use their knowledge of government structure and governance capacity at each level to help determine the most effective ways that policy changes can be lobbied for, created and implemented towards the goal of a sustainable and secure food system (Mendes, 2007). Planners are also in the position to compile the information and outcomes of data gathering and collaborative processes, and translate this into the language and the context of government (Pothukuchi, 2004). Because of the highly multidisciplinary nature of food systems planning, the development of policies, plans and programmes will not usually be confined to just one department. As Mendes (2008) has explained, food issues can touch on fields as diverse as environmental protection, agriculture, land use, public health, community building and local economic development, and planning practitioners need to work to identify the ways that each government department can potentially fit into the bigger picture of food system sustainability.

Essentially, food systems planning practitioners and activists need to identify ways that government departments and policy and planning instruments can be utilised to further the goal of sustainable food systems (Lebel and Lorek, 2008). This is the practice Feenstra (2002) described as 'creating policy space' for food

initiatives by utilising policy and planning instruments to open up new opportunities in specific places. Several authors have pointed out that again the question of scale presents itself in this situation: at what scale of governance can new policies be the most effective? Mendes (2007) suggests that meaningful changes can occur at all levels of government, although they will take on different forms depending on the scale at which they are implemented. At the municipal level, areas of focus could include supermarket location, dealing with food 'waste', urban agriculture, emergency food supplies for disadvantaged citizens, or developing the local economy. At the regional and national level areas of interest could include public health, nutrition, sustainable agriculture and soil preservation, and the management of fisheries and natural resources. In some cases, food systems planning can even extend out to the global level, in the form of trade agreements, food aid, and addressing climate change and other issues associated with agriculture (Mendes, 2007). However, the bulk of planners' work occurs at the local level and involves a community focus, and this is the most common scale at which food systems planning activities are undertaken within a government context (Pothukuchi, 2004). Local government is community focused, and it is the most accessible to the average citizen. People can go and talk to their local body politicians and actually feel like they are able to contribute to their community in a meaningful way (Mendes, 2008). Korfmacher (2000) argues that scales of government should not be viewed as separate, and that planners and policy-makers should focus on connecting different levels of government through policy mechanisms in order to achieve efficient and effective outcomes for a larger number of communities. Also, while sustainable food politics often naturally tends toward the local scale, Feagan (2007) warns of a policy version of the 'local trap', where planners and policy makers may neglect to consider the potential value in advocating for policy changes at higher levels of government, leading to a 'reinvention of the wheel' in

a policy sense in many individual local governments, when in some instances overarching broader policy mandates may be the better option.

One of the primary roles of those working within governments on food issues is to firstly recognise, and secondly take steps to mitigate, tensions arising between different objectives within their organisation and the community in which it operates. Rayner, et al. (2008) illustrated that organisations are frequently troubled by conflicting goals, often with sustainable development on the one hand, and economic competitiveness on the other. MacRae (1999) sees these difficulties as inevitable in the transition to a genuinely sustainable system, but he also believes that this situation has resulted in a large degree of *rhetorical*, as opposed to *actual* support for sustainability initiatives within governments. He sees this as being due to the desire of government agencies to be seen to be supporting sustainability, but not wanting to sacrifice the economic wealth of a region in doing so. Pothukuchi (2004) has observed that local governments and planning agencies around the world are undergoing a transformation from reactive forms of governance which respond to market forces, to a new form of governance characterised by proactive partnerships and coalition building to efficiently achieve sustainability objectives. In this political, environmental, and social climate, it is crucial for governments to take this role in identifying effective ways of transitioning to sustainable systems which minimise economic loss.

As discussed earlier in this chapter, it has been made clear within the literature (Allen, et al., 2003; Donald, 2008; Eaton, 2008; Mendes, 2007) that food systems planning initiatives are largely shaped by the context from which they emerge. As such, the degree to which governments actively pursue this subject will vary depending on the level of public pressure, buy-in from businesses, consumers

and governments, budgeting allocations for food projects, and so on (Eaton, 2008). Historically, there has been slow and reluctant uptake of long-term sustainability initiatives by local and central governments, and in many cases activists and advocates are losing hope for 'top-down' solutions and are now beginning to shift toward grass roots or 'bottom-up' strategies (Heinberg, 2007). If it is the case that action on food systems issues is lacking within a particular government, Pothukuchi and Kaufman (2000) suggest that at the very minimum, planners can conduct an assessment and evaluation of policies and plans within that organisation to ensure that these frameworks are at least not actively hindering the development of independent sustainable food systems initiatives.

Many authors have provided specific examples of the types of policies, plans and projects that may be implemented in a food systems context (e.g. Feenstra, 2002; Lebel and Lorek, 2008; Mendes, 2008; Schiff, 2008). Commonly mentioned possibilities include: developing seasonal and healthy eating guides for local produce; encouraging entry-level farmers through information about potentials of local farming; facilitating vertical and horizontal *networking* between food businesses; supporting or implementing 'buy local' campaigns; soil preservation and farmland protection through zoning and bylaws; the creation of 'food charters' within planning documents; establishing or working with 'Food Policy Councils'; and supporting urban agriculture initiatives such as community gardens and allotments by providing land, funding or other resources. Lebel and Lorek (2008) also discussed some more 'conventional' policy options which have not been highly successful in food systems planning, such as regulation, monitoring and penalties for businesses who do not comply with set standards of 'eco-friendliness' or social measures. The general trend in food systems planning now is to utilise participatory and evidence based mechanisms rather than imposing top-down controls on industry (Lebel and Lorek, 2008).

Kloppenber, et al. (1996) describe two main approaches towards transitioning to sustainability: '*Succession*' planning involves a conscious and incremental transfer from old to new practices across all sectors of industry and society, whereas '*secession*' planning involves strategic preference for withdrawing from unsustainable elements of the dominant system, creating alternatives in areas of high urgency, rather than challenging all aspects directly. This is similar to Allen et al.'s (2003) observation that most sustainability oriented discourse and action can usually be identified as either 'oppositional' or 'alternative' in their core philosophies. Allen, et al. (2003) and Kloppenber, et al. (1996) both favour a secessional or alternative approach, suggesting that practitioners try to create 'insulated spaces' to work and grow within, to create systems which can exist alongside conventional food systems until such a time that situations such as peak oil catalyse a more complete transition. This resonates with Feenstra's (2002) concept of 'creating spaces', and thereby opportunities, through planning frameworks.

Hinrichs (2003) and others have taken issue with the division of problems into simplistic and often dichotomous categories, arguing that this can cause practitioners and academics to be blindsighted to options which do not fit in to one of these categories, or make them less open to the possibility of mixed methodologies for working towards sustainability objectives. Many authors (Allen, et al., 2003; Kloppenber, et al., 1996, Mendes, 2008; Hinrichs, 2003; Donald, 2008) recognise that the true nature of these systems is much more complex than simple categorisation can account for, and as such the overriding themes in food systems planning practice discourse include advocacy for an evidence based, open minded, democratic, collaborative, strategic, and adaptive planning methodology.

Several authors have also recommended that planners and policy-makers consider multiple time scales when considering new strategies, with a mixture of short, medium and long-term goals (Reilly and Willenbockel, 2010). This is an extension of the secessional planning method which considers the adaptive capacities of a place across different time-frames, to balance realistic outcomes with sustainability objectives. Ultimately, planning action on food systems issues needs to reflect information gleaned from participatory processes with communities and stakeholders, and data gathered about various elements of the food system by researchers and planning practitioners (Feenstra, 2002; Pothukuchi, 2004). Fritz and Schiefer (2008: 442) believe that the biggest challenge for food systems planners is to

integrate and balance the interests of all stakeholders including enterprises, consumers, and the society as a whole, considering all of the relevant factors for successful integration including economic efficiency, environmental control, social responsibility, fitting process organization, food safety, marketing, transaction rules, and so on.

While policy options may be a desirable option for achieving certain goals within food systems, Mendes (2008) suggests that planners should always keep in mind that policy outcomes should help to facilitate progressive change. She also argues that planners should be weary of over-beauracratizing food issues, and always evaluate the potential costs and benefits of each option in a broad sense.

7.3 Non-governmental Food Systems Initiatives

As a result of the slow uptake of food systems planning by governments and

planning bodies, a large portion of activity in the field to date has occurred largely independently of formal government involvement (Allen, et al., 2003). Given the strongly neoliberal political climates of many western nations and the overriding desire of governments to leave food systems issues mostly up to market forces, initiatives have generally evolved from the grass-roots level, with many activists coming to accept and even utilise the characteristics of the social, political and economic contexts in which they are embedded, by sourcing funding and support from non-governmental sources or through their own entrepreneurial endeavours (Eaton, 2008). While many food systems initiatives may be independent in the most general sense, many are involved with local government or planning bodies to varying degrees. Some may make submissions on plan reviews or engage in other consultation processes, while others are directly mandated by government agencies and receive funding and support from these sources, while remaining a formally independent organisation. The past twenty years has seen the widespread emergence of a variety of different types of food systems initiatives. Some focus on bridging the urban-rural divide by reconnecting farmers and consumers through farmers markets and community supported agriculture schemes. Others focus on further empowering local food system actors through projects such as community gardens, horticultural training programs, or business incubators for local food based enterprise. Many also provide education on food and nutrition for children, growers, caterers, or the general public (Allen, et al. 2003). Most of these initiatives work towards goals of a more equitable, effective, and ecologically sustainable food system (Pothukuchi and Kaufman, 1999). This section explores the main types of sustainable food systems initiatives that are discussed within the literature, for the purpose of illustrating the types of stakeholders and organisations that food systems planners usually engage with.

7.3.1 Food Policy Councils

Food policy councils are groups comprised of members from various food related sectors who have the goal of identifying problems within local food systems and providing ideas or implementing projects to address these problems. Food policy councils can also function as a bridge between stakeholders and civic officials (Feenstra, 1997). Of all the different forms of food systems initiatives, food policy councils have the most direct links to government and planning agencies. There are now dozens of food policy councils established across North America, with varying structures, functions, and goals (Pothukuchi and Kaufman, 1999). While some operate under government mandate and have direct planning powers (Mendes, 2008), the majority exist outside of government frameworks, although virtually all food policy councils have close connections with government agencies and planning bodies, with active and frequent communication between them (Pothukuchi and Kaufman, 1999). Most independent food policy councils operate as not-for-profit organisations (Schiff, 2008). The emergence of food policy councils has reflected a growing awareness by activists other food systems stakeholders of the need to be able to integrate their goals and objectives with government and other institutional frameworks. Mendes (2007) describes one case study in Vancouver, Canada, where a local food coalition was formed and operated fairly unsuccessfully for several years. It was not until they began to articulate their goals and objectives in policy terms that coincided with the city's mandates, tools and planning objectives that their project began to gain traction as well as support from their local municipal government. Donald and Blay-Palmer (2006) note that until recently, public policies have tended to bias toward large firms or agribusiness, making it more difficult for small to medium farms or enterprises with sustainability objectives to become established. It is this type of imbalance in government or organisational frameworks which food policy councils seek to address.

The City of Vancouver (2010: online) defines food policy as "any decision, program or project that is endorsed by a government agency, business, or organization which effects how food is produced, processed, distributed, purchased, protected and disposed of". One role of food policy councils is to coordinate stakeholder involvement and data gathering activities in order to advocate for policy and program outcomes which further the transition to sustainable food systems. Essentially, they seek to broaden discussion on food systems beyond just the agricultural sector, to encompass a more comprehensive perspective of the entire food system (Schiff, 2008). One of the key functions is to make connections and establish communication channels between different food systems stakeholders who may not otherwise work or collaborate with each other in a focused way. Members of food policy councils can include farmers, food distributors, nutritionists, processors, waste managers, activists, academics, community gardeners, government staff and others (Pothukuchi and Kaufman, 1999; Schiff, 2008). Often, government staff are appointed as non-voting advisory members so as to avoid conflicts of interest between stakeholders and government agencies (City of Vancouver, 2010). In many cases, planners from local government will sit on food policy councils as their primary means of obtaining information and advice on food systems issues (Mendes, 2008).

