PRINCIPLES FOR AN INTEGRATED LAND ADMINISTRATION SYSTEM TO SUPPORT SUSTAINABLE DEVELOPMENT

by

Lisa A. Ting

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Department of Geomatics, Faculty of Engineering
The University of Melbourne, Melbourne, Victoria 3010, Australia

DECLARATION

This is to certify that this thesis has not been submitted for a higher degree to any other university or institution. The text does not exceed 100,000 words.

Parts of this work have been published in refereed journals or refereed conference proceedings as listed in Appendix 1.

Lisa A. Ting

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ABSTRACT

This thesis aims to investigate what principles should guide the development of land administration infrastructures to adequately address the governance needs of evolving rights, restrictions and responsibilities between government, corporate bodies, community groups and individuals to better support sustainable development objectives.

The research comprised two phases. The first phase was an overview of the dynamic humankind-land relationship with particular focus on the changing balance between public and private rights and responsibilities. This included an examination of the emergence of sustainable development as a priority, and the significance of having a land administration system that was responsive to this priority as well as the relationship between good governance and land administration. This required a literature search of relevant materials from disciplines spanning geomatics, law, environmental planning, sociology and public policy.

The second phase was to conduct case studies of New Zealand and New Brunswick, Canada with the objective of determining the impact of sustainable development objectives on the balance of rights and responsibilities of government, private sector, community and individuals. This then led into the inquiry of their existing land administration systems to observe what reforms had been attempted to meet these changed rights and responsibilities and what lessons could be learned. A related focus was the potential of advances in information technology. The aim was to better understand the role that land administration can play in supporting the dialogue between stakeholders with competing interests across the social, economic and environmental priorities that constitute sustainable development. This research was conducted in an Australian context and thus there are many examples taken from the Australian federal and Victorian state experiences.

The findings of the case studies were then used to define key principles to guide a more integrated institutional, legal and technological approach to land administration systems that would better support sustainable development.

These key principles focus on the development of legal, institutional and technological aspects of land administration into coherent ‘tools of thought’ that allow people and governments to interact to envision and implement how rights and responsibilities over land should be defined and utilised.

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AAC	Agriculture and AgriFood Canada
ACAP	Atlantic Canada Action Plan
ACC	Auckland City Council (NZ)
ACOA	Atlantic Canada Opportunity Agency
AFN	Assembly of First Nations
ANZLIC	Australia and New Zealand Land Information Council
ARC	Auckland Regional Council (NZ)
ARET	Accelerated Reduction or Elimination of Toxics
CARD	Canadian Agriculture and Rural Development
CC	City Council (NZ)
CCC	Christchurch City Council (NZ)
CCME	Canada Council of Ministers of the Environment
CEN	Canadian Environmental Network
CESD	Commissioner for the Environment and Sustainable Development
CGDI	Canadian Geospatial Data Infrastructure
CHH	Carter Holt Harvey
CLFA	Crown Land and Forests Act (NB)
CLURE	Commission on Land Use and Rural Environment (NB)
CMC	Catchment Management Commission (NZ)
CPA	Community Planning Act
CRS	Core Record System
CSD	Commissioner for Sustainable Development (Canada)
DC	District Council (NZ)
DCDB	Digital Cadastral Database
DFO	Department of Fisheries and Oceans (Canada)
DLGE	Department of Local Government and Environment (NB)
DOC	Department of Conservation (NZ)
EC	Environment Canada
EF	Empoyers Federation (NZ)
ESA	Environmentally Significant Area (NB)
ESRI	Environmental Systems Research Institute, Inc
FDE	Farm Dairy Effluent
FF	Federated Farmers (NZ)
FIG	French acronym for International Federation of Surveyors
FLIP	Farmland Identification Program
FN	First Nations
GATT	General Agreement on Tariffs and Trade
GIS	Geographic Information System
GST	Goods and Services Tax
IC	Industry Canada
INAC	Indian and Northern Affairs Canada
LC	Local Council (NZ)

LGA’89	Local Government Act (NZ)
LGA	Local Government Authority (NZ)
LINZ	Land Information New Zealand
LIS	Land Information System
LSD	Local Service District (NB)
MAF	Ministry for Agriculture and Forestry (NZ)
MDBC	Murray-Darling Basin Commission (Australia)
MDBMC	Murray-Darling Basin Ministerial Council (Australia)
MFE	Ministry for the Environment (NZ)
MOLA	Meeting of Officials on Land Adminstration
NB	New Brunswick
NBCC	New Brunswick Conservation Council
NBEIA	New Brunswick Environment Industry Association
NBEN	New Brunswick Environment Network
NBFA	New Brunswick Federation of Agriculture
NBFWO	New Brunswick Federation of Woodlot Owners
NIMBY	Colloquial phrase: ‘Not in my backyard’
NRCan	Natural Resources Canada
NSW	New South Wales
NTM	Ngai Tahu Management
NZ	New Zealand
OECD	Organisation for Economic Cooperation and Development
PCFE	Parliamentary Commissioner for the Environment (NZ)
PID	Parcel Identifier (NB)
RC	Regional Council (NZ)
RDPC	Rural District Planning Commission (NB)
RMA	Resource Management Act
RP	Regional Plan (NZ)
RTNB	Rural Team New Brunswick
SCC	Supreme Court of Canada
SDI	Spatial Data Infrastructure
SNB	Service New Brunswick
TCPA	Town and Country Planning Act (NZ)
TRONT	Te Runanga o Ngai Tahu (Ngai Tahu Management Trust)
UK	United Kingdom
UN	United Nations
UNB	University of New Brunswick
UNFAO	United Nations Food and Agriculture Organisation
US	United States
WWII	World War II
WWW	World Wide Web

1

INTRODUCTION

1.1 BACKGROUND

Expanding human requirements and economic activities are placing ever-increasing pressures on land resources. Competing rights and uses create conflicts and result in sub-optimal use of land and land-related resources. International instruments on sustainable development such as Article 10.1 of Agenda 21 (UN, 1992) have flagged the need for an examination of rights in land in an integrated manner to minimise conflicts, make the most efficient trade-offs and link social and economic development with environmental protection and enhancement (UNDSD, 2000).

In this thesis, land administration is taken to indicate society's way of institutionally expressing and administering rights and responsibilities that exist in relation to land and land-use. Many of the existing land administration systems were created primarily in response to economic paradigms. The growing urgency to balance the triple bottom lines of economic, environmental and social priorities that constitute sustainable development call for an appropriate response from the land administration systems of today to harness the potential of information technology.

The achievement of this integrated approach challenges existing systems and attitudes towards land that have fragmented the use and administration of, and information about, land. Many current systems reflect a time and place of

understanding that encapsulated the birth of land markets, dilution of the traditional ties to land and a general ignorance of the fact that such a dismembered approach might be unsustainable. Land administration systems are a product of the era in which they were developed, and change is an inevitable product of the dynamic nature of society (Ting and Williamson, 1999a; Ting and Williamson, 1999b).

The International Federation of Surveyors (Commission VII) developed Cadastre 2014, which describes cadastres of the future as 'a methodically arranged public inventory of data concerning all legal land objects in a certain country or district, based on a survey of their boundaries' (Kaufmann and Steudler, 1998). Cadastre is a narrower and less complex structure than land administration. As will be elaborated in Chapter 3, the complexity of sustainable development dialogue that precipitates changing rights and responsibilities over land demands access to sound information and good governance. The integration and subsequent querying of spatial datasets, the locating and obtaining of datasets across a network, and the transfer of dissimilar spatial datasets across networks, are all concepts that have arisen in an attempt to better utilise the spatial datasets that are in existence (Phillips et al., 1998).

Whilst it is clear that there is a demand for information by key decision-makers, there is also a need to place civil society firmly within that interaction to ensure the dynamism and relevance of the system. One primary challenge in the development of Geographic Information Systems (GIS) technology is finding the balance between meeting the demands of Geographic Information Analysis (GIA) practitioners for more intensive geographic information processing capability, and at the same time being sensitive to the tolerances of society for increasingly privacy-intrusive GIA (Michell-Viret, 1997).

Sustainable development decision-making affects rights and responsibilities over land and its use. Therefore it requires sound land administration systems underpinned by legal and institutional frameworks that adequately relate to information technology infrastructures and good governance to support the necessary dialogue about those rights and responsibilities. Thus, current land administration infrastructures are either inadequate or are struggling in their role of supporting sustainable development.

1.2 AIM AND SCOPE

This thesis aims to investigate what principles should guide the development of land administration infrastructures to adequately address the governance needs of evolving rights and responsibilities between government, corporate bodies, community groups and individuals to better support sustainable development objectives.

The focus is primarily on the legal and institutional aspects of land administration frameworks. Thus the discussions about the potential role of information technology and infrastructure are dealt with from those perspectives rather than from a detailed scientific information technology approach.

The legal and institutional approaches bring into play discussions of the contextual factors of public policy and good governance. The resulting observations are meant to guide the land administration framework rather than result in an in-depth theoretical examination of public policy and good governance.

1.3 OUTLINE OF THESIS

This thesis has three broad parts.

The first part includes detailed discussion of the background problem that the final framework will seek to address. To this end, Chapter 2 discusses the dynamic nature of the humankind–land relationship and indicates some of the key current drivers of change that lead to the development of more complex rights, restrictions and responsibilities. Chapter 3 delves into sustainable development and the challenges it poses for land administration systems because of the need for integrated dialogue between competing economic, environmental and social objectives. Chapter 4 discusses the role of governance in facilitating dialogue between public and private stakeholders about their changing rights and responsibilities over land and its use. The purpose of these chapters is to overview relevant literature on these topics. Thus a range of secondary and where available, some primary sources are used. The interdisciplinary nature of this work has required research into a range of literature. Chapter 2 makes reference to historical texts as well as some sociological, economics, law and land administration works that provide insights into the changing relationship

of people to land and the resulting impact on land administration. In examining the role of land administration in sustainable development, Chapter 3 refers to environmental, planning, humanities and economics materials as well as land administration texts. Chapter 4 further focuses on the importance of governance within the sustainable development and land administration parameters so the categories of materials referred to will be expanded to include governance and public policy.

The second part will cover the research design and the case studies. Chapter 5 will discuss the problems raised by the above review of the literature and the design of a research program to throw light on these problems. Chapters 6 and 7 will present appropriate case studies conducted in New Zealand and New Brunswick, Canada.

The final part includes the Discussion and Conclusions. Chapter 8 is the Discussion chapter that will then present the principles gleaned from the background chapters and the case studies that would guide the re-engineering of frameworks for land administration systems that are supportive of sustainable development. The emphasis will be on the synergy between the legal, institutional and technological aspects that underpin sound decision-making and good governance. Chapter 9 concludes the thesis.

2

THE CHANGING RELATIONSHIP OF PEOPLE TO LAND

2.1 INTRODUCTION

A useful first step in this research is to examine what challenges face the land administration systems of today. The problems to be addressed by the desired framework will be explored in this chapter and Chapter 3. This chapter presents a historical perspective on the dynamic nature of the relationship between people and land with a view to indicating the current importance of sustainable development. Chapter 3 then discusses how land administration is relevant to sustainable development objectives.

Section 2.2 of this chapter outlines the history of the relationship of people to land in the western world. There is then discussion in Section 2.3 of some of the current drivers of change and how some western nations are seeking to respond to them, in particular sustainable development and technological advances. The conclusion at Section 2.4 points out some of the key issues arising from this historical exploration of the relationship of people to land that are useful background to the case study research.

2.2 HISTORICAL PERSPECTIVE

This section outlines the history of the changing relationship of people to land, with particular attention to the changing dynamics of public–private property rights and their significance for legal and institutional reforms. The concept of institutions is used somewhat differently in different disciplines and even within the same academic field the definitions might differ. The most general usage is that an 'institution' is a principle, custom or a system that forms part of a society or a civilisation. Quite often it would refer to formal bodies, mechanisms or partial elements of the established 'order' or governance of society. Another usage is that 'institutions' refers exclusively to rules that constrain individual behaviour. These rules could be formalised in law—statutory as well as customary—or they could have the form of cultural norms and standards for behaviour, based on values and traditions for a particular society or a culture. In institutional economics as well as law and economics, this is the standard usage and so scholars like North, in his study of institutions and economic performance, have made a very clear distinction between institutions and organisations (North, 1989). In this thesis, the usage of the term 'institutions' will be more as a reference to the formal bodies, legal mechanisms and elements of the established governance of society. The institutional environment for individual people will vary depending on their position in the society that is being served by the institutions.

Land and its use have meaning for the different layers of identity in an individual and a society, which could include economic, social, community, historical, spiritual and environmental components. The rights, restrictions and responsibilities that society creates in relation to land reflect the diverse meaning and significance that land has held for humankind. The changing relationship of people with land is an expression of changing structures of public–private property rights. Property rights are generally understood to be the control of valuable assets by one or more individuals (Alchian, 1965). Eggertsson (1993) elaborated that property rights have two sources: internal and external. External property rights are granted by the institutional environment through 'laws, regulations, norms, enforcement and sanctions—which constrain outsiders' (Eggertsson, 1993). Internal property rights are 'established by the individual himself or herself through various investments aimed at gaining control

over scarce resources, which, for instance, may involve monitoring, fencing, hiring private guards, and checking reputations' (Eggertsson, 1993).

The importance of rights in land is exemplified in the well-accepted view elucidated by Blackstone that property law is in fact the basis of all law (Blackstone, 1791). Put another way, the rights, restrictions and responsibilities in relation to land are the result of negotiations between government and society as well as between sectors of society and the individual. These are then given expression in the institutions of society, which include laws, policies, and structures of bureaucracy, and systems of governance. Territoriality is an expression of power:

> Territoriality is the primary expression of social power. Its changing function helps us to understand the historical relationship between society and space. (Grant, 1997)

The significance of land from a diversity of perspectives including spiritual, physical, social, economic and identity is evident from historical accounts of the changing approaches to land tenure and administration that result from the dynamic changes in societies around the world. This dynamism particularly impacts on the approaches to individual, community and State rights and responsibilities.

An examination of the development of Western thinking about the human relationship with land/property reveals some insights that will be explored in this chapter. In examining Western thinking about land and property, this research is confined to English-language sources.

The Powelson (1988) study of world tenure systems from 8500BC led him to state:

> My 'bold' hypothesis is that customary land tenure, non-literate society, trend migration, slavery and continuous warfare (conflicts not expected to be resolved) all go together; they contrast with fixed tenure (land registration), literacy (written contract), settled existence, free wage labor, periodic peace, and the expectation that all conflicts will end.

Powelson (1988) further hypothesises that the societies that now lead the world in economic development, namely Western Europe and Japan, are the very ones whose systems of land tenure were worked out by negotiation and compromise between village institutions and overlords. In these countries the system for ordering

private and public rights in land formalised the power (and property) structures within society in a way that effectively supported economic development.

The concept of institutional soundness for property and other forms of capital was expanded by Hernando de Soto (2000), who argued that the efficacy of legal, administrative and governing infrastructures for formal property is tested by the extent to which these infrastructures can support human creativity and thus productivity:

> Formal property is more than a system for titling, recording and mapping assets—it is an instrument of thought, representing assets in such a way that people's minds can work on them to generate surplus value.
>
> The revolutionary contribution of an integrated property system is that it solves a basic problem of cognition ... A good property system does that—it puts assets into a form that lets us distinguish their similarities, differences and connecting points with other assets. (Soto, 2000)

So, for the purposes of this thesis, de Soto's contribution is to pinpoint the need for human creativity (which in turn results in productivity) to be properly supported by institutional frameworks. What this thesis will explore in later chapters is what principles will guide the extension of our existing institutional systems for property and land use in order to bring out the creativity necessary to strengthen the three pillars of sustainable development—social, environmental and economic sustainability.

The present author would argue that the de Soto (2000) reference to institutional mechanisms of formal property being used as an 'instrument of thought', needs to be extended to represent the social and environmental aspects in a way that allows people to identify and creatively think about implementing sustainable development. Sustainable development implies that decisions will be made about social, economic and environmental aspects of life in a balanced and integrated manner.

The following sections trace out the changes in the people to land relationship over time, and in particular the changes in the institutional frameworks resulting from society's ordering of public–private rights.

2.2.1 Tribal Communities

As Marx outlined, in the ancient world tribal property tended to be landed property, and the right of the individual tended to be that of possession. Real private property began with movable property, e.g. slaves. Tribal property then evolved through various stages: feudal landed property; corporate movable property (feudal organisation of trades); and capital invested in manufacture. Marx stated:

> Through the emancipation of private property from the community, the State has become a separate entity, beside and outside civil society;…The modern French, English and American writers all express the opinion that the State exists only for the sake of private property, so that this fact has penetrated into the consciousness of the normal man (Arthur, 1974).

In early Mesopotamia, which existed around the fourth millenium BC, land was collectively owned, and was believed to belong to a god or goddess who protected its inhabitants. Thus land, people, government and religion were regarded as one unit (Powelson, 1988). In the fourth millennium BC, there was widespread 'settling-down' as society became organised into city-states, first religious and then dynastic, and there were wars between them, probably over land or water rights (Powelson, 1988). From about 2350 BC, as city-states were conquered and absorbed into empires such as the Sargonic empire, state capitalism, aided by heavy taxes, caused private landholdings to move into the ownership of the state. Eventual political fragmentation saw the resurgence of private economies and landholdings. In Southern Mesopotamia, three types of citizen were entitled to different land tenures, ranging from none for the slave, to rights of use, to private ownership (Powelson, 1988). Pegs were placed as boundary markers, the palace kept records of all landholdings, and land was generally inheritable and could be sold (Powelson, 1988).

In seventh century Western Europe, there were three distinct categories of land (Koebner, 1966). One category covered those areas that adopted Roman customs and traditions. The second was those which lacked Roman traditions, e.g. Franks, Frisians, Saxons and Scandinavians. The third was the Northern Germans where lords had vast estates made up of villages. In Normandy and England, most land was held by allodial means, but was inalienable outside the family (Kolbert and MacKay, 1977).

In short, even in some of the earliest societies the balance of ownership of land and its resources has waxed and waned between ownership by the sovereign and ownership by the common people.

2.2.2 Feudalism

The fusion of land and government known as feudalism illustrates a change from the tribal situation where all had access rights to land that was generally communally owned and/or understood to belong to a higher power or deity (Powelson, 1988). Apart from having meaning as a tenurial system, feudalism is a concept that has meaning from a political viewpoint as a system of government. Feudalism as a method of government was one where the essential relation was between lord and vassal—the performance of political functions depended on personal agreements between a limited number of individuals, and thus political authority was treated as a private possession and political power was personal rather than institutional (Strayer and Coulborn, 1965). As a political system, feudalism disappeared from the greater part of western Europe in the late middle ages, with the emergence of cities and commerce. This thesis is focused more on feudalism as a tenurial system.

In a study of the agrarian history of England and Wales, it was found that by the seventh century the king was able to use rights in land to win the loyalty of key subjects, who in turn allowed certain use rights to the peasantry (Finberg, 1972):

> Around the king stands a retinue of nobles whose main function is to fight his battles. If their service merits it, he will in time reward them with grants of land, and they will form a territorial aristocracy supported by the rents and services of the tillers of the soil, whom they are bound to protect and keep in order.

At that time, England had three categories of landholdings: folkland (customary land that the king could choose to take); loanland (granted to a noble for life); and bookland (originally created for churches but expanded to be granted to nobles by charter, and which could be sold, exchanged or bequeathed) (Powelson, 1988). The concept of entail (reserving land forever within a family) was established even before the Normal Conquest (Powelson, 1988).

In the early years of the Germanic kingdoms, private property was customary, in that anyone who turned wasteland to arable land by their own labour became its owner. Gradually, though, owners of free land came under powerful lords, with the village as the principal land unit, and community-owned land being assigned to free men by rank.

By the time of Emperor Charlemagne (800-814AD), the overall directions of European feudalism were clear, with the most significant change being the loss of dominium in favour of the fusion of land and government known as feudalism (Powelson, 1988).

The Normans extended and developed the feudal system after the Conquest of England in 1066. Under the feudal system, the king owned all land directly or indirectly. He granted use of these lands to his subjects in return for the rendering of military or other services. The tenant and his heirs were bound in feudal service even if they had subinfeudated to another party. Karl Marx commented in *The German Ideology* that:

> The chief form of property during the feudal epoch consisted on the one hand of landed property with serf labour chained to it, and on the other of the labour of the individual with small capital commanding the labour of journeymen (Arthur, 1974).

Powelson (1988) noted that there were differences between the East and the West of Europe (the rough boundary being the Elbe). In the West, shortages of labour, land fragmentation and advances in agricultural technology gave the peasants some bargaining power that forced the development of institutions to formalise and facilitate negotiation over rights that naturally included land tenure matters. In the East, where there was more land and less necessity for such 'institutions of compromise', the peasants were more subject to the whims of the monarch and nobility (Powelson, 1988). This illustrates the relevance of the nature of public–private power sharing to the institutions and processes that could exist for the determination of rights and responsibilities over land and its use.

Magna Carta

The Magna Carta of 1215 in England was revolutionary because of its establishment of the right to not have one's body or property taken by the king without due process.

This document is an early example of the tension that exists between the rights of the individual and those of the crown/state with regard to property. There is a further dynamic—the community's interests—which may not be represented in either the individual or the crown.

Private ownership

It is useful for the purposes of this thesis to understand the origins of the concept of private ownership and its dynamic responses to changes in the way public and private rights and responsibilities relate.

Powelson (1988) concluded that:

> The decline of feudalism, the specification of property rights and the alienation of land all appear to correlate with economic development, which was stronger (in the sixteenth and seventeenth centuries) the farther west one went in Europe, compared to the east, and the farther north one went compared to the south. The agricultural and industrial revolutions came first to England, then spread to the continent, and came last of all to the countries in the east and the south.

'Property' is derived from the Latin *proprius* and *proprietatem* meaning 'own or proper'. So apart from the concept of ownership, it encompasses the meaning 'of quality'. In other words, property comes with responsibilities as well as rights.

John Locke's writings in the late 1600s focus on the dichotomy between the concepts of owning property in common as well as on a private, individual basis. He considers how there can be private ownership even though:

> God gave the World to Adam and his Posterity in common…The Earth, and all that is therein, is given to Men for the Support and Comfort of their being. And…all the Fruits it naturally produces, and Beasts it feeds, belong to Mankind in common…The Earth and all inferior Creatures be common to all Men (Locke, 1690).

He found that one of the justifications for individual ownership was that labour expended to 'value-add' gave some justification to claim individual enjoyment of the fruits of the land. Thus property is a natural right created by individuals, which can be subject to public/government control by way of social contract with the agreement of those individuals (Locke, 1690). Locke also argues that unless money had been invented, there would have been no sense in accumulating more than could be used.

The advent of money certainly contributed to the decline of the feudal system, because land was no longer the key currency.

In line with Locke's approach to private, individual property, his theory of the state involved a social compact by which free individuals agree to form a political society. In this society, the legislature is subordinate to the people and is accountable to what he described as 'the public good of the society'. In turn, the executive is 'visibly subordinate and accountable to the legislature' and owes a fiduciary trust for the safety of the people. This is the institutional manifestation of the society's relationship with land that reflects in particular the relationship between individuals, the State and the community at large (Gough, 1973).

In contrast to Locke (1690), Thomas Hobbes (1968) viewed property as belonging to the sovereign first, and being made accessible to private individuals at the sovereign's discretion to divide out some parts of the 'bundle of rights' that form ownership (Hobbes, 1968). Thus the Hobbesian approach creates a more involved relationship between public and private rights.

There are contemporary examples of the divergent approaches of Locke and Hobbes. In most European countries, the Hobbesian approach is applied, whereby mineral rights belong to the state even if the surface of the earth belongs to a private individual, whereas the more Lockean-inclined approach of the United States means that mineral rights form a part of surface property ownership (O'Looney, 1995).

Pierre-Joseph Proudhon's *What is Property* was published in 1840, a crucial point in French history. The Orleanist monarchy, in seeking to fulfil the aims of the first French Revolution had, he said, 'degenerated to a tyranny of wealth and status barely better than the Old Regime'. As can be quoted from a reprint of his work, Proudhon's first proposition is that (Proudhon, 1994):

> Individual possession is the condition of social life; five thousand years of property demonstrate this. Property is the suicide of society.

This distinction between possession and ownership is not dissimilar to the modern concept that the essence of property ownership is the control of access rather than the enjoyment of access (Bradbrook et al., 1996).

Hegel argued for property rights as general rights, akin to liberty and the pursuit of happiness. This approach appealed to Marx, who developed it further in the concept of communism (Waldron, 1986).

Blackstone, the well-known jurist, described the right of property as (Blackstone, 1791):

> ...that sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe.

It should be borne in mine that such different approaches to the concept of property do mould different approaches to property and resource rights, and in turn to the supporting legal and institutional infrastructure.

Honore found that full liberal concept of ownership includes (Waldron, 1986):

a) the right of possession of a thing;

b) the right to use a thing;

c) the right to manage a thing;

d) the right to income derived from others' use of a thing;

e) the right to the capital value of a thing

f) the right to security against expropriation of a thing;

g) the right to sell, give or bequeath a thing;

h) lack of any term on the possession of those rights in respect of a thing;

i) the duty to refrain from using the thing in a way that harms others;

j) the potential liability that judgments may be executed against the thing; and

k) the expectation that any rights which others may have in the thing will revert on termination of those rights.

As Kirkpatrick (1996) observed, throughout history many if not all social systems had complex property systems that supported political and financial systems. Those complex property systems defined rights between public and private goods, with public goods tending to be treated as collective property. For example, sunlight

and air resist being other than common property while people resist letting their private things be other than private. He noted that:

> There is ample scope for the incidents of ownership to be split and traded, to limits governed only by the ingenuity of the market or the tolerance of the State. Also important is to note that property rights are not rights of people in respect of property: they are really rights of people against other people. Legal relations cannot exist between people and things, because things cannot have rights or duties or be bound by or recognise rules. (Kirkpatrick, 1996)

Kirkpatrick's (1996) comment about rights between people is a key point because it clearly illustrates why it is that rights in relation to land and property are a direct product of society's dynamics. It is society's changing relationships that impact on the definition of rights and responsibilities held by individuals, the community, private sector and the State.

As Powelson (1988) said, it was the degree of reform by 'leverage and not by grace' that determined the ability of nations to produce land tenure systems that better facilitated economic development.

Property lies at the base of the existence of law. The perspective of leverage rather than grace can be expanded to better understand the legal and institutional arrangements that exist for property, and why they exist. In other words, they are a reflection of the power structures between the sovereign, the community and the individual.

Glaeser and Schleifer (2000) analysed the two main legal traditions in the world i.e. the common law system derived from the English, and the European civil law system. They found that the common law system, being derived from a tradition of greater negotiation between king and subjects (i.e. leverage) as compared with the more top-down approach of the European systems, has appeared to produce a more vibrant society. Rather than attempt to prescribe in great detail what is allowed, the common law system prefers to describe the minimum standards of tolerance beyond which society is entitled to exercise its creativity (Glaeser and Schleifer, 2000).

Throughout the feudal era, the fusion of land and government was a defining point of difference in rights between the subjects and the sovereign. It would appear as well that the extent of negotiation possible between the sovereign and the subjects

had an impact on the way property rights in land, and to use land, would be defined and secured.

2.2.3 The Industrial Revolution

The Industrial Revolution is interesting for the purposes of this thesis, because it elicited significant social, legal and institutional reforms in response to the changing nature and status of land as the primary repository of wealth and identity.

The Industrial Revolution came at a time of agricultural change as well as industrial invention. There were significant land management changes that led to improved productivity, the best known being the enclosure movement of the 1700s across Europe and the UK. This consolidated the tiny, inefficient parcels of feudal land into larger, more productive plots. In the UK, for example, about 7,000,000 acres of land were enclosed between 1760 and 1845; these were made more productive by mixed agriculture, which included crop rotation and alternating arable/pasture use (Toynbee, 1884). This movement, when coupled with the move by landed aristocracy into industry and the demand for labour in the urban factories, again changed the relationship with land. The rapid urban population growth may be exemplified by statistics from Liverpool, whose population of 4000 in 1685 increased to 40,000 in 1760 and then 552,425 in 1881 (Toynbee, 1884). This made it all the more important for the rural food bowl to increase productivity. Increased density in urban areas created new needs in land, land markets, land administration and property law.

As Powelson (1988) noted, the end of feudalism in Western Europe was mainly attributable to the fact that the industrial revolution meant land was no longer the primary asset, and the technologies of communication and existence of a police force meant there was no longer any need to delegate government to a nobility.

These changes during the Industrial Revolution set in train a host of administrative and legal reforms vis-à-vis property and land (Lieberman, 1995). The concepts of property began to expand considerably beyond land, particularly in the 20th Century, to include ideas such as intellectual property.

One example of legal evolution as a result of changes to society's property relationships is the Statute of Uses. From the beginning of the 15th century, the system

of uses was the means by which the Chancellor, on behalf of the King, could hear petitions for the creation of equitable interests in land. These equitable interests had the effect of depriving the Crown of feudal dues. The Crown responded in 1535 with the Statute of Uses, which vested legal title in the recipient of the equitable benefit in land, and thus enabled the king to collect more feudal dues (Bradbrook et al., 1996; Baker, 1979).

The Statute of Uses proved unpopular in the beginning, but by the time of the Industrial Revolution, when the landed aristocracy wished to sell their land to raise capital, they realised that the pre-existing legal framework made it extremely difficult to convey land because of the lack of simple legal conveyancing methods and the inherent feudal tendency towards creating interests in land into perpetuity (Megarry and Wade, 1984). The lawyers discovered that by applying the Statute of Uses, they could transfer land and the legal obligations in a manner that traditional methods could not achieve. Later, between the late 17th and early 19th centuries, the rule against perpetuities was developed by the English courts as a compromise between the landowners' right to dispose of land at will (which arose after the decline of feudalism) and the need to prevent land being removed from the market indefinitely by way of will or grant. The Statute of Uses was eventually repealed by the 1922-1925 legislative reforms that codified and simplified property legislation—culminating in the Law of Property Act 1925 (Simpson, 1976).

This example of the Statute of Uses illustrates the change from feudalism to a stronger role for private property and capital. It strengthens the point made by Powelson (1988) that the public–private power structures in societies helped to determine the range of institutional mechanisms available to facilitate dialogue as well as the extent of access that different sectors had to those mechanisms.

So, a notable consequence of the Industrial Revolution and the birth of highly populated urban centres were the growing realisation of a need for some State regulation of land use by private owners. The lessons on the treatment of labour and the impact on the local community and the wider environment are still issues today.

2.2.4 Capitalism/Socialism and Land Administration

The Industrial Revolution and the rise of capital led into the capitalism vs socialism debate which has continued to this day with varying degrees of passion. At the heart of the debate between capitalism and socialism is the discussion of what control and access individuals and the state should have vis-à-vis one another. A prime focus was the approach to public and private property rights and responsibilities, of which land was the fundamental form, as evidenced by the peasant revolutions across Russia, China and Eastern Europe that were driven by socialist ideals and signposted by mass land invasions.

The existence of land markets is one of the crucial identifying features of private ownership and capitalist society. Land markets require an infrastructure that supports society's approach to the existence of property:

> Trade requires that property rights be defined and enforced, and that a legal framework be present before property rights can be exchanged to allow markets to work. An important reason for the industrial revolution beginning in England was that its well-developed and independent legal system provided security of tenure for private property (Hartley and Porter, 1991).

By way of contrast, the common features of communist central and eastern European countries were that the State and the cooperatives had become major owners and occupiers of land and there were no individual participants in the land market (Ossko and Hopfer, 1999). As well, there was separation of usage and ownership, such that the land records reflected usage rather than ownership rights (Ossko and Hopfer, 1999).

In a little over one lifetime, the Eastern Bloc has moved from private ownership to absolute State ownership and back again, only to find that the Western nations have moved even further along the path into privatisation. Unified Germany is one example (Alexander and Skapska, 1994). Each of these changes has brought a need for matching legal and administrative infrastructures to support the changed dynamics of rights and responsibilities in relation to land and land use.

It has been well documented that reconstruction of land administration systems to reflect society's changed desires for ordering private and public rights over land is

a slow and difficult process that requires sensitivity to the country's historical and institutional heritage (Bogaerts et al., 2002). It is here that the rights and responsibilities of the different sectors of society can and do clash, because land planning creates changes that affect rights and responsibilities, and therefore hold possibilities for disagreement.

Land-use planning or land-use policy at the national level dates back at least to the 16th century. For example, in Sweden during the 1500s plans for development in towns had to be ratified by the king before building could start (Strong, 1977; Fabos, 1985) Yet the greater part of national planning to guide land use has developed only during the 19th and 20th centuries, in response to problems and opportunities created by the industrial revolution and to needs which were generated during those times. National land use planning can accomplish three things:

- It can aid in the exploitation of the riches of virgin land;
- It can minimise environmental land-use problems resulting from human activity;
- It can even search out new opportunities by reclaiming land which has been degraded by previous cultures. (Fabos, 1985)

Public concern for land use was heightened during the years immediately following the Second World War, largely due to large-scale redevelopment efforts in the central areas of old cities (Fabos, 1985). Zoning was a major catalyst for change and action because it brought the public increasingly into the planning process, as communities were presented with the pros and cons of the planners' rationale which outlined the limits of land uses (Fabos, 1985).

The increasing pace of development and the complexity of the issues to be considered by the planner has meant that no individual planner will be sufficiently knowledgable to tackle all the problems encountered in land-use planning, so they multi-skill and also work in multi-disciplinary teams (Fabos, 1985). As is discussed in Chapter 3, part of the challenge of complexity for planners comes from increasing community awareness of growing environmental and social issues that come into tension with traditional economic rationales.

Land-use planning in centrally planned economies took on a different legal and institutional flavour altogether, and was a reflection of society's desire to order private and public rights and responsibilities in a way that, as shown by the fall of centrally planned economies through the late 1980s and 1990s, was unsustainable.

In short, formal planning has existed since humans established a settled existence. As the pace of development and change has accelerated through the ages, planning has had to keep up with society's changing power structures between the State and the individual. Also as society and government became more complex, the spectrum of stakeholders also diversified and created different demands on the legal and institutional structures that give voice to society's wants. These are explored further in Chapters 3 and 4.

The Torrens System, which developed in Australia, is interesting because it is a clear example of legal change responding to society's needs, then propelling further changes in the land markets and land administration, including surveying methods. The Torrens System was revolutionary for its ability to deliver certainty as well as a cheaper and speedier land registration. The pre-existing Deeds method required that lawyers trace the actual documents back as far as possible to determine whether there was good title to be passed on. Each transfer involved the preparation of yet another detailed legal document. Whilst Torrens had intended that the act of registration would grant title as though it had been granted directly by the Crown, the South Australian Real Property Acts of 1860 and 1861 used a combination of provisions that made the certificate irrefutable evidence of title in the person registered (unless of course there was evidence of fraud, error, etc) (Harrison, 1962).

Between 1857 and 1874, the Australian colonies and New Zealand adopted the Torrens system, establishing the pivotal role for cadastral maps in the land registration process (Kain and Baigent, 1992). The Torrens system was a much cheaper and simpler system than the English deeds system, and thus suited the hyperactive land markets in Australia (Toms, 1976).

The Torrens System has been adopted throughout Australia and in other parts of the world with varying degrees of success. It should be remembered that the Torrens System was developed primarily as a response to 19th century paradigms that were driven by the imperatives of a newly-emerging nation-state with vast tracts of

unidentified land that the colonial government wished to distribute to settlers as quickly and efficiently as possible.

Subdivision legislation and title registration is a good example of a relatively recent change in society that required a legal and institutional response. The post-WWII era saw the development of higher density housing and an increase in subdivisions. People's expectations of their relationship to their land and buildings required a legislative response to recognise and secure not only subdivisions on the ground, but also to create independent parcels within airspace above ground, such as a two-bedroom flat on the third floor of a building.

In Victoria, prior to the Subdivisions Act 1989, subdivisions were regulated by a series of separate pieces of legislation. Each of those pieces of legislation reflected a fresh change in community attitudes to land and property. Initially, base subdivisions could be carried out under the Local Government Act 1958, but these were limited to simple vertical boundaries. In response to the demand to own one's own flat, company share schemes developed, based on share allocations. These were unwieldy and costly. Thus the Transfer of Land (Stratum Estates) Act 1960 was created to allow separate ownership of flats as stratum but did not overcome the problem of servicing the building as a whole. This latter issue was resolved by the Strata Titles Act 1967 that allowed the establishment of a single service company known as the 'body corporate'. However, the Strata Titles Act 1967 eventually proved too inflexible because people wished to plan beyond the physical confines of buildings. Thus the Cluster Titles Act 1974 came into force. The plethora of legislation was complex and clumsy. The Subdivision Act 1989 was designed to incorporate all the previous legislation into a more effective and flexible Act that regulated subdivision of land, buildings and airspace. It is expected that over time this, too, will require updating to meet fresh community needs.

Similar issues have been faced in New South Wales, particularly in the high-density, high-value areas of Sydney where there is increasing demand among communities of residents to exert control over their surrounding environment in increasingly creative and varied ways whilst still maintaining individual ownership rights over their own dwelling. Thus the NSW Community Plans legislation was

introduced to allow more flexibility to plan differing uses for various parts of common property to which different management strategies could apply.

Whilst trends such as those shown by the evolution of the subdivisions legislation have been driven by an economic imperative, namely the high cost of land; the trends also reflect community concerns over the state of their surrounding environment, i.e. beyond the four walls of their own home. The growth in centralisation of decision-making at municipal council level has seen a complementary growth in mechanisms for citizen participation and objection (Raff, 1996).

This increase in citizen participation represents a significant change in the dialogue about public and private rights and responsibilities over land and its use. The impact on land administration is discussed in Chapters 3 and 4.

2.3 CURRENT DRIVERS

2.3.1 Economic Trends and Globalisation

As with many western nations, Australia's recent shift away from Post-World War II Keynesian economic theory has been characterised by the privatisation push that places state-owned utilities and services and related decision-making powers into the hands of private owners and urges government to work more efficiently and accountably for the public. The fundamental belief being that laissez-faire and a customer-focus approach will deliver better decisions and services. Studies in the US have indicated that at the root of this push for restructuring and greater accountability has been the declining public trust and confidence in government (Norris, 2000). Privatisation has been a trend in many countries and while the detailed reasons may be varied and complex, there are common ones:

> Today, in response to the high costs of control and the disillusionment with its effectiveness, governments are privatising. It is the greatest sale in the history of the world. Governments are getting out of businesses by disposing of what amounts to trillions of dollars of assets. ... The objective is to move away from governmental

> control as a substitute for the market and toward reliance on competition in the marketplace as a more efficient way to protect the public ... The decamping of the state from the commanding heights marks a great divide between the twentieth and twenty-first centuries. (Yergin and Stanislaw, 1998)

Privatisation programs are basically characterised by a weakening in control exerted by the state and a transfer of control to private investors (Bishop et al., 1994). For example:

> Australia has, over the last few years, made considerable changes to the number of government services provided and to the way they are delivered. Measures have been taken to minimise government intervention and expenditure (capital and recurrent), and make more efficient use of public sector resources. Trade practices, competition policies and mutual recognition of trades, professions and occupations across jurisdictions, have all been reassessed. (Lanphier and Parker, 1997)

The privatisation trend saw government departments either replaced by private bodies or restructured to prove their worth through quality assurance schemes and improved efficiency because the relationship between quality, productivity and international competitiveness is becoming more evident and imperative.

Privatisation has been a part of the greater move for decentralisation of government geographically and in substance. Decentralisation could take place by devolution or deconcentration. Deconcentration being about regionalising central government and devolution being more about shifting power away from central government:

> The aim of deconcentration has been to increase local input into policy design in order to improve policy efficiency. ... Deconcentrating parts of the design process to local offices helps overcome these problems by shortening the process of decision-making and providing more information to the central level. Devolution goes further than this. Its aim is to increase policy effectiveness by developing entirely new policies as well as to improve governance by bringing decision-making closer to the people affected. (OECD, 2001)

Some perceived decentralisation of government as being motivated by government's desire to be 'predatory revenue maximisers' (Bates and Lien, 1985) and privatisation was 'sometimes made to sound like a miracle cure for a host of traditional bureaucratic and political ills' (Pollitt et al., 1998). There were benefits that

included: enhancement of political stability by making government institutions more responsive to people; creation of opportunities for involvement of political activists at more levels; easing frustration of opposition parties by increasing the number of arenas at which they could possibly win (Manor, 1999). It is acknowledged that from experience gained to date, there is a role for government and not everything should be privatised:

> Whilst it is now possible to privatise just about anything, it is not necessarily sensible. The recurring theme of 'winners and losers' that seems to inevitably follow privatisation reforms is worrying, as is the speed and inevitability with which such reforms are sold to the populace. (Hodge, 2000)

The balance of centralisation and decentralisation has to be decided within each society and nation because there are political, economic and social equity impacts to be weighed:

> A further problem of major economic importance, but even greater political and social relevance, is the position taken up by individual people and organisations regarding the choice between centralisation and decentralisation. For perfect decentralisation to give rise to socially desirable results, perfect equality among individuals and among organisations is necessary. But individuals and organisations do not start from equivalent positions, which restricts the social opportunity set available to the majority of them, with major consequences for equity, freedom, justice, and also the social and economic efficiency of the institutional solutions adopted. (Dallago and Mittone, 1996)

Along with the new approach to public and private sector roles has come a need to develop fresh approaches to regulation, dubbed 'neoregulation', which is the consequence of a shift in the generals perception of essential/non-essential products and the increasing market power of the industry producers such that (Emmons, 2000):

> ... firms should neither assume the role of the state is diminishing uniformly across markets, nor that backlash leading toward more restrictive reform bargains can occur only in sectors traditionally characterised by high degrees of government intervention. In particular, firms active in high-tech sectors, including computer-related, biotech, and Internet products and services, should not be lulled into believing that society will gladly reward technological excellence for its own sake. Ultimately, even in these industries, shaping expectations among affected parties,

> building political coalitions, and balancing value creation and value sharing may all be important elements to sustaining success in the new market economy.

Privatisation and decentralisation are ways of looking at the world that impact on how society wishes to define private and public rights/obligations as well as its attitudes to the available institutions, information and tools for debating about these rights/ obligations.

This shift in economic thinking also comes at a time of impassioned calls for more centralised and coordinated global action on the environment. This is exemplified by Agenda 21 (UN, 1992), the seminal document that encapsulated the deliberations of the 1992 United Nations Conference at Rio de Janeiro, and the 1997 United Nations Summit in Japan on Global Warming. How these seemingly contradictory forces will affect land administration into the future remains to be seen. It is obvious from the experience of the Eastern Bloc that a centrally planned economy is not in itself any guarantee of prevention of major environmental problems. As with previous evolutionary phases in society's arrangements for land use rights, there is a need for today's increasingly complex relations between public and private rights and responsibilities to be properly supported by society's legal, institutional and technological frameworks.

Globalisation means the process of increasing interconnectedness between societies and jurisdictions from a social, economic and political perspective, such that events in one part of the world have increasing potential to impact on peoples and societies in other parts of the world:

> Globalisation, privatisation and liberalisation have become dominant forces shaping societies and economies the world over. With the fall of communism and the decline of socialism in most parts of the world, these processes have accelerated in the 1990s. (Rao, 1998)

Further:

> Globalisation is not occurring in a vacuum. It is part of a broader trend that we may call marketisation. Receding government, deregulation, and the shrinking of social obligations are the domestic counterparts of the intertwining of national economies...the broader challenge for the 21st century is to engineer a new balance

> between market and society...the tensions between globalisation and social cohesion are real... (Rodrik, 1997).

The global village is becoming a reality. However, Johnson argues that:

> Communications, travel, and trade are now less restricted by national borders than at any time in the past. However, closer examination of the flow of capital, trade relationships, and income levels reveals strong regional patterns of development....Beyond the Western Hemisphere, a realistic assessment of other regions provides little, if any, evidence of global development. (Johnson, 1991)

It may also be argued that regionalisation is only a stage in the continuing process towards globalisation. The challenge is for individuals, societies and countries to fully participate in this global revolution. Another global driver makes the achievement of globalisation possible: information technology (and communication technologies). The WWW is the most striking example of this trend, since it is improving interconnectedness between individuals in a way never believed or dreamed possible, even a decade ago. It is a pattern of events that has changed the nature of world order. The challenge now is to deliver equity as well.

Globalisation has the potential to assist in improving the quality of lives of people by thinking, working and cooperating together on common concerns at a global scale.

There are many factors that encourage people to work together as part of globalisation. These factors include:

- synergy of information, technology and access, which affect each other;
- expanding global interdependence;
- increasing emphasis on sustainability; and
- increasing focus on the individual in areas such as health, personal rights, privacy, quality of life, recreation, etc.

There are concerns with the trade globalisation process. The UN's (1999a) *Global Compact* acknowledges that multilateral engagement and open markets have spurred on development in the decades since 1945, but expresses concerns about how

the spread of market forces is outpacing the ability of societies and their political systems to adjust to sustainable development effectively. It recommends action on two fronts:

- renewing a commitment to openness and inclusion; and
- finding new ways to embed global market forces in universally shared social values, thereby allowing all countries and cultures a sense of ownership in the global economy (UN, 1999a).

Globalisation and the internationalisation of issues have seen the establishment of a new world order through legal methods such as treaties and covenants, as well as institutional methods, e.g. regional defence and trade organisations. A simple survey can be conducted via the UN home page (UN, 1999b), using its links to the categories of: Peace and Security; Economic and Social Development; International Law; Human Rights; and Humanitarian Affairs. The Economic and Social Development home page (UNESC, 1999) in turn has separate links to: Environment; Human Rights; Human Settlements; Narcotic Drugs; Population; Prevention of Crime; Social Development; Sustainable Development; Trade; and Women. Each of these has further links and information on international agreements, declarations and institutional structures for their implementation. Specific international instruments developed within and beyond the UN have gained broad acknowledgment, if not wide-ranging influence, in national agendas for change. Excellent examples would be Agenda 21 (UN, 1992) and the General Agreement on Tariffs and Trade (GATT) known as now as the World Trade Organisation – 'WTO' (WTO, 1995).

By understanding globalisation and its social, economic and political impacts on our society, we are in a much better position to develop appropriate land administration strategies without losing local involvement and social cohesion. Many countries throughout the world believe that they can benefit from better management of land by taking a perspective that starts at a local level and proceeds through state, national and regional levels to a global level. In some cases this is being facilitated by the development of the Spatial Data Infrastructure concept, with a hierarchical relationship between these different levels (Rajabifard et al., 2000; Ting and Williamson, 2000).

2.3.2 Environmentalism

It is relevant to overview the effects of the environmental movement on society's priorities, and how these lead to the need for fresh dialogue about rights and responsibilities as well as the development of legal and institutional mechanisms to support them. Much of the literature available has examined the environmental movement from a political and institutional perspective. Here are some examples:

> Public polls reveal a near-consensus that environmental pollutants are considered not simply dangerous and harmful but morally wrong. (Maxey, 1991)

> Over the past three decades environmentalism has been linked by sociologists and political scientists to the emergence of new social movements and the new politics. ... Movements in different countries have adopted similar styles of political action and have campaigned on similar issues. Contemporary environmentalism has drawn on several traditions. There are close connections between the New Left of the 1960s (associated with the student movements and anti-Vietnam War protests as well as civil rights movements) and new social movements concerned about environmental degradation and the development of nuclear energy. (Papadakis, 1993)

A critical factor in forcing governments to bring about change is, as Buckley (1990) has noted, the degree of public pressure for reform. In other words, it is not simply a question of setting up the appropriate institutional mechanisms but, as suggested above, the developing a shared understanding of how to behave and an institutional culture of informal rules that provide cohesion (Papadakis, 1993).

It is useful to look at Australia as an example of where this institutional culture of informal rules has developed to provide sufficient cohesion in the environmental movement to change the dynamics of property rights and in turn the institutional mechanisms.

The Australian environmental movement, as that in the USA, can be traced back to the second half of the nineteenth century and the first decade of the twentieth, with the formation of scientific and natural history groups; then outdoor walking groups that formed associations to protect national parks and wilderness areas (Marsh, 1991). The first legal form was the Fauna Protection Act 1948 and then there were the early institutional forms through State Conservation Councils that were established between 1967 and 1971. Environment Centres sprang up through the 1970s based on

government grants that provided community education and resources for voluntary groups:

> In the late 1970s it was possible for almost any circle of concerned citizens to form an action group over an issue of concern and lean on the broader movement for facilities and other support (Marsh, 1991).

> The establishment, in the 1970s, of institutions like the Australian National Parks and Wildlife Service and the Australian Heritage Commission represented a response of governments both to objective problems and to pressure from small groups of activists, including members of administrative and political elites. A Federal Office of the Environment was established by John Gorton in 1971. In 1975 the Whitlam government established a separate Department of the Environment and Conservation that drew the federal government into the centre of environmental policy-making. During this period all state governments established departments of the environment or of conservation (Papadakis, 1993).

At the international level, Australia participated in the United Nations Environment Programme, which was established in 1972 and became a signatory to international conventions like the United Nations World Heritage Convention (1974).

The 1980s saw the united action of over 350 environmental groups from around Australia against the damming of the Franklin River by the Tasmanian Hydroelectric Commission—tens of thousands of people converged on the area to protect the river. ‘From here, the environmental movement found the political mainstream. The Liberal Party pledged support for the dam. The Labor Party supported the environmentalists. The Labor Party won the 1983 elections.’ (Marsh, 1991)

The entrance of environmentalism into the political mainstream in Australia was similar to the process that had taken place in Europe, where the limits of simple protection politics became obvious and the voters wanted something more comprehensive. ‘In particular, they wanted to know whether the movement could offer a superior alternative to objectionable projects and industrial developments.’ (Marsh, 1991)

The end of the 1980s saw the Federal government consciously moving from an ad hoc approach to find strategies to address the conflict between environmentalism and development. Such strategies can be grouped into idealist and realist accounts of

social change: the idealist approach represents the attempts of governments to influence ideas about development and conservation whilst the realist approach represents efforts to create new institutional mechanisms to regulate and defuse the conflict between interest groups (Papadakis, 1993). The Resource Assessment Commission was established in 1989 as a direct response to the conflict over development and the environment. It was given the task of identifying environmental, cultural, social, industry economic and other values involved in the use of resources (Papadakis, 1993). The creation of Environmentally Sustainable Development working groups was an attempt by the government to defuse the confrontation between environmentalists and developers and promote dialogue. But different interest groups had differing definitions of sustainable development, and sometimes the compromises between environment and development led to the worst of both worlds (Papadakis, 1993).

A Commonwealth discussion paper released in June 1990 defined ecologically sustainable development as follows: using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased. (CGA, 1990).

A further indication of the attempt by the Federal Government to institutionalise environmentalism is a well-publicised statement, issued prior to the 1990 Federal election, which placed soil degradation high on the political agenda (CGA, 1989). More than half the land used for grazing or cropping in Australia—2.6 million km^2—has been assessed as needing treatment for degradation, most of the damage being attributable to the worsening of both dryland and irrigation salinity, and the extension of cropping into marginal land (Marsh, 1991). This drew attention to the neglect by previous governments, and was serious enough to merit the government's involvement in a major initiative to integrate development and environmental protection and tackle this problem with both the National Farmers Federation and the Australian Conservation Foundation (Papadakis, 1993). Further:

> There are also strong indications that, electorally, established parties will come to rely heavily on the distribution of preferences from minor parties like the Democrats

> and various Green candidates as well as the endorsement given by some environmentalists (Papadakis, 1993).

and

> As this study has shown, significant progress has been made in Australia in identifying key issues. And the notion that policy decisions, even economic ones, should be informed by an analysis of impacts on the environment has taken hold of both the popular imagination and of the bureaucratic and political culture (Papadakis, 1993).

Environmental movements, particularly in western nations, have very successfully promoted their cause. Even in countries led by conservative governments for a decade or more (for instance the Federal Republic of Germany and the United Kingdom), there has been a major shift towards incorporating environmental concerns into political institutions and business practices (Papadakis, 1993). In the post-World War II climate of strong focus on economic growth in Western nations, environmentalists were able to combine traditional conservationist themes with the attitudes that grew out of the general protest movements of the 1960s. A significant indicator has been the willingness of governments to fund voluntary organisations and its own departments of this type, even in times of economic downturn (Papadakis, 1993). Canada under Pierre Trudeau's prime ministership (from 1968 to 1979 and 1980 to 1984) is another example of a government attitude towards civil empowerment that helped environmentalism to flourish. In this period funds were made available to support many non-government organisations. The Canadian Department of Natural Resources Act specifies that the Minister shall have regard to the sustainable development of Canada's natural resources' and in fact applies the Brundtland definition.

These examples demonstrate that it has been attitudinal changes within society to issues such as environmentalism that have brought sustainable development to the forefront of the push to redefine public and private sector rights. These, in turn, have increased the diversity of stakeholders involved to include individual, private, community and State rights and responsibilities. The dynamics between these rights will be explored later in this thesis. It suffices for this chapter to note that, as has

happened so many times in history, new pressures and priorities within society have led to the need for responses from the land administration system.

2.3.3 Indigenous People's Movements

Indigenous people's movements are another significant source of influence on society's approach to defining the balance of rights and responsibilities between private, community and State. At the heart of indigenous rights movements is the push for the recognition of the rights of indigenous peoples (usually minority groups) The most prominent of these are their rights to land and land use in a manner appropriate to their own cultures. The indigenous people's movements generally became prominent around the same time as the civil rights movements of the 1960s. These culminated in historic developments. In Australia, for example, aboriginal peoples won the right to vote by a referendum in 1967. In 1988, there was the historic Mabo decision, in which the High Court of Australia overturned the traditional legal norms that described Australia as *terra nullius* (vacant land) upon the arrival of the English. In New Zealand, the Treaty of Waitangi was transformed from a widely disliked symbol of colonisation in the 1970s to a rallying point for a movement for further development. The success of that movement has been such that since the 1980s there has been a trend in New Zealand legislation that the implications of the Treaty of Waitangi, i.e. the rights of Maori, are to be considered when interpreting and implementing legislation.

The year 1993 was declared by the United Nations to be the International Year of the World's Indigenous People (UN, 1999b).

At the World Conference on Human Rights (14-25 June 1993 in Vienna, Austria), indigenous people's issues were prominent on the agenda. Their rights were discussed in sections 28-32 of the Declaration and there was a recommendation to the UN General Assembly that an international decade of the world's indigenous peoples should be declared from 1994.

A common theme in indigenous people's movements has been their demands for the return of land and land use rights. This is where nations experience some of the toughest challenges to fulfilling their commitment to reconciliation with their

indigenous people groups, as it means redefining the status quo of rights and responsibilities.

2.3.4 Sustainable Development

Sustainable development means development that effectively incorporates economic, social, political, conservation and resource management factors in decision-making for development. For the purposes of this thesis, sustainable development presents a challenge to existing legal, institutional and technological frameworks to give expression to these changing priorities and processes of determining rights over land and responsibilities for land use.

Agenda 21, the Rio Declaration on Environment and Development, and the Statement of principles for the Sustainable Management of Forests were adopted by more than 178 Governments at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, 3 to 14 June 1992. Agenda 21 stated in its preamble that (UN, 1992):

> Humanity stands at a defining moment in history. We are confronted with a perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well being. However, integration of environment and development concerns and greater attention to them will lead to the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future. No nation can achieve this on its own: but together we can—in a global partnership for sustainable development.

There is plenty of evidence to support the argument for urgency, as revealed by these statistics from the United Nations Environment Program (UNEP, 1999):

- The world's population currently stands at 6 billion;
- Half of the world's population currently lives in urban areas, and within thirty years this will increase to two-thirds;
- By 2025, two-thirds of the world's population will live in water-stressed conditions—with irrigated agriculture accounting for 70-75% of fresh water use;

- Human-induced degradation of the soil has already affected 20% of the world's drylands, and puts the livelihood of one billion people at risk;
- More than half of the world's population lives within 60km of the shoreline. One-third of those coastlines are already damaged by population stress and infrastructure (or lack thereof);
- Global emissions of carbon dioxide reached a new high of nearly 23.9 billion tonnes in 1996—nearly four times the 1950 total;
- In 1995, 25 per cent of the world's 4,630 mammal species and 11 per cent of the 9,675 bird species were at significant risk of extinction;
- Average global per capita income has now passed US$5,000 a year, but more than 1 billion people still live on less than US$1 per day.