While work in areas of policy and plan formation is of a central role to some food policy councils, particularly those operating under direct government mandate, many food policy councils focus more heavily on projects and services as opposed to direct input to policy making (Pothukuchi and Kaufman, 2000). Schiff (2008) has described how food policy councils emerged by utilising a policy focus as a format that is easily recognisable by governments, so that they could engage, interact and form closer ties with government bodies. She has now

identified that many food policy councils have more recently moved away from direct policy making activities toward a stronger focus the effective implementation of those policies, through programs, networking, and information distribution among food systems stakeholders. This may be an indication that these initiatives are 'maturing' in areas where they have been operating for some time. Once the initial goals of acquiring government mandate to engage in food systems issues are achieved, the food policy council can focus more on utilising its networks and resources to effectively act on policies and mandates. In other cases, particularly for independently established food policy councils, they sometimes lack the leverage or credibility to directly advise on policy issues, so project implementation and research is a more viable field of activity. Schiff (2008) highlights that the widespread use of the term 'food policy council' has come to encompass a wide range groups with varying goals and modes of operation, and that a term like 'food systems advisory committee' may be a more accurate descriptor for groups engaging in these activities. Whether a food policy council is focused primarily on policy making or policy implementation, their core purpose remains the same. That is to function as a networking interface and strategic broker between food systems stakeholders, and governments or planning bodies. Harper, et al. (2009) identified that often, a food policy council will be involved in the start up phase of new projects by coordinating the necessary stakeholders, and then those projects go on to become self supporting. Food policy councils usually continue to stay in contact with these initiatives and may collect and analyse data about the outcomes of a project, as well as keeping all members and offshoots of the programmes up to date with the latest news and innovations in food systems planning both locally and abroad. There is the significant potential for the formation of food policy council-like entities in New Zealand and indeed many of the key informants interviewed expressed keen interest in participating in such a forum.

7.3.2 Alternative Food Initiatives

There are many different ways in which the outcomes of data collection and stakeholder participation can be implemented in a practical sense. After a community has evaluated its food system, through methods such as community food assessments or food policy council forums, core stakeholders involved need to devise plans to act on these ideas and integrate them into the broader community, beyond those stakeholders who are directly involved in planning processes. These initiatives, which seek to address the problems found within conventional food systems by providing 'alternative' options, are collectively referred to in the literature as 'alternative food initiatives' (Allen, et al., 2003). Alternative food initiatives encompass a wide range of food production, distribution and retail activities ranging from farmers markets and community supported agriculture initiatives to the upskilling of farmers to more successfully distribute and market their produce, through to promoting increased food production within urban environments via community gardens and other forms of urban agriculture (Harris, 2009).

Most alternative food initiatives promote the re-localisation of food systems as a way of reconnecting communities and working towards a model which is more resilient to present and future challenges such as resource scarcity and climate change (Jarosz, 2008). A common feature of these initiatives is a concentrated effort to educate community members about local agriculture, address urban hunger, improve community economic vitality, and involve residents in community relationships around food (Feenstra, 1997).

Where the conventional food system is largely undemocratic and is driven

primarily by an economic bottom line, alternative food initiatives seek to introduce a democratic approach to food systems with a triple bottom line for evaluating sustainability outcomes that considers social and environmental factors as well as economic ones (Lockie, 2009). While many of the initiatives are formed using democratic process, Smith (2007) illustrates that the true democratic nature of alternative food initiatives is achieved through the consumer: by offering an alternative system of food procurement, consumers can express their own personal values on these subjects through their purchasing decisions. Lockie (2009) and others have referred to this consumer empowerment as a form of "food citizenship" whereby consumers support sustainable local food production and resilient communities. Seyfang (2006) believes that initiatives promoting sustainable consumption have been gaining significant traction in recent years as a new environmental policy objective, and it has been an area of significant focus by sustainable food activists and advocates. This recognition of consumers as the ultimate deciders of the success or failure of a project or strategy is of central importance to the operation of alternative food initiatives (Fritz and Scheifer, 2008). One of the key goals of these initiatives is to develop markets for products outside of conventional supply chains, a task which requires focused effort at both production and consumption ends of the food system, as well as strengthening the linkages between producer and consumer through education, communication, and shortening of supply chains (Higgins, et al., 2008).

Many alternative food networks are focused on sustainable business development within the food sector. Friedmann (2007) has observed that many food related enterprises choosing to implement triple bottom line sustainability agendas are of a small to medium size. These enterprises often focus on niche products like speciality, ethnic or organic foodstuffs (Donald and Blay-Palmer, 2006). While

these can be lucrative markets and a good starting point for sustainable enterprise, the large number of small enterprises equates to a structural problem in which efficiency and economies of scale can often be compromised, particularly in a highly competitive business environment where small businesses may not only be competing with one another but also with larger companies (Fritz and Scheifer, 2008). As such, many alternative food initiatives work towards coordination, cooperation and support among sustainable food businesses to aid in increasing efficiency within 'sustainable' food systems. This can include fostering cooperation along value chains, or networking of small to medium sized enterprises in dynamically evolving business relationships (Fritz and Scheifer, 2008). Another consideration for alternative food networks is the role of larger firms in the picture of sustainable enterprise. Recently, many larger corporations have begun to move into product lines that can be marketed as 'local', 'fair trade', 'eco friendly' or 'carbon neutral' and so on (Donald, 2008; Lockie, 2009). This has presented a dilemma for alternative food systems advocates who have mostly positioned themselves in opposition to capitalism or large scale corporations (Lockie, 2009). It is up to the individual initiatives to decide on whether to include larger businesses in their overall efforts to achieve sustainable food systems, viewing the business landscape as an ecology with room for both small and large businesses fulfilling different niches, or whether to stick to their 'grass-roots' political ideologies and exclude big business from their sustainable food system agendas (Lockie, 2009). Watts, et al. (2005) suggest that alternative food initiatives which focus on the networks, or systems, by which food is produced and distributed are more effective than those which focus on set ideas about outcomes such as supporting only small scale localised businesses. This again reiterates the importance of both a systems approach to food issues, and also the need to look objectively at strategies and outcomes for projects rather than being bound by preconceived ideas about what a sustainable

food system will look like.

7.3.3 Direct Marketing Initiatives

One strategy that has been widely adopted within alternative food networks and other food systems planning initiatives is the shortening of supply chains through 'direct marketing initiatives'. These initiatives usually aim to achieve a variety of environmental, social, and economic goals by reconnecting producers and consumers, thereby increasing the degree of 'embeddedness' of the food system, and ideally having positive spin-offs for local economies and the environment (Cox, et al., 2008). Direct marketing initiatives come in a wide range of formats, with the most common being farmers markets, community supported agriculture initiatives, institutional buying programmes, food co-ops and 'good food' box schemes (Feagan, 2008). The philosophy behind direct marketing initiatives is that by shortening supply chains, a greater portion of the retail value of produce goes to local farmers, who then in turn employ local people, and the entire social and economic of the fabric of the community is said to be strengthened (Feenstra, 1997). Shreck, et al. (2006) pointed out that smaller scale local farmers often aim to have a steady supply of various seasonal crops throughout the year, for sale through farmers markets or box schemes. This offers more steady, year round employment for local farm workers, as compared to the more highly seasonal nature of large scale, single crop commodity agriculture systems.

In addition to these benefits, many advocates of alternative agriculture and direct marketing initiatives hope that the increased connections between producer and consumer fosters a shared concern for environmental protection of the local area (Feagan, 2007). As we have seen in the arguments over the 'local trap' (Born and

Purcell, 2006), these outcomes may not be as directly conflated with 'localisation' as some proponents would hope. However the very fact that direct marketing initiatives are centred around an increased level of awareness about where food comes from and how it is produced is seen by many to have a positive effect within communities, and lays the foundations for future progress to be made (Cox, et al., 2008).

Higgins, et al. (2008) identified three main types of direct marketing initiatives, which differ in their degree of 'directness'. These were: 'face-to-face' exchanges, where no middleman is involved in the transaction; 'proximate' exchanges, based on relations of local or regional proximity; and 'extended' marketing initiatives, which are based on institutionalised conventions or certification standards, such as fair trade or organic, some of which also have a focus on more direct supply chains. Starr, et al. (2003) conducted an analysis of direct marketing initiatives in the United States.

Direct marketing practices first emerged in the form of farmers markets and community supported agriculture initiatives (Hinrichs, 2003). Farmers markets are markets, usually outdoor markets run on a weekly basis, which provide spaces for local farmers to have stalls to sell their produce to the public. Some farmers markets also extend into allowing the sale of locally processed food items. Almost all farmers markets require produce to be grown or processed within a set regional boundary, and many also require the farmers or other employees from the farm or business to be there selling the produce in person (Connell, 2008). Farmers markets have been a huge success around the world and their numbers have been rapidly growing for the past decade or so (Feagan, 2008). They have been held by many activists to be a key response to the

unsustainability of conventional food systems, and a mechanism by which to embody food with non-economic values such as social and environmental values (Feagan and Morris, 2009), in addition to the economic benefits that increased local production-consumption networks have on communities (Lyson, et al., 1995).

Community supported agriculture initiatives are organised around a contract between a farmer and a set of local residents. Members signing up to a community supported agriculture initiative contribute money up front at the start of the season, thereby buying a 'share' of the yet-to-be-grown produce (Feagan, 2007). Having the money up front allows the farmer to have some degree of financial stability, to buy tools and equipment needed, and to gauge how much food they will have to produce that season, as well as what kinds of crops, based on member requests (Jarosz, 2008). The farmer then distributes produce to members throughout the growing season, usually delivering a box of mixed seasonal produce once a week. In this kind of initiative, the risk is spread, so that the farmer is less vulnerable to gaps in crop production or potential unforeseen crop failures and so on (Cox, et al., 2008). Members are made well aware that they may get smaller amounts of food at some stages and may get lots of food if bumper crops occur, however most members of these initiatives are happy with this and choose to engage with local farmers to support social and environmental ideals. Some community supported agriculture initiatives even hold regular networking events so that members get a chance to not only meet the growers of their food but also the other members from their local area who are also subscribed to the initiative. In this sense community supported agriculture can serve as a community building mechanism as well (Cox, et al., 2008).

Farmers markets have been hugely successful in many places around the world, and have served as the spawning ground of many small scale farming or processing ventures which have been highly innovative in providing niche products to local markets, as well as the basic staples (Connell, 2008). Community supported agriculture initiatives have had a more mixed success rate, with many of them turning out to be unprofitable in the long run, although there are also examples of long running successful initiatives (Hinrichs, 2003). Either way, as theory and practice around sustainable food systems began to grow in the 1990s, many activists and practitioners began to realise that farmers markets and community supported agriculture, no matter how successful, were still only contributing to a small proportion of the overall food market, due in part to limitations in the ways that the food was marketed and distributed, as well as the greatly reduced efficiencies that come along with the reduced scales of small to medium sized local farmlets (Cox, et al., 2008). Recognising these limitations, activists began to investigate possible options for expanding the market share of sustainability oriented food production systems.

Institutional food procurement became a focus of several groups aiming to upscale or 'mainstream' locally and sustainably grown produce and products (Hinrichs, 2003). Institutional buying programmes are centred around the idea of encouraging large institutions or businesses which engage in catering activities, such as universities, hospitals, schools, hotels, events centres and restaurants, to commit to purchasing local, seasonal food that is grown in sustainable systems where possible (Friedmann, 2007). These initiatives can range from simple databases, updated regularly at both ends, of 'what produce is available' (from farmers) and 'what produce is wanted' (from institutions),

through to fully coordinated and formalised organisational structures which can enter into buying agreements with businesses, while promoting the goals of local sustainable agriculture (Pothukuchi, 2004). Some of the more formalised initiatives, such as the 'Local Flavour Plus' program in Toronto as described by Friedmann (2007: 392) have created "collaborative and flexible models of standards and verification that give ladders to farmers and corporations to scale up local supply chains for sustainably grown products".

Many of these initiatives are run on a not-for-profit basis and function to connect farmers and buyers, providing a networking and coordinating role to align the needs and capacities of all stakeholders involved (Hinrichs, 2003). They also aim to rebalance the scales in the market back towards local ecological farmers who have in many cases been squeezed out of markets due to the food purchasing frameworks of large institutions, or have been disadvantaged by their lack of resources to deal with increasing regulations and protocols within the agrifood sector (Friedmann, 2007). The provision of networking services through alternative food initiatives can be invaluable to small to medium sized food enterprises, operating in a portion of the sector which is often under supported. Through cooperative and collaborative information sharing between these businesses, the group as a whole can become more adaptable to change, and help lessen the inefficiencies associated with doing business at smaller scales (Fritz and Scheifer, 2008).

Institutional buying programmes have been hugely successful in increasing markets for local produce (Shreck, et al., 2006). Starr, et al. (2003) conducted an analysis of direct marketing and institutional buying initiatives in the United

States. They found that while there was a high level of interest by institutions for buying local or sustainable farm produce, there were several barriers which were identified that were holding back a more widespread uptake of these products. The barriers identified included:

- Increased logistical burdens on the buyer (more phone calls, accounts, etc).
- Inconsistency in supply
- Higher cost of local produce
- Lack of knowledge of how to connect with local farmers
- Unavailability of pre-processing for local produce, increasing labour costs
- Pre-existing supply contracts that lock out local producers
- Insurance requirements for vendors
- Lack of discretionary budgets within institutions. Must buy cheapest

(Starr, et al., 2003: 302)

It is these barriers that organisations who coordinate institutional buying programmes and other direct marketing initiatives seek to overcome. The key principles underlying these initiatives reflect those underlying food systems planning in general, which is to utilise networking, communication and data gathering to understand the situations and needs of all stakeholders, to devise strategies and solutions which take steps towards sustainability with as little compromise as possible for all stakeholder groups (Hinrichs, 2003; Pothukuchi, 2004; Starr, et al., 2003).

8 Discussion and Recommendations

8.1 Introduction

The research presented in this thesis in the form of the literature review, document analysis, key informant interviews and a survey of local government planning departments has explored a range of elements and aspects of food systems in New Zealand. The status and general directions of the food system has been evaluated in terms of central government involvement, local government involvement, and involvement of individual food related businesses in strategic activities within the broader food sector, and contextualised within international literature from food systems researchers.

Overall, the research has confirmed the initial premise from which this thesis topic emerged - that food systems planning is highly underdeveloped and underutilised in New Zealand, especially in comparison to other countries such as Australia, Canada, the United States and the United Kingdom (e.g. Allen and Guthman, 2006; Cox, et al., 2008; Feenstra, 2002; Larsen, et al., 2008; Mendes, 2008; Pothukuchi and Kaufman, 2000). The sustainable management of food systems themselves (outside of the physical parameters of resource use and waste discharges) is at present entirely market driven in New Zealand, and there are significant concerns over whether the market alone is achieving the necessary level of sustainability when considering a long-term approach (Parliamentary Commissioner for the Environment, 2004a). Many of the problems and challenges recognised and addressed by food systems planners overseas more than a decade ago (Feenstra, 1997; Kloppenburg, et al., 1996; Pothukuchi and

Kaufman, 2000) remain largely unacknowledged and addressed by planners, governments and industry within New Zealand.

The research findings have revealed opportunities for action at three levels: central government, local government and within food industry itself. The opportunities and recommendations at each of these levels are interlinked and interdependent. The research found that at present, a clear understanding does not exist about where responsibilities lie with regards to planning for sustainable food systems. Many key informants and survey respondents at a local government level were waiting for direction and guidance from central government on the subject, as there is currently no wider mandate or cohesive strategy at a national level surrounding the security and sustainability of food production and distribution systems. Additionally, local government participants almost unanimously highlighted that, because their purpose is to serve the interests of their local districts and regions as outlined in the Local Government Act 2002, demand for further attention and action to food systems planning would have to come from local businesses, citizens or community groups. The very nature of planning and local government in general requires input in the form of civic engagement and process participation, so that planners can respond to the wants and needs of various stakeholders through the lens of triple bottom line sustainability criteria. As such, there is significant opportunity for businesses and other groups who are involved with food production and distribution to increase their level of engagement and interaction with local governments, and to further link their own goals and objectives with the wider goals and objectives of local councils and the interests of the community.

This chapter outlines the key research findings as they are relevant to each of these three sectors. Each subsection then goes on to evaluate the gaps in approach to food systems issues within each sector, and subsequently identifies opportunities for further action. A series of more specific recommendations, categorised by each sector, are then given in section 8.5.

8.2 Opportunities for central government

The key informant interviews and document analysis of publications relating to food systems in New Zealand have shown that there is a significant role for the New Zealand government in the management of domestic and export orientated food systems. At present, the main activities of the government with regards to food systems are food safety, and providing support for large-scale, export orientated production and distribution systems. For the latter, the focus has tended to be on individual industry sectors, with the primary goal of increasing exports on the international market for the purposes of supporting New Zealand's economy (Food and Beverage Task Force, 2006). There is at present no overall vision for the food sector as a whole, nor is there a long-term strategy for the security and sustainability of food systems in New Zealand. Many key informants, as well as documents such as the Parliamentary Commissioner for the Environment report 'Growing for Good' (2004) or 'Smart Food, Cool Beverage' (Food and Beverage Task Force, 2006) believe that central government would be an effective level at which to facilitate a more cohesive, strategic and holistic approach to food systems in New Zealand. Directions set at this level could then be implemented and given effect to by regional councils and territorial authorities around the country.

Mechanisms by which the government could provide a formal food strategy for New Zealand already exist. One such possibility is national policy statements. National policy statements help local governments decide how competing national benefits and local costs should be balanced. Through these statements, central government is able to identify and protect landscapes and natural resources which are deemed to be of 'national significance'. Places can be deemed to be of national significance for a variety of reasons, including cultural, ecological, historical, recreational or aesthetic values or for the resources which they contain. Once a national policy statement is made, local governments are

required by the Resource Management Act to give effect to them in their plans and policy statements, and resource consent decision-makers must also have regard to any relevant elements of national policy statements. At present, only one national policy statement is legally in effect, the New Zealand Coastal Policy Statement (2010), which protects a selection of valued aspects of New Zealand's coastal environment. The document even protects specific sites deemed to be 'surf breaks of national significance' from any development which may affect the recreational and aesthetic values of those surf breaks.

There is significant potential for central government to utilise the tool of national policy statements to create a formalised strategic framework for food systems management in New Zealand, particularly with regards to agriculture. Creation of a national policy statement for agriculture could identify and protect agricultural regions of national importance for their strategic value for food supply and economic security of New Zealand. The potential contents of such a document are numerous, and it would be up to the expert panel assigned to the creation of the policy statement to determine what those were based on the evidence they have available and the identified priority areas. A long-term strategic outlook would be essential.

At present there is very little national level coordination about managing the risks that future scenarios present to food systems in New Zealand, in particular climate change and increasing scarcity of energy, mineral and water resources. With regards to climate change, significant changes have been projected for New Zealand's climate over the next few decades (NIWA, 2008). Some areas are projected to get drier, some wetter, as well as changing average temperatures and an increase in extreme weather events or unstable weather patterns (NIWA, 2008). This has significant implications for agriculture. Kenny, et al. (2000) investigated the potential implications of climate change scenarios for three agricultural crops: kiwifruit, maize and pasture lands. They found that climate change scenarios could impact these industries in a variety of complex ways. For

example, kiwifruit plants require mean winter temperatures to be below 11°C in order to be triggered into budding, which eventually leads to fruit formation. If the mean winter temperature rises above 11°C, the production of kiwifruit becomes significantly less viable. Kenny, et al. (2000) found that under climate change forecasts at the time, mean winter temperatures would begin rising above the threshold between 2030 and 2040, taking some of New Zealand's most intensive kiwifruit growing regions out of production. At the same time, new areas of land which are not presently viable for growing kiwifruit due to low summer temperatures, may become viable for kiwifruit production as temperatures rise. For maize, the researchers found that an overall increase in optimal maize growing land would occur under projected climate change scenarios. And in pastoral farming, changes in temperature would increase the presence of several undesired weed species which are detrimental to pasture health and have poor animal foraging qualities (Kenny, et al. 2000). These are just some of the examples of the complex ways in which climate change could affect agriculture in New Zealand, and illustrates the need for a coordinated and strategic approach in which the government identifies both present and future valued agricultural landscapes.

While a national policy statement could be the most effective way of coordinating a national food strategy, with pre-existing mechanisms to see those strategies adapted and implemented at the local level, there are also other opportunities for central government to assist in addressing sustainability issues within New Zealand food systems. Many of these options are outlined in the Green Party of Aotearoa New Zealand's Food Policy (2010a), which include the idea of establishing a Food Commission to oversee a variety of elements of food production, distribution, consumption and waste disposal systems through a lens of sustainable development for New Zealand as a whole.

A re-evaluation of the purpose and function of Plant & Food Research and AgResearch could also be beneficial. At present, they are operated on a for-profit

basis, which as the Parliamentary Commissioner for the Environment (2004a) has pointed out, leads to project outcomes which are aimed to be profitable and increase yields or product values. Many solutions for sustainable agriculture are not profitable innovations to share - they reduce farmers needs for external inputs and aim to build a farmer's own skills and knowledge as their primary resource. The enterprising nature of Crown Research Institutes has made them less accessible to smaller players in the food system (Key Informant 14), a segment of the food sector which is heavily under supported. Yet, as is evident in reading documents such as 'Fresh Facts' (Plant & Food Research, 2009), many of the findings of plant and food which are presented in the context of larger scale export food sectors, can actually be relevant and applicable at smaller scales as well. It would be worthwhile for the government to consider an extension service within crown research institutes which aims to transfer knowledge to smaller scale industry players and communities for the benefit of the overall sustainability and resiliency of New Zealand food systems.

Guidance and strategic direction coming from central government could help contextualise each individual 'local' food system within regional, national and international scale food systems. Even if central government does not implement greater coordination around food systems in New Zealand, there is an opportunity for staff members of local government and planning departments to familiarise themselves more closely with national level food activity, such as reports by AgResearch, Plant & Food Research, Trade and Enterprise New Zealand, the Parliamentary Commissioner for the Environment, the Food and Beverage Task force, as well as policy statements and reports produced by the many food industry groups around New Zealand. This will help planners to understand the broader context within which their local regional food sectors operate, and to understand some of the realities that farmers are faced with on a day-to-day basis.

8.3 Opportunities for local government

Local government has the potential to be an effective level for the creation and implementation of initiatives directed at enhancing the vibrancy, resiliency and sustainability of local food systems. Many of the key informants (1,3,5,8,9,10,15) identified local councils as being well positioned to interact with a wide range of stakeholders at different levels of the food system, and to utilise existing operational frameworks to facilitate action in local communities. As has been argued earlier in this thesis, food is a basic essential of life, and the provision of safe, nutritious and sustainable food supplies should be considered by planners as part of a holistic vision of healthy, liveable, sustainable communities.

As has been illustrated in previous chapters of this thesis, the overlaps between food systems and different aspects of communities and the environment that councils are involved with are numerous. Food systems influence and impact on land use, water quality, biodiversity, rural and urban communities, public health, local economic development, energy consumption, animal welfare and more (American Planning Association, 2007; Pothukuchi and Kaufman, 2000). A range of methodologies for incorporating food systems considerations and action into existing planning frameworks were outlined in chapter seven, and many of these have the potential to be applied in the New Zealand context.