Globally, trade and environmental issues have increasingly become inter-linked:

> After more than a quarter of a century of activism, the environment is firmly ensconced as both a national and international priority. Economic systems will be judged by how they respond to the wide range of environmental concerns, and they will be compelled to find further improvements and new solutions (Yergin and Stanislaw, 1998).

The World Bank stated:

> Economists have long recognised pollution to be a negative externality. Without some form of regulatory protection, the environment can become an innocent victim of bad business practices (WB, 1997).

The last twenty years have seen a trend in many countries towards tempering the raw economic priorities with society's growing awareness and preparedness on environmental (e.g. Agenda 21) and social priorities (e.g. indigenous rights, and issues concerned with women's access to land). This has added to the diversity of stakeholders involved in dialogues about property rights, the contents of land ownership, and the boundaries of land use.

2.3.5 Information Revolution

The information revolution has been recognised as a driver of change in societies across the globe. Certainly the world is experiencing possibilities in information exchange and communications that are accelerating with a momentum that is unprecedented. As will be argued in later chapters, the information revolution has a significant role in overcoming the challenges that complex decision-making about land rights and land use poses for this and future generations.

Toffler (1980) asserted that in the Third Wave or the information age, what you have is not nearly as important as what you know (Toffler, 1980). Certainly one of the key tools (albeit unexpected) of the information revolution is the Internet.

Some of the newest initiatives for environmental management and sustainable development, such as Tradeable Discharge Permits (TDP) for controlling air pollution control, will need Geographic Information Systems (GIS). GIS is the tool to incorporate spatial variables into the TDP policy cycle to increase cost efficiency gains from bringing together topographic, land use, and population data as layers of information to help determine the effects of the emission of air pollutants in airsheds (Robey et al., 1999). GIS can facilitate manipulation of spatial data using its cartographic modelling capabilities, increase understanding of spatial datasets through visual display and facilitate the process of dispersion modelling (Robey et al., 1999).

Later chapters will discuss the importance of a concerted effort to identify the type of information and information technology that is required for decision-making about rights and responsibilities in land as well as dispute resolution (and ultimately, dispute avoidance) in the context of sustainable development.

2.4 CONCLUSIONS

As shown in Figure 2.1 below, the relationship between people and land has been and is dynamic. The current trend is towards tempering economic objectives with environmental and social imperatives.

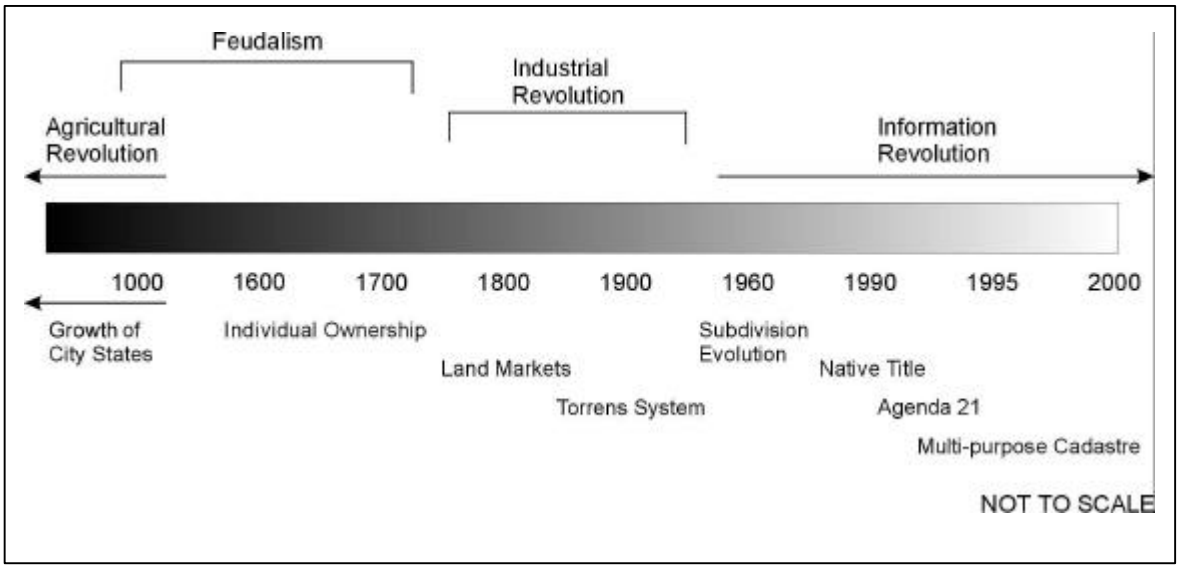

Figure 2.1: Overview of Evolving Western humankind/land Relationship. (Ting et al, 1999)

The extent to which a society can successfully achieve its objectives in its approach to redefining rights and responsibilities in relation to land and land use depends to a significant extent on a complex inter-relationship with the available legal and institutional tools.

At the heart of these evolutionary changes was the changing definitions of and balance between the rights and responsibilities of the private and public sectors of society.

The composition of stakeholders in the private and public sectors has also diversified over time. In recent times, forces such as globalisation, privatisation, the environmental movement, the indigenous rights movement and the rise of civil society have increased the complexity of dialogue about rights and responsibilities for land and land use.

Sustainable development is a leading driver of the need to reconsider the current balance of rights and responsibilities in relation to land and land use, and thus the need for re-engineering of legal, institutional and technological frameworks to suit. The relevance of land administration to sustainable development is discussed in Chapter 3.

3

LAND ADMINISTRATION: ITS ROLE IN SUSTAINABLE DEVELOPMENT

3.1 INTRODUCTION

The previous chapter established that the dynamic nature of society has defined and redefined the balance of rights and responsibilities between public and private sector rights, and that there has been a diversification of stakeholders within these sectors as society's priorities changed and extended. The economic, environmental and social priorities that make up sustainable development have become increasingly important and urgent in recent times.

This chapter explores how some of the major changes in the relationship of people to land have affected land administration systems and the role that land administration has in sustainable development.

Section 3.2 outlines the way land administration has responded to the changing relationship of people to land. There is a particular focus on the evolution of cadastral systems that are a fundamental component of land administration systems. Section 3.3 outlines the meaning of sustainable development and leads into the discussions in Section 3.4 about the role of land administration in sustainable development. Section

3.5 highlights the Bathurst Declaration that was significant for declaring the link between land administration and sustainable development. Section 3.6 then explores the importance and potential of the information revolution to support the complex dialogue about rights and responsibilities over land to better support of sustainable development. The concluding comments to the chapter are stated in section 3.7.

3.2 LAND ADMINISTRATION AND PEOPLE

Land administration is the process of determining, recording and disseminating information about the tenure, value and use of land when implementing land management policies. In short, the overall aim of the land administration system is to minimise conflicts regarding rights, restrictions and responsibilities over land. Land administration may include (Dale and McLaughlin, 1999):

- supporting land markets
- providing access to land
- providing security of tenure
- land valuation
- resolving conflicts concerning ownership and use of land
- gathering revenues from the land through sales, leasing and taxation
- regulating the use and conservation of land
- regulating land and property development.

Each of these underpins the economic, environmental and social aspects of sustainable development.

This section of the thesis will illustrate the way in which the dynamic humankind–land relationship has affected the evolution of land administration systems. To do so, it will focus on a key component of land administration, namely the cadastre, and trace some of the major changes through Western history.

Cadastres are registers of rights over and attributes of definable areas of land. Over time there have been three types of land cadastres. Juridical cadastres are a register of ownership of parcels of land. Fiscal cadastres are a register of properties recording their value. Multipurpose cadastres are a register of attributes of parcels of land (Dale and McLaughlin, 1999). Furthermore:

> Cadastral systems are the foundation and an integral component of parcel-based land information systems (LIS) that contain a record of interests in land. These systems are a central component of the land administration and land management systems in a state or jurisdiction (Williamson, 1990).

The aim of this section is to trace the development and application of cadastres, which are a vital component of the land administration system. This approach allows an examination of the impact of the broad eras in society's approach to land/land use rights and their impact on the use of cadastres within the wider land administration infrastructures. Over time, the very components of cadastral systems have changed and become more complex. There have been four major phases:

- Human settlement during the agricultural revolution through to the feudal system tied human beings to land in a physical way. Land was the primary symbol and source of wealth. In this phase, the cadastral system's role was to publicly record ownership and to support taxation measures.

- The industrial revolution began a process of breaking the strong physical tie of people to the land by turning land into more of a commodity, albeit the most valuable commodity and primary source of capital. This gave birth to land markets, and so cadastre took on another focus—a tool in land transfers.

- The post-World War II reconstruction and the population boom saw an increasing awareness of land as a scarce resource that may not be sufficient for the needs of a growing and increasingly mobile world population. With this came an increased interest in planning, particularly urban and regional planning. This in turn created another important application for cadastre.

- The 1980s have seen a different twist in the concern for the scarcity of land. The focus has turned to wider issues of environmental degradation and

sustainable development, as well as social equity. All of these issues have the probable effect of tempering short-term economic imperatives. Planning issues have widened to include more community interests and deepened to address more detailed issues of land use. This has created a growing need for more detailed information about land and land use. The impacts of these diverse demands have been manifested in the desire for multi-purpose cadastres (McLaughlin, 1975).

These correspond to the major phases in the relationship of people to land that was outlined in Chapter 2.

3.2.1 Land as Wealth and Cadastre as Basic Record and Fiscal Tool

In the early stages of human settlement land was undisputedly the primary source of wealth and power. In that context, cadastre's primary function was as a record of ownership and as a fiscal tool. It is important to note that the objective of the record was to provide some security of ownership as against the world, and to do so required a record that was publicly acknowledged and respected. Among primitive tribes, occupation of land had to take place in the presence of the chief and elders (Larsson, 1996).

The earliest records of land ownership date back to the Royal Registry of Ancient Egypt that was created in about 3000BC, whilst in China in 700AD a taxation system was based on crop yields and land survey records (Larsson, 1996). The Romans carried out a survey in 300 AD to create a register of what lands the Romans controlled as well as provide a basis for fiscal records (Larsson, 1996).

Power in the feudal system was vested in the institutional and legal structures that were put in place by the combined interests of landholders and the sovereign (Davies and Fouracre, 1995). The Domesday Book was created after the Norman Conquest to develop a land register (there were no maps) that stated the owner's name, tenure, area and particulars for assessment of the land for the purposes of extracting feudal dues. In other words, the cadastral register existed for fiscal purposes as well as being a record of the territory of the kingdom. Henssen (1975) considered that the philosophy behind the establishment of fiscal cadastres throughout

continental Europe in the early eighteenth century was the Physiocrat movement which held that land was the basis of all wealth and therefore land tax would be the basis for raising funds to maintain society.

One of the earliest known cadastres is the Theresian cadastre (named after the Empress Maria Therese) that was established over the territories of the Austro–Hungarian Monarchy in 1792. The motivating factor for the establishment of the Theresian Cadastre was land tax reforms to fund Austria's military and 'reform was thus urgently needed to demonstrate Austria's military competence to her external enemies and to consolidate the power of the central authorities against provincial and aristocratic particularism' (Kain and Baigent, 1992). The Theresian Cadastre was the basis of the land registration systems of eight 'Danube' countries in Central Europe, and has evolved into what is known as the 'Grundbuch' system (Bogaerts et al., 2002).

In 1807 Napoleon Bonaparte established the foundations of European cadastre when he ordered the creation of maps and cadastral records to support his fiscal strategy for the empire. During the Napoleonic era, particular bodies were given the task of registering transfers and deeds of ownership. The records showed the physical location of parcels of land as well as ownership across France, arranged by parcel numbers, area, land use and land values per owner. It was this combination of registry records and maps that laid the foundations for modern-day cadastral systems.

These rationales continued to be the basis for cadastral records until the development of land markets around the time of the Industrial Revolution.

3.2.2 Land as Commodity and Cadastre as Land Market Tool

The usurping of land's position as the primary source of wealth began with the industrial revolution and the rise of capital. This in turn created a further important function of the cadastre as a tool to support the growth of land markets and land transfers.

The Industrial Revolution came at a time of agricultural change as well as industrial invention (Ting et al., 1998). The land administration system, which had been designed to preserve attachment to land into perpetuity, became too cumbersome and unwieldy and so was reformed (Ting et al., 1998). New countries such as

Australia, that had large tracts of unsurveyed and untitled land required appropriate responses and the Torrens system is one 19th century example that affected the cadastral systems, laws and even surveying methods (Ting et al., 1998).

Deeds of ownership were now important not only to prove ownership so that a person could remain on the land as against others, but became the cornerstone of the land market. Cadastral records, including deeds, served to provide some proof of ownership that then established the necessary trust to transact the sale of land.

In short, cadastres were needed to better support active land markets as well as serve the traditional purposes of recording ownership and land taxation.

3.2.3 Land as Scarce Resource and Cadastre as Planning Tool

The post-WWII reconstruction period and subsequent population boom saw the need for better spatial planning, particularly in urban areas. There was an increased need for land administration laws and systems to address broadacre subdivisions. Land title systems had to evolve to accommodate the desire to own a piece of property within a high-rise building—condominiums or strata subdivisions (Ting et al., 1998). To achieve this also required a cadastral system that could describe ownership of space in three dimensions.

The growth of urban satellite cities with high-density housing and the increasing pressure on infrastructure by the sheer numbers of the urban populations necessitated better urban planning. The cadastre, as the record of land parcels and registry of ownership, became a useful tool (when teamed with large-scale maps) for city planning and the delivery of vital services like electricity, water, sewerage and so forth. Thus a focus on planning was added to the pre-existing applications of cadastre as a fiscal and land transfer tool.

3.2.4 Land as Scarce Community Resource and Cadastre as Land Management Tool

As today's society faces continuing land shortages and resource scarcity, the imperative exists to better manage and plan land use. The concerns about sustainable

development and the environment are evident from such international instruments as Agenda 21 and the Habitat II Agenda. There are also concerns for social equity such as indigenous and women's rights. Thinking has moved beyond giving more people the possibility of ownership of space over the same parcel of land (strata title).

Concern now focuses on how the land can be better managed in a variety of circumstances, whether for town planning purposes or for rural agricultural development. For example, low-value agricultural lands in New South Wales, Australia need solutions that address sustainable land-use; comprehensive integrated datasets to allow for better decision-making; simplified cost-effective operation of the cadastre; and clearly defined, easily relocatable parcel boundaries supported by an appropriate low cost cadastral survey system (Harcombe and Williamson, 1998).

Society increasingly needs multi-purpose cadastres to answer its fiscal requirements and land transfer needs, as well as for facilitating land information for better dialogue about land management (McLaughlin, 1975; NRC, 1983); Dahlberg and McLaughlin, 1989).

The achievement of a useful multi-purpose cadastre is made possible by the potential of the information revolution and the technology that has continued to evolve with it. The more difficult hurdle is the fundamental legal and institutional reforms that will facilitate the data-sharing necessary to develop, support and maintain information for a multi-purpose cadastre.

In both the Australian and European contexts, cadastral systems are now closely linked with land valuation systems. In the European context, cadastral systems were originally concerned with land valuation for taxation purposes and later were linked to land registration systems. In Australia, the reverse was usually the case, although the end result, which is a close relationship between land registration and land valuation, is very similar (Williamson, 1985).

3.2.5 Cadastres: Recent trends and examples

The trends towards developing multi-purpose cadastres to address planning for sustainable development issues as well as fiscal and economic imperatives is evident in a range of Western nations such as:

- Canada (McLaughlin, 1975; MacLauchlan and McLaughlin, 1998);
- Denmark (Enemark, 1999);
- Germany, Austria and Switzerland (Hawerk, 1995);
- New Zealand (Robertson, 1996);
- USA (McLaughlin, 1975; NRC, 1983);
- Australia (Williamson, 1996).

The Central European countries, which have now moved away from a centralist political/economic system, are grappling with more fundamental issues of institutional revolution in land administration that can restore the concept of private ownership and land markets first. That requires restoration of the traditional Land Cadastre and Land Registry before it can even contemplate moving on to land market and land management functions. As was written about the Czech Republic experience:

> The restoration of Land Cadastre and Land Registry after more than forty years can be neither quick nor cheap, as the first steps the missing parcels and other data need to be completed. It represents a large amount of highly skilled manual work distributed by extremely extensive request for cadastral information required for restitution and privatisation process (Pesl, 1997).

In Latvia, the experience is similarly one of restoring the legal right to private land ownership and use, followed by restoration of rights. The latter, of course, is dependent on the establishment of the necessary cadastral and land registry offices (Eglitis and Balodis, 1994).

The Meeting of Officials on Land Administration (MOLA), which was established in 1996 by the UN's Economic Commission for Europe, stated, regarding countries in transition in Central and Eastern Europe:

> ... privatisation of land and security of ownership is increasingly stressed as a prerequisite for a successful introduction of market economy (Onsrud, 1998).

Land reform in Eastern Europe in recent times has aimed at establishing land markets by developing a coordinated national land policy, and institutional and legal

reform, simplifying property information systems; marketing land information held by government departments; and assessing the effectiveness of farm consolidation schemes (Harris and Land, 1998).

In addition to country examples, there are a number of international instruments that can provide guidance on trends for the future of land administration systems. All of these indicate the emphasis on sustainable development and establish the need for multi-purpose cadastres.

The International Federation of Surveyors (better known by its French acronym 'FIG') developed the FIG Statement on the Cadastre (FIG, 1995):

> A Cadastre...may be established for fiscal purposes (e.g. valuation and equitable taxation), legal purposes (land transfers), to assist in the management of land and land use (e.g. for planning and other administrative purposes), and enables sustainable development and environmental protection.

The UN Interregional Meeting of Experts on the Cadastre developed the Bogor Declaration that stated at point 4.1 that the vision of the future shared by the meeting was to:

- develop modern cadastral infrastructures that facilitate efficient land and property markets, protect the land rights of all, and support long term sustainable development and land management;

- facilitate the planning and development of national cadastral infrastructures so that they may fully service the escalating needs of greatly increased urban populations that will result from the rapid expansion of cities which is projected to continue into the 21st century.

Commission VII of the International Federation of Surveyors has the task of promoting international goodwill, cooperation and understanding in issues of cadastre and land management. There was a specific working group of Commission VII dedicated to Land Management issues (FIG, 1998). Commission VII's terms of reference from 1994-1998 reflect the essence of the FIG Statement and the Bogor Declaration:

- Land management and administration;

- Cadastral reform, multi-purpose cadastres, parcel-based land information systems and computerisation of cadastral records;
- Cadastral surveying and mapping;
- Land titling, land tenure, land law and land registration;
- Urban and rural land consolidation with emphasis on environmental and economic issues;
- National and international boundaries;
- Land and marine management.

Cadastre 2014 is a Land Recording system developed by the FIG's Commission VII Working Group 7.1 (1994-1998) that is suggested as a replacement for the traditional cadastral institutions. It seeks to deliver certainty of rights and peaceful coexistence as well as the wider economic aims of internationalisation (Kaufmann and Steudler, 1998):

> Cadastre 2014 is a methodically arranged public inventory of data concerning all legal land objects in a certain country or district, based on a survey of their boundaries. Such legal land objects are systematically identified by means of some separate designation. They are defined either by private or by public law.

Kaufmann and Steudler (1998) also stated that the surveyor should play the role of localizing all legal land objects and not only with private property parcels.

Some Examples from Western Nations

The following examples illustrate the progression of Western thinking towards land use options driven by factors that temper the short-term economic imperatives that have tended to dominate policy-making. These are environmental and social factors such as environmental degradation (NSW), higher density living (Denmark) and indigenous customary rights (New Zealand).

Western Division of NSW

The Western Division of New South Wales, Australia, is an interesting example of the dynamism of land use and administration, even in consistently agricultural areas. The Western Division of NSW covers 42% of the state and is semi-arid, with low population density and restricted production potential. In research to develop a cadastral model for these low-value NSW Western Lands, Harcombe and Williamson (1997) traced the historical and legal developments, which may be summarised as follows:

- Early settlement of NSW from 1788 followed the English feudal system of grants and registration by deeds;
- 1830-1884: The 'Squatting Era' of unregulated occupation, accelerated by the discovery of gold deposits;
- 1860s: the Torrens system;
- 1901: the Western Lands Act was introduced after a Royal Commission inquiry which was triggered by the need for financial and environmental rehabilitation following a period of severe drought and depression.

The resulting heritage may be summarised as being:

- From a survey point of view: an inappropriate cadastral survey system resulting in survey costs that are high compared to land value, and an emphasis on artificial boundaries established to create neat parcels rather than to be sympathetic to agricultural criteria like topography and natural boundaries;
- From an environmental point of view: issues of land degradation (erosion, woody weed infestation, salinity); declining water quality; rising production costs against low commodity prices (gross income for the Western region has declined by $200 million in the last five years).

Harcombe and Williamson (1997) suggest that these issues set the imperative for policies that consider: sustainable land-use; comprehensive integrated datasets to allow for better decision-making; simplified cost-effective operation of the cadastre;

and clearly defined, easily relocatable parcel boundaries supported by an appropriate low cost cadastral survey system.

New Zealand

Bill Robertson, the former Director-General/Surveyor-General for New Zealand, stated that:

> Multiple use of land has had a history of conflicting activities and negative side-effects where strong commercial factors have dominated. This is not inevitable and indeed our massive global population now demands an integrated and environmental approach to land use…A major instrument in effective sustainable resource development management is an efficient and relevant cadastral system (Robertson, 1996).

The legal framework by which New Zealand sought to promote sustainable management was the *Resource Management Act 1991 (RMA)*. The RMA came into effect in October 1991, resulting in the repeal of 14 statutes, the revocation of 19 regulations and orders, and the amendment of 55 statutes. Section 5(2) of the RMA states the purpose as being sustainable management:

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

The early sections of the Act set the scene, with strong emphases on conservation, ecology, sustainable development and Maori culture. The legislation includes Maori concepts such as *waahi tapu* (sacred places) and *taonga* (treasures of special value) and *kaitiakitanga* (the exercise of guardianship). The scope of enforcement orders is particularly interesting, because the Planning Tribunal has a wide range of options to: prohibit or require an action; order mitigation of an adverse effect on the environment; require reimbursement of an injured party; grant dispensations; as well as change or cancel a resource consent. In the 1996 amendments to the RMA, the Planning Tribunal was renamed the Environment Court.

Robertson explained that the RMA was the product of five years of participatory legislative development and this sense of ownership by diverse sectors of society and

government has contributed to its success (Robertson, 1996). The RMA was the product of a number of factors:

- the environmental attitude that has developed since the 1970s;
- the confusing and sometimes conflicting plethora of statutes;
- a desire to balance economic and conservation objectives.

Denmark

The Danish example lends further support to the evolution of Western thinking about land. Stig Enemark (1997) has outlined the history of Danish cadastral reform. The Danish cadastre was established 150 years ago, coming into force in 1844 as a cadastral register and a cadastral map:

> The main purpose of establishing that old cadastre was to levy land taxes, based on a valuation of the yielding capacity of the soil… Simultaneously, in 1845, the Land Registry System was established at the district courts for recording and securing the legal property rights of ownership, mortgage, etc…This way the Danish cadastre is basically a legal cadastre, maintained by the state agency, while the cadastral work is carried out by private licensed surveyors (Enemark, 1997).

Enemark finds that the cadastral system in Denmark today has extended beyond taxation and legal identification to play an essential role in appropriate land management that includes economic, environmental and development interests in land (Enemark, 1997).

These new demands on the cadastral system have created the need for reform of technology (e.g. computerisation) as well as reform of the legal infrastructure to allow more flexibility as well as to simplify and modernise cadastral legislation and harmonizing with building trends and regulations (Enemark, 1997).

There have also been new demands on the way planning occurs and the jurisdictional framework:

> The Danish planning system is based on the principle of framework control, signifying that the plans at lower levels must not contradict planning decisions at higher levels. But the objectives and the contents of planning are different at the three administrative levels. (Enemark, 1999)

3.2.6 Brief Summary

As illustrated by Figure 3.1 below, the evolution of the people to land relationship has resulted in changes to the way cadastres have been used. A key observation to be made is that these changes have been cumulative in effect. For example, the early significance of land as wealth has continued to be so right through the period of its use as a commodity. These views have also continued through the growing realisation that land was scarce and that the rights of individual owners had to be balanced with the wider community interests.

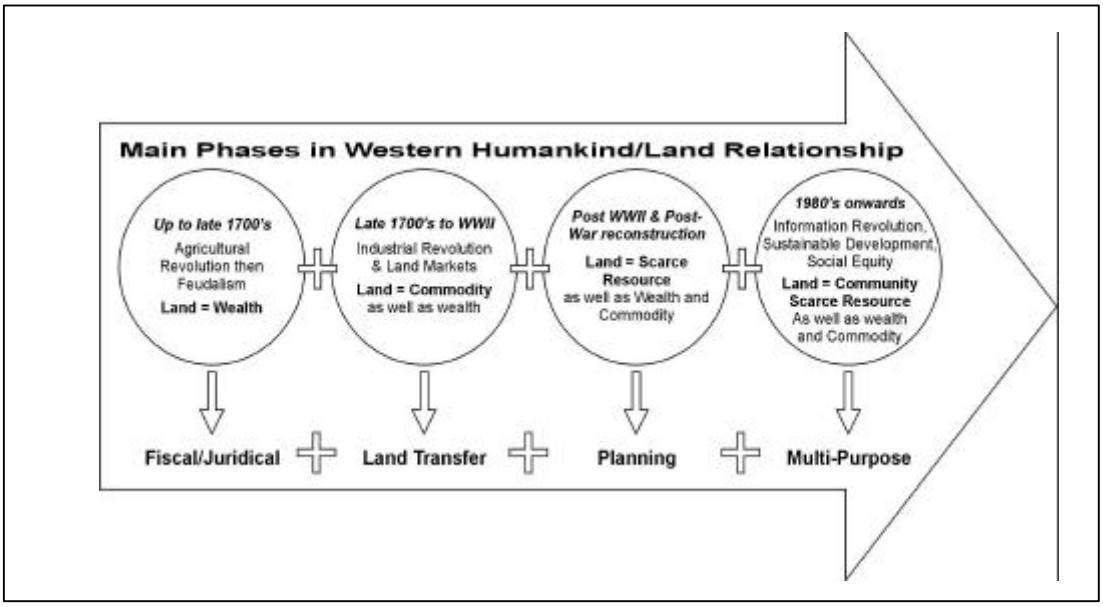

Figure 3.1: Main Phases of Humankind/Land Relationship and Cadastral Evolution in Some Western Contexts
Source: Ting and Williamson (1999)

As illustrated by the bottom row of Figure 3.1, the development and changing applications of cadastres have evolved in a cumulative manner. The recording of cadastres in order to establish ownership and facilitate the fiscal/taxation uses continues to recent times when the cadastre has become an important tool of planning ways to use scarce land resources. The large encompassing arrow indicates the dynamic nature of the relationship of people to land and the corresponding dynamic nature of the applications of cadastre (and ultimately the general land administration system).

As mentioned in the preamble, this section has deliberately focused on cadastre as one core element of land administration systems to show how land administration has responded to changes in the people to land relationship.

According to the World Bank, land administration infrastructure is expected to serve the following needs (WB, 2001):

- security of tenure: clearly defined and enforceable rights for ownership and use/occupation of property;
- accessible means of dispute resolution;
- efficient and secure processes for transference of property interests;
- control and regulation of land use in the public interest;
- management of public lands and commons;
- taxation of property;
- equitable access to and management of land and territorial information.

For the purposes of this thesis, these aspects have relevance for sustainable development objectives as well. Cadastre is but one aspect of the land administration infrastructure that can serve the economic, environmental and social objectives of sustainable development. The next section will look at these sustainable development objectives.

3.3 SUSTAINABLE DEVELOPMENT

This section explores how sustainable development has affected rights and responsibilities over land and its use.

The well-known Brundtland Report of 1987 defines sustainable development as:

> …development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state

> of technology and social organisation on the environment's ability to meet future and present needs. (WCED, 1987)

According to Pasinetti and Solow (1994), a society that invests aggregate resource rents in reproducible capital is preserving its capacity to sustain a constant level of consumption; investment is sufficient to maintain the broad stock of capital, not necessarily every single thing (Pasinetti and Solow, 1994).

Social equity concerns, particularly with respect to women and indigenous peoples, have been highlighted in international instruments such as the UN Social Summit (1995) (UN, 1995):

> Commitment 4(f): Recognise and respect the right of indigenous people to maintain and develop their identity, culture and interests, support their aspirations for social justice and provide an environment that enables them to participate in the social, economic and political life of their country;
>
> Commitment 5(e): Remove the remaining restrictions on women's rights to own land, inherit property or borrow money, and ensure women's equal right to work.

At the fifth year review of the implementation of Agenda 21 in 1997, the UN General Assembly adopted a General Resolution that included areas for urgent action. The first area of urgent action, described at paragraphs 23–32 of UN Resolution Number A/RES/S-19/2 of 19 September 1997, was the integration of economic, social and environmental objectives.

Sustainable development requires meaningful dialogue between the economic, environmental and social aspects of life. Ultimately, this is a dialogue about redefining and renegotiating the rights and responsibilities of people as individuals, corporations and community groups, and also the rights and responsibilities of the State. Essentially, this is about re-defining the relationship between private property rights and the State. Property will continue to be the sign and symbol of opposition to State regulatory power, and will continue to be thought of as a shield protecting individual freedom from encroachment by either private or public intruders (O'Looney, 1995; Krier, 1990).

The following section will discuss how land administration should play a role in the re-definition of rights and responsibilities over land and its use by facilitating the dialogue between competing economic, social and environmental interests.

3.4 LAND ADMINISTRATION'S ROLE IN SUSTAINABLE DEVELOPMENT

Land administration gives enforceable (usually legal) and institutional form to the rights and responsibilities in relation to land ownership and land use. The need to study the tensions between the social, economic and environmental aspects of sustainable development also highlights the need to examine the interplay between the social, economic and environmental roles played by land administration systems.

As defined in section 3.2, land administration has a variety of components. This section discusses how these components contribute to the determination of rights and responsibilities over land and land use that would assist sustainable development objectives.

3.4.1 Planning

Planning would be one component of land administration that has significant importance for achieving sustainable development objectives.

Increasingly, the trend has been to define environmental concerns more widely and to inject them earlier into the planning process (Ting et al., 1999). One example is the Habitat II Agenda and Istanbul Declaration on Human Settlements (1996) at the Second United Nations Conference on Human Settlements where one of the major chapters (Chapter 5) was headed 'Environmentally sustainable, healthy and livable human settlements' (UN, 1996). The section on shelter delivery programs clearly states the necessity for a legal framework of land use that addresses society's need to promote efficient land markets as well as sustainable land use (at Article 77):

> To promote efficient land markets and the environmentally sustainable use of land, governments at the appropriate level should develop a legal framework of land use aimed at balancing the need for construction with the protection of the environment, minimizing risk and diversifying uses (UN, 1996).

Obviously, to facilitate planning at that detailed level, there is a need for a land administration system that provides reliable information for decision-making. It should be noted that the need for sustainable development planning occurs increasingly on a global level. Apart from the obvious environmental initiative of Agenda 21, there are other particular issues of a global nature that multi-purpose cadastres could help to address, and there is an increasing acknowledgement that cadastres have a significant role to play in planning not only on land, but also off-shore (Hoogsteden and Robertson, 1998). One example of an off-shore issue is the world fisheries crisis (PANOS, 1995):

> Around 100 million people in developing countries are dependent on fisheries. They are its largest and poorest stakeholders. But their livelihoods are further under threat from the general stagnation in world catches and from the large trawlers which overfish their waters...Nine of the world's 17 fisheries are in serious decline with four depleted commercially, according to the FAO...The global catch is of less value—both in terms of money and nutrition—than it was.

In the same vein but closer to the traditional issues of land-use planning, is the importance of land for food production. UNFAO research in 1995 showed that, from a global perspective, there are serious inequities in the use of resources:

> The world, as a whole, is getting steadily wealthier. By the early 1990s, about 20 percent of the world's population—most of it in the developed world—received over 80 percent of the world's income, while the poorest 20 percent received only 1.4 percent. The developed countries consume 70 percent of the world's energy, 75 percent of its metals, 85 percent of its wood and 60 percent of its food (UNFAO, 1995).

The remainder of this section is broadly divided into discussions of the relevance of land administration to the economic, the social and the environmental aspects of sustainable development.

3.4.2 Land Administration and Economic Development

That land administration has a role in economic development is well established. Contention lies in the extent and weight of its role. Chapter 2 discussed the evolution of the relationship of people to land, and the early part of this chapter explored the key

changes in the application of cadastres, which include the registration of ownership and the mapping of its location.

As Wallace (1999) found:

> Land registration is profoundly important in the maintenance and engineering of markets in complex commodities .

Land registration is just one significant component of cadastre, which is in turn a part of the formal system of laws and institutions that should give efficient form to the desires of society. It is when these formal systems fail to reflect these desires that economic development is stunted, and poverty is a powerful deterrent to dialogue between the economic and environmental aspects of sustainable development.

Feder and Nishio (1999) have outlined factors needed to enhance economic viability of land registration:

- economic impact is derived from higher income or services per unit of land and from an enhanced level of land transactions, allowing higher value uses of land;
- the main sources of higher income and improved residential services are improved access to credit, higher land-attached investments, greater use of variable inputs, more efficient land markets;
- if various regulations restrict or disallow the enforcement of collateral, or if the legal and enforcement administration for collateral contracts is too cumbersome to be effective, land registration will not provide benefits linked to the credit market. (Feder and Nishio, 1999)

In his research on why capitalism works in the West and fails elsewhere, de Soto (2000) elevated discussions beyond Communist–Capitalist lines to show that the inappropriate formal legal and institutional property systems in developing countries were powerful deterrents to effective economic development:

> Formal property is more than a system for titling, recording and mapping assets—it is an instrument of thought, representing assets in a way that people's minds can work on them to generate surplus value. … In brief, capital results from the ability of the West to use property systems to represent their resources in a virtual context. Only

> there can minds meet to identify and realise the meaning of assets for mankind. (Soto, 2000).

Denman (1978) broadly categorises property as an amalgam of the powers to use, alienate, assimilate, pass by succession and claim title, and these can each exist as property in their own right. He concludes that 'the fission of property in this way has a most practical significance in the ownership of land. It allows property to beget property' (Denman, 1978).

Munro-Faure (1999) found that any investment is likely to involve an element of investment in the real estate market, as the real estate market often forms a the capital asset of wealth, and a mortgage is a relatively low-risk form of security against a specific real property.

According to Soto (1993), land is still the form of security preferred by financial institutions. In fact, access to credit has been one of the strongest driving forces for projects on land titling and registration in developing countries. He later found that:

> The revolutionary contribution of an integrated property system is that it solves a basic problem of cognition ... A good property system does that—it puts assets into a form that lets us distinguish their similarities, differences and connecting points with other assets. (Soto, 2000)

By comparison, Payne (2001) believes there is anecdotal evidence that the poor are suspicious of borrowing from the banks and the banks are reluctant to lend to the poor (even with titled lands as security) because:

> After all, what self-respecting bank manager would lend to a household without first checking that they were able to service the debt, before checking the collateral against which the loan is to be secured? (Payne, 2001)

Payne (2001) goes on to point out that the wealth in western nations was at least in part the result of colonialism and slavery rather than sophisticated property rights. He gives an example taken from (Malpas and Murie, 1999) that when Britain was at the apex of its economic and political power in 1914, only 10 percent of the population were property owners and the remainder were tenants.

An effective system of land registration should provide security of tenure. Whether this security of tenure then converts into development and wealth production

involves other criteria, as demonstrated by research from around the world that highlight the importance of access to political and administrative power as well as other spheres of economic activity:

> The new elites, whether in Latin America, South or Southeast Asia, are more numerous, more deeply entrenched in the rural community and in the vanguard of technological change. They have a pervasive economic control over the peasantry through their control of factor markets other than land. Redistribution of land has failed to dislodge these elites becauseit had not disturbed this class's monopolies in other markets. Today a minifundist land reform beneficiary still ahs to go to the rich farmer-cum-moneylender for credit, irrigation water, inputs supplied by a privatised distribution system and, above all, work and land for rent so as to utilise his surplus labour. (Sobhan, 1993)

> Where the regime transition does not materially alter the political influence of national or regional economic elites, however, democratising the electoral process holds little promise of concurrent redistribution of wealth within the society. Soem analysts have gone further, raising the possibility that democratic transitions may be inherently incompatible with income redistribution. The obstacles confronting proponents of agrarian reform are particularly acute in settings such as teh Philippines, where democratic institutions are superimposed on historic and continuing patterns of fragmented social control and substantial economic inequality. (Reidinger, 1995)

> Changes in the land law or land policy do not necessarily lead to changes of land tenure in practice: there is ample evidence of this throughout the Pacific. The legal tenure system is never the only determinant of how the system works, and sometimes it is a rather small part of the actual principles which determine who uses what land, for what purposes and how productively. (Crocombe, 1984)

> In closing, the research reported in this book reaffirms the importance of definitive property rights to land on the [Brazilian Amazon] frontier as a means of promoting the extension of markets and investment and of reducing private enforcement costs. Settlers, large and smallholders alike, understand the role of title. ... The efficiency gains of well-defined and well-enforced propery rights to valuable land are clear. At the same time, distributional concerns in the face of a very skewed landownership allocation threaten those economic benefits. Land reform, then, is a legitimate political and economic concern. But land reform must be implemented in a manner that differs from current policies that promote violence and rent dissipation. (Alston et al., 1999)

Property rights are relations among people concerning the use of things (Furubotn and Pejovich, 1972). Wealth generation is but one of the functions of property. Property relationships become manifest at different layers of social organisation: cultural ideals and ideologies, more concrete normative and institutional regulation, social property relationships, and social practices (Benda-Beckmann and Benda-Beckmann, 1999). At these different layers the functional aspects of property relationships manifest as normative functional attributes that are central to property ideologies and legal-institutional frameworks; but these property relationships also have actual social, economic, political or ecological significance, whether or not it is normatively attributed to them (Benda-Beckmann and Benda-Beckmann, 1999).

The various components of land administration impact on economic life because they have such an important role to play in marketsfor land and for rights for use of land (resource markets). Identification of rights and obligations in land provide the basis for structuring institutional mechanisms such as valuation of those rights and planning how the rights fit into the wider community. Security of tenure and access to land are aspects of land administration that support the confidence in the system that is necessary for land and resource markets to run efficiently and productively. Conflict resolution is another aspect of the system that is necessary to provide the sense of security in the market that would likely be shaken in the event of disagreement regarding a transaction. The revenue-raising aspect for government is also of obvious economic importance, and is a traditional aim of land administration which draws into play a number of its components, such as the identification of who has what rights, their modification by any planning regulations in existence, and the valuation of those rights. The social and environmental significance of land administration is discussed in sections 3.4.3 and 3.4.4.

3.4.3 Land Administration and Social Forces

> All societies of whatever culture and political creed have land systems woven of property rights (Denman, 1978).

Land administration enables land to become the security or commodity that generates further wealth, provided the legal structures reflect and institutional

structures facilitate what society needs. The degree of sophistication required of land administration systems today extends far beyond land registration.

> I do not think Bill Gates or any entrepreneur in the West could be successful without property rights systems based on a strong, well-integrated social contract. …Throughout history people have confused the efficiency of the representational tools they have inherited to create surplus value with the inherent values of their culture (Soto, 2000).

In his study of the world history of land tenure and agrarian reform, Powelson (1988) states in his concluding chapter that:

> ... economic development requires a culture in which individuals and corporate bodies are clearly bounded and identified; in which rights, duties and obligations with respect to property are clearly assigned to these individuals and corporate bodies, including the state; and where the distribution of rights and resources is not unduly concentrated in any of these bodies, including the state.

The social contract in relation to rights and restrictions over land is clearly an important underpinning force in land administration. Without basic community trust in the fundamental principles of the laws and institutional framework to represent their values and interests, there would be escalated conflicts.

Classic Blackstonian thinking about property is that ownership of property gives a person 'sole and domestic dominion' over that property (Blackstone, 1791). This approach is embraced by modern libertarian scholars such as Richard Epstein and Robert Nozick, who hold that property rights are established upon first possession (Epstein, 1979) and the bundle of rights for private property is unitary.

Rights in land exist for reasons beyond the economic. As discussed in Chapter 2, throughout history rights in land have also represented power and identity. As Denman (1978) expresses it:

> The form of proprietorship peculiar and just to a people is fashioned by prescription, by long usage and custom. There is no historical transcendent criterion of the rightness of property incumbent upon all men at all times. Rightness changes with needs and fashions. To comprehend it at any time one must analyse change by the historical method.

Above all, clear and appropriate definition and enforcement of rights and responsibilities for land and land use are essential for social cohesion. More than 75% of the world's nations have some kind of land-related conflict (Spurway and Benwell, 1998).

Social aspects of land registration programs in developing countries have been outlined by Feder and Nishio (1999) in their study of the impact of land registration projects carried out by the World Bank and related agencies. They have noted that when a modern land registration system replaces customary systems, there has been a tendency towards land grabbing as smallholders and the poor are tempted to sell to large landholders. They recommend that in such cases it would be better if titling were to be done systematically rather than sporadically. They conclude that in order to reduce the social impact of land registration programs, land registries should be administered on cost-effective and transparency principles. To achieve this they suggested that landholders should be closely involved in the registration process, social issues should be examined prior to starting the land registration process, e.g. customary rights and women's rights, and there should be effective monitoring of developments on the ground.

In this thesis the components of land administration will be considered to play a role in the achievement of social priorities. Clarity of rights and obligations over land have obvious implications for the maintenance of peace in neighbourhoods and the wider community. Related to this would be the rules or policies in place to allow access to dialogue about land use by a variety of sectors of the community and, following such dialogue, security of tenure. Indigenous rights are a contemporary example of society's new priorities and the need to acknowledge these in the kinds of rights and obligations that exist over land. Appropriate conflict resolution procedures underpin the attainment of social objectives. The raising of revenue from rights over land provides a contribution to the fiscal base that allows the provision of services to the wider community. Valuation, whether related to land markets or not, has the potential to reflect society's values and reinforce confidence in the land administration system. Planning allows people to become involved in setting priorities for the environment, in which they live and work.

Social priorities are one of the motivating factors behind society's current increased involvement in decision-making and the implementation of policies thereafter. Therefore, the role of the components of land administration in giving expression to the social aspects of sustainable development has ramifications for the structure of society both between and within the public and private sectors of society.

3.4.4 Land Administration and Environmental Priorities

Land administration is concerned with the administration of rights, restrictions and responsibilities over land. This clearly overlaps with environmental concerns regarding land use or resource use rights, because environmental concerns can arise from the way people choose to exercise their rights, restrictions and responsibilities over land.

As the following quote from the OECD confirms, environmental aims are not always in contradiction to economic ones, particularly when society has made clear decisions about the order of such priorities:

> It is worth recalling here that the objective of environmental policy is often to reduce either the use of inputs (e.g. energy) or the production of outputs (e.g. emissions) which harm the environment. These changes are often closely linked to the competitiveness of an industry (via the industry's cost structure). Thus, the 'real' debate should often be not about the loss of industrial or national competitiveness, but about whether or not the environmental policy itself will produce a benefit to society (OECD, 1997).

Environmental issues result from the impact of human beings on the land and the environment in which they live. Land tenure rights help to define the rights to use/not use the land and resources located within and upon it. From a sustainable development perspective, such rights, restrictions and responsibilities over land require expression through appropriate legal and institutional infrastructures that facilitate the dialogue between those competing rights, and in essence this may be expressed as the conflict between approaches to public and private property. As (Ziff, 1996) states:

> In principle, the allocation of public goods should be predicated on an assessment of collective interests, which should mean that the obligations of good governance affect the way that the property is used.

The rise of environmental interest and the relevance of this to land administration are due to the growing concerns about private land use rights and their impact beyond the boundaries of the private land itself. The most persuasive situation would be that of toxic waste dumps. In Monterey, Mexico, there were several cases of babies being born without a brain (anencephaly) to families of employees of a toxic waste dump. In the United States, there are 1250 toxic waste dumps that dot every state and affect millions of people. A high level Environment Protection Agency administrator maintained that the cleanup attempts since the 1980s have cost taxpayers nearly $9 billion and private industry much more. Since 1980, the EPA-mandated cleanup has reached only about 220 of the sites (Goeters, 1997).

In the United States, real estate development began to face much stronger regulation in 1973 when the Endangered Species Act provided for the conservation of species that were listed as threatened or endangered, together with their habitat, regardless of economic considerations (Goeters, 1997).

Environmental and social priorities have also found impact on the traditional economic paradigms that drive the real estate markets. In the USA:

The real estate business has changed dramatically in the last two decades with every phase of a transaction becoming more intricate and problematic…Possibly the most volatile changes occur in the area of environmental considerations. In the last 20-25 years, sweeping legislation dealing with environmental issues has been prolific and has had a dramatic impact on all areas of real estate (Goeters, 1997).

There are even arguments that economic development as we traditionally understand it is unsustainable, and so the emphasis should be on maintenance rather than growth (Daly, 1996):

> Sustainable development, I argue, necessarily means a radical shift from a growth economy and all it entails to a steady-state economy, certainly in the North, and eventually in the South as well.

Daly (1996) goes on to clarify that in a steady-state economy the aggregate throughput is constant, though its allocation among competing uses is free to vary in response to the market. The OECD itself has found that environmental controls do not in themselves necessarily have a negative impact on a country's economy:

> There is no clear empirical evidence that high (or even relatively high) environmental standards are having a systematically negative impact on competitiveness, either at the macroeconomic or the microeconomic level. ... Even in cases where a negative relationship does seem to occur, it should be recalled that the existence of correlation does not necessarily imply causality (OECD, 1997).

Land administration has a changing role to play. This is exemplified by the changing nature of the work of planners, who increasingly work in multi-disciplinary teams and also must develop good strategies for maximising public consultation in order to address the economic, social and environmental imperatives. Memon and Gleeson (1995b) have observed the phenomenon of liberalistic economic ideas rising along with environmental movements to be common across many Western countries:

> Today, many Western societies face a new sociopolitical antagonsim between economic growth, often championed by a resurgent form of liberalism in many Anglophonic countries (the 'New Right'), and ecological protection, advocated by environmentalists.

Rao (2000) concludes that 'estimation of the interrelationship of economic growth and environmental quality remain largely too weak in the information base and analysis to be able to offer any significant policy guidance'. He states that 'a realistic intervention policy in terms of incentives and disincentives for sustainable development remains an important contributor to achieve desired goals, at global, national and local levels.'

As summarised in Table 3.1 all the components of land administration have significance for aspects of sustainable development. It is necessary to identify the rights and obligations in land as well as who has a right to be involved in a dialogue about the way land use rights are exercised. Land markets as a concept will probably need to be expanded to include the value of environmental priorities. Conversely, the use or conservation rights themselves will gain value and marketability as society moves in the direction of valuing such environmental aspects, for example the interest

that urban dwellers have in choosing to purchase property and establish a lifestyle in rural areas. Revenue and the way it is raised will affect environmental priorities because of the need for balance against the other priorities of sustainable development. Planning increasingly needs to take into consideration the community's redefinition of what is of environmental importance. Conflict resolution processes and the personnel that administer such systems also need to grapple with issues of 'environmental justice' when adjudicating disputes over land and land use rights.

Components of Land Administration	**Aspects of Sustainable Development**		
	Social	Economic	Environmental
Identification of rights/obligations	✓	✓	✓
Land markets	✓	✓	✓
Access to land	✓	✓	✓
Security of tenure	✓	✓	✓
Valuation	✓	✓	✓
Conflict resolution re ownership and use	✓	✓	✓
Revenue raising	✓	✓	✓
Planning	✓	✓	✓

Table 3.1: The relationship between land administration components and aspects of sustainable development

In summary, there is growing concern about the impact that land use can have on the environment. The range of issues and stakeholders is diverse, and land administration systems need to respond to these demands and concerns. The following section outlines an important international initiative to issue a declaration about the importance of land administration for sustainable development.

3.5 THE BATHURST DECLARATION

A Declaration on Land Tenure and Cadastral Infrastructures for Sustainable Development was made in 1999 that declared the link between land administration and sustainable development.

The process of producing the Bathurst Declaration brought together 40 international experts from a variety of disciplines for deliberations over a week at Bathurst, New South Wales. The 25 position papers (UN-FIG, 1999) prepared by the multi-disciplinary international experts for the Bathurst Workshop provided an in-depth view of the diverse and complex issues facing land administration systems into the future, with particular emphasis on sustainable development (Williamson et al., 1999). These papers were the basis of discussions that resulted in the Bathurst Declaration on Land Tenure and Cadastral Infrastructures for Sustainable Development ('The Bathurst Declaration') (Williamson et al., 1999).

3.5.1 Background

There were several initiatives that led to the Bathurst Declaration. The International Federation of Surveyors (FIG) had been concerned about land administration issues since its establishment in the 19th Century. Recent FIG developments include the Statement on the Cadastre 1994 ('the Statement') which set out the meaning and significance of cadastre. While the Statement recognised the breadth of cadastres and their important role in land administration systems, it is technical and descriptive, and focuses primarily on land registration and cadastral surveying and mapping (Williamson et al., 1999).

The 1996 Bogor Declaration on Cadastral Reform widened the focus to concentrate on cadastral issues and land markets, and recognised that countries are at different stages of the development of the relationship between their people and their land. After the Bogor Declaration, a resolution was passed at the 14th United Nations Regional Cartographic Conference for Asia and the Pacific, held in Bangkok in 1997. It urged the United Nations, in collaboration with the International Federation of Surveyors (FIG), to hold a Global Workshop on Land Tenure and Cadastral

Infrastructures in support of Sustainable Development ('The Bathurst Workshop') (Williamson et al., 1999).

Research in the intervening years since the Bogor Declaration had emphasised the implications of not only cadastre, but the widening definition of land administration systems and institutions, to meet the needs of current and future societies in their evolving relationship with their land—sustainable development being of primary urgency (Williamson et al., 1999).

Figure 3.2 below (Enemark and Sevatdal, 1999) illustrates the interrelationship between land tenure, land value, land use and land development as components of a land administration system that could underpin the economic, social and environmental aspects of sustainable development.

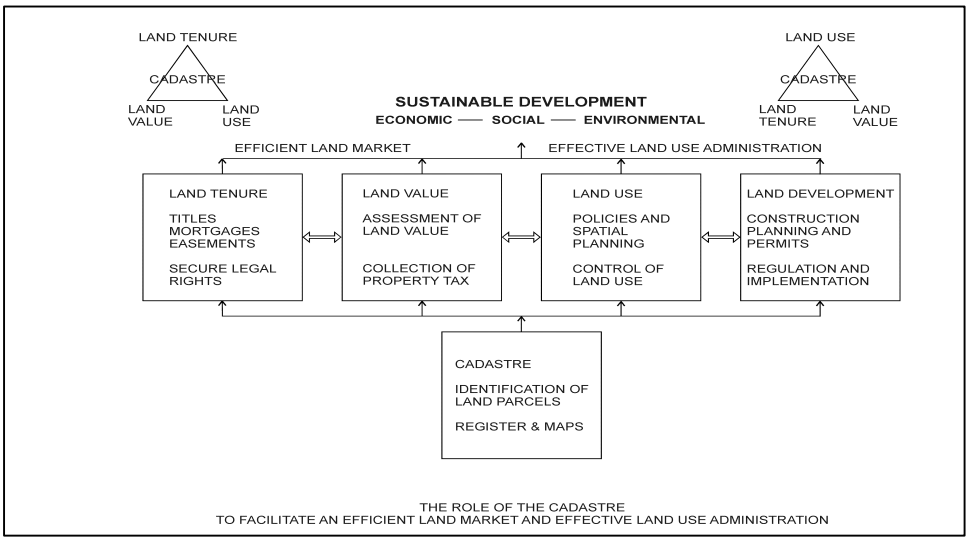

Figure 3.2: Role of cadastre in underpinning land markets and land administration for sustainable development
Source: (Enemark and Sevatdal 1999)

3.5.2 Findings of the Bathurst Declaration

The Bathurst Declaration was significant in taking the stance that sustainable development is not attainable without sound land administration. Sound land administration includes a balanced and integrated approach to all tenure relationships

in urban and rural societies, active participation by local communities to address reforms, and information technology for appropriate land information strategies.

It was found that the changing humankind–land relationship and current global and local drivers such as sustainable development, urbanisation, globalisation, economic reform and the information revolution demand land administration responses, and are forcing a new land administration vision or paradigm (Ting and Williamson, 1999b).

The Bathurst Declaration found that:

- Land registration systems need to be expanded in order to provide information for land market activities, for public and private land management and for customary and informal tenures, in order to support sustainable development;
- The laws concerned with information in the land registration system may need to be adapted to current technological developments, for instance, in order to facilitate electronic conveyancing;
- The statutory survey requirements on the location of pegs, boundaries and parcels need to be adapted to more flexible circumstances depending on the character of the information and the use of the information for different purposes;
- Land administration systems need to be re-engineered to accommodate other forms of information which may not be parcel-based.

The present author would argue that, for the sake of lucid dialogue regarding sustainable development, the same clarity of economic rights and restrictions that are well supported by appropriate land administration infrastructures needs to be extended to include more consideration of environmental and social priorities.

3.6 THE FACILITATING ROLE OF INFORMATION TECHNOLOGY

Land administration requires a sound information base to support decision-making about rights and responsibiliteis over land and its use. Multi-purpose cadastral systems feed into and require spatial data. The Australian and New Zealand Land Information Council (ANZLIC) analyzed the benefits of land and geographic data across Australia and found that cadastral data comprised 25% of all spatial data produced by spatial data suppliers. The report also found a benefit/cost ratio of 4:1 for overall data usage:

> The benefits took the form of improved business and strategic planning, increased productivity, the development of new business opportunities, improved scheduling and coordination of investment projects, and improvements in the utilisation, pricing, maintenance and disposal of fixed assets. These benefits were distributed across the broad spectrum of economic activities ranging from the operation of electricity, gas and water utilities to the development of projects involving agriculture, mining and environmental management (ANZLIC, 1995).

The push for multi-purpose cadastres has been made possible by the availability of technologies to capture spatial data. As the advancement in technologies such as the Global Positioning System (GPS), satellite imaging and total stations have all made the capture of digital spatial data a relatively quick and easy process. There is now a vast amount of spatial data in digital form, stored by several organisations at various locations across the globe (Phillips et al., 1998). The then Vice President of the USA said in relation to LANDSAT images:

> In spite of the great need for the information, the vast majority of those images have never fired a single neuron in a single human brain. Instead, they are stored in electronic silos of data (Gore, 1998).

The integration and subsequent querying of spatial datasets, the locating and obtaining of datasets across a network, and the transfer of dissimilar spatial datasets across networks are all concepts that have arisen in an attempt to better utilise the spatial datasets that are in existence (Phillips et al., 1998).

Aside from the availability of data, it has been the introduction of user-friendly desktop GIS in the last few years that has stimulated interest in using GIS technology in government and industry (Lee, 1997).

It is appropriate here to also mention the three fundamental components that the US considered important to establish a multi-purpose cadastre over 20 years ago (McLaughlin, 1975; NRC, 1983):

- A geodetic reference framework;
- A base map;
- A cadastral overlay.

The US report also stated that these technical components were fundamental to the development of a cadastre that could:

> eventually support permanent linkage mechanisms among real-property title, fiscal, and administrative records. Moreover, only where these technical components are adequately provided can the multi-purpose cadasatre eventually be expanded to a multi-purpose land-data system incorporating natural resource base and land-related socioeconomic data (NRC, 1983).