The research findings have shown that levels of awareness of the potentials for local council to be involved with food systems issues are low. Key informant interviews and the survey of local councils revealed that most people are uncertain about what the issues are within food systems and how they might be addressed through local government activities. Any councils interested in exploring food issues further in their regions will need to start at a basic level, in order to evaluate how food systems planning can fit into their specific context, and determine the strengths, weaknesses, threats and opportunities for food related activities within their geographical region. This initial evaluative phase of

action can be approached from three distinct but interconnected angles: data gathering and analysis, stakeholder networking and collaboration, and evaluation of plans and policies through a food lens. These three angles have been discussed in-depth in chapter seven, and are illustrated below in Figure 1.

One concept which utilises these principles to evaluate the status of a local food system is what Pothukuchi (2004) refers to as a community food assessment. This is the process of "systematically collecting and disseminating information on selected community characteristics so that community leaders and agencies may devise appropriate strategies to improve their localities", from a food perspective (Pothukuchi, 2004: 356).

Data collection, collation and interpretation

At present, collated information on local scale food systems in New Zealand is extremely sparse. Many of the statistics available (e.g. Statistics New Zealand, 2010b) provide measures of broad categories of industry, but do not provide a high amount of detail on individual regional food systems and the patterns of production and distribution within and between them.

Some data on certain aspects of the food system does exist, but it is held in many individual archives within organisations involved in fields such as geology, public health, local economic development, social welfare, agriculture, and so on. This lack of accessible data on food systems has led to many planners' opinions about the feasibility or otherwise of various ideas and potential avenues for food systems planning. For example, some key informants assumed that the crop varieties that could be grown in a region would be represented by what was presently grown in that region. It was the attitude of 'if it's worth growing, people would already be doing it'. Key informant 7, a local economic development specialist, discounted the potential of new crop types on this basis

alone. This is only one example of a large number of key informant statements that were based on assumptions rather than actual data, and this highlights the urgent need for further data collection by councils in order to make informed decisions.

Identifying what relevant data is available, and collecting and collating that data will be a key first step in evaluating the current status of the local food system. As outlined in chapter seven (Section 7.2.2), data collected can be both quantitative and qualitative. Qualitative data is particularly useful when investigating the human values associated with different aspects of local food systems and rural landscapes, while quantitative data can be useful for physical elements of food systems, such as the productive capacity of a regions agricultural land, or the economic characteristics of local production and distribution systems.

Identifying and networking with food system stakeholders

Another key task for planners is to identify and communicate with stakeholders involved in the food system in their local areas. These stakeholders can be from a diverse range of backgrounds, and it is important that representative members from as many of these backgrounds are invited to participate in any food systems scoping or participatory work that the council initiates. Potential stakeholder groups to consider include: food producers, processors, distributors, retailers and chefs; community groups and organisations with a food or sustainability focus; food industry groups; nutritionists; members of various departments within council and other government organisations; agricultural scientists; academic researchers from fields such as business, nutrition, agriculture, sociology, planning, and others; consumer groups; farming schools; food banks and other charities; to name but a few.

Key informant interviews with people involved in food production or processing sectors (key informants 8,9,15) did not consider local councils to be a huge resource to them, and were not in any kind of active engagement with councils beyond resource consent issues. Similarly, many of the councils surveyed for this research were not making any attempt to connect with local food growers, processors, retailers and consumers in any kind of coordinated fashion with the goals of strengthening connections and networking between food systems stakeholders. Key informants in both council and food related sectors all seemed to be waiting to take each others lead. Councils are not pursuing food systems objectives because food systems stakeholders are not approaching them, and food systems stakeholders are not approaching councils because councils are not pursuing food systems objectives. Action clearly needs to come from both sides, and one cannot be forced upon the other, but there is certainly the opportunity for councils to get the ball rolling by expressing an interest in taking a closer look at local food systems and the ways that they relate to community development objectives.

Increased communication and networking with local food systems stakeholders provides for a two way exchange. Council can inform stakeholders of the results of data gathering activity, so that they can make more informed decisions, and councils can also make stakeholders aware of programmes or opportunities within the region that could benefit them and the broader community at the same time. These inputs for stakeholders can then stimulate their feedback into the process, further expressing to planners what areas are important to focus on and where the largest gaps in the resiliency of the local food system are.

Evaluation of policies in the context of food systems

The third key area for planners to begin evaluating prospects for local food systems strategies, is to conduct an evaluation of their organisations plans, policies and objectives through a 'food lens'. In many cases, policies and

objectives may exist which can be applied to food systems, although they do not explicitly relate to them, for example sustainability strategies or local economic development strategies. By identifying the ways that food systems are linked with other aspects of the community, planners can begin to utilise elements and foster potentials within local food systems to achieve community development objectives.

Once they gain an increased understanding of local food systems through data collection and stakeholder networking, planners can also begin to consider or promote food centred strategies in the development of new plans, policies, and projects. The information gathering process may identify elements of the food system which need urgent attention, for example the loss of high quality soils through residential development on the urban fringe, or a lack of resources available to small scale producers to process or value-add to their products. It could also reveal gaps in the current local food system which have an 'easy fix', or a solution which requires minimal investment of council resources but results in strong benefits for the community. Simply connecting stakeholders from disparate and usually isolated sectors of the food system could catalyse new partnerships and collaborations along the value chain which would strengthen the overall health and resilience of the local food system. The organisation of networking events such as a 'food forum' could be mandated by creation of new policies to foster and support the development of diverse and sustainable local food systems, for example.

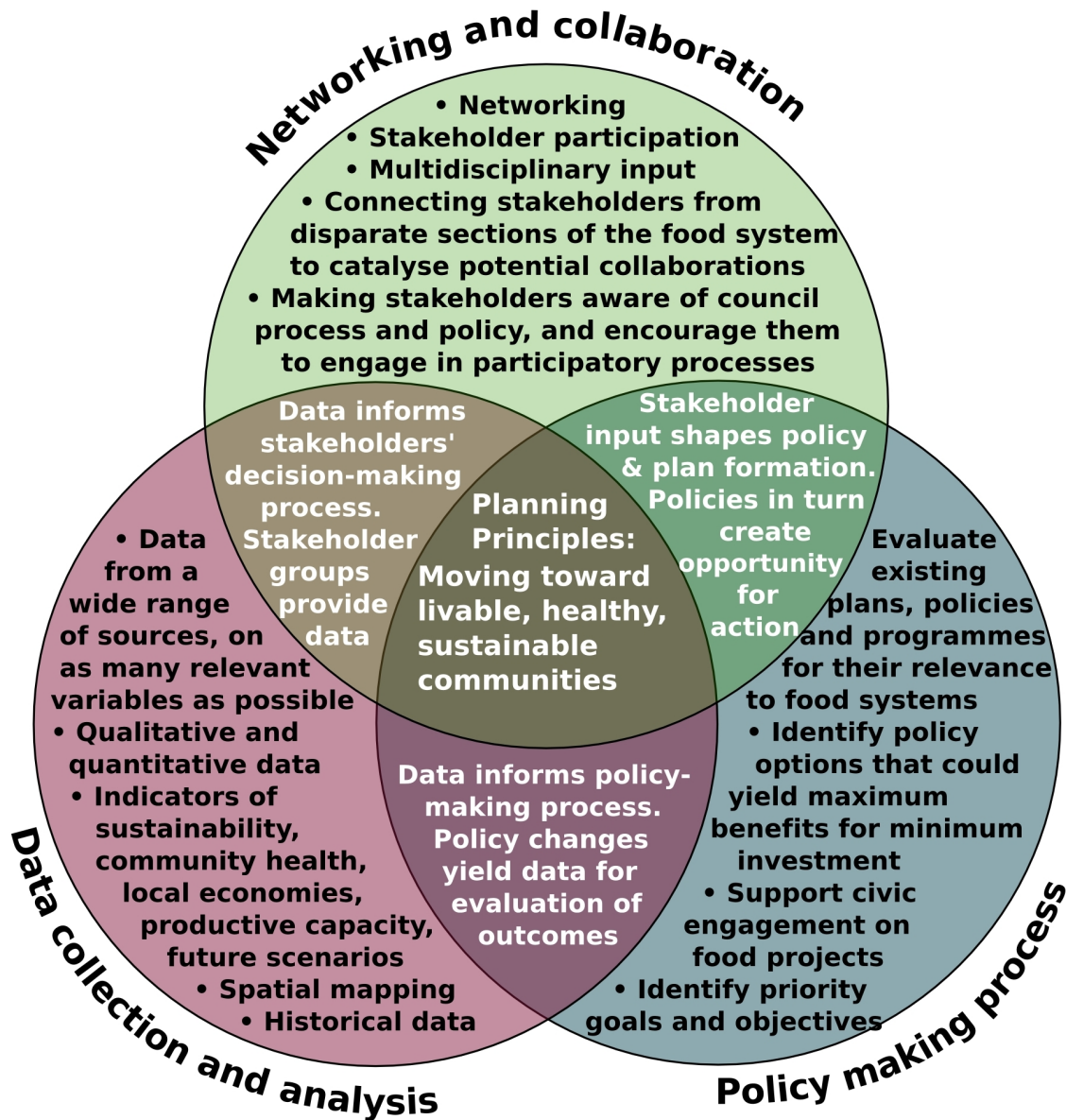


Figure 1. Interconnections between three main elements of food systems planning

Taking a systems perspective

Ultimately, if councils are to support the development of local sustainable food systems in their areas, the approaches outlined above and in chapter seven need to be applied simultaneously and in a way which recognises their interconnections and interdependencies. The interconnections between

methodological frameworks is illustrated in figure 1. There are also interconnections between stakeholders and government, and between the different types of stakeholders themselves. The core purpose of planners engaging with food systems is to utilise planning principles to foster change and innovation within local food systems. Often, the role is more about connecting people together and facilitating connection between them than it is about imposing any kind of ideology onto them. For initiatives to be successful in the long-term, they need to have buy in from all stakeholders, and the best way to get buy in from stakeholders is to have them create the shape and directions of initiatives themselves, from a well informed perspective (Feenstra, 2002). By recognising the strengths and weaknesses of different stakeholders, effective networks can be built to create a more robust system for all (Pothukuchi, 2004).

8.4 Opportunities for stakeholders

The research undertaken for this thesis revealed significant opportunities for an increased level of civic engagement by groups, organisations, businesses and individuals with local councils. Many research participants from the planning sector expressed that they are essentially responsive in nature. They are much more likely to respond to and support ideas coming at them from the community than they are to go out and proactively engage the community on food systems issues. Planners and local governments in general are receptive to and even enthusiastic about supporting various kinds of community based initiatives, if those ideas are pitched to them in an effective and appropriate manner. As such, it would be worthwhile for those involved with food systems, whether they are farmers or local grocers, nutritionists or agricultural researchers, to learn more about local council and what it does, and to link in ideas and initiatives with the community development objectives of the council.

The establishment of independent initiatives in the form of community projects or social enterprise has a number of benefits. Firstly, it works well with the

current situation that most councils are in, with tight resources and public pressure to cut back council spending to basic core services. Initiatives can remain linked with council in a collaborative sense, while remaining independent in a formal sense as well as being financially self-supporting. Social enterprise models or other forms of entrepreneurial initiatives have been found to be more resilient to changing political configurations within governments, whereas projects which are reliant on ongoing government funding are vulnerable to the changes in priorities that come with changes in power (Eaton, 2008).

The formation of an independent food policy council, bringing together a diverse range of stakeholders for the purpose of engaging with local government from a unified position, has been shown to be a successful option overseas (Schiff, 2008). A food policy council could take many forms and would not necessarily have to be a huge commitment for participating members. Groups of stakeholders could arrange meetings around specific issues where and when they saw it as necessary, or an email list of interested parties could be compiled and communications maintained through that.