Some of the major cadastral reforms being introduced or being considered for introduction into Australia about ten years ago include (Williamson, 1991):

- the development of completely computerised indexes of land parcels at a state level updated by the title registration system;
- the development of automated and fully computerised land title systems;
- the development of statewide digital cadastral data bases updated by digital subdivision data;
- the reform of the institutional arrangements for the management of the cadastre reforms to land transfers and title registration procedures often instigated by Law Reform Commissions;

- reforms to the registration of surveyors and the statutes and regulations concerned with the performance of cadastral surveys;
- the introduction of coordinated cadastral surveys;
- the introduction of coordinated cadastral survey systems where the mathematical coordinates have 'legal' significance in that the mathematical coordinate over-rides monumentation on the ground;
- the move from a cadastral surveying system, to a cadastral mapping system supported by cadastral surveys;
- the incorporation of the core computerised cadastral system as part of a broader land information system or multi-purpose cadastre;
- systems to improve the delivery of cadastral information whether this information is textual or graphical. This includes imaging systems and the use of remote terminals and fax machines.

Technological innovations such as digital cadastral databases and the WWW will be vital tools for land administration and planning both now and into the future (Williamson, 1991). But technology, however impressive, is but a tool. The data which our society chooses to prioritise and maintain in those computers will be the factors which drive complex planning decisions into the 21st century. Information is power. As Wallace (1990) concluded in her paper 'Barriers to Cadastral Reform':

> The biggest reform is the capacity of the computer, when combined with coordinated surveying, to produce coordinated maps…Can we truly reform the cadastre and not be merely reactive sponges who must absorb new technologies but do not form their own destinies?

3.7 CONCLUSIONS

Throughout history, the relationship of humankind to land has been dynamic. This dynamism has had a direct impact on the creation of cadastral systems and the subsequent evolution of their function.

The process of evolution of the relationship of people to land and the resultant changes in cadastral functions (and wider land administration structures) have been cumulative (refer 3.1). Over time, the humankind/land relationship has built up layers of complexity: land as wealth was extended to include a perception of land as commodity, then land as a scarce resource, and finally as a scarce 'community' resource. In other words, the original view of land as wealth moved to include a more capitalist view of land as an individual's commodity. As land became increasingly scarce, some countries decided that State ownership of land based on communist ideology would resolve the problem. Other countries in the West preferred to address the scarcity with better planning (particularly urban planning). Now there is an increasing awareness that land planning has a wider community and even global imperative.

Each of these phases in the humankind/land relationship elicited a corresponding layer of complexity in the function of cadastral systems from being a simple record of ownership and a fiscal tool, to becoming a cornerstone of land markets and increasingly making an important contribution to land-use planning.

The world is at different points of this continuum. Many developing countries are only just establishing more formal cadastral records for fiscal and also land market purposes. The command economies in the Eastern Bloc in Europe have crumbled in recent times and are attempting to re-establish cadastres for fiscal and land market purposes, while the Western nations are rushing to create multi-purpose cadastres that take a community approach to sustainable development issues whilst maintaining private ownership. Linked to this trend is the growing need for multi-purpose cadastres that have been made possible by the information revolution.

Sustainable development is a prominent and urgent objective now and into the future. Land administration has a significant role to play. This can be achieved if it is properly re-engineered to deliver security of process and trust for the dialogue

between rights and responsibilities over land and its use that touch on some or all of the components of sustainable development. The integration of land administration processes into a complementary whole is important to supporting the sustainable development objectives.

Chapter 4 discusses the inter-relationship between good governance and land administration.

4

GOVERNANCE AND LAND ADMINISTRATION

4.1 INTRODUCTION

Chapter 2 established the dynamic nature of the relationship of people to land, and highlighted the changing balance between public and private rights and responsibilities over land and its use. Chapter 3 then examined the effect that this had had on the evolution of land administration systems and on the potential role of land administration in supporting sustainable development objectives. This chapter discusses the role of governance in facilitating dialogue between public and private stakeholders about those changing rights and responsibilities over land and its use.[1]

Section 4.2 overviews the existence of individual, community and State rights and responsibilities in land and its use.[2] Section 4.3 discusses literature on governance that is relevant to the balance of public and private rights and responsibilities and

[1] Governance here is about the way societies order their power structures for decision-making.

[2] In this thesis, the term 'community interest' will be used to mean 'in the public interest' and the term 'the State' will be used as the cumulative term for government, inclusive of the three arms of government, namely, legislative, administrative and judicial.

sustainable development. Section 4.4 outlines the relevance of governance to effective land administration for sustainable development, with particular emphasis on the planning component. Section 4.5 explores the considerations relevant to the expression of these governance trends in legal and institutional frameworks. Section 4.6 will discuss the necessity for information infrastructures that are supportive of the complex decision-making by the diverse groups of stakeholders about rights and responsibilities in land and its use. The threads running through all these sections are brought together in the Conclusions at Section 4.7.

4.2 INDIVIDUAL VS COMMUNITIES VS STATE

The sustainable development philosophy has put greater emphasis on the responsibility of private landowners and users to take into consideration the well-being of others in the community. Goodchild and Munton (1985) note that society's views on ownership are formed with regard to the following:

- The degree to which owners can derive and exploit power and influence from their ownership of a scarce resource and, by implication, the extent to which they recognise, accept and act upon their obligations to others as a result of their ownership rights;
- The level of financial advantage (revenue and/or capital) enjoyed by owners over non-owners;
- The extent to which owners seek to frustrate public policy initiatives, not only by their willingness or reluctance to relinquish their property rights but by the manner in which they maintain their properties.

The infrastructure for land administration needs to be geared to allow dialogue and flow of information to take place between property owners and the diverse representatives of public interest. This change in perspective has ramifications for land administration and, ultimately, sustainable development.

Planning is important for sustainable development, but cannot operate effectively without the cooperation of the landowners and/or holders of land use rights themselves. In this context, the legal and institutional frameworks have an essential

role to play in creating sufficient certainty of rights and also procedures for dialogue regarding the redefinition of those rights/responsibilities:

> The effective definition and enforcement of property rights is likewise central to overcoming many environmental problems. As part of this legal framework, private parties need to be assigned liability for any effects their activities impose on others. ...When the air or water is not owned by anyone it is available to anyone who can use it first. ...Conversely, many environmental 'goods', such as the preservation of wildlife or genetic diversity, are dwindling because the lack of property rights to these resources limits the net return entrepreneurs can obtain...[In] regard to the environment and the economy generally, governments have a primary responsibility for setting up and enforcing effective legal frameworks within which private parties can act to further their own multitudinous goals (Hartley and Porter, 1991).

The ability of communities to respond directly to issues has changed over time and so has their relationship with their various levels of government:

> Communities will only be effective if they accept the responsibility for dealing with tough issues. A primary reason why so much power moved to the national level in the twentieth century was that many critical questions were allowed to fester. Only central governments had the courage to make tough choices in the forties, fifties and sixties. Today this pattern is being reversed. Imagination is most visible at the local, and sometimes at the state, level. (Theobald, 1999)

As local communities are increasingly charged by government to take on more responsibility for governance, there is a corresponding need for appropriate community/neighbourhood institutions. (Lurcott and Downing, 1987) argued that such neighbourhoods are likely to invest in their overall self-improvement. O'Looney (1995) found that such empowered local communities were 'likely to invest the time, energy, thought, and resources needed to integrate the facilities and people originally seen as being unwanted'. Conversely, he noted that one of the dangers of interest-group decision-making is that it is difficult to ensure equity of voice:

> The direct action approach of the well-organised NIMBYs ('not in my backyard') in white suburbs probably put more pressure on businesses and governments to site LULUs (locally unwanted land use) in poor, minority communities as the path of least resistance (O'Looney, 1995).

The term 'community' does tend to be a fluid one:

> There are communities of place and of interest; there are communities of people who share experiences focused on a particular issue, and some of these are 'virtual' in the sense of relying on Internet and communications technology for most interactions (McKay, 2001).

Interest group activism runs the risk of producing inequitable representation of the range of stakeholder views available. For example:

> The corruption of classic liberal ideals had magnified the problems of social injustice and environmental degradation caused by inadequate land-use controls. ...Moreover, interest group liberalism helps explain why poor minority communities face particularly high barriers when mobilizing against environmental threats (O'Looney, 1995).

and

> ... the dynamics of interest group liberalism translate these limitations into lower levels of access to legal, technical and medical expertise, which in turn results in weaker influence with the media and the political centres of power (Taylor, 1989).

In short, owners have a key role to play as stakeholders in dialogues about rights and responsibilities over land, but then so do interest groups, corporations and government. Any land administration framework would need to be flexible and broad-minded enough to cope with this diversity.

There are explicit and implicit bases for social control over private land use (Clawson and Dysart-III, 1989):

- safety and health of the populace or even of the landowner/user alone;
- equity and efficiency—the character and value of property is affected by the way surrounding properties are used.

Despite strong privatisation trends, there continues to be a role for government to play in the dialogue about rights and responsibilities over land and land use (OECD, 1997):

> ...at least three types of government intervention may be warranted:
>
> - national policies to internalise the environmental costs of those domestic externalities which have no international competitiveness implications;

- cooperative arrangements with other governments to address those domestic environmental externalities which do have international competitiveness implications; and

- cooperative arrangements with other governments for addressing transfrontier/global environmental externalities.

The OECD has also acknowledged that market-based policy responses may not be sufficient to address the ecological bases of environment problems connected with globalisation because (OECD, 1997):

- Markets do not capture environmental externalities.

- Even where they do capture these externalities, markets are typically not sensitive to local ecological conditions. In effect, markets work in the direction of convergence, whereas efficiency in the design/delivery of environmental policies requires diversity, to reflect variations in local conditions.

- Countries have even less reason to use markets as a vehicle for internalising transfrontier/global externalities than they do for internalising domestic ones. In a globalizing economy, more environmental problems are likely to become transboundary in nature;

- For all those reasons, policy intervention by governments will continue to be necessary as globalisation proceeds.

As we enter the globalisation era there will be increasing pressure to achieve coordinated planning objectives, even though countries are at different stages of the continuum of the relationship between people and land, and have diverse land administration traditions.

4.3 TRENDS IN GOVERNANCE

This section will cover some major theories about how societies have ordered their approach to power between public and private rights and responsibilities.

Current land-use conflicts are not clearly explainable along Marxist/capitalist lines. In other words, the conflicts are not just between capitalists and workers. These

conflicts can run along different and less predictable lines, and can range from local to regional or global, involving a wide diversity of group identities:

> Contemporary land-use conflicts tend to divide citizens (who may be capitalist or workers) in their capacity as neighbours and consumers of land against industrial and development interests (O'Looney, 1995).

An understanding of the classic comparison between libertarian and communitarian approaches to who decides what in relation to people's rights is very useful for the purposes of this thesis because the process of decision-making goes to the heart of governance and the balance between public and private power. Once that is understood, it will be a natural progression to focus on land administration, which is the institutional expression of society's approach to governing rights and responsibilities for land and land use.

Libertarians support free markets, 'not because they maximise wealth necessarily, but because they value the maximisation of free choices of individuals' (O'Looney, 1995). By way of contrast, 'communitarian ideologies would allow regulation of markets to maximise aggregation of wealth whereas libertarians would allow intervention of the state only to achieve minimalist needs' (O'Looney, 1995). These two fundamental approaches to government, economics and, ultimately, the power to define rights and responsibilities in society, have obvious application to land and land use.

The importance of decentralisation for libertarians is discussed by Nozick (1974). Clark (1988) would add that to live by libertarian principles decentralisation would need to be complemented by some centralisation so that victims of community or majority rule may appeal to a higher authority. As O'Looney notes, there is a fundamental difference of approach as to whether it is the State relinquishing some rights to the individual or vice versa (O'Looney, 1995):

> Communitarians tend to support the idea that property rights are divisible and mutable. The shaping and distribution of the various bundles of rights, however, should be determined by social processes that are guided by a vision of social justice. ...Legal realists argue that property is not a thing as such, but rather a set of contingent and disaggregated human relationships that are played out in real contexts.

> It should be emphasised that libertarians do not wish to outlaw the unbundling of property rights per se; rather, they would limit the choice of whether and how to unbundle those rights to the owners of these rights. That is, government cannot and should not force individual property owners to separately sell the rights to possess and use property, while maintaining the right to dispose of a piece of property themselves (as is commonly done with leases) or, alternatively, to sell a right to the subsurface minerals, exclusive of other use rights and so forth.

There is also the middle road of classic liberalism, which differs from classic libertarianism in the acceptance that natural law exists in relation to issues of human dignity and welfare and that there is a need for ‘equilibrium between the private and public spheres of human freedom’ (O'Looney, 1995).

The wider social and cultural contexts are relevant to governance because ‘these environments create the infrastructures—regulative, normative and cognitive—that constrain and support the operation of individual organisations’ (Scott, 1995).

These fundamental philosophies underpin public and private spheres of action and the legal and institutional frameworks that uphold them. They are relevant to the classic political stances of laissez-faire capitalism and command-economy Marxism. They are especially important in the present study because of the effect that they have on the way the land administration operates to define, enforce, manage and facilitate dialogue about land ownership and land use rights and responsibilities.

In European countries such as Germany, there is an institutional role for interest groups in what Katzenstein (1987) has called a ‘para-public’ system of institutions. The interest groups are expected to internally organise themselves to come to agreement on policy and present a united voice on behalf of their members. These interest groups are part of a recognisable institutional framework to which they are bound .

O’Looney (1995) points out that:

> The crucial difference between corporatist models of administrative bargaining and those of interest group liberalism is that in the former, private participation in governance is not free-formed, left to chance, or founded on the cruel logic of collective action that dictates disproportionate power for special narrow interests to bargaining with other broad-based interest groups of a different sort.

In this way, O'Looney (1995) notes,

> Instead of narrow interest groups being able to find a special niche in the political landscape, they are forced to join with larger, more primary group interests and to bargain within these larger groups prior to bargaining with other broad-based interest groups of a different sort.

The significance that this holds for land administration, and in particular for planning, is that this European corporatism model encourages narrow groups to lobby within their own interest groups. This can sharpen the policy to be put forward on behalf of their interest group as well as simplify the process at the discussion table with other stakeholder groups, be they companies, other community groups or representatives from different tiers of government.

There is merit in Elinor Ostrom's suggestion that local collective-choice institutions can exist under some conditions (such as a well-defined boundary for the resource) (O'Looney, 1995):

> In particular, by establishing clearly defined boundaries to a geographically small collective, the framework policy being proposed should tend to foster greater neighbourhood activity and renewal around development and planning issues.

As discussed in Chapter 2, the phenomenon of a rise in civil rights movements has fundamentally affected the traditional processes of decision-making:

> One of the effects of interest group liberalism on environmental land-use issues has been to shift the ground of political decision-making away from public institutions and to create what Greider terms a 'politics of the rude and crude' (O'Looney, 1995).

Fukuyama (1999) has deduced that there have been two separate developments in civil society since the 1960s. The first is that there has been a broad-based decline in trust in institutions and other people, and the second is the need to reconcile the shift toward fewer shared norms with an apparent growth in diversity and density of groups in civil society.

A significant change brought about by the civil rights movements of the 1960s and 1970s was a growing sense among citizens that perhaps the State should not be left to make all the policy and implementation decisions. This was particularly well exemplified in the area of environmental health and protection.

The US experience offers some good examples of citizens becoming dissatisfied with government policy-making and implementation (O'Looney, 1995):

> After Congress passed clean air and clean water legislation and set up the Environment Protection Agency, there was a general expectation among most citizens that the government would come to the rescue of those whose lives, health and property were threatened by those wastes and pollutions. However as environmental laws proved to be hollow in content or to lack an enforcement component, or worse yet, were handed over to industry boards and commissions, citizens' expectations were in many cases dashed. ... people learned that their best discourse was to engage in the crude politics of confrontation, guerrilla theatre, and civil disobedience.

And Lois Marie Gibbs of the Citizen's Clearinghouse for Hazardous Waste said:

> If you work within the established system, doing the right thing, more often than not you will lose. The system is put together by the powers that be so they will win. To be outside means not to accept that we will lose. (Greider, 1992)

Browder (1989) suggests that as citizens lose faith in the ability of government to protect them then they begin to practice local environmentalism. Their protest against waste treatment and other industrial facilities will begin to be based on NIMBY-type[3] reasoning rather than on a full understanding of environmental values for the larger geographical entity (Browder, 1989).

As O'Looney (1995) states,

> The situation described here, in which private citizens exercise on behalf of the public a kind of property claim, is another crossing of what was once a clear line separating public and private roles in a classic liberal society.

He went on to note that there has been a tendency to bypass the legislative branch and seek to use the judicial branch instead:

> As private citizens use the courts for public purposes, they bypass the legislative branch in favour of an appeal to another branch—the judicial one—that in the classic liberal formulation would be shut off from bargaining and lawmaking by private

[3] NIMBY is the acronym for 'not in my backyard'.

> interests (except for cases strictly involving private interests in conflict with each other) (O'Looney, 1995).

Research by Putnam (1993) on the importance of social capital in the political and economic success of different regions of Italy showed that in spite of uniform reforms across the country in the 1970s many regions in the following decade moved back to where they were prior to those reforms. Putnam (1993) found that in addition to the traditional notions of physical and human capital, there was the notion of social capital or 'civicness', such that:

> …economically advanced regions appear to have more successful regional governments merely because they happen to be more civic. ...Regions with many civic associations, many newspaper readers, many issue-oriented voters, and few patron-client networks seem to nourish more effective governments (Putnam, 1993).

In essence, Putnam (1993) discusses how social capital plays the roles of providing systems of accountability as well as systems of support for the successful implementation of policies. Social capital has been described as the wealth (or benefit) that exists because of an individual's social relationships (Lesser, 2000).

Observations by Putnam (1993) about social capital are all the more important in the context of a system of governance that increasingly shares responsibilities between the government bureaucracy and the people. As outlined in Chapters 2 and 3, international instruments on sustainable development such as Agenda 21 have emphasised the need for more local governance. Thus, social capital has relevance to the framework of land administration for sustainable development.

As discussed in Chapter 2, globalisation also poses legal/institutional directions for the way in which a framework might be formed to facilitate discussion about public and private rights and responsibilities for the exercise of land use rights, even at international levels:

> The globalisation process focuses attention on three main issues in the trade-environment linkage:
>
> - What are the probable environmental impacts of trade liberalisation and/or protectionism?
> - What are the probable trade effects of the more stringent environmental measures that might be needed to protect against these impacts?

- How might trade and environment policy integration at the international level contribute to the environmentally-sustained globalisation of the economy? (OECD, 1997)

It is beyond the scope of this research to comprehensively study the impact of social capital. It suffices for the purposes of this thesis to note that there are three primary contexts that influence the development of mutual benefits that comprise social capital. These are the structure of the relationships, the interpersonal dynamics within the structure and the common context or language of the individuals in the structure (Lesser, 2000).

This section has outlined why and how society's understanding of governance is shifting, and its effect on dialogue on matters such as sustainable development. In turn there are implications for the appropriateness of current processes in key components of land administration, particularly planning and markets, with regard to dialogue about rights and responsibilities over land and its use. This will be expanded upon in the following section.

4.4 GOVERNANCE AND LAND ADMINISTRATION

> Property will continue to be the sign and symbol of opposition to state regulatory power, and will continue to be thought of as a shield protecting individual freedom from encroachment by either private or public intruders (Krier, 1990).

The above quote from Krier (1990) regarding the importance of property as the individual's shield from private and public (State) intrusion encapsulates a fundamental ground rule that has implications for social, environmental and economic aspects of land administration. This statement sums up the essence of the tensions and relationship that exists between public and private rights. As discussed in Chapter 2, land has a diversity of meanings and uses for human society. Land markets do not serve economic interests only. The tempering of economic goals with environmental and social goals such as indigenous rights has led to a renegotiation of rights and responsibilities that has required substantive as well as procedural adjustments.

For the purposes of this thesis, 'substantive adjustments' refer to the content of rights and responsibilities over land as set out in legislation and policies. For example,

the Environment Protection Act of Victoria, Australia, provides that owners of properties shall be held liable for the clean-up of any pollution that exists on or escapes from their property, regardless of whether they were the cause of the problem. This has put the responsibility on purchasers of properties to investigate the intended property carefully and work the cost of clean-up into the negotiations for buying the property if they wish to go ahead.

The 'procedural adjustments' are the main focus of the present research because the dynamic nature of sustainable development means that the institutional procedures for facilitating peaceable dialogue between the diverse and dynamic range of stakeholders are of paramount importance.

Conflicts can be broadly categorised into three types (Vlahos, 1989):

- Cognitive conflicts: disagreements about the 'facts', true nature of trends and about which variables are 'critical' to the decision to be made;
- Stakeholder conflicts: these reflect coalitions of social power or interest groups and relate more the questions of 'who is at stake';
- Ideological conflicts: these are the ultimate expression of disagreements about social values, models of development, and visions of the present and future.

The first part of this section will discuss the importance of land markets. The next will outline the role of valuation. Then there will be a discussion of planning, which is perhaps one of the most significant components of land administration for the purposes of sustainable development. This section closes with a glimpse of some of the current trends in land administration.

4.4.1 Land Markets

The concept of buying and selling land and the use rights over it is an ancient one. For example, the prophet Jeremiah, who was born around 650 BC and began prophetic work in 627 BC, is recorded in the Bible as having bought land:

> ...so I bought the field at Anatoth from by cousin Hanamel and weighed out for him 17 shekels of silver. I signed and sealed the deed, had it witnessed, and weighed out

> the silver on the scales. I took the deed of purchase—the sealed copy containing the terms and conditions, as well as the unsealed copy—and I gave this deed to Baruch son of Neriah, the son of Mahseiah, in the presence of my cousin Hanamel and the witnesses who signed the deed and of all the Jews sitting in the courtyard... (Jeremiah 32:9-12, Holy Bible—New International Version)

Property rights in land have gained in complexity over time and will continue to do so as we recognise that there are competing interests from economic, environmental and social perspectives:

> There is not a single market for property rights in land but a wide range of specialised markets. Horticulturalists wanting a site for a market garden would prefer a few acres in the Fens of Lincolnshire to the same acreage in the City of London, while an international banker will want the site in the City of London for his banking hall and office no matter how much cheaper the land in the Fens (Goodchild and Munton, 1985).

The process of valuation of environmental factors in land is relevant to land markets. There is also the more recent process of creating markets for the components of land rights such that the bundle of rights can be split up and established into their own markets as one means of giving them value and of preserving them. A well-known example of this would be carbon trading. Another growing market that traditionally had cognitive if not legislative value as private property rights would be water rights. So, there are circumstances where the preservation of a resource is enhanced by establishing the institutional ability to distinguish them from other rights over land and establish a market around them. For brevity, in this thesis they will be referred to as ‘preservation by divorce’.

There were ancient concepts of land ownership records/registries that suited the intention that land ownership would not be transferred for a long time:

> In their presence I gave Baruch these instructions: ‘This is what the Lord Almighty, the God of Israel says: Take these documents, both the sealed and the unsealed copies of the deed of purchase, and put them in a clay jar so they will last a long time. For this is what the Lord Almighty, the God of Israel, says: Houses, fields and vineyards will again be bought in this land’. (Jeremiah 32:13-15, Holy Bible—New International Version)

Chapter 3 outlined the cumulative sophistication of cadastres and the wider land administration systems as they adapted to society's increasingly complex needs. For the purposes of this chapter, it is pertinent to note that registration plays an important role in the process of establishing a record of ownership, and therefore a basis for enforceability and certainty that are vital to any market.

As illustrated by the example from Jeremiah, the form that registration takes would depend on what each society deems to be a reliable and respected method. For sustainable development purposes, it is the process of determining rights, restrictions and responsibilities, which needs to be flexible enough to permit the local participation and action that was urged by Agenda 21. It follows that the processes for determining and recording these rights need to be transparent and accountable to the people at the appropriate level/s of government. A related matter is the coherence of the rights and responsibilities that are decided by the different sectors of the community and the government.

4.4.2 Valuation

Valuation plays an important supportive role in land markets. Markets require a common currency of value. By way of example, new resource markets such as carbon trading have sought to provide a suitable currency.

However, there will be instances when there is no easy common currency. The competing priorities of social, environmental and economic priorities do require a common language of value that can assist with the dialogue. In these instances, value judgments need to be made by the people. Mechanisms need to be put in place to determine who would have standing to take part in such dialogue, and procedures to create as level a playing field as possible for stakeholders, as well as decision-making procedures that are conducive to reaching a definitive and accountable outcome.

Market valuations may be broadly divided into those for market requirements such as sale, purchase, rent, insurance, mortgage, inheritance and dissolution of joint ownership, and those to fulfil statutory requirements such as taxation and compensation for compulsory purchase (Munro-Faure, 1999). Also, there is a range of factors that affect the value of property rights:

> The value of property rights in an individual parcel of land is determined at the micro-level by site characteristics. These may be summarised as follows:
>
> - size
> - current use and level of fixed investment (improvements)
> - location in relation to existing development, road and services
> - physical characteristics, e.g. drainage, topography, which affect its adaptability to alternative uses as well as its maximum productivity in its current use
> - planning status—planning consents granted, zoning on the relevant development plan, etc (Goodchild and Munton, 1985).

The valuation of land is in itself an exercise in reflecting what society deems to be of value. This can be done through planning rules/policies or market forces. These are not mutually exclusive. For example, zoning of an area as residential only can protect the value and standards of residential properties. On the other hand, the declaration of one's home as a heritage property can reduce its value in the sense of limiting development options, but could also create a new market among those who value heritage characteristics in a house.

4.4.3 Planning

Planning has existed at least since the agricultural revolution allowed humans to settle more permanently and to develop more sophisticated traditions of rights and responsibilities with institutional mechanisms to adjudicate and enforce:

> The environmental regulation of human activities is an ancient societal practice. Agrarian cultures controlled irrigation flows. The Romans regulated road design and solar access. Societies have banned or zoned health and safety nuisances for millenia. Modern regulations are seen as a public solution to private sector market failure, such as industrial discharges, which traditionally was characterised as an economic 'externality'. Ideally, environmental controls involve a sequence of information flows. (Felleman, 1997)

Modern land-use planning as identifiable in Western culture dates back to the 15th century, which marked the start of the Renaissance period in present-day Italy. The instruments at the disposal of this physical approach to planning were quite

straightforward, and were reactive rather than proactive in responding to society's evolving needs:

> Historically, regulations took the form of prescriptive mandates. In medieval Venice after some major fires, the munitions arsenal and glassworks were moved to nearby islands. The regulation identified the problem and articulated the form of the solution (Felleman, 1997).

Land-use planners offered mostly physical solutions to land-use issues until this century. The introduction of zoning in the early 20th century provided a new, non-physical or legal device to deal with land-use issues (Toll, 1969; Fabos, 1985). Since the introduction of zoning, land-use planning has been greatly expanded by many additional legal devices and numerous economic, social and policy-planning actions. In response to the increased complexity of land-use issues to be addressed, land-use planning has become a highly complex activity pursued by numerous public agencies at all levels of government and by private planners, ranging from the large inter-disciplinary planning teams of corporations to individual land-use planning consultants (Fabos, 1985).

Land use issues expanded from local to regional, statewide and even national, and the range of tools grew too:

> The powerful forces of scientific findings, new technology and changing social values all have been contributing to the fascinating and often rapid evolution of land-use planning (Fabos, 1985).

The Lockean view of land ownership (refer to Chapter 2) proposed that all value in land results from the human labour expended to realise that value, and that, by reason of that labour, people annexe to something that was their property, that is, their own labour. For the purposes of this discussion, the Lockean view establishes stakeholder status by weight of property ownership as justified by the amount of effort expended in adding value to the land or land use in question.

In a sense, this is at odds with the environmentalism values exemplified by principles such as the precautionary principle, and with the intergenerational equity

principle.[4] This is converse to the Lockean view, because ownership for ecological purposes is deemed to be in the hands of present (and future) generations. It is implicit that preservation from use will be preferred over any use that could be detrimental, regardless of the amount of effort already expended in bringing the land and/or its resources into use.

An issue that naturally follows on from this is that of who pays for the loss of use—the public or the private sector. Put succinctly, it is the 'public good and private cost' issue that can divide communities who would all agree in principle with the concept of sustainable development for the good of present and future generations.

It is interesting to note too that, from an early stage, the public-good perspective existed as a tempering force on absolute ownership rights, particularly when the rapid urbanisation brought on by the industrial revolution posed challenges to aesthetic and natural landscape values (Fabos, 1985):

> The development of large industrial cities and regions of Europe and the rapid growth of American cities during the 19th century focused the attention of concerned people on the loss of natural and aesthetic values within these population centres. ...This romantic sentiment gave rise to the development of public parks in every major city by the end of the 19th century.
>
> The rapid move to park planning and implementation was perhaps the first major challenge to the Lockean thesis of absolute ownership of land by individuals. This was soon followed by the preservation movement, and the development of public recreation areas, especially from the 1920s on. By the early 1960s, the attention of some articulators focused on ugliness and finally during that same decade efforts were made to plan the total environment. All branches of government have aided the reversion from individual ownership and rights.

Fabos (1985) lists examples of tools for local land use controls from the US to include: zoning; subdivision regulations; tax and fee systems; annexation; official mapping (helps direct growth by providing information to the public); capital programming: allocation of public investment; public improvements; geographic restraints; cost/benefit analysis; land use controls with an environmental focus e.g.

[4] Meaning that in the event of a serious perceived threat to environmental integrity, lack of scientific certainty should not be an excuse to postpone preservation measures

controls for critical and hazardous areas; social/environmental; public acquisition; transfer of development rights; administrative processing and delay; one-stop permit; impact zoning; quota systems; and land banking.

The zoning powers that are so common to planning have an impact on property values and a role to play in land/resource markets:

> For real estate interests, the organisation of the market through zoning can potentially be much more profitable than a truly free market in properties—especially if real estate development interests are given easy access to the less visible policymaking and administrative sectors of local government. (O'Looney, 1995)

The interesting point about planning is that once the policy is made and converted into legally binding regulations, the State does not take over the management; rather, owners are directed to heed and implement the outcomes of the planning process:

> Planners do not plan the use of land and resources within the competence of their own executive powers. As planners their authority is over the use of powers lying in the hands of others. They plan the control of property power over land and resources, not the use and discharge of that power (Denman, 1978).

The following section will look at some current trends in land administration that also highlight the role of governance.

4.4.4 Current Trends in Land Administration

This sub-section discusses some of the current trends in land administration with highlights on public and private rights, zoning, the role of planners, decentralisation, and integrated management.

Public and private rights

It is useful to examine planning and markets together because, whilst these can operate in a complementary manner, they do ultimately represent different philosophies of the balance between public and private rights and responsibilities. The following comment about the impact of these different philosophies in the USA is

applicable in any discussion of society's attitudes to the balance of rights and responsibilities between public good and individual rights:

> Two contradictory attitudes toward land use and land ownership prevail in the US and to a great degree in other western cultures. One represents our value for the public and the other for the individual right. Our public value is based on the notion that land, like air and water, is essentially a public good the efficient use of which is beneficial to all citizens. ...The individual value is prompted by an attitude that the individual's right in land-use decisions should not be restricted. (Fabos, 1985)

As Fabos goes on to conclude, each of these two beliefs has a historical basis and each belief grounds its credibility in its assumption that it 'best advances the general welfare of the nation' (Fabos, 1985).

There are four key theoretical domains that describe the nature and purpose of modern planning summarised by (Selman, 2000) based on (Healey, 1997) and (Rydin, 1998):

- The 'new right': planners appear as bureaucrats and the public appear as consumers of competitively priced and quality-assured commodities;
- The 'new left': still struggling with the ideological implications of the collapse of east European communism and trying to reinterpret the analysis of the link between an economy based on capital accumulation and one based on liberal representative democracy;
- Liberal political economy: characterised by the renaissance of neo-classical economics where the planner has a role as an objective, expert professional with a range of techniques to assist the transition to sustainable development;
- Institutional approach: main focus is on the way government professionals engage with individuals and groups that represent the social and economic interests of society such that planning becomes a deliberative activity.

O'Looney referred to four US Supreme Court cases, *First English*, *Nollan*, *Lucas*, and *Dolan* that indicated the Court was more likely to recognise the conservative–libertarian position. In these cases 'the court found that regulations that leave the owner with no economically viable use or that divest the owner of some

essential aspect of property would constitute a compensable taking' (O'Looney, 1995).

Social conflicts over property rights and development have often found the courts to be ineffective in resolving conflicts and, as a result, there have been numerous attempts to create a higher-level managerial solution to locally focused land-use conflicts (O'Looney, 1995). However, this can create an imbalance of access, because smaller groups generally have fewer resources and therefore reduced ability to compete at the higher tiers of courts and government. By way of example, William Greider (1992) quotes Leon Billings, an environmental consultant and a staff director of the Senate Public Works Committee who was active in development of key federal environmental laws:

> Adopting national air ambience standards in the Clean Air Act was the biggest mistake we ever made. ...The Clean Air Act brought the fight to Washington where industry could manipulate things much more cleverly. The federal law short-circuited the activism. It took away the forum for local activists, and they had to become involved in much more technical arguments, an arena where industry is strong and citizens are weak. ...There's no local agitation because it's now a 'national issue' .

O'Looney (1995) listed examples of the higher administrative level mechanisms used:

> State and national level land-use planning and environmental legislation and national fair housing, mortgage lending and civil rights legislation and enforcement are representative of this effort.

He found that the result was a confusing array of ordinances and decisions that 'added only mind-numbing complexity to decisions about siting industrial, waste treatment, and community care facilities' (O'Looney, 1995). These were further complicated by the need to 'consider the preservation of greenspace, historic values, and ecological sustainability' (O'Looney, 1995).

This approach via the administrative arms of government is limited by the fact that it 'accepts as given the existing delineation of conflicting property rights and the existing organisation of interests that spring from this delineation' (O'Looney, 1995). In other words, it is difficult to deal with the fundamental issues of the renegotiations of rights and responsibilities in relation to land and land/resource use that are so close

to the heart of the reform of land administration to better support sustainable development. In addition, studies have found that interest groups can erode democratic processes because the elite are more able to capture the higher levels of the administration (O'Looney, 1995).

The institutional manifestation of the dichotomy between individuals' rights (especially absolute private ownership) and the community's rights (or public good) can be found in society's varying commitment to instruments for planning as well as markets, with owners generally preferring minimal restrictions:

> Both landowners and industry have systematically opposed regulations, even those that have been demonstrated over time to efficiently improve health, sustainability and property values. The opposition ranges from 'paperwork reduction', the simplification of self-reporting, to deregulation. (Felleman, 1997)

As Denman (1978) notes,

> The land use pattern of an area is, at any one moment, the outcome of decisions taken within the competence of particular property rights and within the confines of proprietary land units.

Further, he argues that:

> ...a survey of all factors affecting or likely to affect development of land should, therefore, cover the proprietary land units and a record systematically prepared of the land assets and motives of the holders of the proprietary land units (Denman, 1978).

These records are, of course, cadastres, and they enable planning by government to cooperate with owners of the land in order to 'set property rights and planning power in true perspective'(Denman, 1978).

Zoning

Zoning is an example of specific and prescriptive public planning. It has two purposes. Firstly, zoning protects the economic value of neighbourhood real estate by keeping districts homogeneous. In the early days of US development, zoning was a response to serious tax base erosion and property abandonment in New York and other large cities due to uncontrolled speculative construction (Boyer, 1983). Secondly, based on national guidelines, zoning spatially segregates the location of

various land uses to zones and each zone has unique requirements for minimum lot sizes, yards, and structural heights (USDC, 1931).

The role of planners

Planners have a unique and onerous responsibility to represent the community or public interest in a dialogue with individual owners about what their ownership rights and responsibilities shall entail:

> The changing role of planners from 'form givers' to planners who serve as 'facilitators' has parallelled the development of metropolitan and rural land-use planning (Fabos, 1985).

No doubt, it would be far preferable for planners to work with owners in the planning process, for reason of enforcement and also for quality of the planning process itself:

> If we could remove the animus and in its place find a way to concerted action in cooperative planning between the planners and the holders of the property sanction over land, there would be released a tremendous new energy and hope for a better planned use of land and resources in the future (Denman, 1978).

Goodchild and Munton (1985) found that the owner's role in the development process could not be ignored because, firstly, the privatisation process will transfer more influence to the private sector and, secondly, as most people are not professional landowners financial incentives are not in themselves sufficient motivation to change. They also concluded that the planner is the more objective agent in the process of dialogue about development processes and plays a facilitative role as well as being the final arbiter:

> In principle it is right that the planner rather than any other actor in the development process should largely determine, albeit in discussion with other participants, the amount, location, and timing of development because, a few cases aside, the planner and the elected member are the only actors without direct financial interest in the outcome (Goodchild and Munton, 1985).

Also, apart from statutory enforcement, it is advisable that planners understand and work with the realities of the forces of the market to assist with the implementation of planning objectives:

> Planners and policy makers should learn to manipulate the market in land to assist in the achievement of planning ends (Goodchild and Munton, 1985).

Decentralisation

Another commonly acknowledged phenomenon to note is the trend towards decentralisation of governance:

> The focus of decentralisation, the increased involvement of the public in land-use decision-making, all suggest the importance of local planning. But at the same time local planners have to understand that the development of every acre of productive agricultural land decreases that resource base nationally and internationally. ...Dispersed land uses or poorly located developments demand unnecessary amounts of oil, gas, or coal from the limited supply of the global non-renewable resource base. (Fabos, 1985)

Decentralisation goes against the flow of traditional notions of economic development and modernisation that have 'tended to favour both large-scale, private-sector institutions and facilities for production and distribution, and correspondingly, large-scale public institutions to regulate the private sector ones' (O'Looney, 1995).

Decentralisation of government tends to focus on delivering services, policy-making and consultations with the people as locally as possible. The general advantages are (Enemark and Sevatdal, 1999):

- Local communities are able to make adequate responses to resource pressure.

- The relationship between central and local levels is important; political responsibility and financial accountability must be combined at each level; local institutional development is a response to policies at central level.

- Local institutions matter; peoples´ behaviour patterns are framed more by local then central institutions. Policies and actions devised at central levels are mediated through local community institutions.

- Monitoring is important. Without efficient monitoring of the conditions of the resources in question, no actions can be taken either on central or on local levels. According to context, access to information of this kind must be readily available and affordable, and the local level should be involved in the monitoring process. The

emphasis on monitoring has a very direct implication for the design of adequate land information systems based on the cadastral identification.

The Danish approach to land use management is illustrated by Figure 4.1 below. Note the approach is to allow the legal acts and processes and the information sources to feed into the land use management processes.

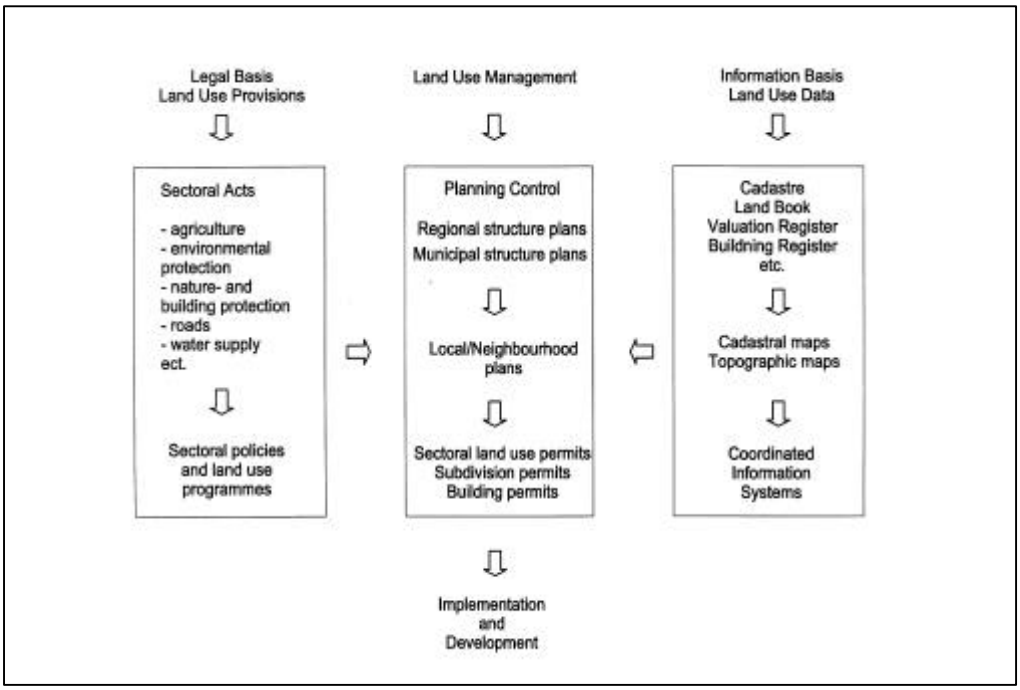

Figure 4.1: The Danish Concept for Land Use Management
Source: Enemark and Sevatdal (1999)

Integrated management

An observed feature of environmental law and administration has been the growing interest in integrated and holistic approaches that may be more time-consuming but could result in progress towards sustainability (Selman, 2000). The influence of international bodies interested in environmental management has also driven national and sub-national administration towards standards of best practice (Selman, 2000).

Environmental and institutional development projects by the World Bank have tended to focus on 'the process of creating or strengthening environmental institutions rather than improvements in environmental policies or innovative programs for environmental management' (WB, 2001). The World Bank has noted that through the

1990s there was a tendency to focus on projects-based policy, with relatively little attention to linkages between environmental and developmental objectives such as agriculture, infrastructure, tourism and even macro issues such as the trade regime (WB, 2001).

The World Bank has now placed an emphasis on community capacity-building:

> At the local level, the WBG can work to help set environmental standards, enhance the ability of local communities to participate in decision-making that can help them maintain their livelihoods, gain access to resources on an equitable basis, and use those resources sustainably (WB, 2001).

A good example of the development of thinking and initiatives for integrated management is in the area of catchment management:

> Water management is linked to land management. Integrated management is essential and involves addressing practices which led to soil erosion and silting of streams and reservoirs, land and water salinity and water pollution...(Marsh, 1991)

Flowing on from the acknowledgment of an integration of land and water issues is the development of institutional responses through legislation as well as administrative action:

> The next step in the evolution of planning came when the Federal government started to mandate an integrated approach. The Nation's Water Resource Act of 1965 was one of the early acts which made integrated water and related land resource planning a legal requirement. This act created a cooperative framework between the Federal government, state, local governments and private enterprise. The water and related land resource planning which was overseen by the Water Resources Council was actually carried out by 18 regional groups, each including several states. (Fabos, 1985)

4.5 INSTITUTIONAL AND LEGAL FRAMEWORKS

Institutions are an expression of a society's prevailing attitudes, values and choices:

> The formal structure of organisations are seen, at least in part, to represent theories of action that embody the prevailing cultural logics. Rationalities are contextualised. (Scott, 1995)

This also happens at the macro level of a nation's policies, government structures and legislation. Previous chapters examined the progress that had been made by the environmental movement from a fringe activity into mainstream politics and then gradually into legislation and institutional structures.

This section of the chapter will narrow down discussion to rights and restrictions in land and the institutional mechanisms related to their administration. It will cover some of the key considerations in the establishment of legal and institutional frameworks. Sub-section 4.5.1 discusses the alternatives of standards and rules as the bases for approaches to law making. Sub-section 4.5.2 explores property rights in the context of the broad categories of expansionary and exclusionary rights. Sub-section 4.5.3 builds on the previous sub-sections by discussing the legal and institutional aspects of balancing State and private interests.

4.5.1 Standards vs Rules

Article 17 of the United Nations Declaration on Human Rights that was adopted and proclaimed by United Nations General Assembly resolution 217 A(III) of 10 Dec.1948 clearly states in sub-articles 1 and 2:

1. Everyone has the right to own property alone as well as in association with others; and
2. No one shall be arbitrarily deprived of their property.

Policies, rules and institutions continue to evolve as there are substantive adjustments to the content of policies and also procedural adjustments to the way such rights and responsibilities are managed. An example of such adjustment would be the view that property rights exist within parameters of social and environmental obligations to the wider community, and that such a legal principle of property ownership with inherent obligations exists in the capitalist economy of Germany (Raff, 1998). The German Constitution has been interpreted by courts to mean:

> ...when a citizen has an obligation to preserve or maintain an environmental quality of his or her property, article 14(2) [of the German Constitution] can preclude a right to compensation for what would otherwise be an interference with private property initiated under a law made to express that obligation (Raff, 1998).

In a dynamic environment of tension between social, environmental and economic drivers, it is debatable whether it would be better to encourage more legality through rules or to allow more room for standards, which can be more informal and flexible:

> Legal formalists and classic liberals argue that although a review of legal rules for direct bias and coercion should be part of legal processes, the extensive adoption of standards in lieu of rules could result in a reduction in individuals' rights and in the benefits of certainty....Standards demand that society continuously discover the meaning of the standards in new contexts. ....Standards suggest an open-ended dialogue about the reasonable relationship among various communities or within a single community. Standards would allow judges to attempt to decide whether the community had used its police powers (such as to effectively exclude others) in ways that would lead to an undermining of the ideal of community itself. (O'Looney, 1995)

Similarly, there have been studies of different planning regimes, and whether more formal and coercive measures for intergovernmental mandates work better than cooperative approaches. Berke et al. (1997)compared New Zealand's (NZ) more cooperative approach and Florida's more coercive approach. Their work showed that the Florida approach produced a stronger planning basis and regulatory policies in plans, but could have benefited from NZ's building of sub-national political commitment in advance of the planning work. Also, although the NZ system created strong goals they lacked specificity, technical capacity-building and selective use of funding rewards, which are more characteristic of the Florida approach (Berke et al., 1997).

More formal legal rules and regulations such as the requirement to pay compensation for damages have the advantage of permitting mechanisms for penalties to fall on the wrongdoers, but there are instances when even this does not work well:

> While compensation is better than no compensation from the 'good policy' perspective of having polluters internalise the full cost of their operations, buy-out programs neither reduce the potential for toxic emissions nor take into consideration the impacts on community life as a whole (Austin and Schill, 1991).

In short, standards have the advantage of being more informal and flexible whilst rules provide more legality and certainty.

4.5.2 Property Rights

From the time of the industrial revolution, the concept of a corporate citizen was introduced that gave a company status as a legal entity with the capacity to own and dispose of property. A matching counter-dimension of rights and institutions was developed, and the impact of the creation of corporate citizenship was that:

> As expansionary capital was collectivised through the recognition of corporate citizenship in the early industrial era, there was a need to balance the growth of expansionary rights with a similar growth of exclusionary property rights. Hence, a parallel collectivisation of exclusionary rights can be seen in the development of land-use planning and zoning controls and the widespread use of restrictive covenants. (O'Looney, 1995)

Property rights can be classified broadly into expansionary and exclusionary rights. O'Looney elaborates that these two aspects of property rights represent 'balancing the social power of expansionist capital with the preservation of entrenched users living in specific communities' (O'Looney, 1995). In turn, Marxist theory is useful for explaining the expansionist–production side of land-use conflict dynamics, while consumptionist theory is more effective in explaining the exclusionary side of this dynamic (O'Looney, 1995).

In essence, as Plotkin (1987) suggests, capitalism necessarily requires this counter-balance between expansionary and exclusionary rights because 'they stem from the contradiction between fixed and circulating capital'. Plotkin goes on to say that, as both dimensions are necessary, it is up to the courts to regulate them:

> In the end, any policy in consistent support of expansion or exclusion rights would shatter half the expectations of capital. Thus it has been left to the law courts and local and regional administrations of capitalist governments to regulate, however awkwardly, the force and counterforce of capitalist property, to keep rights moving or to keep them from caving in on the rights of others. (Plotkin, 1987)

O'Looney (1995) draws two observations from Plotkin's theory on Expansionary and Exclusionary rights. Firstly, 'interest groups do not simply form in a willy-nilly fashion; they are shaped by very basic legal structuring, especially around property rights' (O'Looney, 1995). The state, through the judicial arm, plays the 'major role in restructuring the interest relationships around an expansion–

exclusion dynamic'. Such a role of the judiciary would, however, compromise the classic liberal notions of clear standards, because the courts can only deal with conflicts as and when they arise, and usually in relation to single land parcels (O'Looney, 1995). Secondly, the other classic liberal notion of representing private rights solely through the legislature is therefore eroded because, as Plotkin suggests, the expansionary and exclusionary property rights effectively organise interests into two large blocks, rather than numerous individual interests as required by classical notions of democracy. O'Looney also points out that the 'dominant position of the judiciary in articulating these rights would place this branch in a more sovereign role than was originally conceived'.

The judiciary are limited to addressing matters on a case by case basis and, because of the various tiers and branches within the court system, it is 'impossible for the broad and multiple interests at stake in land-use policy to be effectively heard' (O'Looney, 1995).

O'Looney (1995) notes that the State supports expansionary rights with instruments such as creation of abstract titles 'that can either be used to change the land for productive purposes or sold to absentee owners who will perform this function'. In the case of exclusionary rights, there are laws that grant 'rights against unlawful trespass and rights against other neighbouring property owners using their lands in ways that would be injurious to private parties or the community in general' (O'Looney, 1995).

To better support sustainable development a land administration reform would need to consider how to address these two aspects of the property rights of owners.

4.5.3 Balancing Power and Dialogue: By Leverage, not Grace

Critical Legal Studies advocates have long shown that existing law and institutions are the product of social conflict and choice that reflects the dominance of different groups or classes (O'Looney, 1995). As discussed in Chapter 2, Powelson (1988) concluded in his book *The Story of Land* that reforms to tenure systems by 'leverage not grace' were brought about by an institutionalised process of negotiation between sovereign and subjects. They were the products of societies where the sovereign had

to negotiate more and be more accountable to the people. In these cases, Powelson found that the resulting tenure systems were more secure than those that had been granted simply by the grace (or whim) of the sovereign concerned. In a similar vein, Glaeser and Schleifer (2000) found that the common law system was more minimalist than the civil law system in its intervention, because of the need for the sovereign to win over the support of his people. This meant that the common law system was more supportive of free enterprise creativity than the more prescriptive civil law systems, which were the product of sovereigns who had less need to rule by negotiation.

For a legal system to protect property, coercion and corruption must be restrained (Glaser and Strauss, 1967). Powelson (1988) argued that reforms by leverage not by grace tend to stand the test of time because a system is better established fair and square by leverage of power balance between sovereign (the State) and the people rather than the through whim of a sovereign.

Building on the principles put forward by Powelson and Glaeser, it can be argued that the same principle of institutions being brought about by leverage rather than grace apply to the land law and administration systems that exist in common law systems. On the other hand Powelson (1988) noted that the more prescriptive civil law systems have by and large grown out of societies where law and institutions were more the product of grace than leverage, and therefore more susceptible to monarchial whims and less dependant on popular support. These findings are significant for land administration and sustainable development, because the institutions of governance need to facilitate negotiations between public and private rights and responsibilities in relation to land and land use.

The value of appropriate legal and institutional frameworks for economic growth has long been appreciated, and has therefore developed a significant degree of sophistication:

> Trade requires that property rights be defined and enforced, and that a legal framework be present before property rights can be exchanged to allow markets to work. An important reason for the industrial revolution beginning in England was that its well-developed and independent legal system provided security of tenure for private property (Hartley and Porter, 1991).

In the present age, when environmental and social issues are also jostling for recognition, sophisticated, workable processes need to be developed:

> ...in regard to the environment and the economy generally, governments have a primary responsibility for setting up and enforcing effective legal frameworks within which private parties can act to further their own multitudinous goals (Hartley and Porter, 1991).

Registration of land ownership has tended to sit side by side with the State's rights to impose other restrictions by law. It sits within the context of a particular society's definition of what ownership should entail. It also sits within the forces of priorities set by society, which can compete as well as converge:

> The forces leading to economic policy convergence also work in the direction of environmental policy convergence (OECD, 1997).

The challenge for societies in the age of sustainable development imperatives is that, as stated over and over again in seminal documents such as Agenda 21 and Habitat Agenda, decision-making has become so complex that it must necessarily take place in a decentralised manner. This issue of complexity is a worldwide trend that is forcing every level of government and society to re-think its frameworks of decision-making:

> Centralised, authoritarian corporations have been failing for the same reason that centralised, authoritarian states have failed: they cannot deal with the informational requirements of the increasingly complex world they inhabit (Fukuyama, 1999).

Thus governments around the world have been experiencing the push to go back to 'core business' and abandon any vestiges of Keynesian approaches to managing economies. Privatisation is one of the common approaches used:

> Most of the world's 165 states, stimulated by the prospect of political gains and economic benefits, will continue to implement policies intended to promote privatisation and deregulation within a variety of socioeconomic systems (Gayle and Goodrich, 1990).

Institutional and legal frameworks are the product of particular sets of needs that are dictated by society through the processes of government and public administration:

> Property laws in this sense reflect the social choices that citizens make with respect to whether they give priority to freedom, equality, security, or some other value and whether their lives will be organised around individual choices, group choices, or dictated by a 'sovereign' who chooses for individuals (O'Looney, 1995).

It has been argued that, from the perspective of sustainable development, partial interests in land are preferable to simple absolute ownership (Wiebe and Meinzen-Dick, 1998). Controls over land have always existed, and the English commons is one example. Based on research in the United States, 'partial interests have proven to be flexible, popular, and effective tools for land use and conservation policy involving lower political costs than a strict regulatory approach and lower acquisition costs relative to outright land purchase' (Wiebe and Meinzen-Dick, 1998).

The role of public administration is to efficiently manage on behalf of others:

> The conflict currently existing between environmental policies and economic growth is exacerbated by the lack of rules and procedures applicable to many environmental projects. Governments in Australia should, as a priority, pursue the goal of uniformity on critical environmental issues together with the development of agreed guidelines and resource security on key proposals (Dent, 1991).

In short, there is a significant place for the State administration to be involved in the process of land administration. The key consideration is how the institutional mechanisms will provide for the interaction across government departments as well as into the different sectors of the community, be they individual owners, private corporations or community special-interest groups. This leads us into the next discussion, which is about the potential of information infrastructure to support the level and extent of dialogue necessary for sustainable development.

4.6 INFORMATION INFRASTRUCTURE FOR SUSTAINABLE DEVELOPMENT

In light of the above, a land information infrastructure needs to support informed decision-making, not only within government, but also in the community and by individuals. The task for planners can be particularly challenging:

> The challenge for planners remains one of getting better information on the complex cause/effect relationship of land-use decisions on people's wellbeing, on their economic prospects, and on their environment (Fabos, 1985).

Fabos (1985) identifies the common characteristics of land-use issues:

- All land-use issues present or generate one or more uncertainties;
- Each can be perceived as both a problem and an opportunity;
- All land use issues have a supply and demand effect;
- All issues can be dealt with either systematically or conceptually.

The serious institutional issues are those of increasing regulation and increasing administrative fragmentation and therefore decreased data coherence (Felleman, 1997):

> Our most extensive source of environmental information is contained in the numerous Federal, state and local regulatory systems which document the public control of human activities. This source is highly fragmented due to the multiple jurisdictions involved and the legislative and administrative tendency of regulations to focus on narrow problems.
>
> Environmental regulations emerged in the post-WWII period as the primary means for reducing pollution and protecting natural resources. The history of the regulatory movement has been one of increasing regulation accompanied by increasing administrative fragmentation. The regulations are the largest generator of environmental data. The majority of this data is highly localised, second party self-reporting. Its primary format is the hard-copy application file, which includes permit forms, maps, technical reports and agency correspondence. Typically, only selected summary data ever gets into a digital format.

Science and technology have much to offer in the way of processes towards finding solutions in a world of complex interests and stakeholders. Technology such as remote sensing has greatly assisted with the visual presentation of data as accurate maps for mineral exploration, landform surveys, coastal surveys, and crop and forest evaluation (Marsh, 1991). Spatial data infrastructures are starting to find prominence on agendas in different countries. It is important to balance the enthusiasm for science with an understanding that it is not always as objective as it is made out to be:

> Probably the greatest failing of positivistic philosophy and science has been the attempt to separate fact from value, by the argument that the basis of scientific knowledge can always be separated from ethical considerations. This gave rise to the mistaken notion that science could be in all circumstances value-free, or neutral and objective. What is now clear is that scientific and technological development for industrialisation hitherto focused mainly on one goal—growth—and on the means of achieving it can no longer be divorced wholly from social goals or ethical and ecological considerations. (Carley and Christie, 1992)

Information technologies today have significant potential to assist with discussion about rights and responsibilities between the different sectors of society and varieties of stakeholders. Technologies such as Geographic Information Systems have the potential to present data collected by various stakeholders in a spatially related sense. But the science has to be ready to service multi-dimensional and multi-stakeholder discussions about land-use:

> Similarly, our response to science could improve greatly. Much of the current application of science to land-use decisions is also reactionary. ... most scientific efforts deal with problems such as how to reduce the stresses we have created by urban concentration or through any of the monocultural land uses. Applied science would be more useful in helping us determine the carrying or holding capacity of landscapes, or in providing land-use planners with opportunities for growth and options for a greater degree of landscape utilisation, instead of focusing on corrective measures. (Fabos, 1985)

The extent to which people are willing to allow their personal and property information to be open to public scrutiny will affect the extent to which data would be made available for spatial data infrastructures:

> Generally however, we live in a society in which the confidentiality of information on private property is widely upheld. ...A full land register would indeed be expensive to draw up and to maintain. But some owners do not behave in such a manner and society has of late become increasingly concerned about the ownership of property. ...The case for disclosure is strongest in situations of land-use conflict and change, and where society accepts a significant degree of intervention in market forces through the planning system and its associated land policies. The urban fringe and the inner city are two such situations but we are no better informed about the ownership patterns than elsewhere. (Goodchild and Munton, 1985)

Privacy issues aside, some countries are having difficulty in establishing even a basic source of data:

> There is no publicly available land register and associated cadastre giving a mapped definition of property boundaries for England and Wales which also records the beneficial interests of owners or occupiers in particular properties (Goodchild and Munton, 1985).

Community-based decision-making requires a change in the organisation and operation of information systems. A planning strategy is an aggregate of: (a) knowledge about the state of the environment as a rolling audit of existing conditions and resource issues; (b) a management plan showing planned activities; (c) information services to analyse design constraints and options; and (d) evaluation to refine and modify the progress of activities that could affect the environment and the consequent plan. Delegation of decision-making to the community means that they have to be responsible for these land use management processes and have the capacity to undertake analysis and evaluation. So, the key distinction between an agency-driven approach and a community-driven approach is control of the information, evaluation and the decision-making process. Empowerment of community-based groups means they have involvement and ownership of both information and decision processes (Walker et al., 1998).

The technical capability now exists to combine GIS with other forms of representation as well as to other media. Linking narratives, oral histories, photographs, moving images, and animation, to GIS provides enormous capability to increase not only the richness and diversity of the information available but more closely parallels the ways in which communities know or conceive their space. The linkage between GIS and multi-media systems is an obvious connection in this context and holds considerable potential for extending the knowledge base of GIS (Harris and Weiner, 1999).

Sustainable development's challenge is: how can dynamic communities with changing needs, aspirations and technologies maintain a sustainable linkage with an environment that is itself dynamic and constantly changing? This clearly requires an adaptive process. The first practical step towards achieving it is to make public participation in local environmental decision-making more effective (Meredith, 1998).

For example, in Milwaukee, six grassroots neighborhood organisations pooled their resources to pay a programmer to develop an information system program for organiser-based groups to share their data. The information system was designed as a Community Information System with substantial links between client and member addresses and a property–parcel/ unit frame using City of Milwaukee data (Barndt, 1998).

Effectively visualizing information is especially important within a collaborative planning context. First, there are multiple participants—concerned citizens, experts and technicians, or decision and policy makers (Heckman, 1998). Each participant may perceive and employ visualisation differently depending on previous life experiences, layers of their identity and their expertise (with the decision-making/planning process. Second, participants refer to places in temporal terms (i.e., past, present, and future) (Heckman, 1998). Visualisation is useful in assisting discussions about activities that take place over time. Understanding the range and diversity of visualisation is a key to participation and empowerment in neighbourhood planning.

To achieve the outcomes of a land administration framework that adequately supports sustainable development objectives, a reliable, accessible and interoperable information framework needs to be available not only to planners and policy makers, but also to ordinary individuals. Appropriate information frameworks need to be worked into the land administration framework to facilitate better decision-making through participative governance and participative administration of rights and responsibilities over land and land-use.

The information technology revolution has the potential to assist in complex decision-making for sustainable development. Geographic information systems and spatial data infrastructures make possible the collection and integration of data that can be spatially related for the purposes of planning as well as dispute resolution. Society’s task is to determine the balance between access and privacy.

4.7 CONCLUSIONS

Sustainable development philosophy has required a re-thinking of the way government and governance structures reflect the changing balance of rights and responsibilities between individuals, the community and the State.

In the most basic form of government, the sovereign embodied law making, justice and administration. By virtue of possessing all these functions, the sovereign could impose his/her will on the individual and the wider community. Select community groups (such as lords) had better access to the sovereign and individuals could obtain access by appealing to or gaining membership of a select community group. This was in turn reflected in the system of land administration, whereby the sovereign determined who held what rights and for how long, whether as individuals or as a community. Figure 4.2 below illustrates that the sovereign had ultimate decision-making powers over the people, whether as communities or individuals.

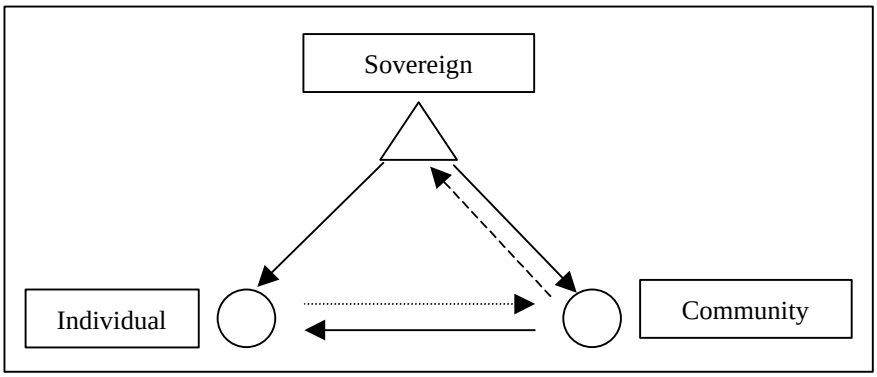

Figure 4.2: Decision-making in basic kingdom structures
Ting (2001)

The classic democratic state (Figure 4.3) has separation of powers between the legislature, the administration and the judiciary:

- The legislature is made up of parliamentarians who are held accountable to the people by periodic elections where individuals may cast votes, and the cumulative voting force of communities/electorates (thus the dotted arrow between individuals and communities)

- The legislature as representative of the people, creates laws that bind the people and are to be implemented by the administrative arm of government (note the double-shafted arrow in Figure 4.3);

- The administration is accountable to the legislature and also informs the legislature;

- The administration implements the legislature's laws unto the people and can seek enforcement through the judiciary, on a case by case basis;

- The people can in turn, on a case by case basis, hold the administration accountable for the decisions that it makes in the course of implementation—thus the existence of administrative law to facilitate review of administrative decisions.

In the classic democratic state, the people largely express their opinions through the representative democracy processes of the legislature. The people tend not to become involved in administration, which is accountable to the legislature.

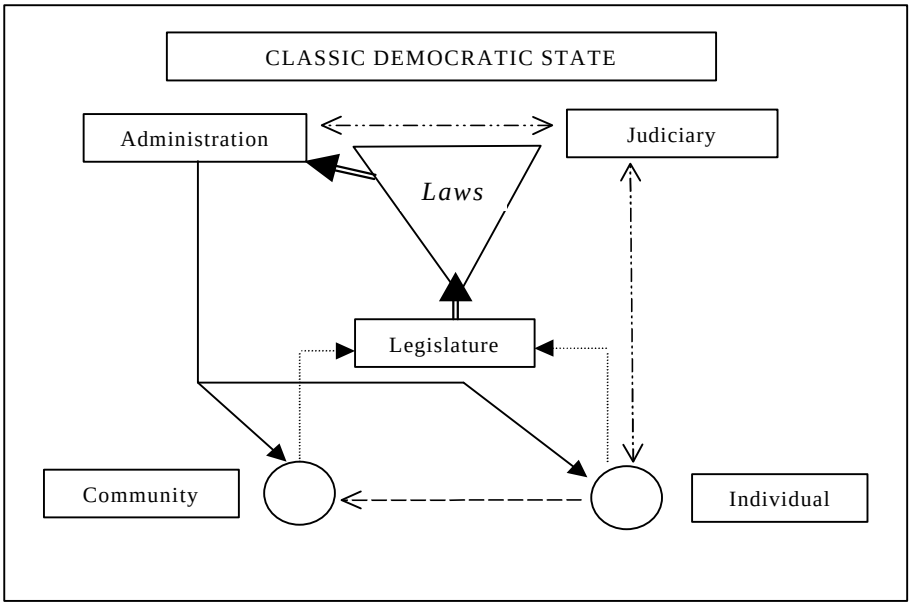

Figure 4.3: Classic democratic state
Ting (2001)

Traditional philosophies of governance no longer adequately describe the trends in governance. Similarly, the governance structures for land administration to support sustainable development are inadequate because the stakeholders in the discussions about the changing balance of rights and responsibilities over land and its use are becoming so diverse and localised.

The process of re-designing institutional and legal frameworks needs to take into account whether the preference would be for a legal system that leans towards rules or more towards standards. It would also need to consider what sectors of property rights are to exist, e.g. individual, State, community, private corporate entities and also how to institutionally facilitate discussion between these different sectors about the changing rights and responsibilities over land and its use. The emphasis on information to support such complex decision-making about rights and responsibilities for sustainable development results in a need to include information infrastructures that can support such discussions.

This chapter concludes the three background chapters for this thesis. Chapter 5 summarises the conclusions to be made from these background chapters and explain the research design to be used in the case studies of New Zealand and New Brunswick, Canada.

5

RESEARCH DESIGN

5.1 INTRODUCTION

The previous chapters discussed the problem enunciated in Chapter 1 by exploring the evolution of the relationship of people with land and the growing understanding of the need to address sustainable development in a manner that embraces the appropriate application of technological innovations. This chapter outlines the research design to be applied towards defining the principles that would guide the development of a framework for re-engineering land administration systems to address this problem.

Section 5.2 outlines the problems or key questions that arise from the discussions in Chapters 2 and 3. Section 5.3 explores the research approaches available and selects the case study method as being the most suitable for the purposes of this research. Section 5.4 explains the choice of case studies for this research, and Section 5.5 outlines the research procedure to be followed in the selected case study countries.

5.2 BACKGROUND

The background discussions in Chapters 2, 3 and 4 may be summarised into several key points that will guide the path of enquiry to be taken.

Firstly, land administration systems have evolved in response to the changing relationships of people to land. Secondly, changes in values and priorities have affected the balance of power, rights and responsibilities between the private and public sectors of society—these are given expression in formal institutions such as structures of government, law making and enforcement as well as informal structures such as social capital and norms. Thirdly, sustainable development has become an important driver of the need to reconsider the balance of rights and responsibilities between diverse sectors of government and society. Fourthly, existing land administration systems need to respond to sustainable development objectives, which cover economic, environmental and social issues such as indigenous land rights. Fifthly, processes for participatory decision-making within government and between government and the community for redefining the balance of rights and responsibilities are needed. Sixthly, the achievement of sustainable development objectives appears to have been hampered due to the lack of appropriate good governance and the need for appropriate legal, institutional and information infrastructures to support broad-based decision-making.

This thesis aims to investigate what principles should guide the development of land administration infrastructures to address the evolving rights, restrictions and responsibilities between government, private sector (corporate entities), community groups and individuals to support sustainable development objectives. It would thus be appropriate to study the approaches taken in various countries to glean principles to construct an appropriate framework for the re-engineering of land administration systems. The research in each of these countries will need to:

- Note whether changes have been evolving to balance rights, restrictions and responsibilities over land and its use;
- Determine whether the components of the existing system address the need for coordination of land policies to reflect those evolving rights, restrictions and responsibilities;
- Examine some examples of coordination of work and decision-making relevant to land administration within tiers of government, between tiers of government, and with the private sector and the community;

- Explore what supportive role could be played by advances in information technology;
- Identify innovations and trends that could be useful in the final framework for re-engineering land administration systems.

The research approach taken will need to address these objectives.

5.3 SELECTION OF RESEARCH APPROACH

The two main research approaches considered were detailed postal surveys and face-to-face interviews. Postal surveys would permit land administration systems in a very wide range of countries to be examined. However, the multi-faceted nature of land administration means that it would have been very difficult to determine which department/s or individual/s in each country should receive the postal survey. Moreover, the wide range of issues to be addressed and the diversity of categories of people and organisations to be covered in the research as well as the breadth of possible answers would have resulted in lengthy and unwieldy postal surveys which people would be unlikely to complete and return.

These problems would be readily resolved in personal visits to case-study countries, which would permit face-to-face interviews. This approach allows flexibility to tailor the inquiry to better fit the interviewee's background and jurisdiction, and also allows exploration of the contextual circumstances that affected the interviewee's answers and perspective. It can be used in conjunction with a questionnaire format to obtain basic background information and to facilitate the general structure of the interview process. However, time limitations and the logistics of face-to-face interviews would limit the number of countries to one or two case study systems.

It was decided to use a case study approach. The reason for choosing this approach is set out below. According to Yin (1993) case study research is appropriate when there is a need to:

- define topics broadly and not narrowly;

- cover contextual conditions and not just the phenomenon of the study;
- rely on multiple and not singular sources of evidence.

In relation to these criteria, land administration and sustainable development are broad topics of enquiry, and an understanding of the contextual conditions such as economic, political and social forces is relevant to examining the formation of the legal and institutional processes being studied. Furthermore, there are multiple sources of evidence to be studied, ranging from interview material to legislation, government policies and literature or brochures produced by government as well as non-government groups.

Case studies are useful because they can provide a close reading of individual examples of a society as well as focus on the system of actions and relations; rather than a one-time cross-section of individuals (Feagin et al., 1991).

Yin (1993) makes a distinction between descriptive, explanatory and exploratory case studies. The descriptive case study theory approach will be applied in this research because the aim of the case studies will be to observe and describe what trends exist in the current structures of government and in the community for decision-making (within land administration) that are supportive of sustainable development. Furthermore, each study will be conducted in a one-time data collection effort in which only post-hoc longitudinal data can be collected, with a view to conducting analytic generalisation.

5.4 CHOICE OF CASE STUDIES

The case study subjects were chosen based on the following criteria:

- They have established land administration systems;
- They have a political commitment to environmental issues;
- They have a history of indigenous rights movements;
- They are accessible;

- The legal or institutional aspects of their land administration systems include existence of a feature or innovation relevant to this research. An innovation would be some new institutional procedure, policy or legislation aimed at helping land administration to better support sustainable development.

New Zealand and New Brunswick, Canada, were the primary case studies chosen, with some supporting material from Victoria, Australia. All these places have experienced environmental and indigenous rights movements that have entered mainstream political platforms. All of them are Commonwealth countries with similar legal and political heritages. New Brunswick is a province of Canada, and Victoria is a state of Australia. The advantage of including federal systems such as these is that they provide an extra dimension to the study of intra-tier governmental interaction. This permits comparison with New Zealand, which is not a federal system. Consideration was given to Victoria, Australia. Some field research was conducted on Victoria but the outcome of the landmark Yorta-Yorta case—the first case to be heard since the enactment of the Native Titles Act in 1993—was that there had not been an unbroken occupation of land by the indigenous peoples making the claim. The following is an excerpt from the judgment that was upheld on appeal (FCA, 2001):

> The facts in this case lead inevitably to the conclusion that before the end of the 19th century the ancestors through whom the claimants claim title had ceased to occupy their traditional lands in accordance with their traditional laws and customs. The tide of history has indeed washed away any real acknowledgment of their traditional laws and any real observance of their traditional customs. The foundation of the claim to native title in relation to the land previously occupied by those ancestors having disappeared, the native title rights and interests previously enjoyed are not capable of revival. This conclusion effectively resolves the application for a determination of native title.

This had ramifications for the legal and institutional responses that would have been the focus of this research. Thus Victoria would not have met with the third criteria for selection of a case study. Consideration was also given to including a case study of a developing country but:

- the vast difference in priorities and resources;

- the fact that many developing countries either do not have a well-developed land administration system or might possess a transplanted land administration system from a Western donor;
- the very different political, economic and social heritages;

led to the decision to study only comparable Western examples—namely New Zealand and New Brunswick, Canada.

Networks of contacts in government and academia were also available in New Zealand and New Brunswick to open up access to at least some of the right people and organisations. These then led to other contacts and referrals.

These places had different innovations in their approach to the issue of sustainability and land administration that were worth studying within their local contexts as well as for comparison between case studies. In New Zealand, the Resource Management Act 1991 (RMA) was notable for focusing attention on the need to manage land and its resources in a holistic manner and with emphasis on wider consultation. Another interesting feature of the New Zealand system was the restructuring of central and local government that dovetailed with the RMA. In New Brunswick, Service New Brunswick was an interesting innovation in the structuring of management and access to information relevant to land administration as well as government services. There were also notable aspects of its relationship with central and local governments in Canada's federal system, such as the multi-tier Rural New Brunswick initiative and the role of the Auditor-General's Office in promoting sustainable development objectives in policy-making.

5.5 RESEARCH METHODS

The research used a primarily qualitative approach based on interview material and the survey data from the questionnaires. Upon selection of the case studies, the duration of each study trip was determined based on the estimated number of places that needed to be visited, and the number of organisations and people that needed to be interviewed. The general strategy was to locate relevant government departments,

non-government organisations, a selection of industry groups, and special representative groups such as indigenous peoples.

The broad objectives identified in section 5.2 will be addressed by the gathering of data from written and electronic sources as well as interviews and background questionnaires.

The questionnaires were prepared with the aim of obtaining general information about the institutions targeted for data gathering. This included information about the institution, the extent of its interaction with other institutions, the existence of public consultations and participation, and the supportive role (if any) of information technology tools such as Geographic Information Systems (GIS). As explained above, the primary research data will come from the interview process. The interview would generally seek to find out:

1. What respondents understand to be sustainable development issues relevant to their organisation/group's area of work;

2. What rights and responsibilities over land and land use their organisation is involved in administering or campaigning for or seeking to change.

3. How they consider that their work and that of other public or private sector organisations could be coordinated to formulate and implement policies on land rights and responsibilities;

4. How they use information technology in their decision-making;

5. Whether and to what extent they consider it relevant to ascertain society's dynamic needs in policy-making and implementation, decision-making about specific cases, and information creation and exchange;

6. Their perception of the inter-relationship (if any) between information infrastructures and good governance;

7. Any innovations that have been or should be implemented to improve the land administration framework to support sustainable development.

In each of the case studies, a letter of support was obtained from the supervising PhD Professor as well as a prominent person in the government or academic circles of the target country. These letters were forwarded to potential interviewees with a cover-sheet that explained the reason for the research, together with a brief questionnaire. This questionnaire was a systematic way to obtain basic details about the organisation being interviewed, and to introduce the general lines of enquiry outlined above.

The target organisations were central government, local government, and state/provincial government (if there was a federal system), professional associations such as surveyors, valuers, engineers and planners; and non-government organisations such as environmental interest groups, indigenous groups and farmers or forestry organisations. Appointments were also made with academics that had researched various relevant aspects such as property studies, public policy, geomatics, indigenous rights, environment, and planning to discuss their insights into the local context.

5.6 CONCLUSIONS

Case studies will be used to examine current land administration systems, the changes in rights and responsibilities over land and its use, and the way each case study subject addressed these changes from legal, institutional and technology perspectives.

New Zealand and the province of New Brunswick, Canada, were selected for the case study component of this research. The wide range of issues to be addressed, the variety of institutions to be approached and breadth of possible answers led to the determination to use face-to-face interviews rather than postal surveys. This made it feasible to conduct just two case studies in depth. A brief questionnaire was used only to obtain basic background information and to introduce the interviewee to the topics to be covered in the face-to-face interview.

Chapters 6 (New Zealand) and Chapter 7 (New Brunswick, Canada) detail the approach taken in conducting each of the case studies and present the data gathered.

6

THE NEW ZEALAND EXPERIENCE

6.1 INTRODUCTION

As explained in Chapter 5, New Zealand (hereafter NZ) was chosen as one of the two case studies because it fulfilled the criteria set out at sub-section 5.4.

This chapter reports the results of the author's preliminary research in 1998 (one week) and detailed research on NZ in 1999. The study took six weeks and involved trips to Christchurch and Auckland and surrounds to interview local and regional government and speak with regional farmers associations, environmental groups, Mäori organisations and forestry industry groups. The final leg of the research was focused on central government in Wellington.

The report in this chapter and the next on New Brunswick follow a systematic pattern: economic and political trends; rights and relationships in society; legal framework; institutional framework; the role of technology; and the state of land administration.

In this chapter, Section 6.2 outlines some of the economic and political trends in NZ, the general structure of government, particularly in relation to the RMA, and the government's policy on the environment. Section 6.3 covers the changing relationships within New Zealand society and the resulting effect on rights and

responsibilities for land and land use, as well as the balance between the public and private sectors. Sections 6.4 and 6.5 discuss the legal and institutional frameworks respectively, and Section 6.6 outlines the potential role of the technological framework. An overview of land administration in NZ is covered in Section 6.7. The concluding comments are at Section 6.8.

6.2 ECONOMIC AND POLITICAL BACKGROUND

New Zealand (hereafter NZ) is a cluster of two main islands and a number of smaller islands with a total land area of about 270,000 km^2 in the Pacific Ocean. It is geologically youthful and has diverse vegetation and terrain. It is sparsely populated with a population of about 3.8 million people. The Mäori arrived in NZ in the 13th Century and the Europeans arrived in the 18th century. The top exports are agricultural products, particularly meat and dairy products.

NZ has undergone significant legal consolidation relevant to sustainability objectives. It has also undergone far-reaching reforms of local and central government powers that were motivated by economic necessity but nonetheless dovetailed with the environmental reforms as well as international globalisation and privatisation trends. The landmark Resource Management Act 1991 (RMA) has put a strong emphasis on consultation with the community and has specific provisions on Mäori rights. Mainstream consideration of Mäori treaty rights is a phenomenon of recent decades. Mäori rights are relevant to the social, economic and environmental aspects of sustainable development.

In its status report to the UN Department for Policy Coordination and Sustainable Development in 1997, the New Zealand Government stated that:

With the passing of the Resource Management Act (RMA) in 1991 and the adoption of Agenda 21 at Rio in 1992, New Zealand is formally committed to promoting the sustainable management of natural and physical resources as a guiding policy principle. The RMA, supported by a variety of other laws and policies, is the basis on which sustainable development can be achieved. (NZGovt, 1997)

New Zealand faced an economic crisis in the mid-1980s that precipitated the economic restructuring popularly known as the New Right. The government that

came to power in 1984 'faced an immediate crisis brought about by the draining of foreign reserves and finally the suspension of all foreign exchange transactions.' (Walker et al., 1993). Economic growth between 1976 and 1984 totalled only 1.15% per annum and annual inflation was 12%; government net debt as a proportion of GDP rose from 9% of GDP in 1976 to 41% by 1985 (Scott, 1996).

The government that preceded the radical reforms of the mid-1980s had used increasingly interventionist methods that failed to arrest the crisis (Scott, 1996). Needless to say, the New Right is anti-interventionist, and revolutionised government with stringent philosophies on cost recovery and downsizing of government. In a phenomenon experienced by other Western nations, the New Right gained prominence almost in parallel with the rise of the environmentalists ('the greens'):

> Today, many Western societies face a new socio-political antagonism between economic growth, often championed by a resurgent form of liberalism in many Anglophonic countries (the 'New Right'), and ecological protection, advocated by environmentalists. In the sphere of planning at least, New Zealand claims to have resolved the apparent paradox between environmentalism and economic growth through the formulation of a new resource management statute. (Memon and Gleeson, 1995a)

New Zealand was lauded as having undertaken one of the fastest and most radical reforms of economic policy and government management in the world. The basic features of the reforms were (Scott, 1996):

- separation between policy advice and operational units within the administrative arm of government;
- separation between funding, purchasing and provision of services;
- competition between service providers—this required removal of protection for government providers and the introduction of pricing systems based on cost-recovery;
- reallocation of responsibilities between government departments.

Local government responsibilities increased significantly as a result of the reforms. The changes are embodied in the Local Government Act 1989 (LGA'89),

which was amended in 1996 with some financial and accountability provisions. It is noteworthy that, as at the time of writing, there is a new local government bill being drafted. NZ basically has a two-tier system of government. Central government is based in Wellington and there are a variety of local government structures. The Regional Councils (RC) are considered part of the local government tier because they have different rather than superior powers to the more localised councils. For example, RCs are given jurisdiction of water catchment areas that would span more than one local council area. The Local Councils (LC) tend to be defined over smaller areas based on population and political boundaries. In the case of large cities such as Christchurch, LCs may be referred to as a City Council (CC), and in the country areas they tend to be referred to as District Councils (DC). NZ has also set up pilot areas where there has been a Unitary Authority (UA) that replaces and exercises the powers normally vested in a RC and DC.

NZ has innovative environmental legislation in the RMA, and was the first nation in the world to have a Minister for the Environment. Although Agenda 21 post-dated the RMA, New Zealand has made a conscious commitment to implementing it. Pursuant to the RMA, local government is required to produce ten-year plans for the use of resources in their area. Thus there are references in this chapter to District Plans (DP).

On the trade front, the General Agreement on Tariffs and Trade (GATT) has had a very significant impact. New Zealand was one of the first countries to dismantle its tariffs and subsidy system, with dramatic effect on farmers, and therefore on the socio-economic-political fabric of New Zealand. This can have serious implications on land administration and land use. For example, thinking at the international level has moved to consider non-tariff barriers such as poor environmental standards as a cost to be factored into the trade balance formula between countries. As a country reliant on agricultural exports, New Zealand is an excellent example for studying the impact of global drivers on land administration in the context of sustainable development.

The New Zealand government's strategy on the environment is based on eleven basic principles (MFE, 1995):

- Sustainable management;

- The precautionary principle;
- Environmental bottom lines;
- Internalisation of external environmental costs;
- Sustainable property rights;
- Least-cost policy tools;
- Social costs and benefits;
- Pricing of infrastructure;
- Research, science and technology;
- Defining the limits of resource use and substitution;
- Protecting international competitiveness.

Integrated management of natural and physical resources has been interpreted in many ways. One good example is from the Taranaki Regional Council's regional policy statement (PCFE, 2000):

- integration across resource systems;
- integration with social and economic factors;
- integration of actions across a range of time scales;
- integration of responses across management agencies;
- integration of actions within management agencies;
- integration of methods used to implement policies;

- integration with the cultural and spiritual values and resource management approaches of *tangata whenua*.[5]

The Resource Management Act 1991 (RMA)[6] has the specified objective of 'sustainable management'. This is defined in the RMA to mean managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety, while:

- Sustaining the potential of natural and physical resources (excluding minerals) to meet the foreseeable needs of future generations; and
- Safeguarding the life-supporting capacity of air, water, soil and ecosystems; and
- Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

One of the chief architects of the RMA, Sir Geoffrey Palmer, stated that 'the key concept is sustainable development' (Palmer, 1999). But the government adopted the recommendation of the Review Group on the Resource Management Bill that it is inappropriate for the RMA to include such goals as social inequities and global redistribution of wealth (MFE, 1998). The government's Environmental Management Agenda (MFE, 1995) aims to achieve the following:

- Integrate environmental, economic and social policies;
- Establish a coherent framework of law;
- Sharpen the policy tools;
- Build up the information base;

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[5] tangata whenua = Mäori people

[6] This Act will be discussed in some detail in sub-section 6.3.1 and section 6.4.

- Promote education for the environment;
- Involve people in decision-making.

The key features of an effective environmental management system irrespective of the model of local government adopted are: (PCFE, 2000)

- Integrated management;
- Environmental outcomes;
- Separation of regulatory and service delivery functions;
- Interaction with the public.

General issues faced include (PCFE, 2000):

- the need for government to establish and maintain formal arrangements between councils for cross-boundary issues;
- the potential loss of specialist skills that are not being replaced and not readily available from the private sector;
- the need for national guidance on a consistent approach to local government environmental outcome setting and evaluation;
- the uneven distribution of financial resources among councils, which affects their ability to deliver environmental outcomes.

In short, the economic and political infrastructures of NZ have been shaped since the 1980s by some major forces that include globalisation, privatisation, environmentalism and the acknowledgment of Mäori rights pursuant to the Treaty of Waitangi. The restructuring of local and central government was the result of urgent fiscal problems and the New Right philosophies of more streamlined government, globalisation and privatisation. The RMA has had a leading role in bringing environmental concerns into mainstream policy and law, and the local government authorities have had a significant role to play in the implementation of the RMA.

6.3 THE CHANGING BALANCE OF RIGHTS AND RESPONSIBILITIES

This section outlines some relevant changes in New Zealand society such as the rise of environmentalism and Mäori rights as well as some of the tensions these have with farmers and each other. The RMA is a focal point for discussions about sustainable development strategies in New Zealand and also directs attention to other features that illustrate the changing relationships in society that affect the content of rights and responsibilities in land and its use.

6.3.1 The Role of the Resource Management Act

Agenda 21 states at 8.3 that (UN, 1992):

> the overall objective is to improve or restructure the decision-making process so that consideration of socio-economic and environmental issues is fully integrated and a broader range of public participation assured.

The challenge for government is to create equitable access to information and resources by which to analyse and discuss issues with other stakeholders and to lobby government.

In order to encourage full public participation, the RMA took the revolutionary step of doing away with the issue of 'standing'. The RMA provides that 'any person having any interest in the proceedings greater than the public generally' may appear and give evidence at the proceedings. Thus, non-New Zealanders could (and did) initiate objections and appeals even at local council level and take part in consultation processes for production of district/regional plans and so on. This highlights an interesting tension even within Agenda 21, of advocating the global nature of the environment, whilst still seeking to strongly encourage local action and ownership of the process. This opening of wide consultation with the community was a change from the previous planning regime under the Town and Country Planning Act:

> The RMA is a big leap forward because it opens up discussion whereas the Town and Country Planning Act was more prescriptive (Christensen, John. 1999, Banks Peninsula District Council, 25/06/99).

Justice McGuigan decided in a case on the RMA that genuine consultation would include: sufficient information; sufficient time; and genuine consideration of the advice of those consulted (Kandandice, Judge Shona (1999) District Court, Wellington, pers. comm. 16/07/99)

The following parts of this section discuss the positions of major stakeholder groups in NZ, namely the Mäori, farmers, business and community groups and government vis-à-vis each other and the role of the RMA in facilitating such discussion.

6.3.2 Mäori

Mäori Customary Land may be described as all land in New Zealand that has not been transferred into freehold titles by the Mäori Land Court, or ceded to the Crown (Asher and Naulls, 1987) .

The RMA was the first piece of legislation to statutorily require consultation with the Mäori. Essentially, Mäori decision-making is strongly decentralised. For example, the Ngai Tahu, who are recognised as having jurisdiction over two thirds of the South Island, have a central body of statutory force called Te Runanga o Ngai Tahu (TRONT). However, the individual *runanga*, or clans, consider that TRONT shall only have what powers they decide to give them on a case by case basis.

Interviews with local authorities showed that there was a growing realisation that there must be structures in place to better connect with Mäori on their terms, and therefore with their culture. The methods employed include:

- appointment of a Mäori liaison officer;
- payment to Mäori groups to cover costs of time spent on research and consultation;
- leaving it to consent applicants to contact and negotiate with Mäori groups;
- any combination of the above.

The key challenge is that although there has been much talk about biculturalism there has been no definitive government statement on it (Boston et al., 1998) and, when coupled with an ongoing Treaty of Waitangi process, the degree of acceptance of *kaitiakitanga*[7] is variable. 'Treaty rights' is the term used to refer to Mäori rights that are based on the Treaty of Waitangi. Some of the key issues have revolved around ownership and use of land and water rights, because Mäori view tenure and use differently from the non-Mäori majority.

Water is of considerable importance to the Mäori. They traditionally view rivers and lakes on a catchment basis, and it is not uncommon for them to pass water rights onto successors that run lengthwise from the source to the mouth of a river. The *mauri* or spiritual essence of water is important for burials, dealing with the afterbirth, and other rituals. The rivers are referenced from the mountains to the sea, so families are given slices of land from the mountains to the sea. This is, of course, in stark contrast to western systems of subdividing land (Constable, L. 1999, NTM,[8] pers. comm., 30 June).

As an example, on the South Island one of the District Councils (local government) needed a new consent for discharge into the Shotover River. The Ngai Tahu stepped in to comment because of the nearby places where they camp and do customary practices. The District Council then made application for a sewage treatment station. The original proposal was to leave the water disposal and conditions vague, but the Ngai Tahu filed the matter in the Environment Court and it was settled by consent, with more detailed and firm standards, prior to the court date.

The Ngai Tahu have the human resources necessary to pursue such a case. They have an administrative person installed at each *rünanga*[9] and run seminars and training on the RMA every six months on preparing submissions, hearings, how to

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[7] kaitiakitanga = Mäori guardianship

[8] NTM = Ngai Tahu Management

[9] rünanga = Mäori conference/consultation

interpret Mäori values for the *päkehä*[10] and demystifying the technical terminology for the local Ngai Tahu people (Constable, L. 1999, NTM, pers. comm., 30 June).

As part of its settlement with the New Zealand government, the Ngai Tahu received ownership, management and control of thirty-five properties, some in fee simple, some as reserve lands and some leasehold, including camping entitlements along waterways, such as in the Waitaki Valley (NTNG, 1998).

Mahengakai is the Mäori approach to land and resource conservation. This approach is different from that of environmentalist groups such as Forest & Bird, who are more committed to preservation. Fish & Game, which is an organisation that is partly under the Department of Conservation and partly a non-government organisation, has been able to support the Ngai Tahu regarding water usage and obstruction of rivers by assisting with placing of covenants on some key waterways. There is an embryonic relationship between the Ngai Tahu and the Federated Farmers that was born out of discussions about how to better deal with drought conditions (Constable, L. 1999, NTM, pers. comm., 30 June).

The Ngai Tahu are the largest Mäori tribe in New Zealand and have made successful claims over a significant portion of the South Island and nearby islands. They first lodged a claim with the Waitangi Tribunal in 1986 and, after a decade of negotiations and hearings at the Waitangi Tribunal, the Crown made a settlement offer which was considered by the Ngai Tahu and accepted by them after a voting process. The settlement included (NTNG, 1998):

- an official Apology which marked the end of the grievance period and allowed a period of healing to start;
- the return of Aoraki (also known as Mt Cook) to the Ngai Tahu, who then gifted it back to the nation of New Zealand as a representation of the commitment of the Ngai Tahu and the Crown to the Treaty partnership;
- Economic redress, comprising NZ$170 million cash as well as mechanisms to give the Ngai Tahu the right to buy certain Crown assets, and a relativity

[10] päkehä = Caucasian or non-Mäori

clause to ensure the tribe's position is maintained. A well-known example is the controlling share of Sealord, a fishing company;

- Cultural redress, which provides the Ngai Tahu with the opportunity to see their approach to resource management given practical effect in day-to-day management;

- Non-tribal redress for the many claims made by individuals separately from the tribal claim, which were heard by the Waitangi Tribunal.

Once passed by the Ngai Tahu, the Deed of Settlement was enacted in the Ngai Tahu Claims Settlement Act (also known as the Te Runanga o Ngai Tahu Act). Their tribal equity as at 22 October 1998, was NZ$199,085,837.

The Tainui are another Mäori tribe, but on the North Island. The membership of the Tainui Trust in 1999 was 44,000. In 1863 the Crown took 1.2 million hectares of land that was within Tainui jurisdiction. In the Crown's Deed of Settlement dated 22 May 1995 the Tainui had 40,000 hectares restored to them, all of it being Crown-owned land. These lands are administered by the Tainui Mäori Trust (TMT) and developed by Tainui Development Ltd and Tainui Corporation Ltd.

There are ten District Councils (DCs) that affect the Tainui lands, and the TMT's experience of consultation is that there is no clear definition of what consultation with Mäori means or how it should be carried out. It would be more efficient if the DCs could come out to speak with the TMT and brief them in advance about the District Plans to give them time to respond. It can be a matter of personalities and relationships, but generally most DCs do not feel the need to consult much. There is also the Regional Council to negotiate with in addition to the ten DCs.

The Regional Plan (RP) was produced after some District Plans (DPs) had already been developed, and there are some differences there that need to be ironed out. There needs to be proper recording of what is said in consultations and a reporting back of how it was used. There was a suggestion that, as one of the key decision-makers and not just a member of the general public, Mäori voice should be given more weight. Treasury's power should be reduced because every policy has to pass through Treasury where the main consideration is fiscal impact, and

accountability is more distant. Also, in general the middle and senior levels of government bureaucracies could be streamlined.

For the Tainui, water issues are more significant than land issues. In interview, the Tainui representative noted that there needs to be a neutral organisation of consultants available nation-wide to assist with water and other issues. When the Tainui challenge users of the river about water quality, the main reason for the challenge is usually that there be responsible usage of the resource. An example would be the Tainui requirement that all sewage should be treated before being released into the Waikato River.

The Tainui are often in conflict with the farming community because there are many farms within the area where the Tainui have a right to be consulted in decision-making. The issues are mainly about effluent, fish passes and flooding. The farmers are not accustomed to dealing with such problems; for example they had difficulty coming to terms with having to pay anything towards the Waikato Flood Control Scheme.

Environmentalists, who range from Greenpeace, to Maruia Society, to the local River Action Focus Team, have varying levels of cooperation with the Tainui.

Industries are coming to the Tainui about development projects in their area. The Tainui have representation on the Waikato Chamber of Commerce as well as at the informal but influential NZ Business Roundtable which invited a representative on to their board because they realised that the Tainui had become a force in the economic community.

There are eight *iwi*[11] that the Auckland City Council (ACC) consults with in its planning for the City of Auckland. Muriel Tawhai, who is *iwi* liaison officer at the ACC, has been in the ACC for eight years, the last four years in her current position. She has found the ACC receptive to advice about places of significance for the Mäori.

The ACC had supported the process for the *iwi* to decide their respective jurisdictions. Tawhai has also spent time with each of the *iwi* to establish accounting systems and provide training on writing of reports and responses to the ACC. She has

also advised business to consult early with Mäori. The ACC has provided financial support for *iwi* representatives for travel and for time spent in the consultation process, on research, writing responses and assisting with implementation of projects. Other staff in the ACC have been trained in how to communicate better with the *iwi*. For example, the planners are more aware than before of the need to be proactive in assisting the *iwi* to identify their *wähitapu*[12] on the District Plan. ACC staffs have also had to learn the role that an *iwi* liaison officer plays.

From Tawhai's experience, to get the best out of the consultations with the *iwi* it would be preferable if the ACC, DOC, Historic Trust, developers etc could consult with *iwi* together. This would minimise the tendency to put them in a reactive position to a series of unrelated and uncoordinated programs across local, regional and central government as well as business and environmental groups, because these would jointly have impact on the wellbeing of the Mäori as a whole (Tawhai, M. 1999, ACC[13], pers. comm., 5 July).

Ngarimu Blair is employed by the Ngati Whatua Orakei Mäori Trust Board to consult and negotiate with different local, regional, and central government authorities on resource management. Their Trust Board represents one hapu[14] and one marae,[15] so there is not the same complexity as exists with the Ngai Tahu. They deal with Manukau, Waitakere, North Shore, and Rodney local councils, and also with Auckland Regional Council. He agrees with comments by other *iwi* that it would be best for consultations to take place before the submissions to council, and that there be at least 20 days notice of the submission. It is an ongoing task to educate council staff and developers in Tangata Whenua ways, as the phrasing of the RMA puts the onus

[11] iwi = Mäori tribe

[12] wähitapu = Mäori sacred place/s

[13] ACC = Auckland City Council

[14] hapu = Mäori clan

[15] marae = traditional Mäori meeting place

on the applicant to consult. Sometimes there are issues with Forest and Bird about hunting native birds (Blair, N. 1999, NWOMTB,[16] pers. comm., 9 July).

The two most frequently used methods in 1997/98 to gain Mäori participation/consultation was to send draft plans to *iwi* for comment and to hold meetings on *marae*. The most effective mechanisms were (MFE, 1999a):

- holding meetings on marae;
- employing tangata whenua staff and/or iwi officers;
- hui[17] with iwi/hapu;
- written agreements or memoranda of understanding.

In summary, the last decade or so has seen many Mäori restored to their rights of ownership over tracts of Crown lands, with their rights to comment on land use and other economic resources formalised. The institutional arrangements and capacity-building of government staff, stakeholder groups and members of the community to consult with the Mäori about rights and responsibilities over land they own or land which they have a right to comment about is an ongoing process.

6.3.3 Farmers

As most of New Zealand is mountainous, only about two-thirds of the land area can be farmed, of which 90% is pastoral land, 7% for arable crops and 3% for horticulture. About 5% of the total land area is in forestry. About 80% of agricultural production is exported, making up about 60% of total export earnings. (Walker et al., 1993)

Before 1984 the NZ government provided a system of subsidies to farmers to undertake their agricultural activities and to take part in programs to improve farming practices. At the height of this traditional approach, ‘30% of total agricultural output

[16] NWOMTB = Ngati Whatua Orakei Mäori Trust Board

[17] hui = traditional Mäori meeting or gathering

was derived from government support in some form' (Walker et al., 1993). In the 1970s and part of the 1980s farmers were given access to marginal loan schemes to clear marginal lands, and there were subsidies for animals grazed on these lands that did not really relate to the market value (Fordyth, T. 1999, Rayonier, pers. comm., 7 July).

The lifting of subsidies since the mid-1980s was in direct response to the globalisation of trade and 'exposing the sector to international prices for outputs and inputs, including government services' (Walker et al., 1993). There were three years of rural downturn when farm debts were restructured and some 5% of farms had to be sold. At the height of this difficult period, one-third of the farming population formed a protest march to Parliament in 1986. A recovery phase began as local support groups developed that provided social and financial counselling and the agricultural industry began responding directly to international market signals with strategic planning. Government then supported these initiatives to 'strengthen rural recovery and farm profitability' (Walker et al., 1993).

A key background point is that until recently farmers held significant political influence by virtue of the fact that New Zealand's wealth was so agriculturally dependent. Prior to the local government restructuring in 1989, they had strong representation at the local authority level as well as with central government.

In Canterbury, 87% of the landowners belong to the Federated Farmers. In some districts, farmers felt alienated from local authorities and uninvolved in the district plan processes. The most dramatic reaction was in the Far North District Council where farmers took to the streets to protest the proposals put in the District Plan for their area. That District Plan had to be withdrawn. Unlike the Mäori, there is no specific statutory requirement for government to consult with the farmers, although they would fall within the requirement for general community consultation.

Native vegetation and significant natural landscapes were the issues that the farmers across NZ appeared to be most perturbed about. Even before the RMA, some had already started new farming practices and many had joined the Queen Elizabeth II Trust, which assists in covenanting for preservation of native vegetation and provides status for about 50% rates relief and assistance with necessities such as fencing costs for the preserved area.

The NZ Rating Powers Act 1988 provides at s.180G that a local authority may remit or postpone rates on land that has been voluntarily protected for natural or historic or cultural conservation purposes. But there are other rating issues that also had to be addressed. For example, in Auckland Regional Council's (ARC) jurisdiction farmers pay rates many times that of urban dwellers but do not enjoy urban amenities to the same extent, so the ARC agreed in 1999 to amend the Local Government Act to factor access to amenities into the rates (Kroon, G. 1999, FF(Akld),[18] pers. comm., 14 July).

There are two broad aspects of the RMA's operations that would involve it in consultations or actions with farmers. The first is the process of drafting District Plans, and the second is in the instances when a farmer is required to apply for Resource Consents to do something on the farm. The process of drafting a District Plan involves the District Council in classifying lands and therefore determining what restrictions should apply. This can lead into the Resource Consent issue. For example, if a part of a farmer's property is classified as 'indigenous vegetation' then there are strict limitations about what can be done with that area in the event that a Resource Consent is required, when there are more onerous procedures such as notifying neighbours and stakeholder groups.

Farmers' Experiences of Consultations

The experiences of farmers in the consultation processes related to the RMA are relevant to this thesis because they illustrate the range of problems that can arise in the process of dialogue about private and public rights and responsibilities. These also illustrate the tensions arising from the matter of 'public benefit at private cost'. The summaries of some of their stories are set out below in the first person.

Hugh Bethell (South Island)

There was no consultation with me prior to the District Plan (DP) being released. There was only a public meeting in Culverden where not many people were in attendance. Department of Conservation (DOC) was there. The Final draft plan had

[18] FF(Akld) = Federated Farmers (Auckland)

several hectares of wetlands on my property declared protected, and I am getting a botanist in to see about any significant indigenous vegetation near the irrigation canal that I'd invested in prior to the DP process. About 1989 or so there was a student from Lincoln University who came out to check for DOC where indigenous vegetation was. At the time DOC said it was not for any special purpose, but for general DOC use. Apparently the student also was not very sure what indigenous vegetation was and that botanists would come along later to confirm the data collected, but they didn't. I hear there isn't really a clear definition even now. But I hear they are using these unvalidated maps to make decisions about my property. (Bethell, H. 1999, pers. comm. 29 June)

Geoff and Brian Wilkinson (South Island)

A whole section of my property has been classified outstanding landscape by the DP. The District Council (DC) did not give reasons why this was so. The neighbouring property has the same look about it but it hasn't been classified in the same way. It means I can't do anything on these sections until I apply for a resource consent—I've heard that these can take many months because it may be notified to the public and there may be objections from anyone and the applicant pays for the whole process. There are other parts that have been classified native vegetation and of significance to *tangata whenua* and I agreed to those. This one I just don't understand. (Wilkinson, G. and B. 1999, pers. comm. 29 June)

McFadden (South Island)

My parents have been here for 30 years and I studied Parks and Recreation at University. The RMA itself is good, but the practice at local council level is different—they do not appear to apply s5-7 or s32 on cost-benefit considerations. We love our land too. Twenty years ago my parents set aside 25 hectares of native vegetation. Of the 800 hectare farm, 120 hectares have been classified as significant native vegetation by the DP. As the DC's map includes the wool shed, the house and the garden, we would need to get a resource consent to plant something in our own garden plot near the house. I already run an informal nursery here with native plants that I sell to neighbours and even to the DC recently for its own projects. I know farmers who'd already intended to plant a lot of native vegetation on their properties

and had ordered seedlings from me, but now they are worried it will just be classified significant natural vegetation anyway, so they are not bothering to invest. (McFadden 1999, pers. comm. 29 June)

Ross Bethel (North Island)

Our freehold land was bought in 1862 and some more in 1890. This should be a drystock and cattle farm. My father had let the farm go, so much of the pasture had reverted back to native vegetation, and it was zoned as reserve by the council. My father and I have kept our families together by doing odd jobs. I'm a carpenter and occasionally film crews will come out to film something. Before he died in 1984, my father had put in an application for forestry. My father had tried four times under the Town and Country Planning Act to get that consent and we've tried again under the RMA, but the entire property remains zoned as reserve. I tried to clear 10 acres for a horse paddock so people could pay to agist here, but the Waitakere City Council had someone take photos of us clearing and they threatened to take us to the Environment Court.

The local community has become mainly lifestyle block owners who are not interested in farming. At least the RMA opened the process for more scientific decision-making, but it does not change the way this local community thinks, and it was very expensive. Last year I hired consultants to prepare my case and these cost me about $20,000, not to mention this year's expenses. The WCC has offered rates relief, but what we need is to be able to use at least some of our property. (Bethel, R. 1999, pers. comm., 13 July)

'David', Tomato farmer (South Island)

David had a coal-fired boiler for heating glasshouses for his tomato plants. He needed a Resource Consent (RC) about the fumes. He had to approach 19 neighbours in all. The application cost $450. To get an RC costs about $2000, and if it goes to a full hearing would be $350 per half day. He had no time to read the DP or to make submissions. 'There are two groups of people, those educated with degrees and others who are out of their depth—we need to get skills and to get information'. (David, 1999, pers. comm., 28 June).

Consultations with farmers can be difficult. They work very long hours and live away from urban centres where the District Councils are situated. Even organisations dedicated to farmers experience difficulties in this respect, as exemplified by this comment from the head of Landcare:

> People underestimated the amount and effort to get community involvement—requires capacity-building to work in community participation processes. ...Also many people in rural communities are quite stressed at the moment and have little or no time to go to meetings. The Councillors need to understand the process better. (Ross, Don. (1999) Landcare, pers. comm., 28 June)

In summary, farmers in NZ have had to adjust to major changes in their position within the NZ economy, politics and society as well as the impacts of globalisation of trade that also took place at around the same time as the raised public awareness about environmental issues. There has been a process of ongoing change whereby the bundle of a farmer's private rights in relation to land and its use is changing. There is an unprecedented level of community interest in what happens on private farmlands that has effectively given the community and local government rights to direct what happens on those lands, but the debate continues as to whether the changes demanded should take place at the individual farmer's expense.

6.3.4 Business

The RMA has some severe penalties for contravention of the RMA, ranging from fines to imprisonment of Directors or agents of the company.

Apart from agribusiness, the prominent players in the resource management field are the forestry industry. In response to the economic reforms of the mid-1980s, there was 'huge investment in new forestry processing plants coincided with the sale of State forests to private companies, and the maturing of State-planted forests'. (Walker et al., 1993)

To date, there has been insufficient research to substantiate the claims that the RMA is driving away business. Interviews with some forestry representatives confirmed the existence of frustration with local council handling of DPs or resource-consent processes rather than with the RMA itself. For example, Rayonier, the third

largest pulp and paper manufacturer in NZ, spent NZ$1.5 million and several years on a notified resource-consent application for its pulp and paper plant in Southland. Rayonier commented that local councils deserved more human resource support from central government to administer the RMA and to facilitate consultations more efficiently (Fordyth, T. 1999, Rayonier, pers. comm., 7 July).

Dylan Thomas of the Employer's Federation of New Zealand (EF) said that the organisation would like to see a constitutional limit on the taking of private wealth by local planners. Thomas was also concerned about the issue of standing, and that there was no proper system to restrict frivolous and vexatious claims, because such objectors can impose significant costs on the process and therefore on applicants. At the heart of this is the unresolved issue that government has not dealt with, regarding public good at private cost. From the EF's perspective, it would be better to streamline the current resource consent process. One suggestion put by EF was that extensive consultation with all groups should take place at the DP stage rather than at the decision-making stage, because most businesses, farmers and the public, including *iwi*, do not have unlimited time to turn up for consultation processes. (Thomas, D., 1999, EFNZ[19], pers. comm. July)

Chris Drayton of Carter Holt Harvey expressed his observation in an interview that one of the common issues that came up in the process of district plans was over the definition of 'indigenous vegetation' and the meaning of 'significant landscapes'. Clearly, there is a need for a national policy on these matters. (Drayton, C. 1999, CHH,[20] pers. comm., 8 July).

A good example of a business enterprise involving a variety of stakeholders across economic, environmental and social concerns over land and its use is the Waimakariri Irrigation project.

[19] EFNZ = Employers' Federation of NZ

[20] CHH = Carter Holt Harvey

Waimakariri Irrigation Ltd

The material on the Waimakariri Irrigation project was obtained in an interview with Donald Young (Young, D, 1999, pers. comm., 30 June).

Donald Young had a business background in mining before he started an irrigation company on a cooperative basis. The Waimakariri area is a very dry area, and this irrigation project was a response to the major drought in 1988/89. The Waimakariri DC funded the research to obtain the resource consents, expenditure that would be recovered if the project went ahead and, if not, then through rates.

This irrigation scheme was to be a water management scheme whereby the flow of the Waimakariri River would join up via canals to the Ashley River, which would then flow consistently through the year. The environmental groups were initially agreeable, but at the hearings they took the stance that the joining of the rivers would bring non-indigenous salmon into the Ashley River. The North Canterbury Salmon Anglers, Friends of Waimakariri and Forest & Bird were given ample time to speak at hearings. (Young, D, 1999, pers. comm., 30 June)

The requirements of the RMA caused several years of delay and cost $650,000. Since the cost of the scheme in total was NZ$7 million, the resource consent alone cost 10% of the project, not counting the volunteer time put in by the community. It would be good if the RMA could be refined to allow the DC to make a judgment at an early stage rather than be held up at a later stage by minority interests with what might be pedantic viewpoints. The next issue was the rate of water usage. Regional Council has the power to issue a river plan and consents in line with the river plan. Once the river plan is released, the RC can call in resource consent for water that was issued by a local council (LC) and change the terms of the consent. Federated Farmers say that if there are any amendments to the LC consent due to the river plan, DC should pay compensation to the farmers. (Young, D, 1999, pers. comm., 30 June)

People who apply to renew their water rights have to apply for consents. The Regional Council then notifies the local community at the applicant's cost. If a member of the local community writes an objection to the application or a counter submission, the applicant pays for that as well as the cost of that person going to the hearing. It is standard procedure in an application for resource consent for the local

council to determine whether it should be notified to the local community and, if so, how widely. This uncertainty about delay and expense can be daunting to those who need to apply for resource consent.

Young confirmed that new management and communications skills are required for the community and district councils to cope with the level of dialogue required. (Young, D, 1999, pers. comm., 30 June). Young's view was that the RMA encourages the opening of dialogue, but needs some checks and balances so that sensible farming economics also has a role. The Ministry for the Environment has acknowledged the as-yet-unresolved issue of the impact of public interest on development and the need to be sensitive to the consequences of regulatory intervention:

> To avoid a mismatch between regulatory intervention and risk levels the Ministry supports a more specific identification of risk and the values the community wants to protect (MFE, 1999c).

In short, the business community, like the farming community, has had to adjust to a tempering of their private development rights by special interest groups that may or may not represent the wider community. There is also a learning curve for all concerned about the process of determining rights and responsibilities for land and land use at local government level and above.

6.3.5 Environmentalists

The rise of the 'green' vote in the mid-late 1980s in New Zealand resulted in the passing of the RMA, as well as the establishment of the Department for Conservation (DOC). It was interesting that when environmentalists and the farmers were asked which local authorities had the best consultation processes, they made diametrically different choices.

Apart from the well-known international organisation Greenpeace, the Royal Forest and Bird Protection Society (hereafter Forest & Bird) is the main environmental group that gets involved in submissions for the District Plan (DP) processes. They have a focus on conservation advocacy, and own and manage 20 nature reserves. They have over 50 branches across the North and South Islands, with a membership of over 10,000.

DOC is the only government agency that had a formal advocacy role on matters to do with conservation. Thus DOC was for a period extremely active at district plan development and resource consent processes. This is interesting on two fronts. Firstly, there was a natural alliance between the DOC with its preservationist mandate and environmental non-government organisations such as Forest & Bird. Secondly, in spite of having access to six million dollars for advocacy, DOC revealed in interview that it was difficult to keep up with the ongoing processes of district plans and resource consent applications, which are one part of their advocacy responsibilities. This highlights the difficulties being experienced by other less-well-resourced government and non-government bodies. Surely a more equitable system of access is integral to effective consultation.

The irony in this institutional and fiscal structure was that although central government advocated a 'hands-off' approach, it inadvertently gave DOC a better standing to lobby at local government level than other ordinary community groups. Other central government bodies like the Ministry for Mäori Affairs or the Ministry for Agriculture and Forestry did not have similar advocacy resources.

Environmental issues are in mainstream politics. There are a number of major community interest groups with impressive numbers of members that advocate on environmental issues and have been involved in the RMA's District Plan processes. The alliance that they have with the Department of Conservation, which was given funds to be involved in local District Plan processes, was not mirrored by other community groups and government departments.