There are many ways in which independent groups, businesses, organisations and individuals can seek to engage with local government, or even simply run initiatives without any form of support from council. There is no set formula for how to engage with councils and on what topics, because each council and each local context is different. It is up to the stakeholders themselves to think creatively and design initiatives that can be mutually beneficial to all parties involved, including the wider community. The key message of this section is not to provide a how-to guide, but simply to make it known that most local councils are receptive to ideas if they are well thought out and well presented, and there is a good chance at funding or other forms of support if a group can effectively link the goals and initiatives of their own project to those of local government.

8.5 Recommendations

Table 3: Recommendations for central government

Recommendations for central government	
Recommendation 1	Conduct a strategic audit of New Zealand's present and future food production capacities, taking into account projections for climate change; energy prices; water, fertiliser and other resource scarcities; and growing populations
Recommendation 2	Create a national agricultural policy statement, protecting agricultural areas of national significance, as well as other aspects of our food production systems
Recommendation 3	Establish a food commission to oversee and report on the implementation and management of sustainability strategies at all stages and scales of food systems in New Zealand
Recommendation 4	Re-evaluate the functions and purposes of food related crown research institutes. Provide for better transfer of research and technology to smaller scale producers and processors
Recommendation 5	Develop a networking forum to bring together representatives from a wide range of food production and distribution sectors, to engage in information sharing and strategic planning from a long-term, holistic and multi-scalar perspective

Table 4: Recommendations for local governments

Recommendations for local governments	
Recommendation 6	Host a 'food forum' to bring together a wide range of stakeholders from the local food system, to evaluate the strengths, weaknesses, threats and opportunities to the long-term sustainability of the system. This can serve as an initial gauge of the health of the local food system, and identify priority areas for action
Recommendation 7	Evaluate existing plans, policies and programmes through a 'food lens'. Determine how food fits in with these elements, and how they could be applied to food systems issues to improve the health and sustainability of the local food system whilst simultaneously achieving other community development objectives
Recommendation 8	Support or catalyse the establishment of a local food policy council, comprised of representatives from different parts of the food sector, the community, research sectors and government, for the purposes of providing ongoing input to local government on food systems issues, where relevant to council activity
Recommendation 9	Collect, collate, analyse and disseminate data on different elements of the local food system. Measures of household food security, regional productive capacity, health and nutrition, economic factors, resource base (physical, social and economic), human values, climate change forecasts, etc. can be incorporated to identify present and future priorities for local food systems development
Recommendation 10	Evaluate the resiliency, sustainability and adaptability of local food production and distribution systems. Determine levels of dependence on external inputs, vulnerabilities to changes in weather patterns, and other factors, and create strategies to increase long-term resiliency and sustainability, e.g. diversification
Recommendation 11	Re-evaluate current soil protection and rural landscape policies. Clarify how they are to be interpreted. Consider revising these policies to provide not only for the physical retention of high class soils, but also their ability to be used in a productive capacity

Table 5: Recommendations for food system stakeholders

Recommendations for food system stakeholders	
Recommendation 12	Become familiarised with the role of local government, and the mechanisms it has in place to support activities which work towards community development objectives. Identify council policies which are harmonious with the goals and objectives of a sustainable local food system.
Recommendation 13	Network and collaborate with stakeholders from different parts of the food system, in order to create strategic direction within the sector as well as to engage with local and central governments in a focused and coordinated fashion
Recommendation 14	Consider establishing social enterprise business models which operate under triple bottom line social, environmental and economic decision-making criteria
Recommendation 15	Innovate and experiment with alternative production and distribution systems. Gather information and case studies of successful sustainable agriculture initiatives from overseas, and adapt them to the NZ context

9 Conclusion

9.1 Introduction

This research has investigated the current and future prospects for strengthening the sustainability of food systems in New Zealand through planning and other government mechanisms. The research was motivated by a significant and growing movement toward food systems planning in other countries, particularly in North America, Europe and Australia (see Allen and Guthman, 2006; Cox, et al., 2008; Feenstra, 2002; Larsen, et al., 2008; Mendes, 2008; Pothukuchi and Kaufman, 2000) which was not gaining the same level of attention in New Zealand. Authors such as Pothukuchi and Kaufman (2000), Campbell (2004), and Feenstra (2002) among others have drawn clear connections between the stated aims and objectives of planning as a profession, and various elements of local food systems. They have described ways in which planning practice can facilitate and support the implementation of initiatives within local food systems which can not only help to achieve a wide range of community development objectives, but also increase the diversity, resiliency and sustainability of local food systems at the same time. At present, a lack of research exists with regards to the topic of food systems planning in New Zealand. Neoliberal political frameworks have meant that food systems are all but absent from the agendas of local and central governments. This thesis contributes to filling this knowledge gap by evaluating food production and distribution systems within New Zealand alongside the specific political frameworks existing at local and central levels of government.

This research, informed by a literature review of food systems planning discourse and case studies from overseas, sought to investigate the current status of food systems in New Zealand, and evaluate the potential opportunities for

local and central governments to take a more proactive approach to managing market failures and providing for future sustainability within local food systems. Fifteen key informants from a diverse range of positions within New Zealand food systems and local governments were interviewed in order to evaluate their perspectives on a range of topics. These key informant interviews were supplemented with a short survey on food systems planning sent to planning departments of local governments around the country, as well as document analysis of a variety of high level publications relating to the food sector in New Zealand (Food and Beverage Task Force, 2006; Parliamentary Commissioner for the Environment, 2004a). Together the information provided a basis upon which to evaluate the current status of New Zealand food systems and helped to identify opportunities for future directions.

9.2 The current state of New Zealand food systems

An evaluation of the current status of New Zealand food systems was the first research objective of this thesis. It was found that relative to its size and population, New Zealand produces an abundance of food, with roughly 92% of the food produced here destined for export markets (Federated Farmers, 2010). However it was also identified that many of these large scale production and distribution systems are dependent on situations which are not guaranteed to continue to exist into the future, including access to cheap and plentiful energy (fossil fuels); stability in global financial markets; availability of fertilisers, water, and other agricultural inputs; and stable and predictable weather patterns (Parliamentary Commissioner for the Environment, 2004a). The dependency of the majority of New Zealand food systems on these conditions leaves them extremely vulnerable to future shocks such as fuel price rises or scarcity of fertilisers - events which are not only possible but are probably, and could begin impacting on New Zealand farming any time from now on (Cribb, 2007; Hirsch, et al., 2005; Kenny, et al., 2000; NIWA, 2008). This vulnerability has led to urgent calls for action to implement strategies for transitioning food systems to

future scenarios in New Zealand (Parliamentary Commissioner for the Environment, 2004a). However these messages, despite coming from government commissioned advisory boards, have fallen on deaf ears, steam-rolled by the incredible inertia of a multi-billion dollar export sector aiming for continual growth year after year, a priority objective which is supported by the New Zealand government but which in some instances does not allow for a full acknowledgement of the huge challenges that will be faced by the food sector, and all other sectors, in the coming decades.

The results of the research showed a polarisation of support at different scales of the food system. This support is generally in the form of organisations and research institutes targeting specific single sectors within the food system with the goal of increasing profitability or productivity, as opposed to strategic support with an interconnected focus on sustainability. There was found to be high levels of support for large scale and export orientated food sectors, and a growing level of interest and support for very small scale community food initiatives such as community gardens and farmers markets, which are highly visible but only contribute a small amount to the population's overall nutritional needs.

Yet the medium scale farms and food production businesses, which researchers have identified as a crucial scale for sustainable food systems activities (Donald, 2008), are all but excluded from the well developed support structures at either of these scales. This can be seen to be a side effect of market structures in New Zealand food systems. The large scale operators produce and distribute the required volumes to achieve economies of scale and be competitive in international markets, and to have access to the research and development of the likes of AgResearch and Plant & Food Research. And at the smaller scales, as highlighted by key informants 8 and 9, many of the growers are essentially hobbyists, relying on off-farm day jobs or other forms of external income

sources to supplement their niche market farming activities.

9.3 Support and barriers for food systems planning

The second research objective was to evaluate support and barriers for food systems stakeholders at a local government level. This was achieved through key informant interviews, document analysis, and a survey of local government planning departments about food systems planning. Overall, there is very little attention paid to food systems by local governments in New Zealand, outside of day-to-day resource consenting processes. Some councils have supported a few highly visible projects such as farmers markets and community gardens, which have genuine and tangible positive effects within the local community, including social cohesion, education and awareness raising about food issues, local economic development, amenity values and so on. However the overall contribution of these initiatives to the broader food system is small, and frameworks for facilitating the 'mainstreaming' of sustainable agricultural systems are lacking in scope, scale and coordination in New Zealand, and in many cases they do not exist at all.

The information gleaned from the research showed a mixed response by planners towards the concept of food systems planning. Many of the planners could see the potential to further integrate food systems planning into their portfolios, while others did not see involvement with food systems as a role that local government should have. Many respondents felt that it was up to central government to create a mandate and an overall direction for an increased level of attention to food systems issues in New Zealand. Others were waiting for demand for such action to come from local businesses, community groups and individual citizens. Many of the research participants could easily see the links between food systems and physical resources such as land use, water use, discharges and transport networks. However, aspects of the food system were less easily linked with less tangible or less measurable aspects of communities,

including social factors or local economic development outcomes. This illustrated the need to address institutional 'siloeing' issues within local governments, and to adopt a more holistic, interconnected, systems-oriented approach to the local food sector and its dynamic interactions with the local community.

Regardless of their attitude toward the potentials for adopting food systems planning practices, many of the respondents felt that getting buy-in from the council as a whole would be a difficult task, particularly in today's tight economic environments where there is immense pressure on councils to cut costs and strip their operations back to basic core services. Planners were more likely to support ideas for initiatives if they were primarily community or industry driven, requiring perhaps some start-up support or networking and information provision services from the council. Any potential projects were expected to be able to become self-sufficient and not rely on ongoing financial support from local government. This reflects the strongly neoliberal political climate in New Zealand, and it is a concept which has been embraced by many groups and organisations who are beginning to see the potentials in social enterprise and other forms of 'ecopreneurship' which are networked with, rather than supported by, local and central governments.

Overall, the present levels of support for the food sector as a whole were determined to be extremely low. Most respondents saw the food system as a market driven sector. There was confusion among respondents about conflicting development objectives. For example, diversification within the agricultural sector could increase resiliency to external shocks, however it could also reduce levels of specialisation and economies of scale which the export sector relies on to compete in international markets. At present, no tools or guidelines exist in New Zealand to assist councils in evaluating trade-offs between different development options in their regions with regards to food systems, and there is a

lack of clarity about how to balance sustainable development and economic competitiveness for short-, medium- and long-term time horizons.

9.4 Opportunities for food systems planning in New Zealand

Based on the characteristics of food systems in New Zealand, and the current gaps in support for the development of sustainable alternatives, led to the identification of a series of opportunities for food systems planning frameworks to be implemented at different levels of government and industry. This was the third research objective.

Due to the unexplored nature of food systems planning in New Zealand to date, the opportunities for further attention to this sector are great. Dozens of case studies from around the world bear elements that could be applicable in the New Zealand context (e.g. Allen, et al., 2003; Cox, et al., 2008; Francis, 2003; Larsen, et al., 2008; Pothukuchi, 2004; Wilson, 2008). However, the political, social, environmental and economic contexts within councils vary across New Zealand to such a degree that it is impossible to prescribe a 'one-size-fits-all' model for the implementation of food systems planning in this country. Instead, a broader level of thinking has been outline, which encourages planners to utilise their skill sets to evaluate policy and planning options through a 'food lens'. Most planners are already well versed in sustainable development and how to involve stakeholders in decision making processes and so on. It is the application of these principles to food systems which is the key task for planners here, and the concepts and themes outlined in this thesis are intended to help reorient the perspectives of planners to be more aware of the potentials of utilising food systems to further the community development goals of their organisations. The main areas of opportunity identified were: data gathering and analysis, stakeholder networking and collaboration, and evaluation of plans and policies through a food lens. These three angles, and how they interrelate with one

another, were illustrated in Figure 1.