6.3.6 Other Community Groups

Community groups can exist for a range of reasons. Some may be issues-based and others more institutionally supported. An example of the latter is the Community Boards of the City of Christchurch. There are six Community Boards for the city of Christchurch, each covering about 50,000 people and linking in with neighbourhood Residents Groups, of which there are about eighty in the city. These Residents Groups apply to the Christchurch Community Boards for recognition as official residents of their demarcated area. Upon recognition, they have the right to be consulted by

Christchurch City Council (CCC) on all work planned within their boundaries. They also have the right to some administrative support. (Phillips, S. 1999, CCB,[21] pers. comm., 29 June).

Apart from the Landcare and other farmers' groups, industry and the larger environmental groups, a wide range of national associations are listed in the Ministry for the Environment's Sustainable Land Management Directory for NZ. Examples of groups that get involved in the DP processes or resource consent processes include Fish & Game NZ, which is responsible for the maintenance, management and enhancement of sportsfish and gamebirds in the recreational interests of anglers and hunters. There is the NZ Native Forests Restoration Trust, which is involved in native forest restoration, the Tree Society of NZ to foster a love of trees, and the Soil and Health Association NZ, which promotes sustainable organic agricultural practices and principles of good health.

The above paragraphs about other community groups illustrate the range of stakeholders that can exist from the community itself, separate from corporations and government-sponsored groups. In this diversity lies opportunity for receiving a greater diversity of viewpoints and suggestions but also the challenges of locating relevant stakeholders and facilitating an amicable outcome to the discussions.

6.4 LEGAL FRAMEWORK

The RMA is representative of New Zealand's legislative commitment to sustainability, albeit focused on sustainable management of resources, which deliberately limits the development/economic dimensions.

6.4.1 The Resource Management Act 1991

The RMA, which pre-dated Agenda 21, sought to give effect to the fundamental principles expressed in international instruments such as the Stockholm Declaration 1972 and the Brundtland Commission 1987, i.e. sustainable resource use and

[21] CCB = Christchurch Community Boards

integrated resource management. The RMA is an example of how global sustainable development drivers can influence the legal, economic, institutional and social fabric of a nation. The RMA is also significant for the degree of public participation in the drafting of the original Bill—it had been the subject of lengthy and considerable consultation over two years and more than 3,500 submissions were received (Palmer, 1990).

The RMA is notable from several perspectives:

- From a resource management perspective, it was based on a holistic philosophy exemplified by the integration of air, water and soil policies.

- From a statutory perspective, it consolidated over 50 statutes into one act. Other complementary statutes are the Reserves Act 1977, Biosecurity Act 1993 and the Hazardous Substances and New Organisms Act 1996.

- From an institutional perspective, it benefited significantly from the local government reforms of 1989, which consolidated over 700 local authorities and bodies into 12 regional councils and 74 territorial authorities, and devolved power to them. This was part of the radical micro-economic and public-sector reforms of the late 1980s, as explained in the following section.

- From a political perspective, community consultation was a strong feature of both the RMA and the Local Government Act 1989. Also, the RMA was passed by a parliament that had strong elements of the New Right as well as the environmentalists.

The RMA continued the town planning tradition of controlling the use of private land and allowing local statutory authorities to take land for public purposes and the provision of services, but the Act goes further than previous legislation. It binds the Crown, and thus directly controls the use of most public land as well as private land (Grinlinton, 1995).

Part III of the Act is novel in that it imposes fundamental duties and responsibilities in respect of the use of land, air and water, and breach of these duties may attract severe enforcement penalties. ‘Use’ is widely defined to include

erection/alteration of any structures, demolitions, excavations, interference with flora and fauna and depositing substances on land (Grinlinton, 1995).

Additional restrictions apply to the use of the surfaces and beds of rivers, lakes and the foreshore, prohibiting certain uses unless a planning instrument or resource consent expressly gives them permission. This reverses the traditional approach by preventing, for example, the exercise of riparian rights by a private landowner unless there is an express provision allowing such use in a planning instrument or resource consent (Grinlinton, 1995).

While private property rights are being increasingly abrogated by modern environmental regulations such as the RMA, they are also being applied in imaginative ways to protect elements of the environment and to help achieve goals (Grinlinton, 1995). The use of mechanisms such as easements, restrictive covenants, leases and licences can assist in the protection of environmental values without interfering with private ownership (Grinlinton, 1995). Some of these are age-old methods. For example:

> In the Land Act 1877, the Surveyor-General of New Zealand required reserve land of one chain's width along the banks of navigable rivers. By 1886 this was extended to settlement surveys of coastal areas and by 1892 to rivers, lakes and the coasts for the purpose of access and subject to the discretion of the Commissioner of Crown Lands. ...Specifically in relation to esplanade reserves, the Resource Management Act 1991 declares their purpose to be for protecting conservation values, maintaining public access or enabling recreational use which is compatible with conservation values. (Kirkpatrick, 1996).

However, the pursuit of public good by regulating private use but at private cost can have outcomes that are inconsistent with the desired aim. For example:

> The worrying thing about these general tree protection rules is that as more people become aware of their potential impact, there appear to be increasing numbers who try to avoid any impact by either planting only species which are unlikely to grow above the thresholds or by removing trees as they approach these thresholds ...In living according to district plan rules which restrict property rights, for example in relation to trees, a private individual is forced to assume responsibility over goods with public elements. On the other hand, the person remains the owner of the property and still carries certain private risks as a result. A common question in relation to trees is, will the Council pay for any damage which this protected tree may

> cause? The usual answer is no, on the basis that the rules ordinarily provide exemption where a tree is known or likely to cause damage, and the owner's liability in respect of a tree is not strict, but depends on negligence. (Kirkpatrick, 1996)

As will be discussed in the next section, the Environment Court has ultimate jurisdiction to hear cases arising from the RMA, and there is strong encouragement for the use of alternative dispute resolution.

6.4.2 Environment Court

The Environment Court's work includes (DFC, 2001):

- designations authorising public works such as energy projects, hospitals, schools, prisons, sewerage works, refuse landfills, fire stations, major roads and bypasses; also major private projects, for example, dairy factories, tourist resorts, timber mills and shopping centres;
- classification of waters, water permits for dams and diversions, taking of geothermal fluids, discharges from sewerage works, underground mines; setting of maximum and minimum levels of lakes and flows of rivers, minimum water quality standards; and water conservation orders;
- land subdivision approvals and conditions, development levies, car parking contributions, reserve contributions, development levy fund distributions, road upgrading contributions, regional roads, limited access roads, and stopping roads;
- environmental effects of prospecting, exploration and mining, including underground, open pit and alluvial mining;
- enforcement proceedings (including interim enforcement orders), declarations about the legal status of environmental activities and instruments, existing and proposed, and appeals against abatement notices.

Other statutes under which the Court has jurisdiction include (DFC, 2001):

- Public Works Act—objections to compulsory taking of land;

- Historic Places Act—Appeals about archaeological sites;
- Forests Act—Appeals about felling beech forests.;
- Local Government Act—Objections to road stopping proposals;
- Transit NZ Act—Objections regarding access to limited access roads.

Some of the issues that arise in Environment Court proceedings are (DFC, 2001):

- Mäori cultural and spiritual issues and relationship with ancestral land;
- Water and hydrothermal resources, including use for electricity generation;
- Levying and distribution of public funds (reserves and development levies, in some cases millions of dollars);
- The physical environment, including the coast, bush, landform, lakes, rivers, productive soil;
- Noise environment and cost of protecting the environment from noise nuisance, eg. methanol plant;
- Public safety, eg bulk LPG installations, exposure to earthquake risk, flooding, erosion;
- Issues such that Ministers of the Crown seek to intervene, eg mining in reserves; developments in the coastal environment; regional planning;
- Social issues, including social effects of mining and other industrial projects.

From a legal perspective, the Environment Court has jurisdiction to hear cases arising from the RMA. There is currently a back-log of cases, giving rise to a delay on average of one year, but the falling number of new cases indicates that the teething stages may be coming to an end.

Ninety percent of the larger projects go to the Environment Court, because even one person can file an appeal for a fee of $55 and there are no sanctions for frivolous

claims. The RMA allows people who are not involved as appellants to be a part of the appeal. Although the Environment Court has the power to strike out vexatious claims, so far it has not (Drayton, C. 1999, CHH, pers. comm. 8 July).

Apart from its resource management role, the RMA has been a useful focal point and process for stakeholders and government to discuss rights and responsibilities over land and its use by diverse sectors of society and government. The Environment Court has played a role in raising awareness about the importance of environmental issues whilst also providing a forum for the development of specialist skills to adjudicate cases arising from the RMA.

6.5 INSTITUTIONAL FRAMEWORK

The institutional framework is what brings law and policy into effect. Sustainable development requires coordinated decision-making within tiers of government (horizontal co-operation) as well as between tiers of government (vertical co-operation). This section looks at some examples of decision-making structures and experiences within government sectors and between government and the community.

The efficacy of institutions and laws are dependent on policy to set the appropriate context. The following section discusses the interplay between institutions and policies in the processes of decision-making about rights and responsibilities for land and its use in New Zealand.

This section discusses the institutional framework for making decisions about rights and responsibilities over land (and its use) within government and into the community. Sub-section 6.5.1 provide some background to the government structures in NZ. Sub-section 6.5.2 outlines the issues of coordination within and between the tiers of government and highlight experiences of cooperative decision-making and consultation.

6.5.1 Local and Central Government

NZ has two tiers of government—central and local. Local government has three forms: local, regional and unitary.

As noted earlier, New Zealand's local government underwent considerable change in 1989, when about 700 diverse local authorities and bodies were amalgamated into 12 regional and 74 territorial councils (15 city and 59 district councils). These two types of local authorities were designed to be complementary parts of the same tier rather than separate tiers. Each is a body corporate rather than an agent of the Crown. The purposes of local government pursuant to the Local Government Act 1974 include:

- recognition of the existence of different communities in New Zealand;
- recognition of the identities and values of those communities;
- definition and enforcement of appropriate rights within those communities;
- scope to make choices between different kinds of local facilities and services;
- delivery of appropriate facilities and services on behalf of central government;
- recognition of communities of interest;
- efficient and effective exercise of the functions, duties and powers of the components of local government;
- effective participation of local persons in local government.

The changes to local government in the late 1980s aimed to reduce the number of local authorities and similar bodies and to introduce new management and accountability mechanisms (Horner, 1990). Apart from the delegation of central government powers and the requirement for separation of regulatory from other functions within local authorities and emphasis on greater transparency, there were no radical reforms of the division of existing functions between territorial and regional authorities. For example, although water-catchment areas were one of the considerations in determining the boundaries of regional authorities, the pre-existing artificial division of rivers into riverbeds (under the jurisdiction of regional authorities) and surface water (the jurisdiction of territorial authorities), remained.

UNCED concluded at Rio de Janeiro that local authorities should play a vital role in the implementation of Agenda 21 because (UN, 1992):

> Local authorities construct, operate and maintain economic, social and environmental infrastructure...establish local environmental policies and regulations, and assist in implementing...national environmental policies. As the level of governance closest to the people, they play a vital role in educating, mobilizing and responding to the public to promote sustainable development.

The day-to-day management of environmental issues in NZ is the responsibility of local government, which includes the regional councils and the local/district councils (MFE, 2002). In 1994 central government put out a document to specifically 'assist those in local government attempting to come to grips with Agenda 21 and its application' (MFE, 1994).

The actual model adopted by local government to achieve effective environmental management needs to reflect the diversity of environmental issues of the regions and the socio-economic, cultural and biophysical outcomes desired by the communities involved. Apart from regional and local councils there are unitary authorities that exist at local government level. The unitary authority is a type of local government body that covers all the functions that would normally be provided by regional and local council authorities. Thus an area covered by a unitary authority would not have regional and district council authorities. It is as capable of delivering sound, integrated environmental management as any other model, provided that these other significant factors are addressed:

> In the regional council/territorial authority dual model, regional councils can act as a check on the service delivery activities and environmental management responsibilities of territorial authorities, particularly where consents are granted and monitored by regional councils. In the absence of a corresponding external check on unitary authorities' district service delivery activities and environmental management responsibilities, there is the potential for environmental outcomes to be compromised ... Unitary authorities' management of their wide range of functions encourages 'job stretching' and, in some cases necessitates 'multi-skilling' among their staff...Although this study did not find evidence of specific problems associated with unitary authorities' environmental management capabilities, risks to achieving environmental outcomes may arise if the organisation overestimates its capabilities in

> respect of understanding and dealing with issues requiring specialised knowledge. (PCFE, 2000).

As discussed in section 6.2, the reduction of central government's role had been the catch-cry of the New Right. The rule of thumb was that policy and service functions should be distinguished and, wherever appropriate, the service functions were to be delegated or devolved elsewhere to local government or the private sector.

The Ministry for the Environment (MFE) reports to Cabinet on the state of the New Zealand environment and the way that environmental laws and policies work in practice (MFE, 2002). The significant areas of policy for which MFE is responsible would be: resource management; land, air and water quality; waste, hazardous substances and contaminated sites; protection of the ozone layer; and climate change (MFE, 2002). MFE also advises on the environmental implications of other Government policies and participates in interdepartmental work on biological diversity, marine environmental issues, energy and transport (MFE, 2002).

There are other central government departments that also play a significant role in sustainable development from economic, environmental and social perspectives. For example *Te Puni Kokiri* (Ministry for Mäori Affairs) is charged with the responsibility to provide advice to government on policy for Mäori; Department of Conservation's mission is 'to conserve New Zealand's natural and historic heritage for all to enjoy now and in the future' (DOC, 2002); the Ministry for Agriculture and Forestry (MAF) has the mandate to set policies on 'agriculture, horticulture, forestry, safe food, a protected environment, the wise use of the land, the creation of clean, green product and the economic success of those who produce it' (MAF, 2002). MAF also manages Crown forest resources. Cabinet is the central decision-making body of executive government and its role includes major policy and funding issues, interdepartmental matters, and ratification of international treaties and agreements (GNZ, 2002).

Many local government and other individuals interviewed for this research believed that sufficient funds should have been directed to the Ministry for the Environment (MFE) to provide leadership in the implementation of the RMA. All non-MFE bodies and many individuals felt that the MFE should have developed more national guidelines on new concepts such as significant natural areas.

Although New Zealand does not have a formal Roundtable on Sustainable Development in the style of some other western countries such as New Brunswick in Canada, innovative individuals have formed informal networks across central government bodies to access funding. The 'Green Package' for example, was an MFE-led joint effort with Ministry for Agriculture and Forestry (MAF) and DOC. Although it did not proceed according to traditional Treasury procedures, it was able to secure the support of the Prime Minister and thereafter the funding for some inter-departmental work.

There was a period in the 1990s when the Ministers for the Environment and Treasury both had the power to scrutinise all pieces of legislation. The key difference between the two, however, was that Treasury had more resources than MFE to capitalise on those powers. Now, all departments and ministries are required to circulate proposed statutes that may have relevance to others.

In summary, the year 2000 report of the Parliamentary Commissioner for the Environment confirmed that:

> The lack of national policies and standards on a number of issues requiring a common approach among all local authorities is hindering the integration of environmental management at the national level. For example, councils have had to develop their own benchmarks and key indicators, and there is a general feeling that guidance from the Ministry for the Environment on issues such as environmental indicators or standards would have been more helpful if they had been produced sooner. (PCFE, 2000)

The local government reforms of 1989 did not channel significant funds to local government. Local Government NZ, a representative body for local governments, has acknowledged the need for changes to rating powers ('Local Democracy 2000' pamphlet) to allow more flexible rating powers over all land (i.e. including Crown and Mäori land), to streamline procedures and to allow charging of actual and reasonable costs. An extreme example is along the West Coast of New Zealand, where there are large tracts of Department of Conservation lands, but the local councils have no rights to charge rates because central government is exempt. The current proposed reforms to the Ratings Act are aimed at delivering user-pays systems and better accountability. The uneven distribution of resources among councils has been officially recognised,

not only in terms of quantum, but in the types of resources available. For example, 'some have access dividends from port company shares whilst others are dependent entirely on rating income from fluctuating and sometimes declining population bases'. (PCFE, 2000)

There is no serious consideration at the moment as to what reforms to the fiscal structures could be needed to enhance resource management and sustainable development. Yet, as expressed in a publication of the Institute for Sustainable Development, fiscal measures are relevant to behavioural change:

> Providing a subsidy or tax allowance for environmentally positive activities creates an incentive for behavioural change. Public expenditure instruments represent an important class of economic instrument. (Gale et al., 1995)

In other words, there should be further open debate about this issue and consideration of whether there should be fiscal measures involving public (central) funds to support public goods. 'Ecotaxation' is a concept that government needs to explore properly (O'Riordan, 1997)

The challenge is that the central government reforms wiped out the previous complex tax structures with the result that the new very simple flat tax regime and GST does not leave much flexibility for the application or development of incentives or penalties.

6.5.2 Cooperative Decision-making and Consultation

Apart from the important issue of partnership between central and local governments that was covered in the previous sub-section, there is a need to move away from the segmented style of decision-making in central government. Frieder (1997) concluded that there was a need for better leadership from the Ministry for the Environment (MFE) for local government. But integrated management (including some integration of fiscal structures) across central government bodies is also important.

Interviews with central government department representatives showed that only a few central government departments make submissions to the DP process, namely Ministry for the Environment, Ministry for Health and Ministry for Transport. Apart from the Department for Conservation, which has an advocacy mandate, central

government generally does not make appeals to DPs. Other central government departments did not have a similar advocacy fund to draw on for active involvement in the local government processes to draw up plans and to process resource consents.

There are some ministries who should work together but do not, because of lack of resources and/or commitment. One example is the Ministry for Fisheries, which is not subject to the RMA but has made a commitment to sustainable development. It does not actively coordinate policies with, say, MAF and does not have the resources to be involved significantly in the development of district or regional plans.

Regional councils and unitary authorities are required by section 30 of the RMA to achieve 'integrated management of the natural and physical resources of the region'. Section 31 of the RMA also requires local government to achieve 'integrated management of the effects of the use, development, or protection of land and associated natural and physical resources of the district'.

The RMA requires that the plans of local authorities (also known as territorial authorities) should not be in conflict with those of regional authorities, but it was not uncommon for the regional plan to appear after the local authority's plans. The Parliamentary Commissioner for the Environment found:

> ...clear tension between the Local Government Act, which set up regional councils and territorial authorities to be two complementary arms of a single level of local government, and the RMA, which set up a hierarchical relationship between the two through the policy and plan process (PCFE, 2000).

A good example of the need for better coordination between local councils, central government and stakeholders is the management of effluent. In 1996 the Ministry for the Environment prepared a report called 'Resource Management Practice and Performance: Are desired environmental outcomes being achieved at least cost? - A case study of farm dairy effluent management'. The following are some highlights from the report:

> Effluent from farm dairies primarily consists of faeces, urine and washdown water, but can also contain stormwater, spilled milk, soil and feed residue, detergents and other chemicals. Together, these constituents contain nutrients, organic matter, harmful micro-organisms (pathogens), sediments and toxins which are potential contaminants ... Federated Farmers of New Zealand, in commenting on current policy

> approaches, consider that, while some councils deal with certain aspects of farm dairy effluent management well, there is scope for improvements in practice, particularly in targeting the use of regulations, ensuring least cost methods, consistency across councils, and improving relations between councils and farmers. (MFE, 1999b)

The report concluded (MFE, 1999b):

> Regional councils acknowledge that discharges of FDE [farm dairy effluent] pose environmental risks which require management. They are responding to these risks by developing policy approaches which include a mix of policy instruments including the use of voluntary instruments, economic instruments and regulatory controls. Differences arise in the nature and mix of these policy instruments.

The above case study of FDE identified the following key reasons for the differences:

- council perception of relative environmental risks of FDE as determined by the nature of the receiving environment and the pressures on it;
- professional and political judgement about the best practicable option for managing those risks;
- the history of FDE management in the region, and the adequacy of the provisions in the transitional regional plan;
- the stance of councils on encouraging a shift to application of FDE to land;
- council policy on cost recovery (public/private split);
- council response to public input into policy development.

The report found that farmers were more likely to support a regulatory regime ‘when they see it as underpinning a comprehensive policy mix which has a substantial component of non-regulatory methods, particularly support for voluntary initiatives by farmers’ (MFE, 1999b).

The report also found that farmers valued the support they could receive from councils in terms of advice, research, written material and workshops, attendance at discussion groups and field days. The farmers also appreciate councils providing an

'open house' approach to management where farmers are encouraged to approach the council for initial advice without fear of immediate prosecution (MFE, 1999b).

In a survey by Rodney District Council of the treatment of significant natural areas by other councils, 49 district councils and 10 regional councils replied. It was found that many used non-regulatory instruments while others were still using the regulatory approach (e.g. zoning). The details of the methods used varied considerably (RDC, 1999).

Proposed changes by the Department of Internal Affairs, which has jurisdiction over local government, do not address the two issues at the heart of the RMA's fiscal challenge: the central/local government partnership and the public/private property relationship (in particular public goods at private cost). It is for each society to decide where the balance lies.

In its 'Resource Management Act: Annual Survey of Local Authorities 1997/98', the Ministry for the Environment found that 43 plans (9 RPs, 20 unitary plans and 14 DPs) were fully operative; 58 were at appeal or partially operative (7 RPs, 23 unitary plans, 28 DPs), 46 had been notified to the public (27 unitary plans, 19 DPs); 7 were still in the draft stages (4 unitary plans, 3 DPs); and 12 were at the pre-draft stage (4 unitary plans, 8 DPs) (MFE, 1999a).

Table 6.1 sets out the wide range of environmental management functions that fall within the jurisdiction of local government and the way these functions are carried out by the various forms of local government. This table shows that unitary authorities have the ability to carry out all functions that are currently being shared between territorial (local/district councils) authorities and regional councils.

Table 6.1: Environmental Management Functions of Local Government

Indicative Range of Environmental Management Functions of Local Government		UA[22]	TA[23]	RC[24]
Resource Management Act	– control of air, water, soil and geothermal energy	✓		✓
	– control of the use, development or protection of land	✓	✓	
	– control of discharges	✓		✓
	– control of subdivision of land	✓	✓	
	– natural hazards mitigation	✓	✓	
	– control of noise	✓	✓	
	– management of coastal marine area	✓		✓
	– management of part of the coast	✓	✓	
	– management of hazardous substances	✓	✓	✓
Biosecurity Act	– regional pest management	✓		✓
	– pest management agency	✓	✓	
Land Transport Act	– regional land transport strategy	✓		✓
Maritime Transport Act	– oil spill response	✓		✓
Health Act	– environmental health	✓	✓	
Building Act	– building control	✓	✓	
Local Government Act	– hazardous waste management	✓		✓
	– provision and maintenance of infrastructure	✓	✓	
Non-regulatory	– environmental education	✓	✓	✓
	– tourism	✓		✓
	– community facilities	✓	✓	
Service Delivery	– rivers control and flood protection	✓		✓
	– solid and liquid waste disposal	✓	✓	

(PCFE, 2000)

[22] UA = Unitary Authority

[23] TA = Territorial Authority (local councils which include district councils and municipal councils)

[24] RC = Regional Councils

A study of local government by the Parliamentary Commissioner for the Environment in 2000 highlighted concerns among local authorities about the capabilities of local government to meet its environmental management responsibilities, the uneven distribution of resources among councils, and their concerns about the lack of guidance from central government:

> With few exceptions, the councils visited have generally been critical of the lack of helpful guidance from central government on environmental management issues...Councils were strongly of the view that while partnerships between local and central government agencies are important to achieving outcomes, so too is the environmental management partnership between central and local government (PCFE, 2000).

The Parliamentary Commissioner for the Environment recommended that:

> …councils investigate options for inter-council arrangements to achieve effective, efficient, and integrated resource management outcomes and that the network of councils collectively identifies specialist skills which may exist only on a nation-wide basis, and develops a system for accessing such skills (PCFE, 2000).

There is considerable overlap of jurisdictions between district councils and regional councils (s30 and 31) (Chapman, B. 1999, CHH,[25] pers. comm., 9 July). This was affirmed in interviews with Rodney District Council who gave as an example that the Regional Councils (RC) are responsible for river beds and the District Council (DC) for surface water, so sediment control is RC business even though it is the land activity (within DC's control) that is causing the problem (Cosigin, M. 1999 RDC,[26] pers. comm., 12 July). There is no requirement for RCs and DCs to exchange data, so it has to be done by building working relationships between staff at different councils (Cosigin, M. 1999 RDC, pers. comm., 12 July). There is a regional monitoring forum, but it is a lot of work and DCs prefer not to change what they have been doing. There is also the issue of inappropriate indicators. For example, it was found that that many of the Ministry for the Environment's (MFE) indicators were based on the South Island high country, with the result that Auckland Regional Council considered the

[25] Carter Holt Harvey (paper products company)

[26] RDC = Rodney District Council

data inappropriate to guide decision-making in their area (Cosigin, M. 1999 RDC, pers. comm., 12 July). There is a need for MFE to provide direction since DOC are administering areas of conservation value and therefore operate on conservation objectives rather than the RMA's resource management approach.

An example of the tension between geographic and administrative boundaries the wetlands between Waitakere CC and Rodney DC. It is one wetlands but the two local authorities have different management policies for it. For example, Waitakere CC has invested in a weed control program, but at the time of interviews conducted in July 1999 Rodney DC had not (McDonald, J. 1999, WCC,[27] pers. comm., 14 July). This issue was confirmed in a report of the Parliamentary Commissioner for the Environment, which used the example of the Roding River catchment area, which is partly in the Tasman District and partly in Nelson City. This report recommended that 'where there are actual or potential boundary issues affecting environmental outcomes, councils establish joint formal arrangements for managing shared natural or physical resources' (PCFE, 2000).

The Parliamentary Commissioner for the Environment found that (PCFE, 2000):

> …the relationship between the regional council and territorial authorities, and the type of leadership demonstrated by the regional council, are important factors in determining the nature of environmental management within a region.

It recommended that unitary authorities[28] subject their environmental performance to routine audits, the results of which should be made available to the public (PCFE, 2000).

The previous Town and Country Planning Act used to cover economic, social and environmental issues. The RMA now causes even more delays, especially because of third party rights on environmental issues. The new plans are effects-based and the vision of the local council is more environmental, with community support.

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[27] WCC = Waitakere City Council

[28] Unitary Authorities are a local government authority that operate like an amalgamation between district councils and regional councils. In an area covered by a unitary authority, there would be no district or regional councils.

Eight years ago, the city spent NZ$7 million to buy 20 hectares of swamp to be preserved as swamp. The RMA did focus on reasons and purposes for the plans, encouraging more theoretical depth to the plans. For some councils with larger populations, it was harder to get a draft plan out because of so many competing views, particularly between farmers and rural lifestyle dwellers (Dryden, J. 1999, CCC, pers. comm. 28 June).

A comment from a senior town planner was that the planners that come out of university now have a rural focus because of the priority for resource conservation, and no central government body now has the responsibility for cities (Dryden, J. 1999, CCC[29], pers. comm. 28 June).

At the heart of issues like: classification of private lands as heritage sites, significant natural vegetation or significant natural landscape, is who should pay for the loss of use and the maintenance of these assets. To what extent should public good be maintained at private cost? At the moment, these expenses are borne by the private owner. These changes are in stark contrast to the words of the famous 18th century English jurist, Sir William Blackstone, who described property as:

> ...the sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe (Blackstone, 1791).

At least the Town and Country Planning Act understood the interaction, whereas the RMA does not make the distinction, and the rural councils are bound by the same rules as the urban ones. Farmers are only a small part of Christchurch City Council where most residents and members are rural lifestyle dwellers . (Dryden, J. 1999, CCC, pers. comm. 28 June).

Brian Peat, CEO of Federated Farmers Christchurch (FFC), said the process for District Plans (DP) should be that the draft DP should be available to send to the Federated Farmers members to call meetings for discussion and prepare submissions. In the two years he was with the FFC, there had been no consultation. Farmers had no idea until the notified plan came out. He thinks that ‘outstanding and significant’

[29] CCC = Christchurch City Council

landscapes should mean something of national significance. Hurunui Council's consultant who identified what parts of the landscape should be classified 'outstanding and significant', worked from a map that was 35 years old and never visited the properties concerned (Peat, B. 1999, FF(Cch),[30] pers. comm. 30 June).

As another regular stakeholder in discussions about land and land use, industry has also experienced problems in gaining equitable access to discussions about DPs and other decision-making in local government. One cause of the problems is direct-use benefit compared to public good. Carter Holt Harvey (CHH) found that some DCs used information based on CHH's privately funded research to set standards for others, which is a public use. Section 85 of the RMA raises compensation issues—there are still restrictions on land users that amount to prohibition of use rather than proper use of land. One example is Manukau City Council's riparian margin restrictions that were so strictly applied that the land had no commercial value for forestry and had to be sold for residential purposes. There is a need for central government to step in with some standards for environmental management, especially since the Department of Conservation has a mandate to advocate for preservation (rather than resource management) and the resources to champion this in the local government processes (Chapman, B. 1999, CHH, pers. comm., 9 July).

In interviews with planners from a variety of rural and urban District Councils, a comment was that the RMA is more flexible than the Town and Country Planning Act (TCPA). The TCPA was more prescriptive, so if something did not comply it had to be notified. Under the RMA, if the affected parties agree, then it is likely to go through the non-notification process. If a resource consent has to be notified, it can be expensive, because in addition to the cost of notification there are the costs for the hearing and obtaining reports from expert witnesses.

A minority of those interviewed felt that an odd mix of free market ideology and environmentalism drove the RMA, and so traditional planning methods were viewed as a possible obstacle to development. Others observed that the RMA had significant

[30] FF(CCh) = Federated Farmers (Christchurch)

impact in forcing people to think about the effects and consequences rather than just how to get around planning regulations.

All planners interviewed said that new management approaches and skills were required to implement the RMA, particularly in consultations with the public. A range of approaches were employed that could include all or some of the following: newspaper advertisements; public meetings; and consultations with specific groups.

For consultations with Mäori, the district councils and city councils had a range of approaches. Some would send proposed plans or resource consents to the Mäori tribe concerned. The problem with this approach is that if the Mäori do not respond it does not necessarily mean that they agree with the proposal. Others had *iwi* liaison officers who had the delicate task of liaising between the Mäori groups and the local council, and sometimes with developers.

Consultations in general require knowledge of the various stakeholders and the will to cooperate and share information. The need for and challenges of integrating policies and cooperation on implementation are well demonstrated in the context of land and water issues. Within the land and water context, a good example to discuss is the issue of effluent run-off.

Staff of regional councils in New Zealand rank agriculture as the most significant source of adverse effects on water quality, citing sedimentation and nutrient inputs as the most serious, followed by faecal contamination and alteration of physical characteristics of water bodies (Sinner, 1992)

Detailed evidence throughout New Zealand found (Smith and Cooper, 1993):

- faecal contamination exceeding guidelines is widespread, the primary effect of which is to make waters unsuitable for contact recreation;
- sediment and nutrient inputs commonly cause turbidity problems and profuse growth of nuisance plants in a number of waterways;
- based on limited data, small stream ecology is reported to be in very poor condition in intensive dairy areas;

- waterways in sparsely developed areas of New Zealand are generally in good condition.

> New Zealand government agencies have had difficulty managing non-point source pollution in agriculture. ....Unless the environmental cost of such activities can be internalised into the cost of production, it will remain difficult for government agencies to develop policies which maximise net benefit from resources (Sinner and Nelson, 1994).

The recommended policy was, in brief (Sinner and Nelson, 1994):

- Regional council (RC) to identify a body of water where diffuse run-off is a major contributor to adverse effects of water quality, causing significant damage to other parties;
- RC to set water quality standards in consultation with all interested parties;
- RC to identify segments of the water body and the parties, including agriculturalists, that are contributing contaminants, and those parties may either join a catchment management consortium or adopt Best Management Practices (BMPs) as per the RMA;
- RC to assign permits with standards to Catchment Management Commissions (CMCs). These commissions may be made up of a variety of community, government and industry representatives;
- CMC to monitor water quality standards, audited by RC;
- CMC to have responsibility to alter standards as per changes in water quality;
- CMC to have powers to enforce management and funding decisions on members;
- CMC may be fined for failing to develop a strategy that meets RC approval;
- Adjacent CMCs may alter water quality standards by mutual agreement;
- CMCs may merge or split as is efficient.

The above outline of the work of CMCs is useful in illustrating the fact that the community is indeed becoming involved, not only in the design of policies but also in their implementation. The discussion is not always easy. To the Mäori who attach spiritual significance to waterways, any pollutant that enters the waterways from the source to the mouth may be cause to enforce the RMA provision on 'Significant damage to other parties'. The Mäori approach is more stringent than general statutory standards that tend to set levels of tolerance before something is deemed to have polluted.

There are proposals for the amendment of the RMA that recommend the redefinition of the functions of regional councils and territorial authorities on the basis of reallocating water and land components of the environment, but these changes would seem contrary to the integrated management approach of the RMA (PCFE, 2000).

In a review by the Department of Internal Affairs of the local authority public consultation process for annual plans, comments collected from local authorities indicated that residents of rural areas tend to have a higher level of interest in local government than do urban dwellers. Two-fifths of the local authorities said they would not take any action to change their consultation process and eight local authorities said they would be sending out a flyer or newsletter in the next planning round. There was also a range of intended changes to the consultation process (DIA, 1995).

In summary, there has been a learning curve for regional, district, city and unitary local authorities to take on the responsibilities devolved from central government. They have also had to deal with the new effects-based approach of the RMA and, more importantly with the more extensive dialogue expected with stakeholders and the wider community that has changed the dynamics of power between them.

6.6 TECHNOLOGICAL FRAMEWORK

One of the hallmarks of the RMA was the reform (some would say eradication) of traditional planning to re-focus decision-making on the 'effects' of activities rather

than on detailed control of the activities themselves. Thus, anyone making a decision about use of a resource will need to consider the effects it will have on all aspects of the environment (CCLC, 1998). The effects-based approach to planning puts significant emphasis on the role of science in providing the 'sign-posts' of what should or should not be an acceptable resource development or land use proposal. Combined with the RMA's emphasis on participatory policy-making, there is an implication that equitable access be provided to scientific and other information relevant to decision-making.

Table 6.2 sets out the percentages of people who have access to the Internet. This is useful because it indicates the potential for information and dialogue facilitation to occur through this new medium.

Table 6.2: Access of people to the Internet in New Zealand

Category		Have Internet access	Want Internet access but do not have it because of cost	Want Internet access and don't have it for other reasons
Age	18-34	39.0%	25.8%	13.1%
	35-49	53.6%	15.1%	9.6%
	50-64	40.9%	10.7%	12.0%
Own a PC		73.6%	8.9%	9.1%
European		48.2%	15.6%	12.4%
Mäori		26.0%	32.8%	10.6%
Pacific peoples		12.4%	36.5%	9.1%
Chinese and Indian		64.4%	17.6%	5.1%
Male		46.5%	16.6%	12.4%
Female		42.7%	20.8%	10.8%
All groups		44.6%	18.7%	11.6%

Source: (MAF, 2000)

The lack of equitable access to technology (and information) is one of the issues facing the New Zealand people. Whilst a reasonable number of New Zealanders have access to computers, the challenge is to make available relevant information and in a user-friendly form. On 26 June 2000, the NZ Cabinet confirmed the following vision for the social and economic inclusion and information communication technology (also known as 'closing the digital divide') (MAF, 2000):

> All New Zealanders, either as individuals or as members of communities, have the opportunity to access and effectively use current and emerging information and communications technologies. This will enable individuals and communities to participate fully in the economic, social, educational, cultural and democratic opportunities available in an information society.

The OECD 1996 Environmental Performance Review of New Zealand placed inadequate data at the top of the list of barriers to implementation of the RMA (OECD, 1996). This was corroborated by Frieder (1997). At the time of the field research for this thesis in July 1999, local authorities were developing environmental performance indicators at different rates (and standards), and the Ministry for the Environment's work in the area was still in progress.

The OECD's 1996 report also found that 'local authorities cannot yet fully implement the effects-based regulation called for by the RMA. This is in part due to a lack of data and understanding of the ambient environment by both local officials and the private sector' (OECD, 1996). At the end of the decade, information and the tools to analyse and present them continued to be an area of need:

> Councils will be able to be more specific about the values they wish to protect, and in identifying risk, as better data sets and tools become available. Both NIWA and Landcare Research are developing techniques, in association with the Ministry, to allow councils to identify on Geographic Information Systems the values in water bodies they wish to protect and the varying risk of erosion. This will go some way to giving councils the information they need, and in a form that will provide legal certainty for use in rules. (MFE, 1999c)

The Ministry for the Environment found in 1999 that 85% of local authorities used computerised systems to record information about resource consent processing pursuant to the RMA. The RMA's effects-based planning philosophy has revolutionised land-use management and administration. Prescriptive regulation is replaced by parameters of 'adverse effects' within which creativity may flourish. However, this effects-based approach is very 'science-hungry'. This has created the necessity to employ a wider range of experts on issues such as air quality, noise, light effect and landscape policy. For example, where plans may once have specified that no petrol stations or factories could be established in residential areas, now the decision would be based on consideration of a range of effects such as glare, traffic

volume, odour, noise etc—obviously much harder to picture. Quite apart from the burden on local authorities and resource consent applicants is the question of the community's ability to effectively respond and participate in the consultative process for district/regional plans.

Farmers have started to embrace technology such as geographic information systems (GIS) as a means of making better decisions about their land use, as well as to enter into discussions with other stakeholders about the use of their own land and the surrounding areas. Consider, for example, Omarama Landcare Group in the Central High Country of Canterbury, NZ. The farmers there had a history of conflict with the local council regarding weed management. The 38 farmers were asked to pay NZ$80,000 to the local council for weed and pest monitoring. The farmers said they never got feedback on the results of the program and so were not sure why they had to pay for those services. One farmer who was skilled in GIS developed a GIS system for the district, and now they all self-monitor and no longer have to pay the NZ$80,000, and the local council's role is limited to auditing (Ross, D. 1999, Landcare, pers. comm., 28 June).

In other words, the introductory phase of effects-based planning has created challenges at every stage, from the development of district plans to community consultation to resource consent processes to performance indicators. Knowledge and use of spatial technologies such as geographic information systems (GIS) varies considerably.

There is a need for a central index of all available GIS data that is publicly accessible—perhaps through the WWW. For example, costly battles since 1991 between environmentalists, farmers and local councils regarding the existence and preservation of indigenous vegetation could have been avoided had there been reliable data on New Zealand's vegetation. That information was made available in 1999 by a joint project of the MAF and DOC. There is obviously a strong argument for better spatial data infrastructure in NZ.

Recently there has been the decision to develop a much larger scale digital cadastral database that is available at accuracy within metres. The Surveyor General's DCDB Data Accuracy Specifications (Interim), established in September 1997, specify the standard for positional accuracy of parcels, roads, railways and

hydrographic areas—95% of all coordinates shall not differ from their true position, relative to the survey control framework, by more than the following (LINZ, 2001):

- Urban areas with pegged survey points: 1.5m
- Rural areas with pegged survey points: 10m
- Remote areas with pegged survey points: 50m

The DCDB is a distributed digital cadastral database for New Zealand, designed as an integrated Geographic Information System (GIS) (LINZ, 2001):

> The DCDB is an up-to-date computer register containing data on land parcels throughout New Zealand. It represents the geographic location, shape, area, land appellation and street address for each land parcel and the legal definition of roads, road centrelines, railways and hydrographic features. In addition, the DCDB contains the definition of statistical meshblocks and derived administration boundaries such as local authorities and electoral districts.

LINZ manages core Crown property records. Information about Mäori land is available from a range of sources such as the Mäori Land Court, the Ministry for Mäori Affairs and LINZ. The Mäori Land Information Database is provided by the Mäori Land Court (LINZ, 2001). Interviews with various Mäori groups indicated that they were building their own databases with information such as sacred sites and temporal GIS systems for tracking the natural resources in their care such as forestry and fishing. Land information is an important part of the Treaty of Waitangi settlements with Mäori groups, and LINZ plays an active role (LINZ, 2001):

> Today LINZ continues to play a significant role in the formulation of claim settlement policy, and a supporting role within the context of claim settlement negotiations. It also continues to play a significant role in ensuring the transfer of Crown-owned land and forests under the settlement process.

Attention needs to be paid not only to the data, but the education of council staff and ultimately the community, about how to find and use the data. Integral to the vision for community participation must be the issue of access to information for decision-making. Access means not only that data be made available, but that users understand its limitations and applicability. Examples include the unresolved matter

of layering data accurately, and also understanding that the accuracy required really depends on the use intended. Also, there are the unresolved legal implications of access and privacy (Ting and Williamson, 1998).

The outcome of the many different interviews conducted for this case study was that GIS was quite widely used, more to represent information than for modelling for discussions by stakeholders. The spatial data infrastructures are still being developed, but certainly the base layer of cadastral data is ready. The ultimate aim for management purposes should be for all public and private land and land use rights to be recorded.

6.7 LAND ADMINISTRATION

The previous section on technology has discussed some of the components of land administration such as the work of LINZ. This section brings the discussion into an overview of other traditional components of land administration. Sub-section 6.7.1 overviews some highlights of participatory planning and markets. Sub-section 6.7.2 extends the discussions that started in section 6.6. about the role of land information

6.7.1 Planning and Markets

The above discussion focused on the dramatic changes to the way planning takes place in New Zealand. This has been attributable to the changing relationships between key groups of society as well as the reforms brought about to local government by the LGA'89 and the RMA. In short, there is participatory decision-making and some participatory administration that is taking place in local regions across NZ. Institutional structures are in the process of adjusting to these changes.

The Mäori are a case in point. Whilst there have been successful tribes such as the Ngai Tahu who have regained substantial control of their lands and/or a voice in resource management, there are many others who face difficulties in capitalizing on their rights. For example, the Waitangi Tribunal has seen a number of cases where, because community ownership is vested in up to hundreds of individuals who are scattered within and outside NZ, it is very difficult for them to develop their land and

resources. Interviews with the Tainui and Ngai Tahu revealed that valuation agents generally value Mäori land at lower than market value of other privately held land.

Farmers have gone through a period of frustration at a sense of 'abandonment' by government and the urban green movement, and have started to come to terms with the new skills required to participate in dialogue about wider land use issues and even about their own land. However, there is the unresolved issue of the market impact on more than one front. Firstly, there is the market impact on the value of land that has gone from productive status to reserve status and shades of limited use in between. Second, is the fundamental market question of who shall bear the cost of preservation for public interest—the public or the private owners. Business and Mäori groups and individual owners are also grappling with this second issue, which is relevant to the pricing of their goods and services as well as expenses such as rates and taxes.

6.7.2 Land Information

The NZ land-titling system continues in its traditional role of recording who has ownership per se of parcels of land. This is managed by the Office of the Registrar-General of Land. Crown lands are administered by the Office of the Chief Crown Property Officer. The national spatial reference system and cadastral survey infrastructure are in the jurisdiction of the Office of the Surveyor-General. National topographic and hydrographic information is administered by the Topographic and Hydrographic Authority. All of these Offices are situated within Land Information New Zealand (LINZ).

LINZ is a government department that has the motto of 'Linking you to core Government land and seabed information'. LINZ currently maintains a spatial database of current parcels of land in New Zealand, along with certain cadastral information such as area and street addresses. Although it is not survey-accurate, primary parcel information and other layers will be converted into the Core Record System (CRS). LINZ has been working on upgrading land information in stages. CRS Stage One is currently in operation in the South Island and Wellington, and will automate LINZ's internal processing of land transactions and allow for remote electronic survey and title searching. CRS Stage Two will allow remote digital

lodgement of survey transactions and routine title dealings. As each part of the system is built it undergoes a rigorous testing program. Testing identifies any areas that need refining, and these will be amended (and tested again) before a pilot is conducted in mid-2002. (LINZ, 2001)

LandOnline is LINZ's web-based digital title and survey plan database for land professionals. There are also options for the general public to access land records (general as well as Mäori), including Internet ordering.

The challenging question is how the increasing complexity of rights and responsibilities will be reflected in the institutional mechanisms for recording land use rights. The dynamic nature of this process at local level indicates that what is needed is an information system that will link up the different sources of regulation of property rights, particularly down through regional, unitary and local authorities where most of the dialogue is taking place about adjustment of rights and responsibilities and the enforcement thereof.

6.8 CONCLUSIONS

There have been dramatic social, political and economic changes in New Zealand over the last two decades that have had an impact on the rights and responsibilities of key groups. These changes have demanded a suitable response from the institutional processes for them to dialogue about these changes. The LGA'89 and the RMA are convenient focal points for many of those changes.

The political power changes have put the environmental issue prominently on the public agenda, and farmers have had to readjust to a more competitive international market as well as a less sympathetic public. The Mäori and the Treaty of Waitangi arrangements to restore the place and voice of Mäoris in society reflect another major change. Institutional arrangements need to go much further to reflect these dynamics and to better facilitate discussions about rights and responsibilities over land and its use.

The New Zealand case study of the implementation of the Resource Management Act 1991 offers some useful lessons. Firstly, legislative change through an instrument like the RMA is a useful focal point and usually demonstrates political

change, but it must be accompanied by wider institutional, fiscal and information technology infrastructure to give adequate expression to society's evolving needs and desires for sustainable development. Secondly, increased local government responsibility for the environment is in line with Agenda 21 recommendations, but must be accompanied by appropriate fiscal and human resource structures. Thirdly, central government still has a weighty responsibility to coordinate and monitor. Fourthly, the changing bundle of rights, restrictions and responsibilities in land need to be articulated clearly and early enough to facilitate wide debate about the key issues of re-defining 'public' and 'private' rights, and especially the maintenance of public 'goods' at private expense.

The RMA had the mixed fortune of being introduced soon after institutional reforms of government driven by a new political/economic philosophy, but the process of reform and/or integration of the other frameworks is clearly still underway and cannot be ignored if effective change is to take place. Furthermore, the delegation and/or devolution of powers from central to local government (or private sector) were driven by a fiscal crisis, resulting in a lack of support from central government, even on policy lines, which was supposed to be central government's core business. There was also lack of support to facilitate greater participation from the public—the responsibility fell squarely on local government shoulders, and local governments varied in their ability and resources to manage the processes.

The prevailing political ideology leaves little room for flexibility in the fiscal structures, whether it is a matter of channeling funds to local government, or allocating central funds for 'public goods' or even applying for funds across central government bodies. In spite of the radical amalgamations of 1989, New Zealand is a nation of 3.8 million people with 84 district/regional plans based on the RMA. Each plan took three to five years to prepare and at considerable cost, ranging from fifty thousand to several million (NZ) dollars. This 'patchwork quilt' may well be the necessary first step to initiate further debate to determine:

- what common vision may be gleaned at a national level as to how 'green' New Zealand should be—and this is meant in a physical sense (e.g. should it look as it did pre-Mäori, pre-European etc?) as well as in the sense of the focus of the other implementing infrastructures;

- what level and style of central guidance may be necessary, i.e. central/local partnership;
- what coordination is necessary across New Zealand's community, private sector and government, to achieve the concrete details of that common vision.

Finally, until science and technology catch up sufficiently to support performance monitoring, complex decision-making and community participation, sustainable development may remain a distant utopia.

An important final point from this overview of New Zealand is that the objections raised against the RMA were very rarely against the RMA itself, but rather were about the way it was being implemented by local authorities. These local authorities in turn did not receive the level of policy assistance from central government that they needed and both levels of government suffered from fiscal tightening measures.

While New Zealand may have some way to go before it has resolved all the tensions and conflicting demands created by the institutional, legal, political, economic and technological frameworks, it is does demonstrate the potential of a commitment to develop a land administration system which supports sustainable development.

In brief, and with specific reference to the objectives set out at section 5.2, the NZ case study has shown that:

- There have been clear changes to the balance of rights and responsibilities between sectors of society and government over land and its use—environment and indigenous rights being significant forces of change;
- The components of the existing system only partially address the need for coordination of land policies to reflect those changes to the balance of rights and responsibilities over land and its use;
- By and large there is a need for improved coordination of policies and their implementation within and between government departments as well as into the community;

- Information technology has a significant role to play and there are already some steps being taken to improve the quantity, quality and accessibility of land information and other data that can be spatially-related;

- The RMA was a major legislative innovation that showed how a statutory initiative can help to spearhead changes in other infrastructures. Some synergy was achieved between the RMA and the restructuring and decentralisation of government but the tightening objectives hampered progress towards improved handling of participatory decision-making (within government and with the private sector and community) and the development, management and dissemination of information necessary to support that process.

The following chapter on New Brunswick takes a similar systematic approach to examining the changing balance of rights and responsibilities over land and the legal, institutional and technological frameworks and innovations.

7

THE NEW BRUNSWICK EXPERIENCE

7.1 INTRODUCTION

The New Brunswick case study was chosen on the criteria set out at section 5.4 of Chapter 5.

The interesting contrast with New Zealand is that New Brunswick, Canada, operates in a federal system of government whereas New Zealand does not. This poses some unique institutional issues for exploration in relation to determining rights and responsibilities over land and resources. NB has the added feature of Service New Brunswick (SNB)—a recent provincial government initiative to expand the core work of SNB from maintaining cadastral data and similar property-related services to becoming a one-stop shop for government services.

This chapter reports the results of the author's survey of the legal and institutional mechanisms within NB and their relationship with the federal structures that affect the administration of rights and responsibilities over land and its use. The study took place in 2000 over a period of two and a half months. In that time, interviews were conducted with local and provincial government and environmental groups, First Nations (indigenous) groups and forest industry groups. The study included a trip to Ottawa to interview central government representatives.

As explained in the introduction to the NZ case study in Chapter 6, this chapter follows a general systematic pattern: economic and political trends; changing balance of rights and responsibilities in society; legal framework; institutional framework; technological framework and the state of land administration.

NB is a province within Canada's federal system. It has undergone some legal consolidation, although not as far-reaching as the RMA of NZ. There has been some restructuring within provincial government and local government for fiscal as well as resource management reasons. Canada is party to 88 international agreements on the environment (DFAIT, 2001a) and has made sustainable development a priority:

> 'Sustainable development' (SD) is a cornerstone of Canadian foreign policy. Through peace building measures, economic arrangements and agreements, development assistance programs, and global environmental partnerships, Canada is working toward a world that is more secure, more prosperous, and more sustainable. (DFAIT, 2001b)

7.2 ECONOMIC AND POLITICAL BACKGROUND

New Brunswick is a province within Canada's federal system. It is one of the smallest provinces in Canada and is located in the eastern part of the country. It has a population of 750,000 people and a land area of about 72,000 km^2, making it about one-fifth the size of Germany. The province has seven major cities, but the majority of the population lives in the rural areas.

7.2.1 Federalism

On March 29, 1867, the British Parliament passed the British North America Act that established the provisions of the Confederation of the Province of Canada (Ontario and Quebec), New Brunswick and Nova Scotia into a federal state with a parliamentary system patterned on the British model. The Act established the division of powers between the central Parliament and the provincial legislatures. The federal government was responsible for, among other things: banking business, criminal law, the post office, and the armed forces. The provinces could legislate, among other

things, for property law, contracts and local work. Canada became a sovereign state in 1931 when Britain passed the Statute of Westminster (NAC, 1995).

The Constitution Act 1982 allowed for the patriation of the Constitution from Britain to Canada, ending the role of British parliament in amending Canada's constitution and giving Canada a Charter of Rights and Freedoms (NAC, 1995). The first change to the Constitution was the Constitution Amendment Proclamation, 1983, respecting Aboriginal rights (NAC, 1995).

7.2.2 Provincial and Local Government

In New Brunswick, provincial government is responsible for social services, including education, housing, health, income assistance and justice. Property services, including streetlights, sewers and recreation, are the responsibility of local governments in seven cities, 28 towns and 68 villages. Areas of sparse population are administered by provincial government through 272 Local Service District (LSD) bodies.

Royal Charter established the first municipality in New Brunswick in 1785, which was followed closely in 1786 by legislation creating counties. Local government in New Brunswick has paralleled that of local government in the other colonies of British North America. The first general municipal legislation was adopted by the Legislative Assembly of New Brunswick in 1851 for the incorporation of counties by Order-in-Council. This occurred when areas felt ready to do so. As with neighbouring provinces along the Atlantic seaboard (also known as 'The Maritimes'), such statutes followed the county, city, town and village model.

Prior to 1969, there were local government structures throughout the province of New Brunswick. The local government system had significantly increased in complexity and cost, and there was great disparity across the province. Prior to 1966, local government in New Brunswick was in the form of municipalities (usually urban areas) and counties (usually rural areas). The Byrne Commission of 1967 (led by Edward G Byrne) which was commissioned by the first French Premier of New Brunswick, Robicheau, found serious disparities in the standard of fundamental services such as health, education and justice between regions (GNB, 1998).

The recommendations of the Byrne Commission were innovative, and resulted in a local government system that is unique in Canada. The reforms were commonly known as the 'equal opportunity program'. The Municipalities Act 1967 adopted most of them and, apart from amendments from time to time, it still stands today. The great disparities between different areas was to be overcome by centralising provision of essential 'services to the people' such as health, education, justice and social welfare, whilst the local governments would provide the 'services to property' such as police, fire brigade, land use planning, sewerage and so on.

The elimination of county governments meant that a significant number of areas and population were in unincorporated areas directly under provincial government care. Also, the guarantee of fixed revenue opened the way for municipal units with very different population levels, and municipal governments/local service districts increased in number. In the early nineties there were 119 municipalities and 291 local service districts. The original intention was that once stability and reasonable equity were restored, there would be moves to return more powers to the municipalities, but this has not yet happened.

New Brunswick's unincorporated areas are without local government, and are under the direct responsibility of the provincial government. This has created unique governance issues for NB.

The Municipal Act is generally prescriptive in approach, so unless provincial government specifically confers the power to provide a particular service or undertake a particular action, a municipality cannot do so. Many of the larger municipalities, especially, have expressed the opinion that legislation should facilitate greater flexibility in local government.

The Commission on Land Use and Rural Environment (CLURE) Report of 1993 in New Brunswick established a platform for the discussion of the institutional issues being faced by NB as a result of its land use and environmental factors. The land administration implications of CLURE are discussed in section 7.7. CLURE highlighted problems associated with unincorporated areas, such as conflicting land uses, ribbon development, lack of sound development management and protection of water sources. It recommended that such areas be empowered to elect a Rural Community Committee that had powers to adopt a land use plan (MRTLG, 2001). At

the time of the field research in late 2000, the CLURE report's recommendations were still in the course of being discussed for implementation.

In 1995, the provincial government stated that it would undertake a comprehensive review of the Municipalities Act. The Municipalities Act Review Committee, consisting of municipal and provincial representatives, was subsequently established by the then Minister of Municipalities, Culture and Housing. An initial step was the distribution of a questionnaire to every municipality in September 1995. About sixty percent of the questionnaires were completed and returned. The Committee unanimously found that a new statute should be drafted and that the Municipalities Act should be restructured, with provisions grouped along thematic lines such as municipal finance, which would cover the budget process as well as capital borrowing.

In the *Vision for Local Governance in New Brunswick* that was released in June 2001, it was noted that there are different governance structures in unincorporated and incorporated regions (MRTLG, 2001). Also, in the unincorporated regions there are two alternative structures being used. One was the Local Service District (LSD), which is basically a mechanism for delivery of optional local services by the provincial government, and the other was the 'Rural Community' structure which enabled unincorporated areas to elect their own representatives to a Rural Community Committee. A previous Task Force on the Unincorporated Areas of New Brunswick 1976 had recommended that LSDs be replaced by municipalities (MRTLG, 2001).

The Minister's Round Table for Local Governance discussed the key issues facing the unincorporated areas and stated principles for decision-making and governance in these areas (MRTLG, 2001):

- All citizens of New Brunswick should have access to a form of local government that has elected representatives who can decide on local service provision without requiring provincial government approval, and for communities to take control of development in their areas;

- There should be recognition of the uniqueness of communities and therefore of jurisdictions across the province that require a variety of local governance models;

- Boundaries of local communities should reflect social, cultural, recreational, employment, environmental and economic linkages;
- Restructuring should be community-driven, and facilitated by government;
- Communities should be proactive in working towards local government;
- Sharing of responsibilities between jurisdictions should be based on efficiency and quality.