9.5 Recommendations

The characteristics of New Zealand food systems and governments were juxtaposed with the identified gaps and opportunities in governments approach to food systems, and considered in relation to international literature and case studies of overseas initiatives. This evaluative process provided the basis for the development of a series of priority recommendations aimed at assisting the development of more comprehensive food systems strategies in New Zealand. A total of fifteen recommendations were presented, divided into three sectoral groups: central government, local government, and food industry stakeholders. The recommendations are ultimately centred around planning potentials at the local government level, however, as the research data indicated, local government is looking towards central government for mandate and broader strategic direction to address problems in food systems. Local government also requires motivation, ideas and initiative to come from communities, businesses and other organisations to justify council directing time and resources toward such projects.

Within the highly neoliberal New Zealand political context, it is highly likely that food systems planning initiatives will take the form of social enterprise and other forms of community driven civic engagement. In this situation, the role of local government is to identify how the goals and objectives of these initiatives overlap with community development objectives and other council strategies, and to facilitate communication and support frameworks between council and independent organisations. Ultimately, the process of developing more a more comprehensive understanding of food systems in New Zealand, and subsequent plans and strategies to address problems within the sector, will be an interlinked and multidirectional process of interactions between stakeholders and organisations in all three of the sectors described here.

9.6 Limitations and future research

Considering the heavily under-researched nature of the topic of food systems planning in New Zealand, limitations in the research findings were numerous and inevitable. This thesis has been an attempt to generally gauge attitudes toward, and opportunities for, the implementation of food systems planning in New Zealand. The scope of the research was wide, with information gathered on food production, processing, distribution, retailing, consumption and waste disposal systems. These factors, collectively referred to as 'food systems', were then examined in the context of multiple levels of government and industry.

One of the significant limitations was that the scope of the subject required key informants from a wide range of backgrounds. In some cases only one or two key informants were from any particular background or stage in the food system or level of government (For full list of key informants see Appendix 1). Time and resource constraints of the research project meant that interviewing a greater number of key informants to collect a greater sample size from each background was impractical. An attempt to mitigate this limitation was made by choosing key informants who were well established in their fields, often with many years of experience in the job or with previous history in different but related levels of food systems or governments. Additionally, key informants were made aware of this limitation, and were asked to give a perspective which they felt was representative of their field in general, in cases where their knowledge was extensive enough to do so.

Another limitation with the research was that due to budgetary and time constraints, travelling long distances to other towns and cities around New Zealand to interview key informants was not practicable. Because of this, 12 out of the 15 key informants were interviewed in Dunedin, New Zealand. A further three interviews were conducted via recorded phone conversations with

participants in the North Island. For the broad investigatory nature of the research, it was considered more important to interview an occupationally diverse, rather than geographically diverse range of key informants, so as to get perspective from as many different industry and government sectors as possible.

Food systems planning is an inherently multidisciplinary field. With such a lack of existing research in the New Zealand context, it was seen as necessary to cover as wide of a scope as was practical. This meant that a further limitation of the research was that it did not focus in to a high resolution on any one topic. While the researcher has tried to include all important aspects of all of the areas that have been addressed in this thesis, there are surely areas that have been neglected. Waste disposal from the food system, for example, was only touched on briefly in discussions and feedback from research participants about city council waste reduction programmes and composting initiatives. Yet if a full and comprehensive evaluation of food systems in New Zealand is to occur, waste management could be a particularly important aspect of a sustainable system. As Cordell, et al.'s (2009) research illustrated, human waste and other organic wastes will become valuable sources of agricultural fertilisers as the non-renewable resources which make the bulk of today's agricultural fertilisers begin to run out, and nutrient recovery systems from sewerage and other waste streams will likely be installed around the world.

This research has also opened up many doors for potential future research. The waste example given above is only one possibility. There is the opportunity for more in-depth research at virtually every level of the food system, and likewise for each level of government, to investigate how frameworks for transition to sustainable systems may be established. Future research could be more specific in a geographic sense, or in a sector sense, honing in on a particular segment of the food industry and examining its interconnections with other segments and with government. This research has identified small to medium scale food systems as

being the most under-supported and under-researched in New Zealand. They are also a level which holds much promise for sustainable food systems models to be implemented at. Thus, further research in this field would be especially beneficial in evaluating future prospects for New Zealand in this regard. Research could be conducted from a wide range of backgrounds, including but not limited to: geography, agriculture, business and entrepreneurship, nutrition, planning, sociology, biotechnology and energy studies. The significant lack of data with regards to food systems from any of these fields suggests that any amount of research undertaken on these subjects will likely yield useful results.

9.7 Concluding comments

This thesis has identified that there is significant opportunity for planning to be involved in facilitating a more coordinated, strategic and holistic approach to food systems management in New Zealand. At present, a large amount of the food produced in New Zealand still relies on unsustainable systems to maintain its production and distribution models. The sooner these farming and distribution systems are transitioned to low-input, low-impact alternative models, the more resilient we will be as a nation to the significant threats which lie on the horizon in the coming decades. Food systems planning can help facilitate such a transition whilst striving to maintain beneficial outcomes for stakeholders.

The time to act is now. Many of the looming challenges which stir at a global level, such as energy and other resource scarcities, climate change, instability in world financial markets, and even the potential for further international resource based conflicts to break out, will have consequences that cannot be predicted because they are highly complex systems. Building resiliency into our food systems by encouraging a shift to sustainable agriculture methods, addressing supply chain inefficiencies, and supporting sustainability driven social enterprises should be urgent priorities for governments in New Zealand.

References

Aerni, P. (2009) What is sustainable agriculture? Empirical evidence of diverging views in Switzerland and New Zealand. *Ecological Economics* 68 1872-1882

AgResearch (2010) online: *Our Science, Your Future. Highlights 2009/2010*. <http://www.agresearch.co.nz/publications/annualreport/2010/Highlights2010.pdf> (Accessed 17 September 2010)

Ahumada, M. and Villalobos, R. (2009) Application of planning models in the agri-food supply chain: A review. *European Journal of Operational Research* 195: 1-20

Allen, P., Fitzsimmons, M., Goodman, M., and Warner, K. (2003). Shifting plates in the agrifood landscape: the tectonics of alternative agrifood initiatives in California. *Journal of Rural Studies* 19: 61-75.

Allen, P., Guthman, J. (2006) From “old school” to “farm-to-school”: Neoliberalization from the ground up. *Agriculture and Human Values* 23:401-415

American Planning Association (2007) online: *Policy Guide on Community and Regional Food Planning*. <http://www.planning.org/policy/guides/adopted/food.htm> (Accessed 25 March 2010)

Anderson, M. and Cook, J. (1999) Community food security: Practice in need of theory? *Agriculture and Human Values* (16) 141-150

Barnaby, C. (2004) *An investigation into the reuse of organic waste produced by the New Zealand Mussel Industry*. Thesis submitted in partial fulfilment of the degree of Master of Applied Science. Auckland University of Technology.

Bardi, U. (2008) Peak Oil: The Four Stages of a New Idea. *Energy* (34) 323-326

Bellows, A. and M. W. Hamm (2001) Local autonomy and sustainable development: Testing import substitution in localizing food systems. *Agriculture and Human Values* 18: 271-284

Blandford, D. and Boisvert, R.N. (2002) Multifunctional Agriculture and Domestic/International Policy Choice. *Estey Centre Journal of International Law and Trade Policy*. 3(1)106-118

Born, B. and M. Purcell (2006) Avoiding the local trap: scale and food systems in planning research. *Journal of Planning Education and Research* 26, 195-207.

Brugmann, J. (2009) *Welcome to the Urban Revolution: How Cities are Changing the World*. Bloomsbury Press

Brundtland, G. (ed) (1987) *Our Common Future. The World Commission on Environment and Development*, Oxford: Oxford University Press.

Campbell, M. (2004) Building a common table: The Role for Planning in Community Food Systems. *Journal of Planning Education and Research* 23: 341-355

Campbell, H. , Burton, R. , Cooper, M. , Henry, M. , Le Heron, E , Le Heron, R , Lewis, N. , Pawson, E. , Perkins, H. , Roche, M. , Rosin, C. and White, T. (2009) From agricultural science to biological economies?. *New Zealand Journal of Agricultural Research* 52 , pp. 91-97.

City of Vancouver (2010) *Food Policy Council Questions and Answers*. Online. Accessed 20/8/2010
<http://vancouver.ca/commsvcs/socialplanning/initiatives/foodpolicy/policy/QandA.htm>

Clancy, K. (2004) Potential Contributions of Planning to Community Food Systems. *Journal of Planning Education and Research* 22: 435-438

Clark, J., Munroe, D., and Mansfield, B. (2010) 'What counts as farming: How classification limits regionalisation of the food system'. *Cambridge Journal of Regions, Economy and Society*: 3, 245-259

Clarke, N, C. Barnett, P. Cloke, and A. Malpass (2007) Globalising the consumer: Doing politics in an ethical register. *Political Geography* 26(3) 231-249

Cleaver, H. M. (1972) The Contradictions of the Green Revolution. *The American Economic Review*, Vol. 62, No. 1/2, pp. 177-186

Connell, DJ., Smithers, J and Joseph, A (2008) 'Farmers' markets and the "good food" value chain: a preliminary study', *Local Environment*, 13: 3, 169 – 185

Cordell, D., Drangert, J. and White, S. (2009) The story of phosphorus: Global food security and food for thought. *Global Environmental Change* 19: 292-305

Coriolis Research (2005) online: *Mapping the structure of the New Zealand Food and Beverage Industry*. http://www.coriolisresearch.com/pdfs/fbtaskforce-mapping_final.pdf (accessed 13 October 2010)

Cox, R., Holloway, L., Venn, L., Dowler, E., Ricketts Hein, J., Kneafsey, M. and Tuomainen, H (2008) 'Common ground? Motivations for participation in community-supported agriculture scheme' *Local Environment* 13(3): 203-218.

Creswell, J. W. (2008) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (3rd ed). *Sage Publications*. Thousand Oaks, California

Cribb, J. (2007) online: *The Coming Famine: Constraints to Global Food Production in an Overpopulated, Affluent and Resource-Scarce World: The Scientific Challenge of the Era*, Julian Cribb & Associates Discussion Paper, October 2007 http://www.apo.org.au/linkboard/results.shtml?filename_num=190252. (Accessed 17 September 2010)

de la Salle, J. and Holland, M. (2010) *Agricultural Urbanism: Handbook for building sustainable food and agriculture systems in 21st century cities*. Green Frigate Books. Winnipeg, Manitoba

Donald, B. (2008) 'Food Systems Planning and Sustainable Cities and Regions: The Role of the Firm in Sustainable Food Capitalism', *Regional Studies*, 42: 9, 1251 – 1262

Donald, B. and Blay-Palmer, A. (2006) The urban creative-food economy: producing food for the urban elite or social inclusion opportunity? *Environment and Planning A*, 38, 1901-1920

Donald, B., Gertler, M., Gray, M. and Lobao, L. (2010) Re-regionalizing the food system? *Cambridge Journal of Regions, Economy and Society* (3): 171-175

DuPuis, E. M. and Goodman, D. (2005) Should we go “home” to eat?: toward a reflexive politics of localism. *Journal of Rural Studies* 21. 359-371

Eaton, E. (2008) From feeding the locals to selling the locale: Adapting local sustainable food projects in Niagara to neocommunitarianism and neoliberalism. *Geoforum* 39. 994-1006

Edwards, A. R. (2010) *Thriving Beyond Sustainability: Pathways to a Resilient Society*. New Society Publishers, B.C., Canada

- Farmers Markets New Zealand (2010) online:
<http://www.marketground.co.nz/ClubSite.asp?SiteID=10563&PageTypeID=17&PageID=35274> (Accessed 14 September 2010)
- Federated Farmers (2010) online: *A Snapshot of New Zealand Agriculture*.
http://www.fedfarm.org.nz/f1051,59496/59496_Provincial_Snapshot_-_draft_2.pdf
 (Accessed 10 August 2010)
- Feagan, R. (2007) The Place of Food: Mapping out the 'local' in local food systems. *Progress in Human Geography* Vol. 31. no. 23
- Feagan, R. (2008) Direct Marketing: Towards Sustainable Local Food Systems? *Local Environment* 13.3: 161-67
- Feagan, R. and Morris, D. (2009) Consumer quest for embeddedness: a case study of the Brantford Farmers' Market. *International Journal of Consumer Studies* 33 :235-243
- Feenstra, G. (1997) Local food systems and sustainable communities. *American Journal of Alternative Agriculture*. 12(1): 28-36
- Feenstra, G. (2002) Creating space for sustainable food systems: lessons from the field. *Agriculture and Human Values* 19(2), 99-106.
- Fonte, M. (2008) Knowledge, Food and Place. A Way of Producing, a Way of Knowing. *Sociologia Ruralis*, Vol 48, Number 3
- Food and Agriculture Organisation of the United Nations (2006) online: *Policy Brief: Food Security - Issue 2* ftp://ftp.fao.org/es/ESA/policybriefs/pb_02.pdf (accessed 09/08/2010)
- Food and Beverage Task Force (2006) online: *Smart Food, Cool Beverage. New Zealand's future in the food and beverage sector*. <http://www.nzte.govt.nz/access-international-networks/Explore-opportunities-in-growth-industries/growth-industries/Documents/fbtaskforce-finalreport.pdf> (Accessed 12 September 2010)
- Fox, A. (2010) online: *Farmers Markets Grow Up, Take Off*. The Independent. <http://www.stuff.co.nz/business/farming/3822618/Farmers-markets-grow-up-take-off> (Accessed 10 August 2010)
- Francis, J. (2003) *Recognising the Value and Potential of Small Farms: Learning from the USA*. Department of Primary Industries, State of Victoria

Francis, C. A., G. Lieblein, T. A. Breland, L. Salomonsson, U. Geber, N. Sriskandarajah, and V. Langer (2008) Transdisciplinary Research for a Sustainable Agriculture and Food Sector. *Agronomy Journal* 100.3: 771-76

Friedmann, H. (2007) Scaling up: Bringing public institutions and food service corporations into the project for a local, sustainable food system in Ontario. *Agriculture and Human Values* 24:389-398

Fritz, M. and Schiefer, G. (2008) Food Chain Management for Sustainable Food System Development: A European Research Agenda. *Agribusiness*, Vol. 24 (4) 440-452

Fukuoka, M. (1978) *The One-Straw Revolution*. New York Review of Books. New York.

George, G. (2010) *Cheesed off: why is our produce cheaper abroad?*. Otago Daily Times. <http://www.odt.co.nz/opinion/opinion/133820/cheesed-why-our-produce-cheaper-abroad> (Accessed 29 October 2010)

Getz, A. (1991) Urban foodsheds. *The Permaculture Activist*: 24 (October): 26-27

Gilland, B. (2002) World population and food supply: Can food production keep pace with population growth in the next half century? *Food Policy* (27) 47-63

Giovannucci, D., Barham, E. and Pirog, R. (2009) Defining and Marketing “Local” Foods: Geographical Indications for US Products. *The Journal of World Intellectual Property*

Green Party of Aotearoa New Zealand (2008) online: *Questionable supermarket policy needs investigation: Greens* (Press Release) <http://www.greens.org.nz/press-releases/questionable-supermarket-policy-needs-investigation-greens> (Accessed 10 October 2010)

Green Party of Aotearoa New Zealand (2010a) online: *Food Policy: Greening the Food Basket*. <http://www.greens.org.nz/policy/food> (Accessed 10 October 2010)

Green Party of Aotearoa New Zealand (2010b) online: *Independent supermarket watchdog needed for any code of conduct*. <http://www.greens.org.nz/press-releases/independent-supermarket-watchdog-needed-any-code-conduct> (Accessed 14 October 2010)

Gorman, P. (2010) online: *NZ needs to ‘wake up’ - top scientist*. The Press. <http://www.stuff.co.nz/national/4269183/NZ-needs-to-wake-up-top-scientist>

(Accessed 25 October 2010)

Guthman, J. (2008) Neoliberalism and the Making of Food Politics in California. *Geoforum* 39.3:171-183

Harris, E. M. (2009) Neoliberal subjectivities or a politics of the possible? Reading for difference in alternative food networks. *Area* 41.1, 55-63

Harris, E. M. (2010) Eat Local? Constructions of place in alternative food politics. *Geography compass* 4(4) 355-369

Harward, E. (2010) online: *Why food prices are sky high*. Sunday Star Times. <http://www.stuff.co.nz/national/health/3906804/Why-food-prices-are-sky-high> (Accessed 23 September 2010)

Headey, D. and Fan, S. (2008) Anatomy of a crisis: the causes and consequences of surging food prices. *Agricultural Economics*. 39, 375-391

Heinberg, R. (2007) *Peak Everything: Waking Up to the Century of Declines*. New Society Publishers

Hendrickson, M. and Heffernan, W. (2002) Opening Spaces through Relocalization: Locating Potential Resistance in the Weaknesses of the Global Food System. *Sociologia Ruralis*, 42 (4)

Herm, E. (2010) *Son of a Farmer, Child of the Earth*. Dream River Press, New York

Higgins, V., J. Dibden, and C. Cocklin. (2008) Building Alternative Agri-food Networks: Certification, Embeddedness and Agri-environmental Governance. *Journal of Rural Studies* 24.1: 15-27

Hinrichs, C. (2003) The practice and politics of food system localization. *Journal of Rural Studies* 19 (1): 33-45.

Hirsch, R.L., Bezdek, R., Wendling, R. (2005) *Peaking of World Oil Production: Impacts, Mitigation, & Risk Management*. U.S. Department of Energy, National Energy Technology Laboratory. February 2005.

Ikerd, J. (1993) The Need for a System Approach to Sustainable Agriculture. *Agriculture, Ecosystems & Environment* 46.1-4: 147-60

- IPCC (2007) online: *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007*. Parry, M.L., O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson [eds] http://www.ipcc.ch/publications_and_data/ar4/wg2/en/contents.html (Accessed 15 October 2010)
- Jarosz, L. (2008) The city in the country: Growing alternative food networks in Metropolitan areas. *Journal of Rural Studies* 24: 231-244
- Kelly, E. D. (2009) *Community Planning: An Introduction to the Comprehensive Plan*. Island Press, Washington DC
- Kenny, G. J., Warrick, R. A., Campbell, B. D., Sims, G. C., Camilleri, M., Jamieson, P. D., Mitchell, N. D., McPherson, H. G., Salinger, M. J. (2000) Investigating Climate Change Impacts and Thresholds: An Application of the CLIMPACTS Integrated Assessment Model for New Zealand Agriculture. *Climatic Change* 46(1-2) 91-113
- Kirschenmann, F. (2010) Alternative agriculture in an energy- and resource-depleting future. *Renewable Agriculture and Food Systems*: 25(2); 85-89
- Kloppenburg, J., J. Hendrickson and G.W. Stevenson (1996) Coming into the Foodshed. *Agriculture and Human Values* 13 (3) pp. 33-42
- Kloppenburg, J., S. Lezberg, K. De Master, G.W. Stevenson, J. Hendrickson (2000) Tasting Food, Tasting Sustainability: Defining the Attributes of an Alternative Food System with Competent, Ordinary People. *Human Organization* 59(2) 177-186
- Koc, M. and Dahlberg, K. (1999) The restructuring of food systems: Trends, research, and policy issues. *Agriculture and Human Values*, 16(2) 109-116
- Korfmacher, K.S. (2000) Farmland preservation and sustainable agriculture: Grassroots and policy connections. *American Journal of Alternative Agriculture* 15: 37-43
- Lang, T. (2009) online: *What is a sustainable diet for planet earth?* Seminar presented at the 44th annual Foreign Policy School of the University of Otago: 'Dimensions of the Global Food Crisis'. http://www.csafe.org.nz/news-events/2009/OFPS/Tim_Lang.ppt (Accessed 15 June 2010)
- Larner, W. (1997) "A means to an end": Neoliberalism and State Process in New Zealand. *Studies in Political Economy* (52) 7-38

Larner, W. (2005) Neoliberalism in (Regional) Theory and Practice: The Stronger Communities Action Fund in New Zealand. *Geographical Research*. 43(1) 9-18

Larner, W. and Craig, D. (2005) *After Neoliberalism? Community activism and Local Partnerships in Aotearoa New Zealand*. Antipode. Blackwell Publishing.

Larsen, K., Ryan, C., and Abraham, A. B. (2008) *Sustainable and Secure Food Systems for Victoria. What do we know? What do we need to know?* Australian Centre for Science, Innovation and Society, University of Melbourne.

Lebel, L. and Lorek, S. (2008) Enabling Sustainable Production-Consumption Systems. *Annual Review of Environment and Resources*. 33:241-275

Local Government New Zealand (2010) online: *Local Government Sector*. <http://www.lgnz.co.nz/lg-sector/> (Accessed 15 October 2010)

Lockie, S. (2009) Responsibility and agency within alternative food networks: assembling the "citizen consumer". *Agriculture and Human Values* 26(3) 193-201

Lyson, T, Gillespie, G and Hilchey, D (1995) Farmers'markets and the local community: Bridging the formal and informal economy. *American Journal of Alternative Agriculture* 10(3)

MacRae, R. (1999) Not just what, but how: Creating agricultural sustainability and food security by changing Canada's agricultural policy making process. *Agriculture and Human Values* 16: 187-201

Mann, M. E. and Kump, L.R. (2008) *Dire Predictions: Understanding Global Warming*. Dorling Kindersley, London

Mariola, M. J. (2008) The local industrial complex? Questioning the link between local foods and energy use. *Agriculture and Human Values*, 25: 193-196

McBeth, P. (2010) online: *Rising commodities point to high food prices*. BusinessDesk. <http://www.stuff.co.nz/the-press/business/3614896/Rising-commodities-point-to-high-food-prices>

McKibben, B. (2010) *Eaarth: Making a Life on a Tough New Planet*. Times Books, New York

McMichael, P. (2009) A food regime analysis of the 'world food crisis'. *Agriculture and*

Human Values. 26:4, pp. 281-295

McNelly, H. (2010) online: *New store owner claims intimidation by big rivals*. Otago Daily Times. <http://www.odt.co.nz/news/dunedin/133974/new-store-owner-claims-intimidation-big-rivals> (Accessed 30 October 2010)

Mendes, W. (2007) Negotiating a place for 'sustainability' policies in municipal planning and governance: the role of scalar discourses and practices. *Space and Polity*. 11(1) 95-119

Mendes, W. (2008) Implementing Social and Environmental Policies in Cities: The Case of Food Policy in Vancouver, Canada. *International Journal of Urban and Regional Research*

Ministry of Agriculture and Forestry (2009) *Horticulture and Arable Monitoring: Process and Fresh Vegetables*. Ministry of Agriculture and Forestry, Wellington

Ministry of Agriculture and Forestry (2010) online: *Sustainable Farming Fund Information*. <http://www.maf.govt.nz/sff/> (Accessed 17 September 2010)

Ministry of Research, Science and Technology (2007) online: *Future Foods*. <http://www.morst.govt.nz/Documents/work/trst/TRST-Future-foods.pdf> (accessed 5 October 2010)

Mulqueen-Star, A. (2009) '*Opportunities for planning to support and enhance urban food production in New Zealand*' A thesis submitted in partial fulfillment for the degree of Master of Planning at the University of Otago, Dunedin, New Zealand.