The Minister's Round Table for Local Governance was also clear that if communities were to contribute to cost sharing then they should also have input into decision-making. Thus unincorporated communities and municipalities should be transparent and consultative, and regional land use planning should be essential (MRTLG, 2001). By the same token, taxation should be accompanied by rights to local representation, and all property owners should share in the costs of police and transport services (MRTLG, 2001). Grant funding should continue to be available from the provincial government to ensure equity across the province.

Apart from the need for elected representation, which the municipalities already enjoyed, the Minister's Round Table for Local Governance found that many municipalities needed regional land use planning, cost sharing and accountability and continued access to funding grants for reasons of equity (MRTLG, 2001). The Round Table summarised the issues as follows:

> In recent years, much has been said about the need to change various aspects of the local governance system in New Brunswick. The issues that continue to be raised focus on: provincial fiscal transfers to municipalities; local representation; land use planning and property taxation in the unincorporated areas (i.e., the Local Service Districts or 'LSDs'); and the relationship between municipalities and surrounding unincorporated areas. (MRTLG, 2001)

The Minister's Round Table for Local Governance suggested a range of options that could be made available to local communities. There could be (MRTLG, 2001):

- one-tier municipalities; or
- two-tier regional municipalities; or

- unincorporated areas could be annexed to existing municipalities; or
- rural municipalities could be created; or
- the Rural Community structure could be enhanced with powers to make land use planning decisions; or
- a Community District could be created.

The Minister's Round Table for Local Governance (MRTLG, 2001) concluded that in the interests of local governance for all citizens, local autonomy, recognition of the uniqueness of local areas, the need for choices of governance options, proactive communities, and accountability and taxation with local representation, the following new governance options be available for unincorporated areas: Community District; Enhanced Rural Community; and Rural Municipality. These are illustrated by Figure 7.1.

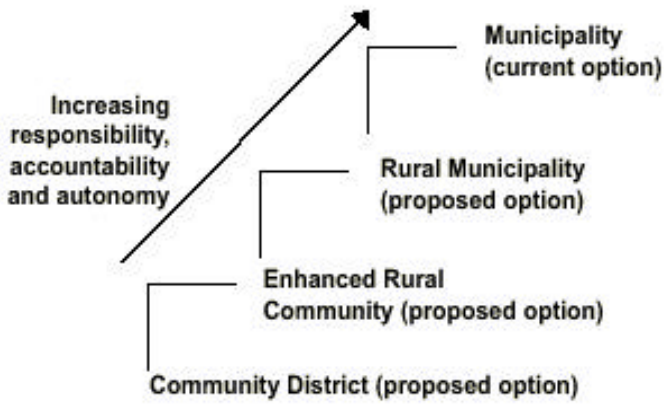

Figure 7.1: Governance Options and the Corresponding Levels of Local responsibility, Accountability and Autonomy (MRTLG, 2001)

7.2.3 Proposed Regional Framework of Organisations

New Brunswick has 37 special-purpose regional service agencies—thirteen Economic Development Commissions, twelve Water Commissions and twelve District Planning

Commissions. The Minister's Round Table for Local Governance developed the following principles for a regional service model that would consolidate these and other relevant regional services (MRTLG, 2001):

- they would not be another layer of local government; but rather would service municipalities and unincorporated areas;
- they would exist across the province, with boundaries based on common interests and identity;
- some decisions would be made by representative processes.

The reasons behind these provisions were:

- greater economies of scale;
- greater equity of service delivery;
- provision of a forum to resolve cross-boundary issues;
- improved accountability to communities;
- more effective land use planning across the region as well as local areas.

These proposals are indicative of trends in planning and public policy that value citizen participation and greater cooperation/consolidation of service provision by government to promote and improve land use planning across different stakeholder groups.

7.3 CHANGING BALANCE OF RIGHTS AND RESPONSIBILITIES

This section outlines some relevant changes in New Brunswick society such as the rise of environmentalism and First Nation's rights, as well as changes to the forestry and agriculture sectors. These changes illustrate the changing balance of relationships in society and how these in turn impact on the content of rights and responsibilities in land and land use.

7.3.1 Environment

In Canada, polling results over the years have shown that the environment is an important issue and never disappears from the agenda, but it does change in priority, and tends to rise when linked to health (Scott, S. 2000, EC,[31] pers. comm., 10 November). Society understands the impact of the environment on health and quality of life, but the term sustainable development is not necessarily perceived as an ongoing issue (Ferguson, C. 2000, EC, pers. comm., 10 November).

'Sustainable Communities' is an initiative of Environment Canada (a central government department) that operates out of regional offices and is based around communities and their ecosystems, such as the Georgia Basin, St Lawrence River, Atlantic Coastal Action Program, Great Lakes and so forth (Ferguson, C. 2000, EC, pers. comm., 10 November). In the 1990s the environment became more linked to health, thus raising public awareness of environmental issues (Cluskey, W. 2000, OAGC,[32] pers. comm., 7 November). People in NB do have an environmental layer to their identity at a local community level (Coon, D. 2000, NBCC, pers. comm., 26 October).

In 2000, the NB provincial government announced that, following research commissioned since 1997, the province would establish ten protected areas (150,000 hectares) representing 2% of NB's total land base, where recreational activities would be allowed, but not resource exploitation (CNB, 2000).

The New Brunswick Environment Industry Association (NBEIA) is a good example of the rise of the environment as a political, economic and social issue of importance. It is a non-profit association dedicated to promoting the growth of environmental business in New Brunswick, Canada. Founded in 1994, NBEIA represents members from all facets of the environment sector, ranging from technology development and manufacturing to consulting, engineering, financial, and legal services (NBEIA, 2000). NBEIA is a chapter member of the Canadian

[31] Environment Canada

[32] Office of the Auditor-General of Canada

Environment Industry Association national office in Ottawa, and is part of a network of ten provincial CEIA associations (NBEIA, 2000).

In NB rights, restrictions and responsibilities to do with aquifers have been developing since the 1980s. The 1990s have been focused on coastal lands and Crown lands, especially forestry (Coon, D. 2000, NBCC, pers. comm., 26 October). Canada is often called a 'water-rich' nation, with 9% of the world's renewable fresh water supply, and the longest ocean coastline of any country, as well as the second largest continental shelf (EC, 2001a).

There has been a lot of work carried out in NB in recent years about Crown land management of forestry and coastal waters, and protection of groundwater and aquifers. Thirty-two communities in NB get water from reservoirs and many more from wells (Coon, D. 2000, NBCC, pers. comm., 26 October). Forestry is dealt with in the following section.

The Clean Water Act 1989 created riparian zone restrictions. It aimed to create static riparian zones in a dynamic landscape, and these affected private as well as publicly held lands. The Wellfields Protection Act 2000 is an example of a major change in approach to community resources. This Act creates a buffer zone around waterways and water sources to protect the quality of the water. The Clean Water Act regulations do not operate along property boundaries. A land use control should typically be relatable to a parcel, but under the current regulations a single parcel of land could be subject to different zonings for wellfield protection. Despite recommendations of the study committee to not be prescriptive in regulations, in the end the regulations were prescriptive. These regulations:

- set controls that were generic;
- changed the proposed travel times for water;
- ignored legal property lines; and
- vested much of the control in the Province, which has the potential to make local development decisions difficult.

7.3.2 Forestry

Forestry is the most important industry in NB (Poitras, I. 2000, NBFPA,[33] pers. comm. 18 October; Dick, B. 2000, NBDNRE,[34] pers. comm., 24 October).

There are debates about whether the sustainability of forestry refers to the volume of wood supply for the future, or to ecological health and biodiversity. With the latter approach, there could be a market for a diversity of products rather than just volumes of a narrower range of products. There are 32 species of wood in NB, but planning and management is applied to only six species. At the moment, only six companies have access to the forests on Crown land. The Canadian Conservation Council does want forestry to continue, but it wants it done more sustainably (Coon, D. 2000, NBCC, pers. comm., 26 October).

The forestry sector has been subject to strict controls on resource utilisation under the Clean Water Act 1989 and the Crown Lands and Forests Act 1982 (CLFA). Under the CLFA, Crown forestlands were given on licences to ten major forestry corporations that pay fees for licences, and there are other charges linked to market conditions for the products. The CLFA came out at the time that ArcInfo became available as a modelling tool and in 1987, for the first time, they could model the feasibility of sustainable soft wood production (Mulholland, G. 2000, UNB, pers. comm., 13 October). NB are leaders in simulation modelling of forest dynamics for sustainable forestry using information such as geology, soils, water, vegetation and seasonal changes. Between 1987 and 1992 another data layer for deer wintering was added in after modelling deer wintering patterns (Mulholland, G. 2000, UNB, pers. comm., 13 October).

NB also has about 40,000 private woodlots that make up about 25% of the land. They are a serious source of supply and they are grouped largely under seven marketing boards that are in turn members of the NB Federation of Woodlot Owners (Marche, P. 2000, NBFWO, pers. comm., 19 October). Crown land became the reserve land in the event that there was insufficient wood supply from private land to

[33] New Brunswick Forest Products Association

[34] New Brunswick Department of Natural Resources and Energy

keep the sawmills operational (Mulholland, G. 2000, UNB, pers. comm., 13 October). Every five years a new forest management plan comes out that outlines a strategy for the next 80 years through temporal modelling, and for the next 25 years through spatial modelling (Dick, B. 2000, NBDNRE, pers. comm., 24 October). There is also a NB First Nations Forestry Program that reflects the growing activity in addressing First Nation's claims (FNFP, 1999).

The NB Crown Lands and Forests Act set a model for sustainability (Dick, B. 2000, NBDNRE, pers. comm., 24 October). The Crown owns more than half of the forest lands, and most of the private companies are using the Forest Management Manual, which is attached to the CLFA, and which changes regularly because of environmental and indigenous pressures (Poitras, I. 2000, NBFPA, pers. comm. 18 October). The Protected Areas Strategy aims to put 2% of NB as protected area (CNB, 2000). Of the original forest industry lands, 18% was lost for deer wintering, another 5% to native claims, because each band got 5% that was near their reserve and, in effect, 22% of Crown land was taken back by the Crown (Poitras, I. 2000, NBFPA, pers. comm. 18 October). Protected areas are removing wood from supply, which was what the environmentalists were campaigning to achieve (Dick, B. 2000, NBDNRE, pers. comm., 24 October).

The vision for NB as put by industry as well as government is to remain a sustainable forestry province (Poitras, I. 2000, NBFPA, pers. comm., 18 October; (Dick, B. 2000, NBDNRE, pers. comm., 24 October). The ten pulp mills in NB have to import wood (Poitras, I. 2000, NBFPA, pers. comm., 18 October). The certification process for uniform international compatibility of standards is underway in Brussels. This replaces the variety of ad hoc certification processes that are currently available (Poitras, I. 2000, NBFPA, pers., comm. 18 October). There is consciousness and activity to get citizens involved in stakeholder committees and promotes a policy of accountability (Poitras, I. 2000, NBFPA, pers. comm. 18 October).

Private land does not have much planning in place for forestry, but the Marketing Boards have started the process. As the representative of one Marketing Board explained, private woodlot owners prefer to have a leadership role in their own sector rather than to be subject to government processes (Marche, P. 2000, NBFWO, pers. comm., 19 October). For example, in 1991 the Clean Water Act specified that

there was to be no harvesting for a specified margin along streams. Within one year, several hundred private woodlot owners had clear-cut along those margins along streams, even though prior to that such clear-cutting had rarely been done (Marche, P. 2000, NBFWO, pers. comm., 19 October). Marche explained that this behaviour had resulted from anger among some woodlot owners that their land use rights were curbed without prior consultation or opportunity to discuss the scientific approach on which the legislation was reliant (Marche, P. 2000, NBFWO, pers. comm., 19 October). The allegation by some scientists at the time was that the principal cause of *giardia* was siltation due to wood harvesting, yet woodlot owners believed that such siltation was more due to road construction (Marche, P. 2000, NBFWO, pers. comm., 19 October). The government did not recognise the financial cost to the owners, nor the fact that they received no compensation for the restriction (Marche, P. 2000, NBFWO, pers. comm., 19 October). Several hundred woodlot owners were unhappy that they had had to bear the cost of the 'public good' (Marche, P. 2000, NBFWO, pers. comm., 19 October). The NB Conservation Council agreed that there had been insufficient consultation with the community, including with the woodlot owners, regarding the widening of buffer-zones along waterways (Coon, D. 2000, NBCC, pers. comm., 26 October).

The head of the NB Federation of Woodlot Owners (Marche, P. 2000, NBFWO, pers. comm., 19 October) further complained that:

> Indigenous species legislation would also affect us. We had given input into the compensation issues. The tone of consultations for this was good and there was a high level of scientific credentials involved as well as sense of genuine open-mindedness about the issues. When government first announced the proposed Endangered Species Act, there was no compensation and, after a series of protests by private owners, the government agreed to discuss a detailed method of compensation. The point is that such legislation has financial implications for private owners and, if ignored, they may disregard the legislation and follow the US trend of 'shoot', 'shovel', 'shut-up', which would have the opposite effect of controlling endangered species. It would be better to have maximum collaboration between landowners, government and conservation groups. Bottom line is that the compensation can be creatively achieved with tax credits.

Marche made the point that 90% of woodlot owners are in unincorporated areas. It is not possible to re-create local government that represents rural dwellers, because

in actual fact many are urbanites on ribbon developments (Marche, P. 2000, NBFWO, pers. comm., 19 October). Also, people are busier and have less time to devote to local governance. This is where the Internet and DELTA Project could really simplify local governance. (The DELTA Project is discussed later in this chapter in the section on Technology Framework.) Private woodlot owners took offence at scientists setting rules in a closed box.

Private woodlots are a real problem because, historically, the parts of Canada where they were located had been settled for 300 years and they were not accustomed to public interference (Dick, B. 2000, NBDNRE, pers. comm., 24 October). There was a tax rebate scheme in place to encourage sustainable forestry practices, but it was apparently not much of an incentive when compared with the world market. There is government funding for silviculture, but this too seems to have had minimal impact (Dick, B. 2000, NBDNRE, pers. comm., 24 October). The government helps the marketing boards by providing data and doing the provincial inventory using aerial photography, but research so far shows that there has been severe over-cutting on private lands (Dick, B. 2000, NBDNRE, pers. comm., 24 October).

Part of the problem was that the mills had already expanded their operations with government grants so, as Crown production become more controlled, pressure increased on private woodlots. This caused overharvesting, such that in 1997 wood production from private woodlots doubled, i.e. provincial policy on expanding the mill operations had started the unsustainable trend (Mulholland, G. 2000, UNB, pers. comm., 13 October).

This section has illustrated the rise of environmentalism and the changing nature of forestry, in particular, the variety of stakeholders involved and their different approaches to forestry management. These reflect the changing balance of rights and responsibilities driven by competing environmental, social, and economic objectives.

7.3.3 Farmers

Over 52% of New Brunswick’s population lives in rural areas, but only 2% actually live on farms (GNB, 1993). This is indicative of the type of pressures being felt on the

agricultural land base, which must be managed and protected if this important rural economic activity is to have a future (GNB, 1993).

NB is encountering increasing conflicts between urban and rural attitudes (Oliver, B. 2000, NBFA,[35] pers. comm. 2 November). General attitudes have become more urban, and through ribbon developments these attitudes are coming into the rural areas. By comparison, before World War II every family had some connection with farming. It was only in the 1980s that the urban and rural owners began to geographically abut each other and set off the conflicts between professional farmers and environmentalists. So the farmers identified that there was a need for some kind of 'right to farm' legislation stating that as long farmers behave in an acceptable way they should be allowed to operate, but if they pollute they should be charged like any other industry. This statute, called the Agricultural Operations Practise Act 1986, has been passed but never received its implementing regulations. This was followed by another version assented to in March 1999, the key provisions of which are:

> Article 1: In this Act, 'acceptable farm practice' means a practice that is carried on in a manner consistent with proper and accepted customs and standards as established and followed by similar agricultural operations under similar circumstances, including the use of innovative technology used with advanced management practices, and in conformity with any standards set out in the regulations.

Article 2 confirms that, subject to compliance with an act or regulation of Canada, a person who carries on acceptable farm practices is not liable in nuisance to any other person for odour, noise, dust, vibration, light, smoke or other disturbance resulting from the agricultural operation.

There was a case in 1999 where nearby suburbs expanded towards a pig farm owned by a farmer named Terry Sullivan. The new neighbours did not like the smells from his farm and, in the litigation that ensued, the court found against the pig farmer and he was forced to move. Years later, he burnt down his subsequent pig farm and killed himself. The swell of public sympathy that followed resulted in the 1986 version of the right-to-farm legislation, which was repealed and replaced by a more modern version in 1999. The Livestock Operation Act is also a recent innovation to

[35] NB Federation of Agriculture.

apply a permit system to operate that would stand once it passed environmental and siting examinations. It would be certification based on science, to hold up to local communities—in particular the growing number of non-farming urbanites who live along ribbon developments (Oliver, B. 2000, NBFA, pers. comm. 2 November).

Another example of social changes that also indicated changes in priorities was the government decision in 1999 to try to close down the Department of Agriculture. This created an uproar among farmers, and the agricultural community submitted a report to government about why a Department of Agriculture was needed (Methven, I. 2000, CPS/UNB,[36] pers. comm., 3 October). This also raised more interest in 'Right to Farm' legislation (Oliver, B. 2000, NBFA, pers. comm. 2 November). This experience in NB broadly echoes the changing position of NZ farmers that was discussed in Chapter 6. This is discussed in more detail in a later section of this chapter.

CLURE had advanced a suggestion that the government retain development rights to certain land transacted through the Agricultural Development Board, and in other cases to purchase development rights to land transferred to a non-agricultural use (GNB, 1993). The provincial government believed that one of the most effective ways to improve protection of these lands was to incorporate them into local and district plans (GNB, 1993).

Taxes on forestry lands are lower than taxes on agricultural lands—this is indicative of the status that forestry has in the NB economy. These land taxes are administered through Service New Brunswick (SNB). The computer system used by SNB to administer this and other property-related taxes came online in Spring 2000 and is jointly owned by SNB and the Department of Finance. Previously, the land registry and tax systems databases were separate.

Provincial government sets average real property tax for all land except commercial woodlots, farm woodlots, and farm land rates (Dillon, M. 2000, NBDAFA, pers. comm., 13 October). Everything else is residential. Also, in NB, the provincial government collects all taxes, both for itself and for local governments.

[36] Centre for Property Studies, University of New Brunswick

There is a program to voluntarily identify agricultural lands and to zone them as such under the Community Planning Act (Dillon, M. 2000, NBDAFA, pers. comm., 13 October). The advantage of agricultural classification is that it becomes eligible for tax deferral (Dillon, M. 2000, NBDAFA, pers. comm., 13 October). Those identified properties are then recognisable as such through SNB's internet services, and valuers have to reflect this classification in their valuations (Dillon, M. 2000, NBDAFA, pers. comm., 13 October).

The experience of the farming sector reflects how a changing physical and population landscape affected society's re-thinking of priorities across its different sectors in the context of competing social, environmental and economic priorities.

7.3.4 Indigenous rights

There are vast areas of Canada where indigenous peoples (also known as First Nations) used to have ownership rights. These were ceded to the white settlers voluntarily or surrendered by treaties. The surrender of native title creates a fiduciary relationship between the Crown and the indigenous group giving up its rights and, according to the Constitution Act 1867, the federal government has jurisdiction over Indians and land reserved for Indians as defined by the Indian Act (Sinclair and McCallum, 1997). The Indian Act defines who may be 'status' Indians with rights on reserve lands. These 'status' Indians may not have ownership rights on reserve lands—only a certificate of possession that is transferable 'only by consent of the band council and the responsible federal official' (Sinclair and McCallum, 1997). Like the experience of the Maoris, there has been a push in Canada for greater autonomy and land rights for indigenous people.

Since 1973, federal and provincial governments have been dealing with native land claims under a comprehensive land claims policy and 'the settlement process will exchange undefined aboriginal land rights for defined rights and benefits set out in legally binding agreements' (Sinclair and McCallum, 1997). There have been very few negotiated settlements, and many cases go to the courts (Sinclair and McCallum, 1997). To some extent, the increased awareness about the environment has also

assisted this awareness of aboriginal issues (Wyse, P. 2000, INAC,[37] pers. comm., 9 November).

The issue of native rights rose in prominence after the Marshall case, where the Supreme Court specifically recognised the First Nations people's communal right of access to land and resources for 'moderate livelihood'. Government has treated quotas for land and resource use as an administrative tool rather than as property right (Wiber, M. 2000, DS/UNB,[38] pers. comm., 16 October). This has affected people's existing rights. For example, holders of Crown land leases for wild blueberry production wanted assurances that they were safe from indigenous claims to pick the crops (Dillon, M. 2000, NBDAFA, pers. comm., 13 October). Another example is that DNRE have come to agreements with band councils for First Nations to have more forestry cutting rights (Dillon, M. 2000, NBDAFA, pers. comm., 13 October).

Ideologically, the federal department of Indian and Northern Affairs Canada has the final say about the way reserve land is used. Among First Nations people, there are three layers of dialogue. The first is the layer of understanding and meaning that they have with their peers. The second is what they seek to be expressed in law. The third is the expression that they seek in institutional forms. These layers may well differ from one another in content as well as in implementation (Wiber, M. 2000, DS/UNB, pers. comm., 16 October). For example, when the Indians want to 'go back to traditional ways' the question is: 'To what historical stage?' (Wiber, M. 2000, DS/UNB, pers. comm., 16 October). There is evidence that, prior to the fur trade, kinships were matrilineal (Wiber, M. 2000, DS/UNB, pers. comm., 16 October). Today there is the injustice of traditional laws that once a woman moves out of the traditional lands, she is to lose her native status (Wiber, M. 2000, DS/UNB, pers. comm., 16 October). Bill C34 from Canada's Federal government seeks to alter that, so that Indian women can win the right to come back, but there is no corresponding increase in resources from federal government to support them (Wiber, M. 2000,

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[37] Indian and Northern Affairs Canada (INAC) falls within the Cabinet Committee on Social Union. It assists First Nations with natural resource and environmental management by issuing timber, mineral and waste permits as well as assisting with remediation of contaminated sites. INAC operates through ten regional officers to function in a decentralised manner (Wyse, P. 2000, INAC, pers. comm., 9 November).

[38] Department of Sociology, University of New Brunswick

DS/UNB, pers. comm., 16 October). There are further divisions between Indian Act groups and others and between those in and out of band councils (Wiber, M. 2000, DS/UNB, pers. comm., 16 October).

Even though native band groups are formally under the jurisdiction of the federal government, the municipality may choose to seek their input into land use decisions. For example, when a road was to be built close to the St Mary's First Nation band, they were consulted; they had no objection because they could build on that development by arranging to run a casino on their land (Tse, W. 2000, FMC, pers. comm., 16 October).

The Marshall decision was a landmark decision of Canada's Supreme Court about the treaty right of Indians to live off the land and its resources. It represented a legal manifestation of a desire to give effect to the early Treaty Rights. In New Brunswick there are 17,000 people of aboriginal ancestry, 5500 of whom have on-reserve status, 4500 have off-reserve status and 7000 are non-territorial Indians from other places (Lavalle, B. 2000, NBCFN, pers. comm., 1 November). The NB Council of First Nations (NBCFN) believes that there are only two First Nations in New Brunswick: the Maliseet and Mi'kmaq (Lavalle, B. 2000, NBCFN, pers. comm., 1 November). But the government has recognised fifteen (ISG, 2001), which the NBCFN believes creates issues of unity, in addition to the issues to do with reserve and off-reserve (Lavalle, B. 2000, NBCFN, pers. comm., 1 November). (Kennedy, J. 2000, SMFNB, pers. comm., 2 November)

Julia Kennedy of the St Mary's Band (Kennedy, J. 2000, SMFNB, pers. comm., 2 November) explained that there is a Framework Agreement on First Nations Land Management, which is a Federal initiative known as Bill C49. St Mary's is the first and only one so far in NB to sign on in the first wave of registrations under Bill C49. A land code for St Mary's will be passed. The Agreement was to transfer management of land from the federal government department called Indian and Northern Affairs Canada (INAC) to the bands—this would be a transfer of authority as well as finance. The First Nations people themselves will vote on the Land Code for each reserve.

Kennedy (2000) explained that the Lands and Trust service's joint initiatives with the Assembly of First Nations (AFN) was to develop new policies for everything, including government, wills and estates. AFN is a national working group

on policy that holds discussions with First Nations leaders and conducts some research to support that policy-making objective (Christoff, B. 2000, AFN, pers. comm., 7 November). So the AFN was funded to develop regional consultation with the chiefs. There is an institutional gap between the research done and the implementation.

In line with the moves to support self-determination, many contracts between the First Nations and the government require that the First Nations indemnify the government against any liabilities that may arise as a result of the management decisions of the First Nations. However there is concern that the administrative and core funding provided by central government for the work to be done is insufficient to carry out the management and administrative tasks properly (Kennedy, J. 2000, SMFNB, pers. comm., 2 November).

On governance, there are considerations about the role that the Association of First Nations (AFN) plays (Christoff, B. 2000, AFN, pers. comm., 7 November). There is a proposal that each FN person should vote on who should be chief, but when INAC approaches the AFN about policy issues, decisions will be made jointly by the FN communities and the AFN (Christoff, B. 2000, AFN, pers. comm., 7 November). There are vast differences between the capacity (and funds) for different bands to self-govern. For example, the Hobbema band in Alberta are very wealthy as they have a population of only 1,000 and have oil reserves on their land worth $600 million (Christoff, B. 2000, AFN, pers. comm., 7 November). Yet the smallest band in Canada has only 10 members and no independent source of revenue (Wyse, P. 2000, INAC, pers. comm., 9 November).

Status Indians were those who had treaties, and with those treaties came reserves, so non-status Indians usually had no land allocated back to them. Since the 1970s the Federal government has received reports that the existing administrative system does not work because Federal government is too far from them and therefore response times to decision-making about reserve lands are inadequate (Wyse, P. 2000, INAC, pers. comm., 9 November). There are also some bands where the members' mistrust in their chief and/or council means that they may not want self-government, so there is a range of views and efforts.

The First Nations Land Management Act replaces a few sections of the Indian Act and brings the powers of the band government on land subject to this First Nations Land Management Act (Wyse, P. 2000, INAC, pers. comm., 9 November). Indian reserve land is like a condominium where the building is owned in common, so even if they wish to lease land, there would need to be a community vote (Wyse, P. 2000, INAC, pers. comm., 9 November). Under the Indian Act, reserve lands cannot be used as security for credit. The band can go to the Crown and arrange for it to be sold or leased, or lease it to an individual and the bank lending the credit could take over the leasehold interest Act (Wyse, P. 2000, INAC, pers. comm., 9 November). Alternatively, the band can allocate the reserve to individuals who then get a Certificate of Possession with which to ask the government for a lease—the money would then go back to the individual/s, which would be akin to private ownership (Wyse, P. 2000, INAC, pers. comm., 9 November). Status Indians can receive tax-free income while they are on-reserve (Wyse, P. 2000, INAC, pers. comm., 9 November).

If there are minerals on the reserve, the Crown holds those minerals on behalf of the bands. Ten years ago Indian foresters got together and created the National Aboriginal Forestry Association, and were able to participate in Canada's initiative for a national forest strategy and thus bring aboriginal issues into the mainstream discussions (Wyse, P. 2000, INAC, pers. comm., 9 November). There is federal funding for First Nations Forestry Programs (FNFP, 1999).

In NB, the Burnt Church dispute was at its height at the time of the present writer's visit to New Brunswick. The issue was over ownership of lobster fishing rights in the Miramichi Bay area. The dispute was between the Esgenoopetitj First Nation group (of Burnt Church) who sought to exercise their rights as interpreted following the Marshall decision, and fishermen/companies licensed by the federal Department of Fisheries and Oceans (DFO) (NBEN, 2000a). The Canadian Constitution entrenches Aboriginal and Treaty Rights within Canadian law and the Marshall decision of 1999 interpreted this to mean the right of Aboriginal peoples to make a moderate livelihood from fishing, hunting and gathering (NBEN, 2000a). Yet the DFO sought to exercise its mandated jurisdictional responsibility to manage the fisheries industry, a part of which was the licensing system, which the Esgenoopetitj First Nation people did not consider should apply to them because they believed they

were exercising their Treaty rights. The DFO had resorted to seizing all traps that did not have DFO tags.

This Burnt Church example is a useful demonstration of the complexity of the social, economic and environmental issues that affect discussions about rights and responsibilities. The DFO was acting within its jurisdictional mandate to manage the lobster fishing with license systems that encourage sustainability. As will be discussed in the following sections on vertical co-operation within government, the matter could be complicated further by provincial government's interest in resources.

This sub-section has illustrated the complex process by which the rights and responsibilities over land and resources of the First Nations are being decided—by the First Nations themselves through their various representative bodies, by the different tiers of government, and by a variety of other stakeholders.

In summary, this section has illustrated the past, current and impending changes to the rights and responsibilities of various public and private stakeholders over land as well as how the definition of 'land' has grown in common usage to include resources such as water. Discussions with indigenous people groups can be very difficult because of the long history of mistrust and the different understandings of their relationship with the land and its use.

7.4 LEGAL FRAMEWORK

Concern for the environment is a significant driver of changes to the legal framework that affect the rights and responsibilities of government, private sector, the wider community and individuals. For example, Canada is a signatory to 88 international instruments on the environment. Within Canada, there is also extensive legislation at federal and provincial level that is relevant to the environmental aspects of sustainable development.

The rights of First Nations peoples have also affected the legislative framework, although perhaps not as far-reaching as the effect of the Treaty of Waitangi on legislative reform in New Zealand.

In this section the implications of these forces on legislation are reviewed.

7.4.1 Federal

The Commissioner for the Environment and Sustainable Development (CESD) reports to the Auditor-General of Canada. It has legislative powers to audit the implementation of policy, whereas in the US, the Congress tends to direct the Auditor-General. The CESD has done capacity building within departments, and has also conducted studies on best practices (Cluskey, W. 2000, OAGC, pers. comm., 7 November). The twenty-one individual Federal departments usually do not have intimate access to each other to help to draw together the lessons learned from experiences. The legislative mandate of the CESD to require departments to produce a sustainable development policy has helped to promote sustainable development as well as provide a focal point from which information about each department's policies may be disseminated (Cluskey, W. 2000, OAGC, pers. comm., 7 November).

There has also been collaboration between the Federal and provincial Auditor-Generals (Cluskey, W. 2000, OAGC, pers. comm., 7 November). Each of the twenty-one departments and three agencies at central government level are required to prepare a sustainable development strategy related to their own mandates, and must include an action plan. The Auditor-General cannot audit those who carry out work that has been out-sourced, but can require the departments to show compliance with its own strategies, and can interview the providers of outsourced services (Cluskey, W. 2000, OAGC, pers. comm., 7 November). For example, in 1995, the Auditor-General approached twenty-five large companies for a study on environmental management (Cluskey, W. 2000, OAGC, pers. comm., 7 November). Also, whilst there are some bilateral agreements such as the Federal–British Columbia bilateral agreement on Equivalency, the federal Auditor-General can usually only audit the federal side (Cluskey, W. 2000, OAGC, pers. comm., 7 November).

The Auditor-General has indicated in past years that there is a need to develop more diverse performance indicators and a more consistent methodology (Cluskey, W. 2000, OAGC, pers. comm., 7 November). The Attorney-General does do a follow-up of each every two years department based on their sustainable development strategy, and has even held hearings with government departments after receiving their status reports.

7.4.2 Provincial

New Brunswick has three key pieces of legislation pertaining to the land and environment. There is the Clean Environment Act 1987, Clean Water Act 1990 and Clean Air Act 1997. There are new acts coming out for Water Classification and also for Phase 2 of the Drinking Water Supply Act.

The Clean Water Act, the Clean Environment Act, and the Clean Air Act are three key statutes administered by DOE. These Acts provide broad powers to the Minister of Local Government and Environment (DLGE) in that they require anyone discharging a contaminant to obtain approval from the Minister. A contaminant is very broadly defined, and essentially includes anything that is in excess of the natural constituents of the environment.

The Clean Environment Act paved the way for environmental impact assessments and anti-contaminant regulations.

The Clean Air Act, which is the most recently enacted statute, expands on the basic elements of the Clean Environment Act and Clean Water Act in several key areas (DLGE, 2000b):

- It creates significantly expanded opportunities for public participation in the review of approvals for major sources of air emissions and in the development of air quality objectives;
- It provides for the establishment of a system which allows Department officials to assess monetary penalties for minor offences;
- It includes a number of principles which must be considered in decision-making;
- It requires reporting to the Legislature on the Province's success in achieving air quality objectives; and
- It provides for citizens to require the Minister to investigate suspected offences. One of the main tasks of the Clean Air Act is to control the type and

> amount of contaminants that are released into the atmosphere, through a system of Air Quality Approvals.

This legislation places responsibility for the harmful effects of air pollution onto the person who releases contaminants, and it applies to all businesses, industries, and individuals in New Brunswick, to federal and provincial governments, and to Crown corporations (DLGE, 2000b). It creates new opportunities for the public to take part when air quality decisions are made, and it enables the Minister to act swiftly against polluters where human health or the environment may be at risk (Christoff, B. 2000, AFN, pers. comm., 7 November).

A key issue that the NB Conservation Council is working on is coastal waters and lands. In government, these are divided between coastal land, which is under the DLGE (provincial) and coastal water, which is more under DNRE (federal) because of the fisheries and aquaculture industries.

> A *profit à prendre* is the right to harvest the natural produce of another's land, such as timber, crops, minerals, turf, peat, sand, soil, fish or other animals. ...Rights to take water may be granted as an easement but not as a *profit à prendre*. ...the profit is a property right. The grantor cannot revoke it unilaterally and it is transferable. (Sinclair and McCallum, 1997)

For example, there is a land use plan for the whole city of Fredericton that has to be approved by the province. In NB, people cannot be involved in the municipal planning process unless they fall within the category of a relevant person as per sections 85 and 86 of the Community Planning Act. It is within the discretion of the municipal authority to determine whether a development proposal should be notified to members of the public, and there may be a compulsory public hearing that is advertised in the newspaper about matters such as rezoning (Tse, W. 2000, FMC, pers. comm., 16 October). In rural areas, people tend to expect development and a mix of land uses, because traditionally that is how small communities developed. But in cities such as Fredericton, people are very concerned about their neighbours' development plans and traffic issues. Fredericton does not have any water supply or water quality issues. The Wellfields Protection Act 2000 has been controversial because it categorises areas of land in margins around waterways, aquifers and so

forth (known as 'wellfields') that are subject to a range of restrictions on use so as to protect those wellfields (Tse, W. 2000, FMC, pers. comm., 16 October).

The discussions in this section show that there have been definite changes to the balance of rights and responsibilities between and within the public and private sectors that have found expression in formal statutes. There has been a trend towards giving the community more responsibility to be involved in these discussions on policy as well as implementation. Environmentalism and First Nations rights have created a more diverse set of stakeholder interests and voices that have also found some legislative expression. Conversely, there have been changes in traditional sectors such as farming. Farmers have found that, in the face of such changes, the strength of traditional support for the farming sector is waning, and this realisation has led to the push for 'right to farm' legislation.

7.4.3 Local government

Local government in NB is administered by the NB Department of Environment and Local Government, and is empowered to implement aspects of provincial government legislation. Examples of this are discussed at 7.5.3.

7.5 INSTITUTIONAL FRAMEWORK

Sustainable development requires coordinated decision-making within tiers of government (horizontal co-operation) as well as between tiers of government (vertical co-operation). The CLURE Report of 1993 established a platform for the discussion of the institutional issues being faced by NB as a result of land use and environmental factors. At the time of the field research in late 2000, the CLURE Report's recommendations were still in the course of being discussed for implementation.

This section discusses the institutional framework for making decisions about rights and responsibilities over land (and its use) within government and into the community. Sub-section 7.5.1 looks at examples of horizontal cooperation within federal government. Sub-section 7.5.2 discusses some examples of horizontal cooperation within provincial government. Sub-section 7.5.3 then overviews the

vertical cooperation between federal, provincial and local tiers of government, as well as into the community. The final sub-section at 7.5.4 summarises why there needs to be better cooperation.

7.5.1 Horizontal Co-operation: Federal Government

> Horizontal integration is very important and there is a need to make organisational values change; sustainable communities is one thematic topic to meet on. (Ferguson, C. 2000, EC, pers. comm., 10 November).

Canada has ten provinces and three territories. In a survey conducted across central government and related stakeholders by Natural Resources Canada in 1999, one of the top areas for the focus of new actions was initiatives to 'harmonise activities across governments' (NRCan, 2000). There is a Canada-wide Accord on Environmental Harmonisation, facilitated by the Canada Council of Ministers of the Environment (CCME), the major inter-governmental forum in Canada for discussion and joint action on environmental issues of national and international concern. The council is made up of environment ministers from the federal, provincial and territorial governments. Its work is supported by a permanent secretariat (CCME, 2001).

Industry Canada alone has fifteen departmental sections (IC, 2000) and administers sixty-two acts or parts of acts (IC, 2001a). NRCan is also very diverse—there are major sections for forestry, earth sciences, energy, minerals and metals, and the department as a whole administers 32 acts or parts of acts (Scott, J. 2000, NRCan, pers. comm. 8 November). When departments such as these responded to the requirement by the Commissioner for Environment and Sustainable Development (CESD) to produce sustainable development strategies and action plans, it became apparent that the task was challenging because of the sheer size of the departments and the number of section within them. Departments had different approaches to producing the strategy for the CESD. In Industry Canada, it went to the Corporate Policy Group rather than the Environmental Affairs Group because of the need to draft performance indicators. (Dauvergne, J. 2000, pers. comm. 8 November). In NRCan it went to the Sustainable Development and Environment arm of the Deputy-Minister's Office (Scott, J. 2000, pers. comm., 8 November). The view of representatives from IC (Dauvergne, J. 2000, IC, pers. comm. 8 November) and DNR

(Scott, J. 2000, NRCan, pers. comm., 8 November) was that the Auditor-General's sustainable development performance indicators should include all three factors, i.e. social and economic as well as the usual environmental ones. It may be that there is a need to summarise on a national scale the goals or strategic directions set by each federal department, and sustainable development should perhaps be included in the job description for Deputy-Ministers.

The requirement for sustainable development strategies in the Canadian (and New Brunswick) experience came at a time of fiscal tightening (Scott, J., 2000, DNR, pers. comm., 8 November; Belzile, G. 2000, DFO, pers. comm., 6 November; Lefebvre, A. 2000, AAC, pers. comm., 8 November). For example, in the first year of Industry Canada's sustainable development strategy there was a budget of about $250,000 for its implementation and to strike relevant partnerships. In the second year this was cut in half and in the third year the task force for sustainable development had only 10% of the original budget. By the fourth year there was some generous funding for community consultations but none for implementing the sustainable development strategy (Dauvergne, J. 2000, IC, pers. comm., 8 November).

When every department was asked by CESD to do a sustainable development plan, some were taken by surprise. So the first generation of such plans were mainly to do with internal strategies. The CESD found that the second generation of sustainable development strategies developed by federal departments had improved in scope. The following is a summary of the one produced by Industry Canada:

> Along with other federal government departments, Industry Canada has a Sustainable Development Strategy which commits the department to work in partnership with industry, consumers and other key stakeholders to advance sustainable development and contribute to a knowledge-based economy. The strategy's objectives are: foster a marketplace climate that promotes sustainable development; enhance the ability of Canadian firms to develop and use innovative technologies and tools that contribute to sustainable development; encourage trade and investment flows which contribute to sustainable development; and, continue to improve Industry Canada's capacity to manage and deliver policies, programs and operations which contribute to sustainable development. (IC, 2001b)

The second generation of these plans dealt with inter-departmental relations and partnerships. For example, NRCan and IC found that they were easy partners because

IC developed stewardship activities in secondary industry that linked with primary industry, i.e. NRCan (Dauvergne, J. (IC) and Scott, J. (DNR) 2000, pers. comm. 8 November). Environment Canada also agreed that the first generation of the sustainable development strategies was an opportunity for consolidation within Departments, whereas the second round has found the Departments making more progress on characterizing issues (Scott, S. 2000 (DNR) pers. comm. 10 November). Another example is Agriculture and AgriFood Canada's (AAC) Sustainable Development Strategy. Its first version was focused on environmental sustainability. However, in line with the CESD's observations about improved scope, AAC's second Sustainable Development Strategy added in social and economic sustainability perspectives and each section of the Department had to prepare an action plan, which helped to improve intra-departmental cooperation (Lefebvre, A. 2000, AAC, pers. comm., 8 November).

One of the criticisms that the CESD had was that government departments needed to consult more with each other before they consulted with the community. This was based on feedback after the first sustainable development strategy rounds, that consultation fatigue was observed in the community (Pearson, M. 2000, NRCan, pers. comm., 8 November).

The strategic positioning of the Commissioner for Environment and Sustainable Development (CESD) within the Auditor-General's Office has promoted awareness in Federal government about sustainable development (Ferguson, C. 2000, EC, pers. comm., 10 November). It seems that the inevitable challenge is that the departments do have diverse mandates that may cause the tendency to lean towards one of the three aspects of sustainable development. Environment Canada clearly has a stronger and clearer focus on environmental sustainability. NRCan and IC have tended to take more of a sustainable economics mandate. These could be tempered if there were to be a blanket provision on meeting sustainable development objectives in all government departments (Ferguson, C. 2000, EC, pers. comm., 10 November). An example of lack of horizontal coherence is when Canada's representative at an international conference on climate change had to present two divergent positions, one from NRCan and the other from Environment Canada (Pearson, M. 2000, pers. comm., 8 November).

Horizontal cooperation at the federal level on sustainable development issues is hampered because: these are additional to set mandates within departments; the departmental mandates are very diverse; there is lack of clarity about who to contact in other departments; and lack of information about what the other departments are doing. There was also the problem of lack of appropriate funding incentives to work between mandates, and this was exacerbated because government had gone through a period of fiscal tightening and public sector reforms that emphasised downscaling. The efforts of the CESD have helped to focus some thinking within departments about sustainable development and how they can support the changes in rights and responsibilities over land and its use through their own mandates. The second generation of the sustainable development strategies required by the CESD has started to consider linkages with other federal government departments on common issues and to seek input from the private sector and the wider community.

7.5.2 Horizontal Co-operation: Provincial Government

Problems with interdepartmental cooperation can and do also arise at provincial level.

For example, there are 25 statutes in the province and 25 statutes federally that deal with coastal planning. This multiplicity of legislative pieces makes it hard to focus on issues-based cooperation. The Clean Air, Clean Water and Clean Environment Acts may need to be further consolidated because, for example, leaching from landfills is not separable into distinct land, air and water issues (Ayer, W. 2000, DLGE, pers. comm. 12 October).

The issue is not only to do with legislation. The institutional structure of government is also a significant contributor to horizontal co-operation and coherence. Prior to the amalgamation of the Department of Environment and Department of Municipality into the DLGE, there was a three-way tension between these and the Department of Agriculture (Oliver, B. 2000, NBFA, pers. comm. 2 November). In line with the divergent mandates of the various departments, planners employed by them would have different approaches to the same situation. For example, what the Department of Agriculture would consider a nutrient resource that just has to be managed properly could be construed to be toxic waste by the Department of

Environment (Oliver, B. 2000, NBFA, pers. comm. 2 November). Also, urban planners who like clear-cut zoning systems would find it difficult to accommodate the reality that rural areas have always been rather mixed-use.

There were also crises that pushed the government forward in the need to coordinate policies and the implementation of those policies. Examples include the Newcastle quality-of-drinking-water issue and the *e-coli* problem in Doaktown in 2000. Both os these arose from the effect of private owners' land-use practices on water quality and involved the NB Departments of Health, Local Government and Environment, and Natural Resources and Energy (Timms, J. 2000, DLGE, pers. comm. 18 October).

As NB Department of Finance has been in deficit budgeting mode, it has been encouraging cost recovery. This has affected the degree of integration and cooperation between departments (Ayer, W. 2000, DLGE, pers. comm. 12 October). The fiscal situation has not helped the challenges for cooperation between say, the NB Department of Natural Resources (DNR), which has a resource-use focus, and the Department of Local Government and Environment (DLGE), which has a stronger conservation focus.

At provincial level, there is direct funding to each of the departments. Then there is fund-sharing for inter-departmental projects. Examples include: manure management between the Department of Local Government and Environment (DLGE) and the Department of Agriculture; and cooperation on clean water between DLGE and the Department of Health where the Executive Council Office is required to coordinate the departments (Nussey, B. 2000, DF,[39] pers. comm. 3 November). There are fiscal reforms required. For example, because of the federal government capital gains tax it is still easier to give donations to a political party than to donate land for conservation (Nussey, B. 2000, DF, pers. comm. 3 November).

The mission of the NB Auditor-General's Office is to 'promote accountability by providing objective information to the people of New Brunswick through the Legislative Assembly'. The first Auditor-General's report that dealt with sustainable

[39] Department of Finance, NB.

development was in 1992/93 (White, B. 2000, AGONB,[40] pers. comm. 17 November). Since 1999, the Auditor-General of NB has dedicated a chapter of its annual report to matters of the environment. The Environment Roundtable has maintained a monitoring role on the provincial government's progress on sustainable development (White, B. 2000, AGONB, pers. comm. 17 November), but there is no authority empowered to check on the progress of municipalities. They are already generally doing more work with less and less funding support from provincial government (White, B. 2000, AGONB, pers. comm. 17 November).

This sub-section and the previous one demonstrate the horizontal issues that are faced within provincial and federal tiers of government in seeking to coordinate their activities and policies. The conflicts arise not just out of difficulty in co-operating and complications in cross-departmental funding, but in their differing mandates. A concern, too, is that the focus is still on the environmental issues, whereas sustainable development is about discussing these in tension with economic and social issues.

7.5.3 Vertical: Federal - Provincial - Local - Community

Whilst each of the provinces has its own structures of government, it is generally feasible to make vertical connections between the tiers of government down to the local and community levels. Through focusing attention on particular projects such as the Model Forest projects, links, relationships and increased understanding are built across government, the local community, the industry and the environmental groups (Bonnell, B. 2000, MFP/NRCan,[41] pers. comm. 9 November).

In Canada, there is a peace and order and good government clause in the Constitution that allows the Federal government to impose its will for the good of the country. Under section 92 of the Canadian Constitution, the provinces have jurisdiction over property and civil rights. Environmental issues are dealt with by federal as well as provincial governments (GC, 2001). Jurisdiction over natural resources such as energy, forests and minerals and metals is provincial, but federal

[40] Attorney-General's Office of New Brunswick

[41] Model Forest Project, Natural Resources Canada.

government does play a role as a facilitator to develop national strategies and encourage sustainable development by working closely with the provincial and territorial governments and natural resources industries (GC, 2001).

The Federal and provincial jurisdictions can create complex problems. Canada has a Minister of Intergovernmental Affairs who is supported by Intergovernmental Affairs, an agency that is part of the Privy Council Office. The mandate of Intergovernmental Affairs is to co-ordinate the efforts of the Government of Canada to make the federation more efficient and to enable governments to address citizens' needs more effectively (GC, 2001). Initiatives such as the proposed Canada-wide Internal Trade Agreement show that the economic priority has well-established institutional support as compared with the newer environmental or social priorities.

The divisions between tiers of governmental mandates can be somewhat artificial. Administration of the fisheries resources is an example of the complications that can results from multi-layered government. The Fisheries Act s.35 says that the Department of Fisheries and Oceans (DFO) can issue specific fishing permits for members of the industry. As a result, there are lobbyists who expect that the Federal government will look after the fish habitat. However, because the provincial governments have jurisdiction over the economic aspects of fishing, it depends whether the fish swim within the coastal and ocean areas beyond provincial jurisdiction or not (Belzile, G. 2000, DFO, pers. comm., 6 November). The mandates of other government departments also affect fish stocks. One example is pollution. Environment Canada deals with discharge of contaminants into water, and therefore liaises with provincial governments about land use that results in such contaminants. However, Environment Canada also needs to liaise with DFO because its policies on management of waterways have the potential to affect the fish stocks in those waterways (Belzile, G. 2000, DFO, pers. comm., 6 November).

Community empowerment may be a partial solution to getting around the jurisdictional issues between federal and provincial governments, but there will still be a need for overall monitoring, funding and so on (Metcalfe, V. 2000, DFO, pers. comm. 10 November).

A complementary role to the provinces that is played by the federal tier of government is to provide research support for provincial and municipal decision-

making. For example, Agriculture and AgriFood Canada has fourteen to fifteen research centres around Canada conducting research on sustainable development issues such as ecological efficiency, integrated pest management, bioeconomy products such as making plastic from corn, hemp products, etc. (Lefebvre, A. 2000, AAC,[42] pers. comm. 8 November).

Usually industry has representations at local, provincial and national levels, and can comment at each of these levels. The Department of Agriculture and AgriFood encourages them to discuss issues among their own membership first before approaching government to discuss issues or proposals, and so they do provide some support funding to national non-government organisations (Lefebvre, A. 2000, AAC, pers. comm. 8 November). The Canadian Agriculture and Rural Development Fund (CARD) is administered by Agriculture and AgriFood Canada (AAC) to support programs that address the environmental aspects of the agricultural industry, and CARD has representation at provincial level to liaise with the grassroots level for these initiatives. This also becomes a useful way for federal government to better understand the issues at provincial level (Lefebvre, A. 2000, AAC, pers. comm. 8 November).

There are Federal–Provincial Agreements between relevant line departments. For example, Rural Development Canada, Department of Natural Resources NB, Atlantic Canada Opportunity Agency and AgriFood Canada work together on regional economic development that is not primary, i.e. not agriculture or forestry. There are also specific agreements on an issue basis, such as flood damage and flood risk mapping, surface water monitoring, and air monitoring.

Local government is the other layer in Canada's federal system of government. It is the tier at which government is expected to have the most familiarity with the local issues about the land rights and responsibilities of the different stakeholders. The Federation of Canadian Municipalities (local government) is a voice for local government across Canada, and since 1993 they have been given a direct line into federal government to assist with the 'greening' of policies. For example, they have had a major role in pushing for changes to taxation legislation to allow land donated

[42] Agriculture and Agrifood Canada.

to conservation purposes to be given the same tax relief as donations to the arts (Dauvergne, J. 2000, IC, pers. comm. 8 November; Scott, J. 2000 NRCan, pers. comm. 8 November).

A survey of municipalities in New Brunswick revealed that only three municipalities had no land use plan because of lack of resources. Of the remaining, half have not revised their land-use plans because of lack of resources, and the majority of these do not belong to a regional development commission, which would normally provide Development Officers to assist with land-use planning (St-Onge, J. 2000, DLGE, pers. comm. 10 October). Forty percent of NB residents live in unincorporated areas, which are unlikely to have land-use plans. The ribbon developments common in these areas tend to identify with the closest urban centre (St-Onge, J. 2000, DLGE, pers. comm. 10 October).

As explained earlier in this chapter, the Byrne Commission's recommendations and the subsequent Equal Opportunity Act in 1969 led to the necessary government restructuring that brought provincial government jurisdiction over the unincorporated areas. The Rural District Planning Commission (RDPC) was created in 1991 as a temporary authority with the task of assisting unincorporated areas in land-use planning until they had established their own local government structures. As of 2000 there were still a quarter of the areas in need of land-use plans and local governance structures (Griffiths, J. 2000, RDPC, pers. comm., 17 October). A representative of the NB Federation of Agriculture (NBFA) confirmed that rural people have realised that by setting up their local governance structures they can set their own agricultural, environmental and forestry standards (Oliver, B. 2000, NBFA, pers. comm., 2 November).

The RDPC hires planners who assist with planning around the rural areas of the province, such as building permits and subdivisions. The Local Service Districts elect a five-person Advisory Committee that also includes a cross-section of people from the local community, and their preparation of a draft land-use plan for public distribution takes about a year. Then there are open houses held with the community, and drafts are sent to government departments, especially the DLGE, followed by a series of public hearings before the Minister adopts the plan for that area (Griffiths, J. 2000, RDPC, pers. comm., 17 October).

DLGE has significant interaction with the RDPC because all the RDPC's plans that have to do with unincorporated areas, and changes to existing municipal plans are reviewed by the DLGE. Plans by local government pursuant to the Community Planning Act still go to the DLGE, which will check them against the provincial Settlement Patterns Policy, Commercial and Industrial Siting Policy and Watershed Policy (Griffiths, J. 2000, RDPC, pers. comm., 17 October). The NB Provincial Planning Director has a strong legislative position for reviewing plans but there are legislative shortfalls. For example, NB does not have building permits legislation uniformly implemented across the province so there is a lack of coordination of the approval process in incorporated, unincorporated or municipal areas (Ayer, W. 2000, DLGE, pers. comm. 12 October).

In NB there is no overarching environmental planning agency—such planning is done by municipalities through the Community Planning Act. As the unincorporated areas are under the provincial government, it depends whether the area concerned requests planning assistance from the RDPC and whether the brief includes environmental matters (Ayer, W. 2000, DLGE, pers. comm. 12 October).

Since there is no single agency or clear association of agencies to which funding should be channelled, there are vertical co-operation issues. For example, with the Wellfields Protection Act, the Department of Agriculture and Department of Natural Resources only received additional funding for the monitoring activities (Nussey, B. 2000, DF, pers. comm. 3 November). The municipality has to designate the wellfield, but apart from some cost-sharing arrangements there is no special funding from the province to assist them in that task (Nussey, B. 2000, DF, pers. comm. 3 November). Out of the fifty-four wellfields, half have been studied but not yet designated.

A good example of vertical cooperation through the tiers of government and into the community is Canada's Model Forest Program. Decisions about use of forestry resources have traditionally been non-consultative and non-integrative. In the early 1990s, Canada's Forest Service within Natural Resources Canada began thinking of establishing model forest programs across Canada that would be inclusive of the people who knew the forest best—the people who lived and worked in the forest, the industry people and the conservationists. It was an important opportunity for the different stakeholders to learn what others were doing and planning for the

forest. The Canadian Model Forest initiative also benefited from the Enhanced Aboriginal Involvement initiative that involved Aboriginal people and integrated their traditional knowledge/expertise into the groups of stakeholders at the discussion table (MFN, 1999). Different model forest programs across the provinces had different emphases. The long-term vision is that these model forests will then link up with other areas to promote similar integrated approaches (MFN, 1999)

The New Brunswick component of the program, called the Fundy Model Forest (FMF), was based on 420,000 hectares of forest in the Acadian Peninsula. Of the total area, 5% is the Fundy National Park, 63% consists of private woodlots (there are 3,500 private owners in the area), 15% is Crown land, and 17% industrial freehold owned by JD Irving Ltd, the largest home-grown corporate entity in New Brunswick. Over 300 projects have been run or are running in the area, covering wildlife, water quality, biodiversity, wood supply, socio-economics, recreation, soils, management planning, education and communications. The FMF has played a significant role in developing innovative tools and processes for sustainable forest management by the coordinated efforts of diverse stakeholders. Apart from the use of GIS, which is discussed later in this chapter in the Information Technology section, one of the innovations has been the development of local level performance indicators relevant to the ecological, economic and socio-cultural components of forest management (MFN, 1999).

Vertical co-operation between tiers of government is necessary to produce a mosaic of policies, implementation strategies and community involvement that will support the complex dialogues that people need to have in order to work towards sustainable development objectives. The example below about the interrelationship of land and water administration shows the changing perceptions about how rights and responsibilities are to be administered between and within the mandates of government and into the various sectors of the community.