Nestle, M. (2007) *Food Politics: How the Food Industry Influences Nutrition and Health*. University of California Press, Berkely

New Zealand Biological Producers & Consumers Council (2010) online: *BioNews: The latest news from the New Zealand Biological Producers & Consumers Council Incorporated* (BioGro) http://www.bio-gro.co.nz/content/files/BioNews_May-June_2010.pdf (Accessed 25 October, 2010)

New Zealand Coastal Policy Statement (2010) online: <http://www.doc.govt.nz/upload/documents/conservation/marine-and-coastal/coastal-management/nz-coastal-policy-statement-2010.pdf> (Accessed 29 October 2010)

New Zealand Government (2010) online: *New Zealand's system of government - an overview*. <http://www.elections.org.nz/elections/system-of-government.html>

(Accessed 20 October 2010)

New Zealand Trade and Enterprise (2010a) online: *New Zealand's Agriculture Industry*. <http://business.newzealand.com/common/files/Agriculture-industry-in-New-Zealand.pdf> (Accessed 20 October 2010)

New Zealand Trade and Enterprise (2010b) online: *New Zealand Seafood Industry*. <http://www.marketnewzealand.com/common/files/Seafood-industry-in-New-Zealand.pdf> (Accessed 20 October 2010)

New Zealand Trade and Enterprise (2010c) online: *New Zealand Specialty Food and Beverage Industry*. <http://business.newzealand.com/common/files/Specialty-food-and-beverage-industry-in-New-Zealand.pdf> (Accessed 20 October 2010)

New Zealand Trade and Enterprise (2010d) online: *New Zealand Horticulture Industry*. <http://business.newzealand.com/common/files/Horticulture-industry-in-New-Zealand.pdf> (Accessed 20 October 2010)

New Zealand Food Safety Authority (2010) online: *New Zealand Food Safety Authority - NZFSA*. <http://www.nzfsa.govt.nz/> (Accessed 20 October 2010)

Newman, P. (2009) *Resilient Cities: Responding to Peak Oil and Climate Change*. Island Press, Washington DC

NIWA (2008) online: *Climate Change Projections for New Zealand*. http://www.niwa.co.nz/__data/assets/pdf_file/0007/75958/IPCC_08_report_02s.pdf (Accessed 20 October 2010)

Organics Aotearoa New Zealand (2010a) online: *Built From the Ground Up. Annual report* http://www.oanz.org.nz/uploads/aboutus/built_from_the_ground_up_2010.pdf (Accessed 19 September 2010)

Organics Aotearoa New Zealand (2010b) online: *About Organics*. <http://www.oanz.org.nz/aboutorganics> (Accessed 25 October 2010)

Otago Daily Times (2009) online: *Duopoly behind high food prices - watchdog*. 10/11/2009 <http://www.odt.co.nz/news/national/81499/duopoly-behind-high-food-prices-watchdog> (Accessed 14 July 2010)

Parliamentary Commissioner for the Environment (2004a) *Growing for Good: Intensive farming, sustainability and New Zealand's environment*. Wellington. Parliamentary Commissioner for the Environment.

Parliamentary Commissioner for the Environment (2004b) *Missing Links: Connecting science with environmental policy*. Wellington. Parliamentary Commissioner for the Environment.

Patton, M. Q. (2005) *Qualitative Research*. Encyclopedia of Statistics in Behavioral Science

Pawlick, T. F. (2006) *The End of Food: How the Food Industry is Destroying Our Food Supply - And What We Can Do About It*. Barricade Books, New York

Peters, C., Bills, N., Wilkins, J., Fick, G.. (2008) Foodshed analysis and its relevance to sustainability. *Renewable Agriculture and Food Systems*: 24(1); 1-7

Plant & Food Research (2009) online: *Fresh Facts: New Zealand Horticulture 2009*. <http://www.plantandfood.co.nz/file/freshfacts-brochure-2009.pdf> (Accessed 20 September 2010)

Plant & Food Research (2010) online: *Discover. Innovate. Grow*. Annual Report 2010. <http://www.plantandfood.co.nz/file/annual-report-2010-discover.pdf> (Accessed 20 October 2010)

Pothukuchi, K. (2004) Community Food Assessment: A First Step in Planning for Community Food Security. *Journal of Planning Education and Research* 23:356-377

Pothukuchi, K. and Kaufman, J. L. (1999) Placing the food system on the urban agenda: The role of municipal institutions in food systems planning. *Agriculture and Human Values* 16: 213-224

Pothukuchi, K. and Kaufman, J. L. (2000) 'The Food System: A stranger to the planning field', *Journal of the American Planning Association*, 66(2), 113 – 124

Rayner, G., Barling, D. and Lang, T. (2008) 'Sustainable Food Systems in Europe: Policies, Realities and Futures', *Journal of Hunger & Environmental Nutrition*, 3: 2, 145 – 168

Raynolds, L. T. (2000) Re-embedding global agriculture: The international organic and fair trade movements. *Agriculture and Human Values*. 17(3) 297-309

Reilly, M. and Willenbockel, D (2010) Managing uncertainty: a review of food system scenario analysis and modelling. *Phil. Trans. R. Soc.* 365(1554) 3049-3063

Roseland, M. (2005) *Toward Sustainable Communities: Resources for Citizens and Their Governments*. New Society Publishers, B.C. Canada

Schaper, M. (2010) *Making Ecopreneurs: Developing Sustainable Entrepreneurship*. Gower Publishing, London

Scherer, K. (2010) online: *Big two supermarket chains locked in fierce food fight*. <http://www.nzherald.co.nz/progressive-enterprises/news/article.cfm> (Accessed 24 September 2010)

Schiff, R. (2008) 'The Role of Food Policy Councils in Developing Sustainable Food Systems', *Journal of Hunger & Environmental Nutrition*, 3: 2, 206 – 228

Schönhart, M., Penker, M. and Schmid, E. (2009) Sustainable local food production and consumption. Challenges for implementation and research. *Outlook on agriculture*, 38(2): 175-182

Seyfang, G. (2006) Ecological citizenship and sustainable consumption: Examining local organic food networks. *Journal of Rural Studies* 22 383-395

Sharma, V. (2009) New Zealand Retail Food Sector Annual Report. Global Agricultural Information Report by the USDA Foreign Agricultural Service. Sourced online 15/08/10 from <http://www.coriolisresearch.com/pdfs/gain-nz-2009-9F3EF140d01.pdf>

Shiva, V. (2000) *Stolen Harvest: The hijacking of the global food supply*. South End Press, New York

Shreck, A., Getz, C. and Feenstra, G. (2006) Social sustainability, farm labor, and organic agriculture: Findings from an exploratory analysis. *Agriculture and Human Values* 23: 439-449

Smith, B. G. (2008) Developing sustainable food supply chains. *Phil. Trans. R. Soc. B* 363, 849-861

Sonnino, R. (2009) 'Escaping the Local Trap: Insights on Re-localization from School Food Reform', *Journal of Environmental Policy & Planning*, iFirst, 1-19

Starr, A, A. Card, C. Benepe, G. Auld, D. Lamm, K. Smith, and K. Wilken (2003) Sustaining local agriculture: Barriers and opportunities to direct marketing between farms and restaurants in Colorado. *Agriculture and Human Values* 20: 301-321

Statistics New Zealand (2010a) online: *Agricultural Production Statistics - June 2009*. <http://www.stats.govt.nz/~media/Statistics/Browse%20for%20stats/AgriculturalProduction/HOTJun09final/AgriculturalProductionJun09finalHOTP.ashx> (Accessed 25 September 2010)

Statistics New Zealand (2010b) online: *Agriculture Statistics*. http://stats.govt.nz/tools_and_services/tools/TableBuilder/agriculture-statistics.aspx (Accessed 19 October 2010)

Timaru Herald (2010) online: *Concern over rising food prices* <http://www.stuff.co.nz/timaru-herald/business/4245309/Concern-over-rising-food-prices> (Accessed 18 October 2010)

Watts, D., Ilbery, B. and Maye, D. (2005) Making reconnections in agro-food geography: alternative systems of food provision. *Progress in Human Geography* 29: 22-40

Wilson, G. A. (2008) From 'weak' to 'strong' multifunctionality: Conceptualising farm-level multifunctional transitional pathways. *Journal of Rural Studies* 24: 367-383

Winter, M. (2003) Embeddedness, the new food economy and defensive localism. *Journal of Rural Studies* 19: 23-32

Appendix 1

Table detailing the roles of key informants in this study

KEY INFORMANT CODE	ORGANISATION/ROLE
Key informant 1	Regional Council, land resource officer
Key informant 2	Regional Council, policy team
Key informant 3	City Council, planning
Key informant 4	City Council, local economic development
Key informant 5	Independent professional planner
Key informant 6	Chamber of Commerce
Key informant 7	Federated Farmers
Key informant 8	Organic Farm New Zealand (certification body)
Key informant 9	Otago Farmers Market Trust
Key informant 10	Sustainable Dunedin City (policy advocacy group)
Key informant 11	Researcher, University of Otago School of Nutrition
Key informant 12	Researcher, University of Otago School of Business
Key informant 13	AgResearch (Crown Research Institute)
Key informant 14	Plant and Food (Crown Research Institute)
Key informant 15	Owner of a local food processing company

Appendix 2

Guiding sheet for semi structured interviews

Appendix 3

Participant information sheet and consent form

Appendix 4

Copy of survey sent to planning departments of local governments

1) Does your organisation have any policies, plans or programmes in place to support or enhance the sustainability of the local food system?

2) The food system can be seen to touch on many aspects of a city's characteristics - land use (both urban and rural), public health, local economic development, community development, environmental protection and monitoring, biodiversity, waste issues (e.g. compostable organic wastes) and so on.

a) Does your organisation have policies, plans or programmes in these areas that could be potentially linked to food?

b) Does your organisation currently actively engage in food systems related issues with regards to existing plans and policies?

c) Do you see potential to further link existing policies to food systems related issues?

3) Does your organisation currently support any community based initiatives that are related to food systems? For example community gardens, backyard gardening initiatives, composting initiatives, charitable food providers, etc?

4) Does your organisation currently support any 'industry' / market based initiatives that are related to food systems? For example farmers markets, 'buy local' promotions, or support for local, small to medium scale farmers and processors, etc?

5) Do you see potential for your organisation to further support community or market based initiatives to work towards sustainable local food systems?

6) There are several ways that planners have engaged with food systems overseas. How feasible do you think the following options for engagement are?

a) Support for local growers and processors, or existing initiatives, in the form of start-up funding, information, networking services, or other resources

b) Encouraging more locally based processing / value adding of products via provision of a shared commercial kitchen facility, food safety education etc.

c) Helping local farmers and processors to market their products through 'buy local' campaigns or publishing 'seasonal eating' guides

d) Any other suggestions of how planning could assist transition to sustainable food systems?

7) One popular option is either mandating the creation of, or giving formal recognition to, a 'Food Policy Council', consisting of members representing a diverse range of food related sectors, including farming, distribution, retailing, catering, scientific research, and planners, etc. Food policy councils meet every so often and discuss issues that are facing them, and ways that these issues could be overcome. They aim for a more coordinated approach by various stakeholder groups. One role of food policy councils is to recommend policy changes to local or central governments which would facilitate sustainable food systems initiatives. Or, they often end up pointing out ways in which existing policies can apply to food systems but are not currently implemented in that way. Do you see a potential for your organisation to work with a food policy council that was aiming to assist the food industry in transitioning to more sustainable systems?

8) Do you think that in the near future, issues such as climate change, energy and other resource scarcity, unstable global economies and so on will be seriously affecting our communities and in particular our food systems? Do you think that governments and planners have a role to play in preparing industry to be more resilient to unpredictable future events?

9) New Zealand has traditionally been a heavily export focused nation. Do you think that we need to build in more resiliency and diversity into our local food systems, so that we are more self-reliant and less dependent on food imported from other areas?

10) Do you have any other thoughts or comments on the potential role for planning in food systems? Or do you know of any documents either by your organisation or another party which you think I should take a look at?