Watershed management is at the forefront of community pro-activeness (Timms, J. 2000, DLGE, pers. comm. 18 October). The other paradigm shift has been more effective public consultation that has moved on from ‘suits on stage talking down people shouting from the audience’ (Ayer, W. 2000, DLGE, pers. comm., 12 October). The public is now involved at many more stages (Timms, J. 2000, DLGE,

pers. comm. 18 October). A range of methods has been used to encourage community participation in watershed management. Some are provincially assisted. The Atlantic Coastal Action Program (ACAP), a federal initiative, also provides support. The coastal and estuarine areas have suffered significant degradation. (Timms, J. 2000, DLGE, pers. comm. 18 October). ACAP started up in 1994 to support five community action groups across the province. Service New Brunswick, which is a property information database, assists with information about what permits are needed for development in those areas. The Department of Natural Resources and Energy regional office then liaises with the Department of Health over the management of water resources and also land use that affects them (Timms, J. 2000, DLGE, pers. comm. 18 October).

Federal responsibilities are in areas that have the potential for significant national economic impact (EC, 2001c), i.e navigation and fisheries. Shared federal–provincial responsibilities include interprovincial water issues; agriculture; significant national water issues; and health.

An examination of this breakdown shows that the most pressing water issues would fall within the 'shared responsibility' category. Agriculture, for example, has the highest water consumption and is a source of organic contaminants. Reminiscent of the situation in New Zealand, NB also grapples with the contentious issue of farm run-off (EC, 2000a). There is also the issue of integrating First Nations perspectives about integrated land and water policies. Grand Chief B.G. Cheechoo, chief of a northern Ontario native population, the Nishnawbe-Aski Nation, explains the relationship (EC, 2000b):

> Our history is tied to these waters. Our continued reliance on fishing, trapping and hunting and our desire to do so is dependent on these waters. Our future is based on these waters…Any threat to such waters poses a direct threat to our survival.

In NB, there is a need for more integrated planning between water and land, and the restructuring to create the Department of Local Government and Environment (DLGE) brings land and water planners together in the same department (Ayer, W. 2000, DLGE, pers. comm., 12 October). Through the informal Outreach and Partnering for Watershed discussion, links into the community started to be established. For example, the Oromocto Indians adopted one basin from the Oromocto

River. Also, there are thirty outreach groups on watershed management (Ayer, W. 2000, DLGE, pers. comm., 12 October).

The need for greater cooperation between federal, provincial and local governments is one of the core discussion topics for Rural Team New Brunswick (RTNB). RTNB is a good example of vertical cooperation between federal and provincial government departments who are working to revive communities in rural New Brunswick and the other provinces along the Atlantic seaboard that are commonly known as the Maritimes. There are more than 60 projects across the Maritimes that the communities themselves brought forward to be studied by RTNB. RTNB found that one of the foremost objectives would be to assist federal and provincial departments in developing partnerships that help communities to address the issues that they put forward to government (RTNB, 2000).

This section has concentrated attention on the challenges that face decision-making on land/resource rights in the context of a federal system of government that crosses three tiers, and also seeks to engage the community in such decision-making. The lessons to be learnt from seeking to engage the community are explored in the next section.

7.5.4 Focus on Community

Although cooperation with communities is touched on in earlier sections of this chapter, it is a topic of sufficient importance to be discussed in more detail here.

Canada appears to be experiencing the most profound reform of traditional constitutional relationships by partnerships between government, industry and the community. As discussed in the previous subsections, government and the private sector have been moving to engage the wider community of stakeholders in policy discussions as well as participation in policy implementation.

Staff from the federal and provincial government departments interviewed confirmed that opening up discussions to communities has provided good ideas and input. Opening up the process has also encouraged the private sector and community groups to work together. For example, Industry Canada’s industry clients and some of the environmental non-government organisations were willing to work together and to

sit in at the same consultation meeting, whereas previously the tensions between them made a joint consultation difficult (Dauvergne, J. 2000, IC, pers. comm. 8 November).

As discussed in earlier subsections, NB's ability to benefit from local governance is hampered by a lack of local government structure (Hubley, G. 2000, RPDC, pers. comm. 5 October). Furthermore, NB is the only province where the trend is for population flow to be from urban to rural rather than rural to urban (St-Onge, J. 2000, DLGE, pers. comm. 10 October). Even in very rural areas, farmers only make up about 2-3% of the population (Oliver, B. 2000, NBFA, pers. comm., 2 November; St-Onge, J. 2000, DLGE, pers. comm., 10 October). This is not dissimilar to some of the experiences outlined in the NZ case study in Chapter 6, where the voice of farmers in some areas has been outnumbered by that of urbanites who choose to live in a rural setting, and who support a different set of values.

A reality of outreach into the community and even into the private sector or industry is that there is not always an identifiable counterpart to engage in consultation from that industry organisation. For example, the Environment section of Industry Canada is often directed to the environmental section of the industry partner, which will claim that it is already liaising with Environment Canada (Dauvergne, J. 2000, IC, pers. comm. 8 November). NRCan did not normally have the same problem, because there is usually some resources/agriculture section or person in the industry organisation (Scott, J. 2000, pers. comm. 8 November).

The previous sub-section has already outlined the Canadian Model Forests Program. The feedback to NRCan has been that the Model Forests program has pushed the rate of progress in bringing stakeholders together to produce united strategies on forest management faster and more peaceably than had been expected (Bonnell, B. 2000, MFP/NRCan, pers. comm. 9 November).

There were other benefits that grew out of the success of the Canadian Model Forest Program. For example, in New Brunswick a number of the key stakeholders involved in the Roundtable for Protected Areas had already worked on the Fundy Model Forest project for 5-6 years before this Roundtable was established. By the time the Roundtable was established, sufficient mutual respect had developed to allow the Roundtable talks to progress well (Bonnell, B. 2000, MFP/NRCan, pers. comm. 9 November).

First Nations

As discussed earlier in this chapter, First Nations' rights and responsibilities depend on whether they are treaty or non-treaty Indians under the Indian Act, which is administered by federal government. Although the provinces own the resources and the Crown lands within their borders, the federal government does have a mandate to be involved in or even to initiate discussions with provincial governments about First Nations (Smyth, J. 2000, FNF/NRCan, pers. comm. 9 November).

In Saskatchewan, the relationships between stakeholders that were developed during the Saskatchewan Model Forest Project led to a separate cooperative project between First Nations groups and a major forestry company to establish a joint sawmill project (Smyth, J. 2000, FNF/NRCan, pers. comm. 9 November). The special component of the Canadian Model Forests Project called the Enhanced Aboriginal Involvement Initiative supported First Nations groups to manage forestry resources on their reserve lands and to be involved in other projects beyond their reserves (CFS, 1999). The success of First Nations' forestry programs have depended significantly on the level of governance they have developed within their band groups—these ranging from almost no governance to comprehensive autonomous governance structures (Smyth, J. 2000, FNF/NRCan, pers. comm. 9 November).

Other federal departments are also officially committed to supporting First Nations groups in exercising their rights and responsibilities over their lands and also to benefit from their knowledge of the land. For example, Environment Canada works on capacity-building with First Nations groups, and is also working on how to bring the knowledge of First Nations about sustainability into the mainstream dialogue (Ferguson, C. 2000, EC, pers. comm. 10 November).

The federal aboriginal affairs department known as Indian and Northern Affairs Canada (INAC) has been focusing on providing more autonomy to the First Nations groups. However, for some First Nations groups, consultation cannot begin until the crucial issue of original land ownership has been resolved (Lavalle, B. 2000, NBCFN, pers. comm., 1 November):

> In discussions about the Protected Areas Strategy, we were invited by the previous provincial government to a roundtable discussion, but we said we would not attend

> until they had dealt with the ownership of land issue. These lands include some of our traditional hunting and fishing territories.

The First Nations generally prefer to deal directly with federal government because many of the old treaties that ceded land to the non-Indians were signed by authorities representing whatever central government system existed at the time—not provincial governments (Lavalle, B. 2000, NBCFN, pers. comm., 1 November). Since the Marshall decision, the First Nations have had to deal with the provincial governments because they have jurisdiction over natural resources. The Marshall decision was a decision of the Supreme Court of Canada (SCC) on September 17, which found that (INAC 2002):

> ...the Peace and Friendship Treaties of 1760-61 affirmed the right of certain Aboriginal groups to provide for their own sustenance by taking the products of their hunting, fishing and gathering activities, and trading them in the pursuit of a 'moderate livelihood'. This decision potentially affects 34 Mi'kmaq and Maliseet First Nations in Nova Scotia, New Brunswick, Prince Edward Island and the Gaspé region of Québec. The Peace and Friendship Treaties in the Maritimes did not require the Mi'kmaq and Maliseet signatories to surrender any rights to land or resources. Today, the Mi'kmaq and Maliseet First Nations maintain that they continue to hold Aboriginal rights and title throughout their traditional territory in addition to the treaty rights affirmed by the SCC in the Marshall decision.

As flagged earlier in the discussion on Model Forests, there are issues of internal governance within those First Nations groups that face difficult human resources, land, natural resources, funding and population circumstances. These issues lead to some concerns about the achievement of self-determination in circumstances where there may be insufficient accountablity (Cluskey, W. 2000, OAGC, pers. comm. 7 November).

Environmental groups

NB has a wide variety of environmental interest groups. For example the New Brunswick Environmental Network (NBEN) has 79 member groups that are clustered around seven Action groups: the Pesticide Action Group, the Future Forest Alliance, the Clean Energy Coalition, Biotechnology, Youth Action Group, Environmental Education Action Group, and the Environmental Trust Fund (ETF) Working Group

(NBEN, 2000b). The NBEN was formed in 1990 as a non-profit network of citizen environmental groups in NB. As it is not an advocacy group, it does not take positions on any issue. It is affiliated with the Canadian Environmental Network (CEN), a national organisation with over 1000 member organisations. The role of the NBEN is to improve communication and co-operation among environmental groups and between these groups, government and industry. A similar understanding of the need for proactive community involvement is expressed by the Environment Trust Fund Working Group in their request for financial assistance for civil society (ETFWG, 1994):

> A mature democracy should be confident enough to ensure that its proposed policies and changes of direction are vetted by its citizens prior to a final decision being taken. To ensure this, funding must sometimes be provided to public interest groups so they can meaningfully participate in a multi-stakeholder consensus-building process. Here, a distinction should be drawn between lobbyists who advocate a position on behalf of a narrow segment of the community, usually for profit, and non-governmental organisations that can demonstrate a wider mandate of protecting the 'public interest' in the broader sense of the word. The former is perfectly legitimate but need not be publicly funded while the latter, by its definition, is worthy of an investment of public funds. Nowhere is this more true than in the environmental field where one person's activities can significantly impact on numerous others.

Access to the different sectors and tiers of government are a concern for a range of community interest groups. As illustrated by the above discussions of the NBEN and the NBCFN, community interest groups are conscious of the need to expend efforts to lobby the community as well as the government on issues that form the basis of their group's cause.

Farmers

The farmers of NB are an example of a sector of the community that has traditionally found strong acceptance and sympathy among their fellow residents because there was a time when even urban dwellers had quite strong relational ties with the rural people. With the decline in public understanding and support for their way of life the farmers of NB, like the farmers of NZ, have learnt the importance of raising public awareness and understanding about their land-use and of building their own networks

in the community. For example, in 2000 there was a prominent pig farm case involving a farmer named Metts. Metts had built his pig farm with modern technological innovations to contain and process farm run-off, but no matter how many times the water was tested as normal by the government, the community believed that it was polluting their environment (Oliver, B. 2000, NBFA, pers. comm. 2 November). The NBFA believes that there is a need for farmers to have special status in land use discussions because the amount of agricultural land in NB is very small (5.3%) and it makes sense to protect it (Oliver, B. 2000, NBFA, pers. comm. 2 November). The Farmland Identification Program that allows tax deferrals up to ten years at a time is a help, and farm inputs are tax exempt (Oliver, B. 2000, NBFA, pers. comm., 2 November; Dillon, M. 2000, NBDAFA, pers. comm., 13 October). Farmers have in some instances been ahead of the wider community and government regarding environmental issues such as pesticide controls (Oliver, B. 2000, NBFA, pers. comm. 2 November).

Bruce Oliver works for the NB Federation of Agriculture and has a background in environmental work with Conservation NB. In his opinion, the structures of government are not yet optimised to support the philosophy of conservation groups towards sustainable development that started in the 1960s:

> We have developed a range of tools for addressing rural issues and working with government but government structure is fractured so that responsibilities are spread around, and there can be situations where initiatives are held up because one part of the government structure is doing something contrary to another. (Oliver, B. 2000, NBFA, pers. comm. 2 November).

Technological innovations such as the Internet have allowed the building of some basic information infrastructure to improve co-ordination across and between departments but there is a need for funds to build this further into government, industry and the community (Lefebvre, A. 2000, AAC, pers. comm., 8 November).

After receiving feedback from the community about consultation processes, one of the CESD's recommendations is for community consultation to be documented and for it to be demonstrated as to how the material from consultations was used. For some departments that have long-standing traditional stakeholders, this task is relatively easy. For example, for Agriculture Canada this has been relatively easy

through the National Farmers Federation (Lefebvre, A. 2000, AAC, pers. comm., 8 November).

This section has illustrated, particularly by contrasting the experiences of the established farmers and forestry workers with that of the First Nations peoples, that the changing dynamics in society have affected rights and responsibilities over land and its use. The result has been that priorities between the economic, environmental and social dimensions of decision-making have become complex to the point where it has proven beneficial to involve all the stakeholders in developing and implementing policy. This has in turn started to affect institutional responses and processes for dealing with such decision-making. As was discussed in the NZ case study in Chapter 5, there is a need for consultation to be better coordinated across and between government departments so as not to exhaust the social capital that is so valuable to the process of implementing and monitoring policies.

The following section explores the role of the information revolution and technological framework in supporting the search for an effective approach to discussing, deciding and implementing policies about rights and responsibilities over land and its use.

7.6 TECHNOLOGICAL FRAMEWORK

The preceding sections of this chapter have overviewed the changes in NB society that have led to the legislative and institutional changes that have affected government, private sector, community and individual rights and responsibilities in relation to land and its use.

The emphasis on participation of citizens in policy-making raises the need for them to gain access to technical and scientific data:

> Environmental policy-making in advanced industrial states is in the very early stages of a transition from the neopositivistic applied-science model to the holistic systems perspective of a Green world view. The choice for movements is not between building alternative grassroots networks for living and working, as suggested by some, or taking part in the policy and electoral processes, as recommended by others. Varied movement organisations can and must do both. The challenge for movements is the unremitting cultivation and mobilisation of both local lore and scientific data, a

> task that can further the self-actualisation of individuals and the collective mandates of groups. (Breyman, 1993)

This section discusses how a technological framework could supplement the legal and institutional frameworks to better facilitate the dialogues within land administration processes that would contribute to sustainable development objectives. As two government representatives noted, the challenge is to maintain the science-base to decision-making in the face of the challenges from a range of economic, social and environmental pressure groups (Scott, J. 2000, NRCan, pers. comm., 8 November; Dauvergne, J. 2000, IC, pers. comm., 8 November).

7.6.1 GeoConnections and other Federal Information Initiatives

GeoConnections of Natural Resources Canada is responsible for the Canadian Geographic and Spatial Data Infrastructure. The aim of NRCan is to put GeoConnections on the Internet at the projected cost of $60 million over five years (GC, 2000). GeoConnections has two primary roles: first, it is to create the Canadian Geospatial Data Infrastructure (CGDI) and, second, to establish technologies and policies to access the collection of geospatial data across Canada (GC, 2000). GeoConnections reflects the federal government's commitment to foster a knowledge-based economy (GC, 2000).

GeoConnections is an example of bringing federal databases together with sustainable development in mind. There are plans to bring it to community-level use (Ferguson, C. 2000, EC, pers. comm., 10 November):

> NRCan is leading on geospatial information (e.g. GeoConnections) and we must continue to lead to provide this information for sustainable development. (NRCan, 2000)

There are examples from every government body about the use of GIS and spatial data:

- As NRCan has a remote sensing group that can assist with provision of data it has found GIS to be a very useful tool in conveying information in discussions and for decision-making (Scott, J. 2000, NRCan, pers. comm., 8 November; Dauvergne, J. 2000, IC, pers. comm., 8 November). NRCan is working on a

national atlas of the data that they have, which it intends to put on the Internet. In this way GIS plays an important information and educative role for the public (Pearson, M. 2000, NRCan, pers. comm., 8 November). NRCan's GeoConnections program has proven itself useful in facilitating more community participation and support for implementation (Pearson, M. 2000, NRCan, pers. comm., 8 November).

- The 'Green Lane' is an information service run by Environment Canada that helps Canadians to exchange information and share knowledge for environmental decision-making (EC, 2001a). By way of a more specific example, EC has undertaken a number of water modelling projects around the country. EC found that water modelling with GIS technology enhances the ability to study the social, economic and other implications of multi-sectoral water uses and their impacts on the water resources (EC, 2001b).

- Industry Canada is preparing a matrix of all the environmental issues being addressed by federal initiatives and all the sectors of industry, starting with Canada's twelve polluting sectors. ARET (Accelerated Reduction or Elimination of Toxics) started in industry, community and government (Dauvergne, J. 2000, IC, pers. comm., 8 November).

- Agriculture and AgriFood Canada has a land and soil types database that generates maps about water resources, collects and supplies data to local governments, and makes GIS expertise available. To the extent that they can, AAC uses the information collected to provide a monitoring role (Lefebvre, A. 2000, AAC, pers. comm., 8 November).

Industry Canada has a vision to deliver government services through Access Centres across Canada that provide on-line property and related information (McRae, 2000):

> ...trained staff in 20 designated Service Canada Access Centres, as well as two Service New Brunswick walk-in centres, can access a Government of Canada database with information on more than 1,000 different federal programs and services, plus the location and hours of operation of the nearest offices in which the services are delivered. The Access Centres provide a place close to home where

citizens can learn how to use the Internet to get the information they need with a 'one-stop-shopping' approach.

The Sustainable Development Information System is a new electronic information system developed by Environment Canada for the World Wide Web. It is designed to provide one-window access by the public and other government departments to sustainable development knowledge in the Government of Canada (EC, 2002).

Although provincial governments are the ones with the mandate over property and natural resources, the federal government can act within its own mandate to assist and support the process with information and funding for specific projects.

7.6.2 Service New Brunswick

In NB, Service New Brunswick is the focal point for information about property rights and related government services.

Service New Brunswick is the provincial government's chief provider of property information and front-line services to the public. SNB has expanded its services over the years from managing land titles to include (SNB, 2000):

- Provision of one-stop delivery of provincial government services;
- Operation of New Brunswick's real property information service;
- Operation of New Brunswick's personal property registry service.
- Assessments on all land, buildings and improvements for property taxation purposes;
- Operation of NB's Property Assessment and Taxation System;
- Maintenance of NB's land information infrastructure.

SNB provides a wide range of online services (SNB, 2000): Atlases, maps, publications; Change of Address; NB Acts and Regulations; NB Control Network;

Property Mapping Information; Registry & Land Titles; Royal Gazette; and Topographic Information.

Other SNB Products and Services relevant to land administration are (SNB, 2000): Aerial Photography; Digital Real Property Information Database; Digital Topographic Database; Land Registration and Information; Maps and Charts; Personal Property Registration and Information; Photo identification of property; and Survey Control Information.

SNB is moving beyond land registration; its new mission is to make government services accessible, and for SNB to become stewards for authoritative information (McKenzie, R. 2000, SNB, pers. comm. 26 September). In 2001, NB passed a Privacy Act in line with Federal legislation—this is significant as a guide to what kind of information should or should not be made publicly available. The Land Gazette Act was the next initiative for SNB, the aim being to take data and turn it into legal data, including zoning, with the aim to have on-line conveyancing by the end of 2001. The valuation database is dated and separate from the land registry database (McKenzie, R. 2000, SNB, pers. comm. 26 September). SNB contracts out all except control of databases and the technical architecture (McKenzie, R. 2000, SNB, pers. comm. 26 September).

Personal property is name-based, and by way of contract can link names to unique parcel identifiers (McKenzie, R. 2000, SNB, pers. comm. 26 September). Since 1996, NB established on-line access to databases on Property Assessment and Taxation, Parcel Index Database and Property Map Database (MacLauchlan and McLaughlin, 1998). One of the immediate outcries was from victims of domestic violence who had taken great pains to conceal their geographic location from their abusers, but were suddenly exposed and locatable via the Internet (McLaughlin, 1998).

SNB's work shows how important cadastral, cartographical and property information is to the work of the public and the private sectors of society in defining, discussing, trading and utilizing their rights and responsibilities in land and its use.

This sub-section has described a variety of information and information technology measures that have the potential to provide significant support for the

complex decision-making demanded by the diversity of stakeholders and issues in discussing rights and responsibilities for land in a way that will better support sustainable development. The next sub-section discusses how information technology advances such as GIS can serve the needs of public consultation and participation processes.

7.6.3 GIS and Public Consultation/Dialogue

Public consultation has moved from noisy public meetings to public involvement at many stages of policy-making and implementation. In line with the discussions in this chapter about participatory decision-making and the complexity of sustainable development issues, NB needs land-based data and the ability to access it, analyse it and display the results for discussion.

GIS is a key tool for communicating information about each community and between communities. For example, on Vancouver Island there is a small town called Taufino where there are many environmentalists, and nearby is another small town called Ucluet where there are many foresters. There were conflicts between the two towns over use of the forests. The Model Forest program's focus on the coastal rainforest provided internship programs for youth (especially aboriginal youth). GIS centres were established that enabled the local communities to access and build up their own information databases and to therefore discuss forest management more professionally (Bonnell, B. 2000, MFP/NRCan, pers. comm. 9 November). It was found that GIS was especially helpful to First Nations people because they tend to respond well to visual representations of data (Smyth, J. 2000, FNF/NRCan, pers. comm. 9 November). Another example of the value of GIS is found on the island province of Newfoundland where there had been a long-held tradition of people cutting wood anywhere they wished. It was only with the assistance of GIS that the local people themselves could visualise the impact of this tradition and to develop alternative ways of managing their wood resources (Bonnell, B. 2000, MFP/NRCan, pers. comm. 9 November). Temporal GIS is especially useful for forestry, and in the McGregor Model Forest Program this helped all the stakeholders to agree on a strategy for their forest (Bonnell, B. 2000, MFP/NRCan, pers. comm. 9 November).

GIS has become an important enough tool to merit funding by departments such as NB's DLGE to provide community interest groups with the necessary computer equipment and training to use GIS (Timms, J. 2000, DLGE, pers. comm. 18 October). The examples of the ACAP project and water catchment area projects have already been mentioned. In the Fundy Model Forest project there were many layers of information with varying relevance to the different stakeholders. Stakeholders found that tools like GIS helped them to focus on obtaining and discussing the necessary information and working together to improve the quality of their water (Timms, J. 2000, DLGE, pers. comm. 18 October). The community groups involved in the water catchment and Fundy Model Forest projects learnt to create mathematical algorithms to determine useful information such as the slopes of their properties and where they could fell timber safely without disturbing the watershed. The challenge for these community groups was to bring data from Service New Brunswick's Caris format to ArcView, which is cheaper and more user friendly—one community group had to spend $4000 of time just to convert the data (Timms, J. 2000, DLGE, pers. comm. 18 October). There is a need for powerful GIS presence with temporal application and real-time accuracy (Timms, J. 2000, DLGE, pers. comm. 18 October).

GIS for the whole coastline of NB is being prepared by Service New Brunswick (SNB) who are putting a layer of natural information such as ecological features, regulatory features and orthophotos. GIS maps help a lot with dialogue, and the NB Conservation Council would like to build its own in-house GIS maps (Coon, D. 2000, NBCC, pers. comm., 26 October). The NB Conservation Council (NBCC) has been collecting ecological information for the NB coastal area but there is no process in place to allow the community to access the information because of the private/public partnership in the GIS field (Coon, D. 2000, NBCC, pers. comm., 26 October). For example, NBCC had worked with fishermen along the coastline to map data about spawning grounds, and the NBCC wanted to put this data on the base map for the Bay of Fundy with the bathometric lines. The Canadian coastguard had paid one of the ACAP groups to do the ground-truthing on the shoreline and put in the bathometric lines (Coon, D. 2000, NBCC, pers. comm., 26 October). NBCC had borrowed the baseline information to layer with its own information, but when it came to digital information their contractor said it belonged to the coastguard. The coastguard would

not give or sell it to Conservation NB because they were concerned about keeping it up-to-date (Coon, D. 2000, NBCC, pers. comm., 26 October).

In line with growing understanding of the interaction between planning for land and planning for water and coastlines, Canada needs more information about marine cadastres and information about rights and restrictions over waterways (Belzile, G. 2000, DFO, pers. comm., 6 November). SEAMAP is a multi-departmental initiative involving the DFO, Transport and NRCan (Belzile, G. 2000, DFO, pers. comm., 6 November). In NB anything that holds water for any period of time is defined as a waterway, but the NB DNR said this was not practical, and only what showed in 1:10,000 orthophoto maps would be a waterway. The courts have now adopted this definition. Most orthophoto maps are done in late spring, after the main winter melt (Dillon, M. 2000, NBDAFA, pers. comm., 13 October). Seasonal maps do present some obvious limitations for year-round planning. Thus there is value in using GIS as a tool to model scenarios based on other forms and sources of data.

Upcoming issues such as land and land-use characteristics and water quantity and quality would require GIS as a tool for dialogue. There is a huge database and expertise in the NB Department of Agriculture that could be accessed, and this could be another example of partnership between government and the community (Oliver, B. 2000, NBFA, pers. comm. 2 November).

The Clean Air Act requires that government consult with members of the public about potential sources of major contamination. For New Brunswickers to take an active part in discussions of air quality issues, up-to-date information is essential. For this reason the DLGE is required by law to keep a Public Register accessible at every office of the DLGE and via the Internet. This register contains information about (DLGE, 2000b):

- applications for registrations, permits and approvals;
- conditions relating to approvals;
- administrative penalties paid and convictions under the Act;
- orders made by the Minister; and

- any agreements the government has authorised the Minister to enter into.

Provincial government has endeavoured to establish databases that can be accessed by government as well as the public. Through the Environment Trust Fund of NB, DLGE had built an Environmentally Significant Areas (ESA) database using existing data, and ground-truthed it. However, it then became delayed by differences with the DNR about who could use the data, and by issues of privacy and cost recovery—this database has now been made available to the public with some caveats (Ayer, W. 2000, DLGE, pers. comm. 12 October).

A significant recent innovation in NB has been the Delta project. This is a multi-disciplinary project based at the University of New Brunswick that aims to (Davies and McLaughlin, 2000):

- Enhance civic decision-making within a virtual community context;
- Use the Internet as the means for electronically-linked communities to develop around issues by facilitating formal and informal communications between government, private interests and non-government organisations;
- Improve government services, gather political support, disseminate information and gather public opinion;
- Rise to the challenge of real on-line democracy that can involve citizens in the decision-making process in a meaningful, constructive and equitable manner
- Go beyond opinion polling and actually solicit public comments via the Internet on particular issues that would normally be gathered at public meetings.

There are risks in a two-way process of information sharing between government and the community. Perhaps it is a risk analysis for each community to determine for itself:

> In order for on-line democracy to be truly participatory, real decision-making power has to be shared with all participants. This involves the risk of having the process hijacked by special interest groups or by individuals with excessive amounts of time available. In order for power to be shared, existing power holders will have to give up

> power. It is not enough to allow citizens to offer opinions into a 'black hole' without any interaction or sense that their input has been considered. (Davies and McLaughlin, 2000)

In short, GIS has the potential to support complex decision-making across diverse stakeholder groups by enabling the capture and visualisation of dataand modelling of scenarios, and can combine with Internet capabilities to rapidly disseminate spatial and textual data.

7.7 LAND ADMINISTRATION

The premise of this research has been that it is possible to peel back to the essence of land administration, which is to respond and give institutional meaning to the changes in society's approach to defining rights and responsibilities over land. The past sections have looked at the broad changes in the approaches to rights and responsibilities, the way the general legal and institutional processes have responded to the challenges, and the potential role of information technology.

This section briefly outlines the history and highlights some of the innovations in the traditional land administration components of land registration (sub-section 7.7.1) and land-use planning (sub-section 7.7.2). The discussion then turns to some key planning issues in NB that challenge traditional land administration approaches: Crown land and forests (sub-section 7.7.3); watersheds and coastal zones (sub-section 7.7.4); rural issues and ribbon development (sub-section 7.7.5).

7.7.1 Land Registration

The earlier sections have covered the role of Service New Brunswick from the institutional perspective and information perspective.

The base role that SNB plays in land markets is to provide a reliable source of property information. There are other innovations within the SNB system that add value to its role in providing an efficient institutional infrastructure for land markets. Earlier sections have mentioned that, apart from control of databases and the technical

architecture, SNB contracts out the maintenance tasks (McKenzie, R. 2000, SNB, pers. comm. 26 September).

At the time of the field research in 2000 contracts were being negotiated with the Law Society of New Brunswick for lawyers to provide on-line conversion of titles and archiving of legal information relevant to those titles (McKenzie, R. 2000, SNB, pers. comm. 26 September). Contracts were agreed with the surveyors to update boundary information in the SNB databases—the digital property base will be handed over to surveyors with no interference from civil servants (McKenzie, R. 2000, SNB, pers. comm. 26 September). Both of these moves are based on the premise that such professional associations can and should be held responsible for the standard of work provided to the public. The government will still require licensing of lawyers and surveyors, but the professions themselves will administer these licences. SNB is ultimately responsible under the Registry Act (McKenzie, R. 2000, SNB, pers. comm. 26 September). SNB has a network of 13 real property registry offices across the province—there are 502,378 parcels of land in NB. According to the SNB Annual Report 2000/2001, NB replaced the grantor/grantee system with a land titles system that year whereby each parcel has a unique parcel identifier number (PID) and property and ownership information is maintained for against each PID (SNB, 2000). As at 2001, 11,500 parcels had been converted to the new land titles system (SNB, 2000). SNB also has a service called 'PLANET' which is a comprehensive, integrated, online source of land registration, assessment, mapping and information services, allowing New Brunswickers to conduct land based transactions quickly, efficiently, and with good information (SNB, 2000). The registry is computerised and allows on-line access to information; provincial government guarantees the land title and boundaries; the registration of transactions has been privatised (SNB, 2000).

The New Brunswick Land Gazette is another innovation that provides 'a mechanism to serve public notice of time limited interests and notices for parcels of land by linking information directly to the Parcel Identifier (PID)' (Davies and McLaughlin, 2000). The DLGE provides datasets to the PID such as the location of municipal watersheds, underground petroleum storage tanks and former dump sites, each with the capacity to relate to land parcels (Ayer, W. 2000, DLGE, pers. comm. 12 October).

The DLGE has limited information stored in databases on specific properties located within the province. Departmental databases may include environmental information with respect to the presence of petroleum storage tanks, the remediation of impacted properties, the existence of Ministerial Orders, and the proximity of properties to former dump sites. Information is made available pursuant to a review of the following specific databases, maintained in the Head office of the DLGE (DLGE, 2000b):

- ‘Petroleum Storage Tank Management System’ database, for issues related to underground and above ground petroleum storage tanks;
- ‘Compliance and Enforcement Information Management System’ database, for Ministerial orders;
- ‘Remediation Site Management System’ database, for property contamination not necessarily related to registered petroleum storage tanks, including Administrative Orders;
- ‘PCB Storage Site’ listing, for storage location information;
- ‘Dumpsite’ database, for the proximity to former dump sites.

The information is accurate in that it provides a factual reflection of what is contained in DLGE databases.

The Land Gazette aims to take data and turn it into legal data, including zoning. The aim is to have on-line conveyancing from the end of 2001. The valuation database is dated and separate from the property database. As mentioned earlier, the SNB core business is moving beyond land registration; its new mission is to make government services accessible, and for SNB to become stewards for authoritative information (McKenzie, R. 2000, SNB, pers. comm. 26 September).

As was discussed in the previous section on Information Technology, SNB’s services are made possible by its development of an Information Framework that is spatially related as well as property and ownership specific.

7.7.2 Land Use Planning

Land use planning has existed in New Brunswick since 1912:

> Originating from the need to organise the layout of streets and buildings and to provide basic services such as water and electricity, planning...has developed into a tool for promoting acceptable land use, managing renewable resources, protecting land resources and features of special value, and encouraging appropriate community development (DLGE, 2000a).

The key planning issues in New Brunswick are sprawl or ribbon development, the use of agricultural lands, and forestry. Historically, landowners have been reluctant to accept new land-use restrictions, and some people interpret it as an invasion of property rights. The Government is, however, willing to use stewardship agreements to help protect agricultural land. (GNB, 1993)

Section 2 of the Community Planning Act 1972 provided for the division of the Province into seven planning regions and the adoption of regional development plans with some budgetary support from the Province. The Act also established district planning commissions and planning advisory committees, with planning powers vesting in rural communities and, for the unincorporated parts, in the Province. It also provided for by-laws with respect to zoning, subdivision, building, deferred widening and controlled access streets, as well as the making of regulations with respect to planning for unincorporated areas. It also established the Provincial Planning Appeal Board to hear permitted appeals.

> CLURE recommended that the Community Planning Act be revised to give district planning commissions and rural communities the authority to accept publicly dedicated land that can be provided as part of the subdivision approval process. The Government agrees with this in principle. The type of lands acquired could be environmentally sensitive areas, wetlands, ecological reserves, shorelines and coastal areas and recreational land. It is more logical to implement this recommendation following the establishment of a new local and district structure and the acceptance of a new provincial land policy. (GNB, 1993)

NB's provincial government has emphasised that lack of planning can result in conflicts between land uses, uncontrolled and excessive exploitation of natural

resources, inappropriate development, loss of rural character, destruction of habitat, and contamination of surface and ground water (DLGE, 2001).

A Rural Plan helps to preserve the rural character of the area by (DLGE, 2001):

- involving residents and business owners in the area;
- defining and enhancing the character of community(ies);
- guiding future development;
- protecting the environment;
- minimising conflicting land uses.

The Community Planning Act (CPA) was amended in 2000 to introduce Rural Plans. The process of developing a Rural Plan is designed to suit the needs of rural areas. The advantages this has over the old style plans is that it:

- contains statements of direction as well as zoning provisions;
- is one complete, inclusive document;
- has more flexibility;
- is geared to rural land use issues;
- is faster to adopt and amend;
- offers an improved process for public participation.

The CLURE report has been introduced in earlier sections of this chapter in the context of local government structures and rural issues. This discussion focuses on the land administration implications, in particular for planning. CLURE recommended that there be a new structure and process for local and district planning which addresses the issue of closer cooperation between incorporated and unincorporated areas, as well as regional service delivery (GNB, 1993).

One of CLURE's most important recommendations from the point of view of services to the people, was to introduce the 'one-stop shopping' concept with respect

to building and development approval. To that end, and for greater efficiency, it was suggested that the CPA be amended to enable a development permit and a building permit to be combined into one development and building permit to ensure conformity with land use designations and appropriate building standards (GNB, 1993). This has been made possible by the facilities provided by SNB, the provincial government's chief provider of front-line services to the public. SNB has been discussed in detail in the previous sub-section and under the sections on Technology. SNB is the focal point for property rights, and thought should be given to a similar system for land use rights and responsibilities, e.g. DNRE is really about Crown land, Department for Environment has influence over municipalities, and the agricultural and coastal zones are primarily under the municipalities (Methven, I. 2000, CPS/UNB, pers. comm., 3 October).

The next sub-section addresses Crown lands issues.

7.7.3 Crown Land and Forests

About 46% of the land area of New Brunswick is Crown land, most of which is forested, and this resource must be taken account of in the land use planning process. CLURE's recommendations concern the multiple use of forested land, with wood production as the predominant use, management of timber licences, accounting for the needs of local residents, public consultation, and Crown land as part of a structure and process for land use planning. The current Crown land management strategy incorporates the concepts of multiple use and sustainability. For example, government objectives for timber production, fish and wildlife habitat, and recreation are at present integrated within the system. Management objectives are reviewed every five years and the system has the flexibility to incorporate new or revised objectives (GNB, 1993). The maintenance of a sustainable supply of timber sufficient to meet current industrial demands remains the prime objective of the Crown land management strategy (GNB, 1993).

CLURE made a number of suggestions concerning mechanisms to account for the needs and priorities of rural residents in Crown land management, public consultation in the development of management plans, and the possible incorporation

of this as part of a new structure and process for local/district planning (GNB, 1993). The Government response was that it understood the intent of these measures, but suggested that consideration for the management and use of Crown land goes beyond district planning boundaries. The Government did, however, accept the principle of public consultation on goals and objectives for the management of crown land, and the Fundy Model Forest project was recognised as being a good example of a consultative–consensus approach (GNB, 1993).

On the CLURE recommendation that the Department of Natural Resources and Energy (DNRE) make every effort to extend management practices on Crown land to include private land owned by licensees, the Government response was that it saw difficulty in trying to enforce better management practices on private land. For those lands that are owned by licensees there is a built-in incentive for good management, in that Crown land is allocated on the basis that their lands under licence must be as productive as Crown land. Education, technical assistance and moral persuasion were seen as the preferred approach by government. For example, DNRE used a Forest Management Manual for guiding the licensees of Crown lands, and DNRE supports the recommendation that a comprehensive policy be developed for sustainable management on private woodlots (GNB, 1993).

7.7.4 Watersheds and Coastal Zones

The NB Environment Department has run a Watershed Designation Program since the early 1990s which has a pro-active public consultation process aimed at building a consensus on land-use requirements on the so-called ‘outside zones’ (those outside the 75m setback but within the watershed) (GNB, 1993). The provincial government agreed that (GNB, 1993):

- enforcement of watershed programs be integrated with by-laws and regulations;
- leadership must come from the Department of the Environment, with involvement from other departments;

- local residents representing the municipalities, local service districts or rural communities affected by the watershed regulations be included in a monitoring committee which could report on progress of protection measures and any concerns or infractions that may occur. Eventually the Surface Watershed Protection Program should be carried out at local level by the new district planning commissions, in cooperation with the Province;

- Environment Department should work with other departments to develop an export policy for water;

- recreational use of land designated for resource uses such as agriculture, forestry, mining and fishing/aquaculture to be allowed as long as it does not negatively impact on the development of the primary resource.

About 90% of NB's 2,000 kilometres of coastline is privately owned, and access to this highly valued resource is becoming a concern. Beachfront development, cottage and recreational use, and pollution were creating conflicts such that CLURE strongly recommended that the Province begin immediately to address the issue of developing a policy and strategy for the management and protection of the coastal zone. The Government said it would proceed to finalise a coastal zone policy with special emphasis on public access to the coastline and on addressing issues such as protection of sensitive and natural areas, set-backs, right-of-ways, coastal development, industrial effluent, untreated sewage, and conflicting uses (GNB, 1993). The government of the day also agreed with CLURE's recommendation that a Memorandum of Understanding should be explored with the Federal government in order to ensure their involvement in a coastal zone management plan (GNB, 1993).

The government also agreed with CLURE's recommendation that a mapping and information database for the coastal zone should be developed, initially through the consolidation of existing information bases, to work with the coastal zone policy initiative. An interdepartmental report on coastal zone information 'recognised that the viability of creating a full database depends on federal participation and the success of new data collection technology for the missing sea-ward data' (GNB, 1993).

The government also agreed with CLURE's recommendation that the Community Planning Act be amended to allow for the provision of shoreline access in local plans, and that a public dedication clause under the subdivision provision be added. It also agreed that public access policies similar to those suggested for coastal areas be considered for major inland lakes and watercourses. Whilst this was fairly straightforward on Crown land, on other lands the public access issue would have to be addressed through the development of a policy framework for land use, and subsequently through district and local planning (GNB, 1993).

7.7.5 Rural Issues and Ribbon Development

Unlike other parts of the world, NB is experiencing a net movement into the rural areas—both into established rural areas as well as ribbon development (St-Onge, J. 2000, DLGE, pers. comm. 10 October).

The concerns about the effects of ribbon developments into rural areas resulted in the Farm Land Identification Program (FLIP). FLIP sought to preserve agricultural land by designating it for deferred tax benefits. The deferred taxes become payable if land is converted from agricultural use, as a 'penalty' for ceasing its agricultural uses Dillon, M. 2000, NBDAFA, pers. comm., 13 October).

The government agreed with CLURE's recommendation that the Policy and Priorities Committee of Cabinet be assigned responsibility for recommendations to Cabinet on the establishment and revision of provincial land use and rural development policies. The Government also agreed to establish an Interdepartmental Committee of Deputy-Ministers on Land Use Policy that would review and coordinate all land use and rural development issues and policies and make recommendations to the Policy and Priorities Committee of Cabinet. Complementary to that would be the establishment of citizen advisory committees to ensure citizen participation in provincial land use planning, rural development issues and development of specific land use policies (GNB, 1993). Human resources is another issue (GNB, 1993):

> A major deficiency in much of rural New Brunswick is the lack of administrative staff and expertise for the provision of planning services. Nine Planning Commissions exist and provide some level of services, while the Department of Municipalities, Culture and Housing is responsible for the remainder of the Province.

> Where Planning Commissions exist, it has been demonstrated they can provide both incorporated and unincorporated areas with a satisfactory level of staffing for the delivery of planning services. …The Government is concerned that the establishment of technical advisory committees might result in the creation of very sizeable regional or district bodies that would require significant human resources. It is also not clear whether this would lead to improvements in the development approval process.

CLURE recommended that the Province modify the non-residential property tax rate for unincorporated areas to more accurately reflect the services provided and to make the tax rate more equitable with the tax rates charged by municipalities for the same types of uses. CLURE also advanced other measures, including the use of an equitable unconditional grant formula for both incorporated and unincorporated areas. CLURE also suggested that the government look at alternatives to property taxation such as the kind and amount of services and facilities that are provided free or are heavily subsidised for unincorporated areas, because it was evident that taxes were not the sole reason for living and operating businesses in unincorporated areas (GNB, 1993).

CLURE pointed out that some policies and practices of the Department of Transportation inadvertently act as financial incentives for such settlement forms as sprawl and ribbon development, and recommended that they be eliminated (GNB, 1993):

- The practice of providing summer and winter maintenance on Class D and private roads should be discontinued;
- Transportation should adopt the user-pay principle and eliminate all subsidies for the provision and installation of driveway culverts for developers and individual lot owners;
- Beginning in 1994, developers should be required to pay for chip-sealing new subdivision streets. The developer should also have to bear the costs for related street signage.

The planning component of the land administration systems probably has the most important role to play in support of sustainable development because it

potentially provides the framework within which decisions are made. But the discussion in this section shows that there are many other components of land administration such as cadastral records, surveying, valuation and maps which provide the spatial, temporal and legal contexts that are necessary for sustainable development decision-making about people's rights and responsibilities over land and its use.

7.8 CONCLUSIONS

The federal system of government of which NB is a part poses some unique challenges and opportunities. The primary challenge is that, unlike the simple two-layer system of central and local government that exists in NZ, there is an additional layer of government with which to liaise about policy and strategy. Generally speaking, the provincial government's stronghold on primary resources and property development is shared with local government, but not with federal government. This makes it difficult for federal government to administer Canada's resources from a national perspective. Conversely, it means that federal government has the freedom and interest to focus more support on initiatives such as capacity building, which need not deal directly with primary resources and development. Local government in NB is faced with the challenge that not all parts of NB have access to local governance, and in these unincorporated areas community planning has had to be channeled by a variety of special means.

As was the case in NZ, the NB people have experienced a change in the balance of rights and responsibilities between the State, private sector and community sectors. For example the rise of environment and indigenous rights interests has affected the content of other interests. There have been some legal and institutional responses. Examples include the allocation of deer wintering areas in place of logging rights and the process of giving greater autonomy to First Nations groups, which in turn brings them into stronger roles as stakeholders in discussion concerning their reserve lands as well as beyond these lands.

As for NZ, legislation in NB had been consolidated in the 1990s into legislation on Clean Environment, Clean Water and Clean Air. This consolidation has significant

impact not only on rights and responsibilities over land and its use but also on the way these are discussed and decided. Another strong influence was the establishment of the federal Commissioner for the Environment and Sustainable Development. The statutory powers of the CSED have been exercised to force federal departments to consider sustainable development objectives and how these are to be achieved. The emphasis on strategies within and across departments is a useful one, as is the emphasis on consultation and cooperation with the community sectors.

There were examples in this study that indicated the existence of problems with horizontal and vertical cooperation across tiers of government and into the community, and these examples spanned policy-making, policy implementation and information exchange. Cases such as Rural Team New Brunswick showed an awareness of the problem. There were innovations in the area of policy implementation that involved the community in undertaking tasks such as water catchment monitoring in cooperation with the administrative arm of government.

From the information perspective, SNB has an important role to play in providing reliable fundamental property information with its digital cadastral database, valuation database and land registry data. It has much potential to expand beyond this because it is already the front face of 120 government bodies. Each of these bodies would gather various forms of information as needed to carry out their department's mandate. Should this information be spatially related, it would form the basis of the spatial information infrastructure that is needed to support the complex decision-making about the rights and responsibilities of diverse stakeholders to hold and use land. The conversion to the land titles system is an important step. However its current property focus does not appear to embrace public lands and use rights and the integration potential this could have within and beyond the province.

NB's land administration system is not dissimilar from the NZ model, especially with the conversion from the Deeds system to the land titles registration system. However, the planning component is the most significant for sustainable development. Hence the discussions about the experiences of managing Crown and private land and forests, the landmark CLURE report, the growing realisation of the need to plan land and water ownership and use, and the tensions between the rural and urban sectors.

In brief, and with specific reference to the objectives set out at section 5.2, the NB case study has shown that:

- There have been clear changes to the balance of rights and responsibilities between sectors of society and government over land and its use—environment and indigenous rights being significant forces of change. In the case of NB, the federal layer of government creates a further layer of complexity in determining the content and effect of those diverse rights and responsibilities;

- The components of the existing system only partially address the need for coordination of land policies to reflect those changes to the balance of rights and responsibilities over land and its use;

- By and large there is a need for improved coordination of policies and their implementation within and between government departments as well as into the community;

- Information technology has a significant role to play and there are already some steps being taken to improve the quantity, quality and accessibility of land information and other data that can be spatially related. SNB has been a useful focal point for consolidation of property-related information;

- NB has had legal consolidation into three pieces of legislation but these do not have the same resource management focus demonstrated by NZ's RMA. NB has experienced some restructuring and downsizing of government and seeks to expand local government whilst also using SNB as a vehicle to improving accessibility to local and provincial government services.

The next chapter discusses the findings from the NZ and NB case studies with a view to suggesting principles for addressing the aim set out in Chapter 1.

8

DISCUSSION

8.1 INTRODUCTION

This chapter draws together conclusions from the background chapters and the case studies in order to outline the principles for the legal, institutional and technological aspects of a land administration system that would better respond to the dynamic dialogue between public, community, corporate and individual rights and responsibilities. Where relevant, the discussion brings in some examples or illustrations from other countries' experiences.

The discussion in this chapter focuses on:

- The changed power structures in western societies and the way they interact with the changes in the content and balance of rights and responsibilities in land and land use as held by the public, community, corporate sectors and individuals (section 8.2);
- The need for better cooperation within and beyond government (section 8.3);
- The trend towards involving the community and private sector in administrative tasks of government (section 8.4);
- The effect of the information revolution on the ability of communities and countries to respond to these changes (section 8.5);

- The response required from the legal and institutional processes of government and the challenges for governance (sections 8.6 and 8.7);
- Lessons learnt from this research and implications for developed and developing countries (section 8.8).

Formal conclusions are not drawn at the end of this chapter because the discussions in this chapter lead into the Conclusions chapter.

8.2 INDIVIDUAL, COMMUNITY, CORPORATE AND STATE RIGHTS

As discussed in Chapter 4, there is a difference between government and governance. Government is the formal institution by which a country is ruled and so would include the parliamentary, executive and judicial sectors. In this research, governance is more about the processes with which decisions that affect the people are made, and so it includes government. Good governance would involve processes of decision-making that demonstrate 'competence, accountability, rule of law and accessibility of information' (Weaver et al., 1997). Rule of law enables individuals and organisations to assess risks, make rational decisions and investments and start new programs. Weaver (1997) describes it as having the following elements:

- a set of rules known in advance;
- rules that are actually applied;
- a means of ensuring enforcement of rules;
- an independent judicial system;
- established and predictable procedures for changing the rules.

Underpinning good governance is democracy, which political scientists define as a political system characterised by (Weaver et al., 1997):

- Leadership based on a competition for public support;

- Decision-making processes that are both publicly known and open to public influence;
- Institutions that both provide channels for public participation and secure the safety of those who choose to participate.

As the Brundtland Report of 1987 said, sustainable development is about meeting present needs without compromising the ability of future generations to meet their own needs. The land administration systems of the present will need to consider current and future needs. The case studies of NZ and NB both confirmed that there have been changes to the balance of rights and responsibilities between the various sectors of the public and private spheres of society. This section will examine these common trends and the approaches used to discuss them.

8.2.1 Individuals, Communities and Corporations

There were examples in both case studies that indicated a trend towards disagreement between sectors of the community and individuals about the content of individuals' rights and responsibilities over their land, how these should be exercised, and the projected environmental, financial or social consequences of their exercise. It is the 'public good at private cost' tension that was discussed in Chapter 4. Local governments generally had the initial task of adjudicating these disputes, especially through the planning processes and procedures.

A good example from NZ was the case of Ross Bethel, the farmer whose farm was classified as a community reserve by a majority of the council members at the local council who were mostly people had chosen to live in the country but worked elsewhere. The same occurred with some private woodlot owners in NB who encountered complaints from community groups about the level of woodcutting and where the woodcutting should or should not take place. These also illustrate how agricultural land represents a variety of social values that include its (Crosson, 1989):

- value as a component of the food production process;
- aesthetic visual amenity;

- significance as the habitat for wild plant and animal life that have economic, aesthetic and scientific value;
- possible threat to economic and environmental values posed by erosion and farm run-off of organic and chemical 'pollutants';
- significance in the preservation of society's intangible values such as the balance between personal independence and democracy and the importance of vibrant rural communities.

In NZ, the district councils (rural local government) had varying degrees of human resource and funding capability to cover the range of stakeholders. Even when consultation meetings were scheduled, not all stakeholders could attend. Due to their long workdays and distance from local government centres, farmers seemed to have difficulty in finding the time to attend planning meetings. In the case of resource consents or complaints by members of the public about possible environmental breaches by farmers, district councils also had varying degrees of resources to properly investigate such objections and complaints. In some instances, the cases bordered on creating a situation where the alleged offender was 'guilty until proven innocent' and had to outlay significant funds to obtain expert evidence to counter the allegation. The RMA does give the Environment Court powers to censure facetious objections, but only a small percentage of cases reach the stage of going to court.

In NB, where there was not complete coverage by local authorities, the situation was more complex, and provincial government had to fill the vacuum. There were clear indications from policies dating back to the Byrne Report of 1967 that it was not intended that areas of NB would remain without local government; hence the recent focus on building local government as well as local governance through initiatives such as Rural Team NB.

Corporations were created in the days of the industrial revolution for primarily entrepreneurial purposes, and were able to legally own and dispose of property in the way an individual could. The addition of more responsibilities since that time for the consequences of their activities has taught some to be more pro-active in consulting with the public.

The representatives of corporations such as the NZ pulp and paper companies and the NB logging concession-holders and sawmills explained that they have consciously sought to do more to engage the community in development of policies and monitoring. In NB, the corporations such as the large forestry companies were clearly in a different league from the private woodlot owners. The private woodlot owners of NB had only started to organise themselves into marketing boards in recent decades, as they had a different set of interests and issues than the large-scale companies. Although they were theoretically in the same industry, they had different approaches and priorities.

Some of the community groups such as Forest and Bird (NZ) and the NB Conservation Foundation had developed quite sophisticated approaches to lobbying industry and government. They are also more often involved in policy-making. In a federal system like Canada there was even more effort required, as there was another tier of policy-making—provincial government.

A trend common in NZ and NB was that, although industry has to go to government for permits to develop or use land, there is a growing responsibility placed on industry itself (not just government) to consult with the community about such development proposals. In some instances, industry has seen fit to voluntarily establish consultative groups with a cross-section of interest groups and local community representatives. There were examples of these in both the NZ and NB case studies—particularly by companies involved in management of forests and production of forest products. It is also worth noting that government policies and community attitudes as well as global markets affect industries like forestry:

> Often, deforestation is led both by external markets and by land conversion for agriculture; terms of trade, lack of environmental cost inclusion in export pricing amd debt are some of the factors behind the former, whereas these and population pressures are the factors which tend to influence the latter effect. Institutional failures and market imperfections (property right delineation and enforcement, uncertainty and monopolistic practices, and logging contract design and government subsidies) are among the major factors behind the deforestation externalities. (Rao, 2000)

As was shown by both case studies, the community is made up of diverse groups and individuals that align and associate themselves according to issues rather

than geographic or administrative boundaries. For example, indigenous groups have their own understanding of environmental sustainability that may or may not be in line with that of the environmentalists. It depends on the issue at hand. For example, the Maori approach to integrated land and water management is strict about any pollutants entering the waterways, and would find alliance with environmentalists on this point. But the Maori expectation of using their forest resources has sometimes encountered opposition from environmental conservationists. Traditional Maori hunting and gathering practices could find alliances with hunting and fishing clubs such as the NZ Fish and Game Society and with farmers against animal rights groups. But if Maori wished to have exclusive hunting and fishing rights then support from the sporting clubs is likely to wane. Similar cases have arisen in the NB case study. In the Burnt Church dispute there were background tensions with environmentalists about whether the First Nations must be subject to the same fishing restrictions as others who wish to fish in the area.

8.2.2 Government as Owner

There were times when government itself was a stakeholder in discussions about rights and responsibilities because of its involvement in land ownership and the granting of licences over those lands. On the one hand there was the contractual obligation to corporate entities that had been granted rights to use State-owned land such as the forests in NZ and NB. On the other hand there was the obligation to uphold the interests and rights of the wider community to comment on the use of public and private land.

It is important to make the distinction between these obligations. In NB, every tree on Crown land that has been allocated for forestry is accounted for in the DNR's GIS databases and allocated to the timber companies that have licences from government to maintain them. The government has contractual obligations to these companies. On the other hand the government also has obligations to the people. An example of the latter would be the recent reclassification of tracts of Crown forests as biodiversity reserves.

Another example relevant to the discussion on spatial information infrastructures is that government authorities often hold information about ownership and use rights that have been obtained by statutory imposition and at taxpayers' expense for a specific purpose. In that situation, the government has used its position as upholder of community interests in order to collect information. But then the trend towards cost-recovery measures can put pressure on them to sell the information for commercial benefit to the government authority itself as well as the buyer of that information.

In short, government wears many hats and interacts with a wide spectrum of categories of 'the people', i.e. individuals, community interest groups and corporate entrepreneurial entities (business).

8.2.3 Government as Policy-maker

The parliamentary and executive arms of government jointly give effect to government's role as policy-maker. As discussed in Chapter 4 the philosophies no longer adequately describe the trends in governance. The civil society movement and rise of interest-groups has changed the traditional attitudes to decision-making where parliamentarians are to be elected for the purpose of making representative decision-making. It was clear from both case studies that there has been an emphasis in government on community consultation for policy-making purposes. It was a trend in many departments at all tiers to try to engage the community in consultation. Whilst such a trend was obviously in line with the spirit of Agenda 21 to 'Think global and act local' (UN, 1992), the unforeseen danger was the depletion of social capital. For example in Canada the department called Natural Resources Canada and the department called Industry Canada found that the categories of constituents whom they consulted with were not mutually exclusive. Sometimes if one or another of these two departments had approached the same corporate entity or community group for consultation, the subsequent request from another department was not always enthusiastically received because these groups consider that they have already given input to 'government'.

There was also the converse problem of not being able to find the right person with whom to consult. For example, the growing interest in environmental matters has meant that most large corporate entities have a person on staff who has been designated with responsibility for environmental matters. So when Environment Canada seeks to consult with these organisations, it is usually relatively easy to locate that person or section within the corporate entity's structures. However, when Industry Canada or Natural Resources Canada wish to consult with these same corporate entities on matters within their respective governmental mandates, they can have difficulty in finding the right person to target within that corporate entity's organisational structure because its operations broadly cover 'industry' or 'natural resources'.

Discussions about rights and responsibilities over land and its use did sometimes reflect the political and economic standing of the various interest groups and entrepreneurial corporate entities. For example, the decline of the agricultural backbone of the NZ economy, coupled with the rise of urban populations and interest in environmentalism, did reduce the extent to which the rural sector could successfully argue about their rights at local or central government level. Forest and Bird were involved in many local government planning processes, as was the Department of Conservation NZ, which had an advocacy fund and conservation mandate, but the Department for the Environment and the Department of Agriculture had less support and capacity to be so directly involved. This meant that there was not always representation of all the relevant stakeholder voices, be they from government in its own right, from government on behalf of particular sectors of the community, or from the various community sectors themselves. The other issue of concern has been how to weight the input of such a diversity of stakeholders. If there is a decision that can be resolved by scientific information then the problem is quite easily resolved. However, if a value judgment has to be made then the number of members in the community-interest group and their level of awareness and support for that group's position does matter. A classic example would be the conflicts that arose in NZ about what the RMA meant by 'significant natural landscape'. This required an aesthetic value judgment that would have an effect on the way that rights and responsibilities could be exercised on the farmlands that were classified as such. The rolling green

hills to which local and international tourists are attracted were once covered in some form of vegetation. There are groups that would lobby to retain the rolling green hills, and others that would advocate that they be reforested.

Participatory policy-setting and planning does tend to take longer than the top-down method, and could cost more. In the NZ example, there were 84 district and regional plans that took three to five years (in some cases more) to produce, and at a cost of up to several million New Zealand dollars each. But the next generation of RMA plans are likely to be developed faster because there will be experience to fall back on. The pertinent question for each society to answer is not just how much or how long it will take, but rather whether there is satisfaction with the overall results of better addressing present and future needs with a process that deals with conflict early rather than late.

Government can facilitate participation in policy-making by providing the information infrastructure. For example, a study of the Land Use Profiler developed by the Department of Infrastructure of Victoria in Australia found that:

> Though LUP did not have the full analytical complement of GIS functionality to explore process interactions in spatial phenomena or any form of temporal phenomena, the function of the embedded spatial technology still enhances what were previously manual processes ... LUP is an example of the role institutional support can play in the development of GIS-related technologies and products as part of such an information infrastructure (Feeney et al., 2000).

Participatory approaches to decision-making provide opportunities for GIS to hold decision makers more accountable as well as to facilitate the devolution of greater decision-making responsibility to stakeholders (Carver, 2001).

Government has a multi-faceted role in policy-making. One is through the classic method of law making by parliament that then sets parameters for policies set by the administrative arm of government. The other is to empower people to contribute to policies either directly or through the provision of relevant information.

8.2.4 Summary

Sustainable development has been a significant driving force in changing the balance of rights and responsibilities between individuals, communities, government and corporate entities.

The dynamic complexity of the inter-relationships between them is illustrated in Diagrams 8.1 to 8.6. The alignments and re-alignments of cooperation are based on issues to do with the definition and exercise of rights and responsibilities over land and its use. For example, a large realtor may own land on the city fringe and wish to develop it under a government initiative to create a satellite industrial complex, but the individual neighbours and the local community love the bush setting and wish to preserve it (Figure 8.1). In a different scenario, there may be an owner who wishes to sell his large block of land to a corporation at a premium rate but the local community objects and seeks government help to have the area rezoned and reclassified as significant natural vegetation reserve (Figure 8.2). In yet another scenario there may be a development project where the owners of the land and the corporation wishing to purchase that land have community support for the development project, but lobbyists for indigenous rights and central government wish to enforce obligations under an international treaty on significant indigenous people sites (Figure 8.3). There may be yet other instances when the developer finds support from one government department (say, in the case of Canada—a mining company and Natural Resources Canada). In that instance, the neighbouring individual owners and the local community may manage to lobby another government department such as Environment Canada to oppose the development (Figure 8.4) or a slightly different alignment of forces in Figure 8.5. Figure 8.6 shows it can become even more complex as there are several government departments involved that are lobbied by competing sectors of the private and community groups, who in turn have different individual owners aligned with them.

This complexity of discussion requires legal and institutional support processes so as to avoid the need for the unpleasantness of street protests and undue delay in addressing the key issues in a pro-active rather than reactive manner.

Representations of some of the different alliances possible between government, corporate entities (business), community interest groups and individuals.

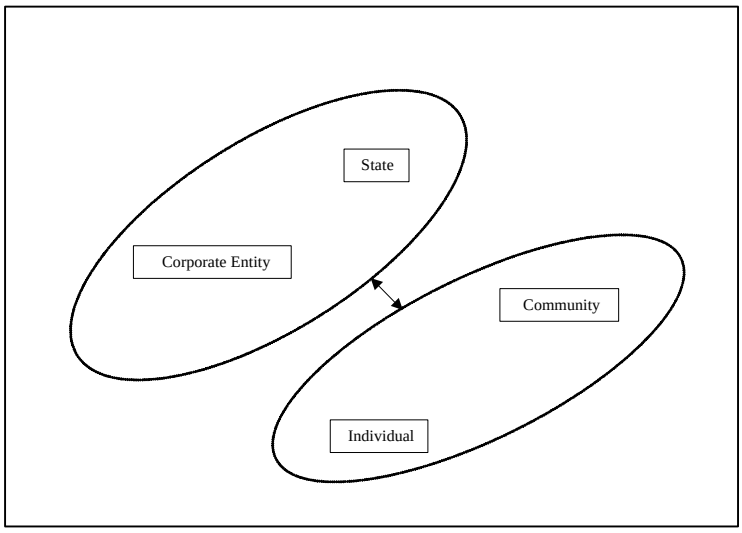

Figure 8.1: State and Corporate entity vs Community interest group and Individual

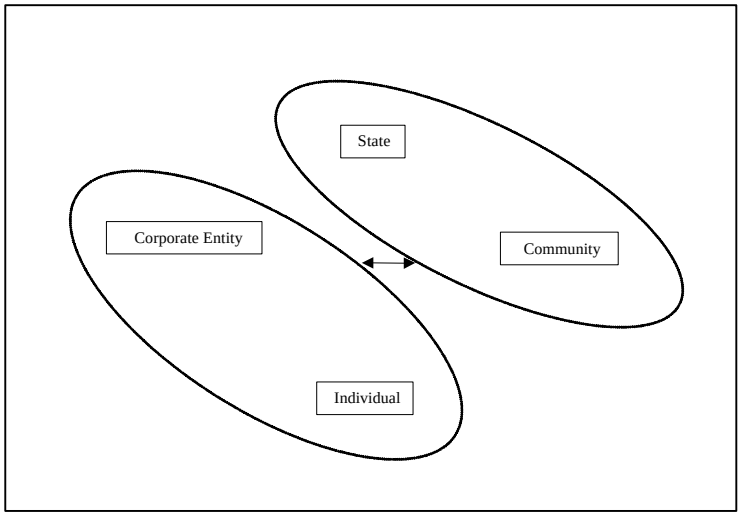

Figure 8.2: Corporate entity and Individual vs State and Community interest group

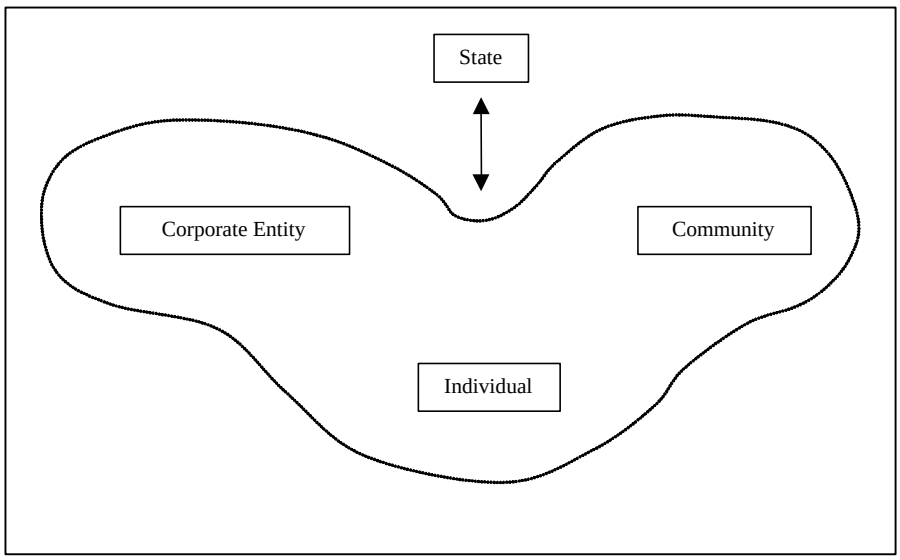

Figure 8.3: State vs Corporate entity, Individual and Community interest group

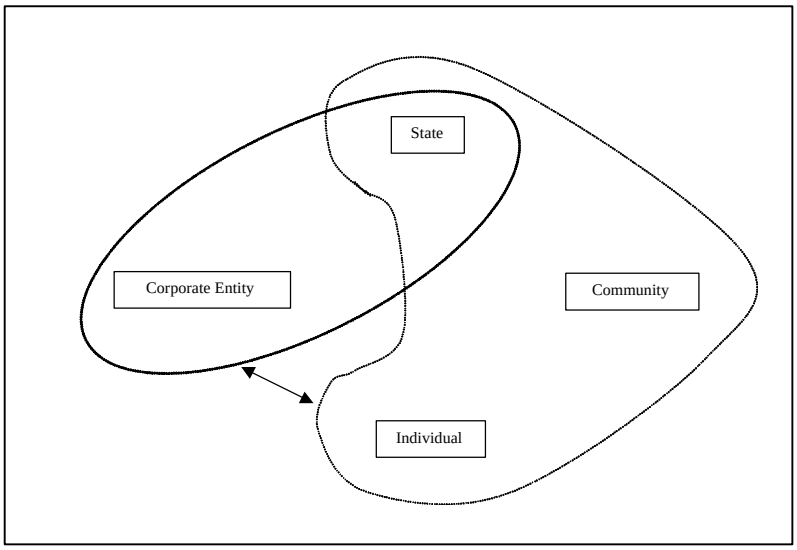

Figure 8.4: State department 'A' and Corporate entity vs State department 'B', Community interest group and Individual

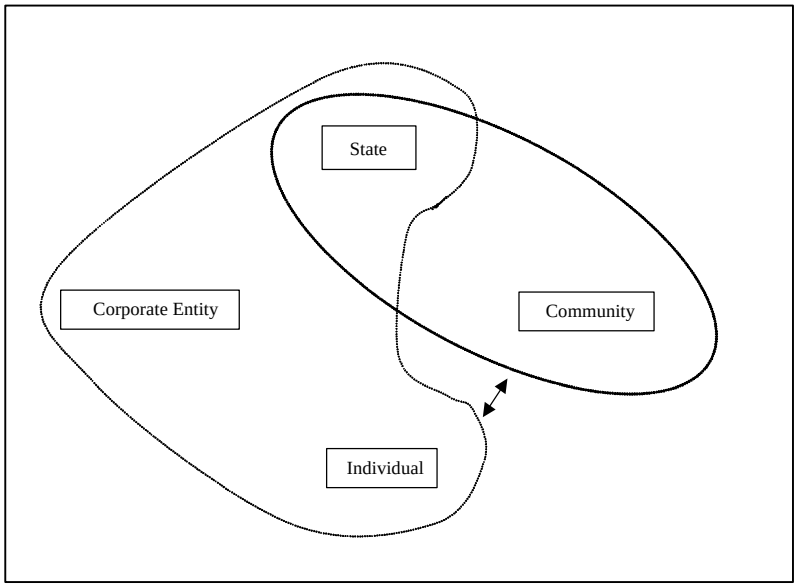

Figure 8.5: State department 'A', Corporate Entity and Individual vs Community interest group

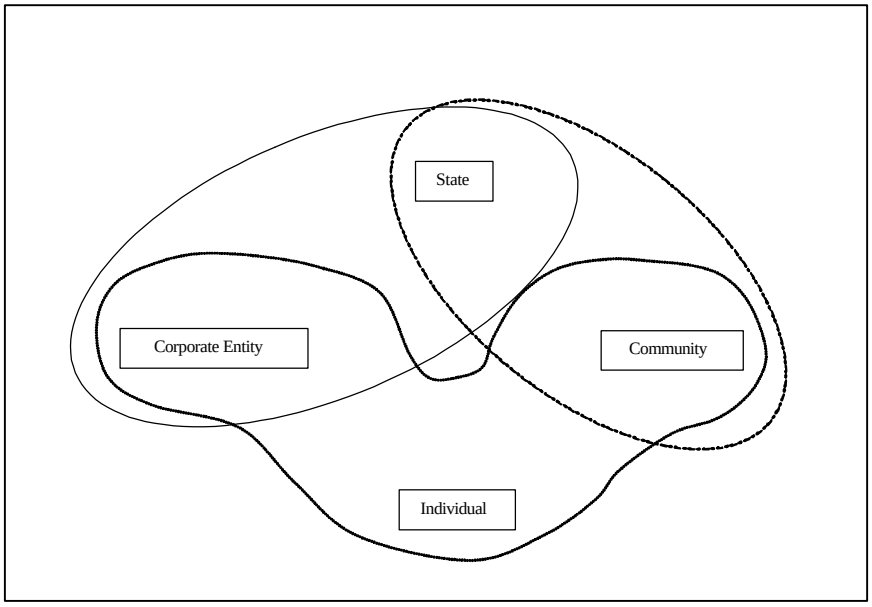

Figure 8.6: State department 'A' and Corporate entity 'A' vs State department 'B' and Community interest group 'A' vs Corporate entity 'B', Community interest group 'B' and Individual

8.3 THE NEED FOR BETTER CO-ORDINATION IN GOVERNMENT

The debates about the ongoing changes to rights and responsibilities over land and its use require support from government to facilitate such discussions and then to formulate official policies.

In NZ and NB the rising awareness of sustainable development, particularly environmental issues, into mainstream politics and legislation took place in the late 1980s and early 1990s. This was a period of global economic recession, and the fiscal pressures led to the implementation of new public sector policies that were characterised by downsizing of government to core business, privatisation of non-core business, cost-recovery, and decentralisation. Apart from reducing the numbers of those in the public service, the number of departments was reduced—some were amalgamated and others were closed down. In NZ, for example, the Board of Works was closed down in the restructuring in the late 1980s. In NB the Department of Agriculture was nearly terminated and there were other amalgamations to form the Department of Environment and Local Government. Decentralisation has taken different forms. In NZ the Local Government Act 1989 devolved powers from central government to local authorities, which existed in the form of district councils, municipal councils, regional authorities and even a few unitary authorities. In NB there is no uniform coverage by local authorities so the provincial government has had to continue to take responsibility for the unincorporated areas. The NB structure makes it more difficult to organise localized consultations. Service New Brunswick's mandate to be a one-stop shop for provincial government will be effective for service delivery, but possibly not so for managing consultations. If Rural Team NB continues to progress well in its work to build local rural communities, it will especially help those currently without access to local government.

The challenge for government lies in the fact that the various government departments have different mandates that in turn determine whether they tend to place more emphasis on one or two of the objectives of sustainable development i.e. economic, social or environmental.

For example, in both NZ and NB the Department for the Environment had a different mandate from the Department for Natural Resources, and therefore divergent policies and relationships with the various stakeholders. The former tended to have more affinity with environmental community groups and the latter with the corporate entrepreneurial entities within industry.

The keenness by different departments to engage the community in dialogue also gave rise to the danger of exhausting the capacity of stakeholders to respond to requests for their input by a variety of government departments.

Sometimes those departments that wished to cooperate with other departments in the same tier of government could not easily locate their counterpart in other departments in the same tier, not to mention from other tiers of government. Even when there was a common issue it was not always easy to determine which other government departments at the same or different levels should be informed or involved in policy-making. An example of a lack of horizontal coherence is when the Canadian representative who attended the international conference on carbon emissions in Seoul had to present two divergent positions, one from Natural Resources Canada and the other from Environment Canada. An example of a need for better vertical coherence comes from the work of Rural Team NB that involved relevant representatives from federal and provincial levels in discussions about how to better support and revive rural communities. As discussed in Chapter 7, Rural Team NB's focus on community building led them to accept that there was a need to also better understand one another's mandates within government and find out what projects they each had or were planning to deliver. This would in turn lead to a more comprehensive and less duplicative service to local rural communities.

There have been cross-tier efforts by government that worked quite well. The NB Atlantic Canada Action Program (ACAP) was federally funded by the DFO and had NB's Natural Resources Department as well as any relevant local governments involved because of their potentially overlapping mandates to engage local communities in coastal and watershed management. Even the well-coordinated ACAP program encountered problems when the NB Conservation Foundation (NBCF), which is a non-government organisation, found that data which it had collected could not be added into the ACAP database because data collection and input was the

subject of a contractual agreement of ACAP with another body. In short, there was no procedure available for the integration of community-collected geographic information databases with government-held geographic information databases.

As illustrated in the Figure 8.7 below on 'Participatory Governance', the ideal would be for the community to be able to submit a proposal to local government and then trust that local government would follow this matter through with all higher tiers of government. In short, for the purposes of decision-making about rights and responsibilities in land, government needs to minimise the tendency to be discouraged from cooperation by the boundaries of their respective mandates. The Rural Team NB experience is a good example of the need to allow a united focus on common issues to overcome concerns about protecting respective mandates. Cooperation on common issues can bring the various government departments together in a way that will improve policy-making and provide a coherent front to respond to the community, as well as gain community trust and input. The work of the Commissioner for Sustainable Development based in the Auditor-General's Office of Canada has helped to promote the development of sustainable development policies within federal departments by linking sustainable development with the process of performance assessment and funding allocation. As such policies develop, it becomes clearer where and how there could be cooperation and where there could be counter-productivity.

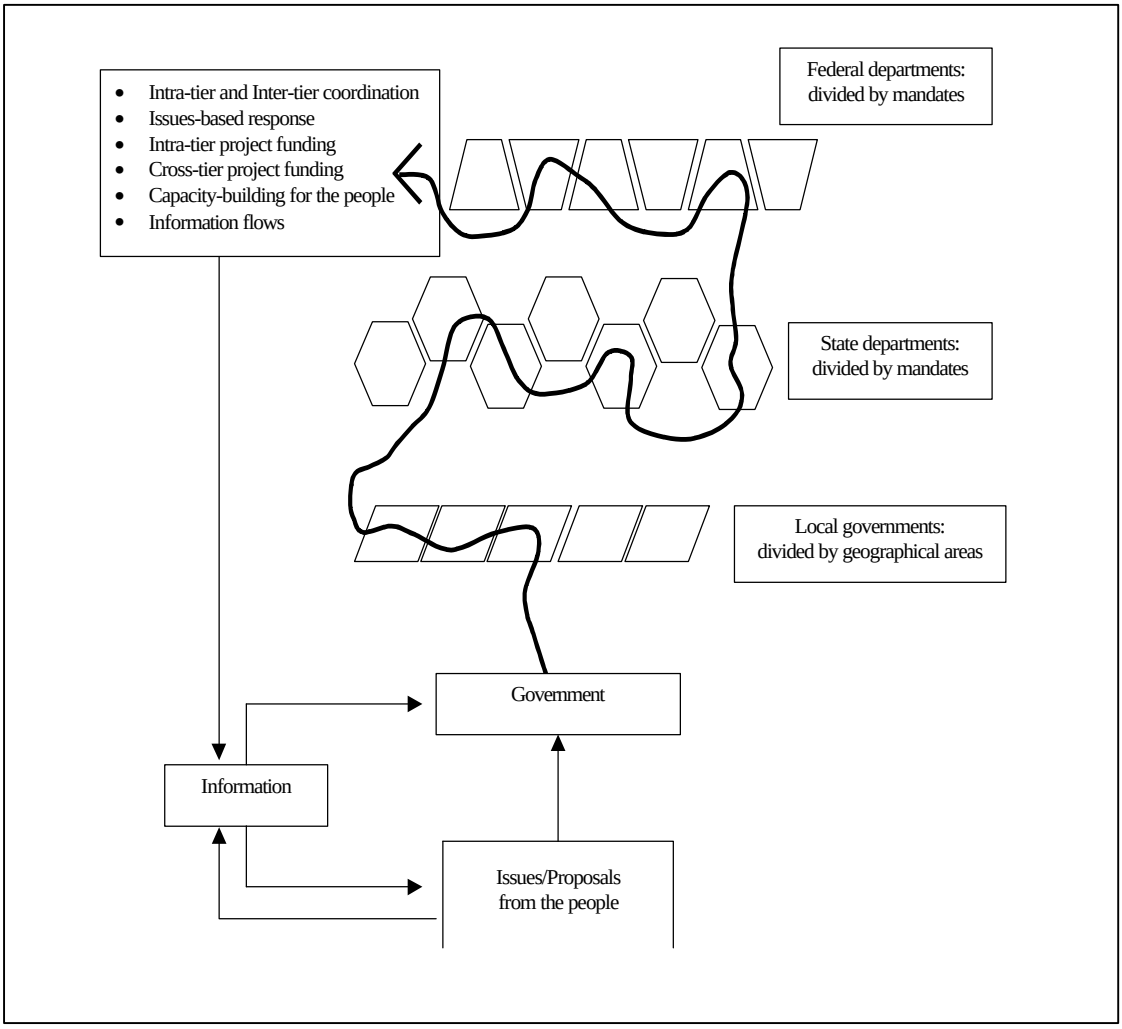

Figure 8.7: An Illustration of the Advantages of Better Coordination within and between Tiers of Government to Support Participatory Governance

8.4 THE PEOPLE AND THE EXECUTIVE

The NZ and NB case studies showed trends towards corporate entities, community interest groups and individuals becoming more involved in performing tasks and implementing policies that would normally be performed by the administrative arm of government.

A good example from NB would be the involvement of community groups in monitoring water quality for water catchment projects within the ACAP initiative. In NZ, entrepreneurial corporate entities are encouraged by some local councils to consult directly with Maori groups and the wider community about their proposed development projects.

These examples show that there has been an evolutionary process that grew out of the downsizing of government due to globalisation and privatisation ideologies. In doing so, some tasks that were originally performed by the administrative arm of government came to be contracted out to corporate entities or community groups. This has had the effect of further removing parts of the administration from the political sensitivity of being directly answerable to parliament. It is beyond the scope of this thesis to explore this aspect in detail. It suffices to note that the increased involvement of the people in delivering administrative tasks does affect the classic democratic model of government and decision-making.

The classic democratic model has separation of powers between parliament, the executive and the judiciary. In this system, the people choose the members of parliament who have the power to legislate and the Executive carries out implementation. If people are dissatisfied with the work of the Executive, they may complain directly through internal procedures of the administrative body concerned or pursue it through the Courts—thus the existence of administrative law.

As the civil rights movements grew since the 1960s and in more recent times with the increased privatisation or delegation of government powers, there began to be more direct interaction between the people and the Executive. For example there has been a trend towards involving non-government organisations and individuals in consultations on policy. There has also been the more recent trend of encouraging the

private sector or community groups to take over administrative tasks that government originally performed such as:

- maintaining the databases of information about property;
- policing the standards of work of surveyors (now up to the Surveyor's Boards themselves);
- collecting field data about soil and water quality;
- monitoring pests and weeds on agricultural lands;
- delivering essential services.

Some of these devolutions of responsibility were deliberated and formalised by regulations, and others by contract. In other instances the devolutions of responsibility were a natural progression of the trend towards structuring service delivery as locally as possible, be it through formal local government structures or more active local governance by the community concerned.

The next section will discuss the lessons to be learned about the way that information technology has made it possible to involve a wide range of stakeholders, and has the potential to improve the content and method of carrying out discussions about rights and responsibilities over land and its use.

8.5 TECHNOLOGICAL FRAMEWORK

For the purposes of land administration and sustainable development, the key contribution that information technology needs to be able to make is to support informed discussions and enhance decision-making across diverse groups of stakeholders within and outside government. Within these parameters there are two broad areas for discussion:

- Datasets
- Privacy, Access and Use

8.5.1 Datasets

As outlined in Cadastre 2014, the cadastre should provide a complete picture of public (government-held) and private lands. Land Information NZ has the digital cadstral database, topographic and hydrographic maps, and core land and seabed information that has been collected by government (LINZ, 2001). It looks after millions of land records for the Crown including property titles, survey plans, Crown grants and indexes, and core Crown property information (LINZ, 2001). SNB provides similar services, but is more focused on titled land (SNB, 2000).

In addition to the complete topographical and cadastral layer, there should be links available to databases held by other government departments that have a spatial dimension, unless there is a specific privacy reason to withhold these. SNB has links to the services of 120 government departments, but not to all the spatial information that these would hold. The same applies to LINZ. A further historical legacy has been that the restructuring and downscaling of government to core business since the late 1980s has meant that some databases did not survive, and that corporate memory of what information was held by whom and where was depleted. Time will tell the full consequences of this.

The power and value of establishing and maintaining databases on land and land use rights and responsibilities would lie in its up-to-date nature and comprehensiveness. In NZ some of the disputes between farmers, local government, environmentalists and the Department of Conservation were about the alleged existence of native vegetation on those farmers' lands. The lack of a complete dataset of vegetation in NZ through most of the 1990s meant that incomplete and unverified datasets such as those collected by university students in the 1980s were used in classification of land as having significant natural vegetation. A complete vegetation dataset for NZ became available only in 1999, as cooperative effort between the Ministry for the Environment, the Ministry for Agriculture and Forestry and the Department for Conservation.

Surveying professionals need to consider how they can survey boundaries of aboriginal lands as defined by the aboriginals themselves. In Australia, for example, aboriginal Dreamtime definitions of boundaries are vastly different from western

square-edge approaches (Brazenor, 1998). It is controversial as to whether sacred sites should be mapped, because the indigenous people may or may not agree to these sites being made known to the public and perhaps being targeted for archaeological research. So although it may make sense for information about native title and use rights to be publicly available, the indigenous people themselves may not always agree to it, because they do not wish to expose those sites to the risk of archaeological or other interference.

Although it is not an objective of this research to deal in detail with the technical aspects of GIS, it is relevant to touch on cell-based (raster) and vector-based systems in the context of accessibility of institutional spatial data infrastructures. The advantages of cell-based systems are: data structures are simple; overlay and combination of mapped data with scanned data is easy; various types of spatial analysis are easy; simulation is easy because each spatial unit has the same size and shape and the technology is cheap (Burrough, 1986). The disadvantages are: the volumes of graphic data; using large cells to reduce data size may mean phenomenologically recognisable structures may be lost (and information lost too); crude raster maps are less aesthetically pleasing; network linkages are difficult to establish and projection transformation can be time-consuming (Burrough, 1986). Vector-based systems have the advantages of: compact data structure; good representation of phenomenological data structures; topology can be completely described with network linkages; fairly accurate graphics; retrieval, updating and generalisation of graphics are possible (Burrough, 1986). The disadvantages are: complex data structures; combination of several vector polygon maps or polygon and raster maps by overlay creates problems; simulation is difficult, as each unit has a different topological form; display and plotting can be expensive; technology is expensive, and spatial analysis and filtering within polygons is impossible (Burrough, 1986). Since Burrough's paper in 1996, there has been some progress made to allow spatial analysis and filtering within polygons but these are still possible only with the use of interpolations (Eagleson et al., 2002).

In short, cell-based systems may allow more flexibility to change the mapped representation to accommodate the changed base perception of the object or topography being mapped. Cell-based (raster) systems are easier to use, and they can

adapt to changes in the underlying philosophy of how a boundary is perceived and defined. For example, natural topology tends to have graduated rather than definite boundaries the way urban landscapes do. Mass dissemination of rasters may require an upgrade of telecommunications infrastructures; particularly if the objective is to provide equitable access to the communities across a nation. Vector-based systems have the advantage of producing much smaller files that are easier to disseminate through the Internet and through the existing telecommunications infrastructure, but do not have the same flexibility to change the base philosophy on which a line was chosen. Accessibility is a key issue, so technology should complement rather than replace older tools such as paper maps, which should be kept as long as society has a need for them (Berry, 1993).

The ultimate point of GIS and other tools is to develop another 'instrument of thought' that facilitates the unearthing and visualisation of creative solutions by diverse stakeholders to conflicts over competing rights and responsibilities over land and its use.

Spatial information is fundamentally useful for such applications within the community but has generally not been easily accessible or useable to illuminate spatial conflicts for the majority of people without GIS software or skills. However, there are an increasing variety of tools that bridge this gap in viewing and manipulating spatial data to support spatial decision-making processes within the user community. These include the development of atlases, spatial data directories, on-line cadastral-based services, community resource centres as well as the development of specific decision support tools, including collaborative or group decision support systems, as well as web-based decision tools. These approaches, as reviewed by (Feeney et al., 2002) within the Australian context, move progressively from visualisation tools and interoperable digital geographic data towards those that also provide the availability of technologies to support spatial decision-making at different levels, including analysis and modelling.

8.5.2 Privacy, Access, and Use

There is a need for legislative directives on privacy and access. In a UK court case decided in November 2001, it was held by the High Court that the commercial sale of personal details held by local government on their electoral roll was illegal (BBC, 2001a). The European Data Protection Directive is a new law, which states that state personal data can only be collected if individuals consent, and that they must be told how the information will be used. They must have access to the data and be able to correct or erase it (Nuttall, 1998).

There is the issue of access to information on the one hand, and privacy on the other. Access can be discussed from two different perspectives. The first is a matter of access by GIS managers to the information of the data holder. The more complex issue is the subsequent access by the public to the information that is essentially a collection of information about individuals and their properties.

GIS managers aim to access individual data sources and produce useful packages of commercial value. To do so requires establishment of meta-data standards and aggregation through sophisticated negotiation with data holders to facilitate the surrender of data. Needless to say, there must be sufficient incentives in the form of monetary or efficiency improvements to entice data holders to part with their information.

There is also the legal issue common in freedom of information laws that require use of information only for the purpose for which it was collected. It is unlikely that the information was ever collected for the ultimate purpose of being aggregated in a potentially sensitive manner with other data in a spatial information system. The tougher issue is access by the public—the tension lies between accessibility and privacy, as is eloquently put by Michell-Viret about the Canadian experience:

> One of the primary challenges in managing the development of this GIS technology lies in being able to strike a balance between meeting GIA practitioners' demands for more intensive geographic information processing capability with the tolerances of Canadian society for increasingly privacy-intrusive GIA (Michell-Viret, 1997).

An example from the NB case study was the Property Assessment and Taxation Parcel Index Database and Property Map Database (MacLauchlan and McLaughlin, 1998). When it was launched in 1996 there was an outcry, as victims of domestic violence were suddenly exposed and locatable via Internet (McLaughlin, 1998).

Certainly one of the key tools (albeit unexpected) of the information revolution is the Internet. But, as Black has noted:

> If it [the Internet] had been anticipated, the Internet and its requisite languages, codes and protocols would most certainly have been designed differently. The problem is that the technology was well-established before the most compelling applications had been envisioned (Black, 1997).

Polley and Williamson (1998) concluded that cadastre, GIS and the WWW are seeking to tap into mainstream markets, and the common underlying concept is a geoinformation system that has a combination of spatial and aspatial information useful in a range of contexts. The Internet cannot yet provide the required functionality through browsers or by allowing use of technologies by GIS vendors to develop interfaces that run inside the ordinary WWW browser, and there are related issues of network transfer rates and security of transmissions of proprietary data (Polley and Williamson, 1998). If the Internet is meant to be the great leveller that allows 'the masses' access to information, then several difficult issues need to be dealt with first:

> 'The masses' can only get involved if they can afford the equipment and the training—in the USA, which is one of the wealthiest nations in the world, about 18% of African-American and Hispanic households and up to 80% of native American households, do not have a telephone, not to mention a personal computer...lack of access is particularly acute in inner city ethnic neighbourhoods and among households headed by women ...Power is power, and information is particularly useful to those who are already powerful (Bereano, 1995).

In its Vision 21 policy, the Victorian government proposed a scheme called the Community Skills & Networking Project (Skills.net) that aimed to ensure that 'all Victorians—irrespective of geographic location, age, income, and education—have access to quality on-line information technology and the necessary training and education to enable them to use it' (MultimediaVictoria, 1998).

Power lies not only in having access to information, but rather the ability to determine where people end up in their search for information, i.e. the possibility of directing traffic through control of search engines (concentration of the media eventually happened—why not the Internet?).

Power also lies in the refusal to allow access to information. The Cold War was the main instigator of massive scientific and technological research:

> ...the main beneficiaries of the new capabilities in information production, transmission and dissemination are, not unexpectedly, those who were the main initiating agents of the Cold War era—the transnational corporations, the intelligence, military and policing agencies. The big businesses with worldwide operations have especially benefitted (Schiller, 1994).

On the other hand, how can access be had to information regarding the operations of large corporations that may be necessary to determine the impact of their operations on, say, the environment?

From the point of view of the public, what can be done to protect personal information? A submission to an Australian federal parliamentary inquiry revealed that existing privacy laws failed to cover hundreds of government organisations, including those with access to personal information supplied on a compulsory basis, and some councils had already sold ratepayer details to companies, providing an instant database of customers (Luff, 1998). An additional concern should be of how to, in practice, trace and then regulate the dissemination of information once it has been 'sold-off' and is circulating through the commercial sector. Australia's Federal Privacy Commission has drafted 'National Principles for the Fair Handling of Personal Information' along the lines of the OECD Guidelines Governing the Protection of Privacy and Transborder Flows of Personal Data (1980) to help businesses self-regulate their approach to information-handling. These principles dealt with (FPC, 1998):

- collection (only when necessary and inform individual of the purpose);
- use and disclosure (consistent with expectations of individual and in public interest);

- data quality; data security; openness (with individual about data held and purpose);
- access and correction (allow individuals to access and correct if their information is wrong);
- identifiers (limit use of identifiers that government agencies have assigned to the individual);
- anonymity (wherever possible, preference to be given to anonymity);
- transborder data flows.

Whilst these guidelines are commendable, the speed and reach of information technology, particularly the Internet, means that breaches of such guidelines can have much further-reaching (and untraceable) effects than was the case with say, the print media.

Whether the access to this information that is already publicly accessible is made possible by a central storage or a network of storage sources is a matter for the spatial data specialists and government to determine, based on the individual country's circumstances. It is also for spatial-data specialists to overcome issues of interoperability, whether this means metadata standards or improved techniques for joining and layering data accurately in a spatially related context. For the purposes of this thesis, the main point is that the information should be capable of interoperability. The technology is not yet ready to deliver the ease of interoperability and accuracy that would deliver the level of confidence needed for widespread use. An interim measure could be that there is some grading method to classify the degree of accuracy and reliability of the data and the resulting information. For the moment datasets are produced by government and specialised parts of the private sector industry on GIS and spatial information. There are examples cited in the NZ and NB case studies that confirm that some community interest groups are already using GIS to display the data that they collect.

Information is held in different tiers of government, in government corporate entities, and in the community and private corporate entities. There is a need to either

provide a central service at least for government services, as in the case of NB, or a wide network of partnerships such as was achieved by Victoria, Australia. Victoria was able to reach tailor-made agreements with the 78 local government bodies in the state that held fundamental spatial datasets such as addresses, roads and development plans/applications for approval (Jacoby et al., 2002).

Land Victoria, a government department at state-level, set out to establish a high quality Spatial Data Infrastructure for the State Government of Victoria. The major components of the Land Victoria strategy were (Jacoby et al., 2002):

- consolidation and updating of the digital cadastral mapbase;
- single custodianship in Land Victoria for the digital cadastral database and re-engineering its technical content and structure through outsourcing;
- the Property Information Project achieved mutual institutional co-operation with Local Government that in turn achieved a definitive, secure and reliable source of property information for the use of all Victorians.

The other advantage was that:

> The development of single custodianship has had significance from a technical perspective in that this also paves the way for improved uniformity of standards of metadata, fundamental datasets, administrative policies as well as accessibility issues. Together, these aspects will form the foundations for the interoperability of datasets and the healthy growth of the spatial data infrastructure. (Jacoby et al., 2002)

The information revolution has considerable potential to support society's evolving humankind/land relationship by providing information for decision-makers that will enable them to make decisions favourable to sustainable development in the context of land administration and management (Ting and Williamson, 1998). At the same time, issues of civil society must be addressed in order to maximise benefit and hopefully minimise disadvantages of the information technology revolution (Ting and Williamson, 1998). These include affordability of technology, equitable access to information across government, business and individuals, privacy, openness of process, responsiveness of data type/s to changing needs and dynamic analysis techniques (Ting and Williamson, 1998). For example, until the development of a

spatial information database on the location of koala populations and habitat suitable for koalas, it was difficult for the Koala Foundation to influence local councils in the early stages of development planning (Tabbart, Deborah (1998) Director, Australian Koala Foundation, per. comm., April).

The examples given in the NB study such as the DELTA project and the wide-ranging mandate of Service New Brunswick show that there are already moves in the direction of providing information in a way that will assist with conflict resolution. Such information services also have the potential to assist in conflict prevention, because people can more quickly check the available evidence to support or refute their position or that of other stakeholders.

The example given earlier from Victoria, Australia, shows that state or central government can help to establish spatial information infrastructures by building partnerships with local government to access property information and bring in single custodianship. Once the fundamental cadastral, topography and property datasets are in place, these form the fundamental layers in the spatial data infrastructure to which other environmental and social data may be added.

Public access to government-held information is important in order to tap into knowledge beyond government and to maintain accountability for the basis on which policies are being implemented. A good example of this was the Wombat State Forest in Victoria. In 2001, the local community in the vicinity of the Wombat State Forest publicised their research findings that the Wombat State Forest was not being managed sustainably and demanded to see the GIS data and other information on which the state's management plan was based. Analysis of the data confirmed the community's assessment.

Apart from information being available, there is the matter of accessibility. According to the US Department of Commerce, the key to achieving digital equality is simply getting computers into more homes. Although minority families are using the Internet more than ever, white households are still one-and-a-half times more likely to own a computer than black or Hispanic homes (Santos, 2001). For countries without extensive cable telecommunications, there would be sense in moving straight to mobile devices.

Canada's Sustainable Development Information System, which is accessible through the Internet, is an example of a recent initiative to encourage information flows. SNB's work, although not specifically on sustainable development, is important, because it helps to spatially relate the issues with the locations, and therefore assist in locating stakeholders whose rights and responsibilities are or could be affected.

On issues of the environment, monetary valuation does not go far enough because:

> ...as meaningful as this may be for improving the economic database, it says less about the comprehensive value of land itself and for people...Therefore monetary valuations can register only a small part of the losses due to the consumption of natural resources. (Fues, 1996)

Ultimately sustainable development is an informed value judgment of society's priorities and the equity of the processes of decision-making:

> The argument of ecological economics is that environmental *limits* (or targets, standards or norms) to the economy cannot in general be set through a process of comparison of private profits and social, external costs, but rather they must be set and *are* set in practice, through a process of 'social evaluation' after scientific-political debates (Alier, 1997).

The challenge that information infrastructures must rise to meet is not only to assemble information that is currently available, but to facilitate the maintenance of information over time. Temporal GIS is already available. To make it work requires political will and legal/institutional readiness. This would be relevant to the core aim of sustainable development that societies are empowered to make decisions that can use resources to meet the needs of current and future generations. Successful policy-making and implementation requires sensitivity to the realities of the lives of groups and individuals in society—Article 2(i) of the Declaration on the Right to Development states (UN, 1986):

> The human person is the central subject of development and should be the active participant and beneficiary of the right to development.

Initiatives such as DELTA have aimed to harness the potential of geographic information services into the service of multi-stakeholder discussions. The mapping of

the areas in dispute help to express the various multiple stakeholder's concerns in a visual sense that has been shown to assist the stakeholders in finding the core issues more quickly, as well as facilitate more focused debate between their competing interests. For example, DELTA was used in the Fundy Model Forests project and found to be of assistance for the complex discussions between multiple stakeholders who ranged from a few government departments to industry groups, individual woodlot owners, community watershed groups, and First Nations groups.

Some GIS industry leaders such as ESRI (Environmental Systems Research Institute, Inc) have started to realise the future market in providing GIS for communities with a new GIS product on the Internet which they call 'g.net', which is a multi-participant, scalable and collaborative GIS system (ESRI, 2001). This 'g.net' is a useful catalogue of GIS data sources but, as ongoing research by (Eagleson et al., 2000) and (Eagleson et al., 2002) shows many basic technical issues of creating accurate and reliable interoperability of datasets are yet to be solved.

The point of this section has been to show that whilst information technology has been a driver of changes in society, it is also part of the solution to the complex decision-making required. The information systems should support and facilitate the complex discussions between the diverse sectors of society and their issues-based approach as illustrated by Figures 8.1 to 8.6. Information systems would need to operate with legal and institutional mechanisms to facilitate the discussions and necessity to make value judgments about current and future needs.

8.6 LEGAL FRAMEWORK

> Legal frameworks and government enforcement mechanisms need to support the rights of local users, respect their management institutions, and provide responsive backup. The actual nature and extent of co-management arrangements are likely to depend on the local capacity to undertake certain roles and functions. (Katon et al., 2001)

Property rights include not only ownership of resources as defined by state laws, but also a variety of rights from customary and local practice. For security of tenure, the rights should provide (Knox and Meinzen-Dick, 1999):

- excludability, to allow those with rights to exclude others from using a particular resource;
- duration, to provide a sufficient time horizon to reap the benefits of investments;
- assurance, from institutions that can enforce an individual's rights; and
- robustness, the number and strength of the bundle of rights an individual possesses.

The United Nations Covenant on Civil and Political Rights (UNCPPR) came into effect on 23 March 1976, about two decades before environmental issues began to appear in mainstream politics. Here are some relevant excerpts (UN, 1976):

> Article 1.1: All peoples have the right of self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development.
>
> Article 47: Nothing in the present Covenant shall be interpreted as impairing the inherent right of all peoples to enjoy and utilise fully and freely their natural wealth and resources.

The statement in Article 47 of the UNCPPR is one that environmentalists would tend to argue with. Yet it is one that landowners and those with land use rights would seek to uphold. Herein lies the tension that has been discussed in the background chapters regarding the dynamics between the community, the individual owner and the government in its capacity to represent community interests as well as to uphold the law and protect property.

Sustainable development does seek to adjust the property rights of individuals or corporate entities to accommodate the environmental and social priorities of the wider community:

> Regulation of property rights by appeal to basic values other than those which ground the property system could occur in cases where recognition of a basic value (e.g. the intrinsic value of the environment) overrides a specific property right which ordinarily would be legitimated by the property system (e.g. the right to manage, or the right to capital) (Dodds, 1994).

The discussion in this sub-section will cover what reforms to the legal system would be required to adjust to the dynamic nature of discussions about rights and responsibilities. Discussion will also consider the governance issues, and how to facilitate the information infrastructure discussed in the previous sub-section on information technology.

8.6.1 Flexibility vs Certainty

The dynamic nature of sustainable development issues, stakeholders and scientific developments, could require a legal system that is more facilitative rather than prescriptive. The former has the advantage of greater flexibility and the latter of greater certainty.

The NZ Resource Management Act is an example of this more holistic and facilitative approach, as opposed to a more detailed and prescriptive approach. The effects-based approach to planning is a key philosophy of the RMA. The problem was the variable quality and accessibility of information available to inform the discussions about the ten-year plans or particular resource consents. What was 'native vegetation'? What was a 'significant landscape'? Over time, as councils and courts decide on more and more of these issues, knowledge and understanding of the application of the RMA developed.

Having said that, the case studies also revealed the importance of avoiding over-balancing in favour of environmental concerns, because there are other values that society would wish to uphold:

> Concerns for the preservation of the environment may be important, they may be vitally important, but the environment is not the only thing of value which individuals and states ought to be concerned to protect; there are others, such as justice or the claims of indigenous communities (Dodds, 1994).

One unintentional effect of the RMA had been that some farmers have felt vulnerable not only about their property rights, but in some instances even about carrying out their plans for conservation. The NZ case study had examples of farmers cancelling plans to plant native vegetation for fear of restrictions being made to their use of that land. A similar urban example was given of some people who consider

cutting trees down before they reach a certain size for fear that the local community would claim their intrinsic value for the neighbourhood. Based on the above quote from Dodds (1994), this is an example of environmental rights being out of balance with other values such as agricultural productivity, individual property rights and a sense of justice, that has in some instances created outcomes that are counter to the spirit of the RMA. In a sense it is a problem attributable to the RMA itself, because of the wide definition of 'standing', that means a broad group of people have the right to lodge objections about the way individuals use their own property.

The answer probably lies in the procedures rather than a rewrite of the RMA. Local government needs to be better resourced to better respond to the need for closer investigation and to deal with the demanding task of facilitating discussions between diverse groups. There also needs to be deeper understanding of the counter-productive potential of an attitude to planning that is insensitive to the effect on property rights. This would apply to every tier of government planning.

Similar issues of flexibility versus certainty were experienced in NB. As discussed in that case study, the Wellfield Protection Act raised the controversial question of whether to specify the requirements of the aquifers in regulations or just by Designation Orders. It was eventually decided in favour of regulations that would make it more fixed. In the Clean Air Act, it was decided that only the more serious potential air pollutant proposals would require consultations with the public. As for forestry there is legislation, but also the nature of the licensing system was such that the NB government was able to work detailed management requirements into the terms of the leases on Crown lands to private timber companies. Dealing with the private woodlot owners was a different matter, because this involved impinging on their personal use of the land they owned. The example of the buffer zone against tree-felling along waterways raising the ire of some private woodlot owners is an illustration of why process can be more important than the actual content of the law. In the case of the RMA in NZ it was reported that the very process that led up to the drafting of the RMA was very consultative, and that different stakeholder groups felt a greater sense of obligation to make it work.

So whilst it is good to have legislation that is more facilitative in effect, there are times when the science on a subject may be clear enough to merit a more

prescriptive approach. This would apply, for example, to levels of toxicity of chemicals sprayed on to agricultural soil. It is also worth noting that the process by which a law is deliberated among government departments and with the public, can develop the attitude that will be expressed for or against it when it comes into effect.

The next sub-section will discuss the trends towards more consultation with stakeholders and what role the legal system could play.

8.6.2 Legislated Consultations

The significant point to note here is not simply that legislation should force consultations between the various State, private, community and individual interests. As illustrated in the case studies, there is a danger of depleting social capital if consultations are perceived to have little or no effect because the contributions were lost in a 'black hole' in the process of consultation.

NZ chose to create a situation where no special standing (e.g. proving a personal loss had or could result) was necessary to participate in the development of district plans or to commence legal action in the event of an alleged breach of the Resource Management Act 1991 and its regulations. It is for each society to determine such issues of standing. Related to the issue of standing is whether or not there is to be a penalty for facetious claims, apart from the usual mechanism of contempt of court or for order of costs.

In the case of indigenous groups, the experiences from NZ's Maori and the First Nations of Canada indicate that they are building up the skills to be consulted after generations of marginalisation. Those seeking to consult with them need to also raise their understanding of the way that indigenous groups communicate. For example, indigenous groups generally do not accept that their failure to respond by a cut-off date should equate with acquiescence.

NZ and NB have legislative distinctions between treaty and non-treaty indigenous peoples that determine what rights they can claim over land and its use. These rights in turn determine the extent to which they need to be consulted by government or companies about development projects or proposed land use. In NZ some local councils employed experts in Maori culture to do the liaison work and also

some financial support was provided to those *iwi* representatives who were asked by government to do the administrative or research work necessary for the consultations to run properly.

Farmers and some interest groups in NZ have indicated that they have difficulty in keeping up with what is being proposed by local government in the ten-year plans for their areas. Even the Department of Conservation, which had an allocated budget to be involved in local council deliberations, had difficulty in keeping up with the RMA process. It may be that e-governance is one option or it may be that local councils will need to set aside the time and manpower to go to their constituents. E-governance is what this author considers to be a further step from e-government. E-governance is about interactive decision-making with government through electronic media such as the Internet. E-government is mainly about making information about government and some government services more accessible through the Internet.

A related issue is that of letting the people who were consulted know that their input was useful and, if so, why. In other words there is a need for government and private sector decision-makers to provide accountability for the process of decision-making as well as accountability for the outcomes. A useful method to encourage accountability would be to require summaries of the inputs from consultations to be made available to the public, and for the relevant government body to compare the main alternatives available and justify why the chosen path was selected.

8.6.3 Liability for Executive tasks

Legislation will also need to clarify where liability lies in the event of the community carrying out what are effectively tasks of the administrative arm of government.

For example, in the event that the community is empowered to collect water samples that assist with the Department of Natural Resources and Environment's monitoring, what legal status will those water samples have in the event that litigation arises against a farmer for periodic run-off from his farm? Who will have the right to initiate a claim? What legal liability might a Maori have for the quality and accuracy of information about the location of sacred sites that local government collects to put into its databases and its advice to developers and land owners? When non-

government personnel sit on committees to carry out research and recommend actions, what status, responsibility and liability do they carry?

Government could indemnify these groups or these groups could take out liability insurance. Whatever solutions are chosen, the primary considerations should be that the enthusiasm and commitment of social capital is not irreparably diminished.

8.6.4 Constitutional Changes: Federal Systems

Examples such as salinity in Eastern Australia, timber policies in the Canadian Atlantic maritime region and land/water policies for watershed management in many countries show that federal systems can pose particular barriers to coordinated cooperation on land and resource management issues.

For example, the Murray-Darling Basin spans four Australian states, and the salinity problem across that area threatens the future of healthy soils and food production and even the quality and supply of drinking water. The Murray-Darling Basin Ministerial Council (MDBMC) launched its Natural Resources Management Strategy in 1990 that led to integrated catchment management. Its goals for the year 2000 were environmental, economic, and social: healthy rivers, healthy ecosystems and catchments, innovative and competitive industries, and healthy regional communities (MDBC, 2000).

The roles and responsibilities outlined by the Strategy were that Commonwealth Government would provide leadership on matters of national interest and would coordinate policies across Commonwealth Government as well as ensure that catchment frameworks were adequate. The MDBMC was to provide leadership on matters of interest to the Basin and would implement decisions in the State/Territory and Commonwealth jurisdictions. The Community Advisory Committee was to provide leadership and advice to the Ministerial Council and promote natural resources management in the Basin. The State and Territory governments were to provide leadership on natural resource matters and plan/promote/legislate within their jurisdictions (MDBC, 2000). The result of this structure was that key objectives such as limits of resource use and defining of acceptable levels of salinity is acceptable, were up to the individual States to set. In short, there was and is a need for Federal

government to take over the issue. However, the state of Queensland, in particular, has been and still is reluctant to hand over its sovereignty on the issue.

The federal system of Canada places management of primary resources and property laws in the hands of provincial governments. For example, NB's neighbour, Quebec, also has a significant forestry industry, and policies differ between the two. The ability of federal government to become involved in policy-setting with a national focus is limited. Examples such as ACAP do indicate that through funding of grassroots organisations to conduct research and build community consensus, it is possible for federal government to play an indirect role in provincial policy-setting.

A study of several states in the United States showed that a planning approach by state governments that provided local governments with a much greater role in achieving state land use objectives had advantages provided care was taken for (Burby et al., 1997):

- adequate authority for state agencies to monitor and enforce prescriptions about plan content and process (e.g. timing of plans);
- building of normative commitment to state policy objectives by local and state officials;
- building the capacity of local governments to carry out policies.

These points by Burby (1997) would tend to be affirmed by this research. The additional point revealed by this research is that similar interaction, commitment and capacity-building needs to take place at from federal to state to local levels as well.

It is beyond the scope of this thesis to discuss constitutional issues in detail. However it is relevant to flag that constitutional issues do exist, because the constitution establishes the federal systems and the federal systems can provide institutional challenges to the cooperative decision-making that is necessary for sustainable development. Ultimately, issues of federalism are embedded in the constitutions of each country, and constitutions can only be amended by referendum.

The more feasible option would be to improve cooperation within and between the tiers of government on key issues of land administration and sustainable development.

8.6.5 Review of Legislation

Individual property rights are being affected more and more by 'the public interest', as represented by community interest groups and/or government, because the priorities have been re-arranged from primarily economic considerations to include environmental and social matters. As was done in NZ through its Resource Management Act 1991 and in NB through its Clean Environment, Clean Air and Clean Water Acts, a consolidation of legislation is an effective approach to focus attention on a more integrated approach to land and its management.

Legislation related to land administration needs to be assessed to determine the part it plays in facilitating sustainable development and how it deals with dynamic dialogue between individual and public rights. How do the taxation laws and regulations affect behaviour patterns in the execution of rights? For example, the imposition of taxes by Malaysian federal taxation law on processed goods meant that the state government of Sarawak chose to encourage export whole rather than processed logs so that the state government could earn revenue within its mandate, which was limited to primary (unprocessed) production.

Valuation regulations and practices need to take into account the effect of environmental, social and economic variables on land values.

Planning legislation should facilitate thinking about the way that plans and regulations will affect private use and rights. In both NB and NZ, approved plans had the legal effect of regulations. In the previous sub-section, and based on the case study materials, it would appear that conflicts tended to arise when private owners felt that they had not been consulted before legislation came into play. This would provide planners and decision-makers with an opportunity to engage with members of the public who could potentially be affected. Just as Maori are given statutory rights to be consulted based on the legal rights established through the Treaty of Waitangi,

consideration should be given to whether there are other groups that deserve special consideration on the basis of equity, if not strict legality.

8.6.6 Laws for Information

The making of decisions on how to balance economic, environmental and social rights for current and future generations is an onerous and information-hungry process. The previous section on information technology has already outlined why much of this would not be possible without the information revolution.

As discussed in the background chapters, laws on privacy and access are needed to help determine what kind of information should be publicly accessible, and in what circumstances. In NB, domestic violence victims were quick to lodge formal complaints when the cadastral maps and addresses were launched onto the Internet, because their former abusers were able to track them down through this system. In NZ, not all Maori groups were willing to tell the public where their sacred sites are, because some of these are traditionally secret and also because of fears that such sites will be the target of archaeological work. Yet there are also fears that corporations will hide behind privacy or commercial laws and refuse to release information about their works in a public way.

In short, there needs to be discussion within each society of how the duty of disclosure in the public interest should be defined and enforced.

There have been instances when the wrong data was used to decide people's rights and responsibilities in land and land use. The establishment of a spatial data infrastructure would require a legal framework that establishes accountability and liability for data. Government should guarantee the fundamental cadastral and topographical layers. If liability is a stumbling block, then thought should be given to whether there should be legislated requirements for insurance in the spatial data industry.

8.7 INSTITUTIONAL FRAMEWORK

This section will discuss structures of government needed to facilitate better horizontal and vertical interaction and information-sharing for improved decision-making, as well as how to facilitate better interaction between government and divergent groups in the community.

Whether it is as a result of globalisation and privatisation philosophies or local community pressures, decentralisation is a well-established trend. Whether this takes place by delegation of powers down to local government, or by giving more autonomy to regional branches of central government, is a matter for each country to determine for itself.

Typically, most countries have at least two tiers of government—central and then regional or local. Federations have an additional tier between central and local called state or provincial government.

As was demonstrated by the New Brunswick case study, there are unique challenges posed by cooperative decision-making on rights and restrictions over land and land use in the absence of local government structures in some areas. Also, local government structures require legal support or mandate in order to enforce the consultative measures with the community.

In order to preserve social capital as well as policy coherence, there is a need for government departments to confer with one another prior to engaging in public consultations. As was illustrated by the example of Rural Team NB, building a community within government is as important as building up communities outside government. The trend so far has been for governments to encourage people to cooperate within their communities and help think of solutions to their own development and land use issues. If there is no corresponding community spirit within government that can cooperatively and coherently respond to the proposals put to them by the people, then there will be a risk that enthusiasm for involvement in local governance will be dampened. The onus should not be placed on members of the public to work out how to dissect their proposals into sections that will fall within the specific mandate of each particular government department.

In order to overcome the sense that public opinion is swallowed up into a 'black hole' and disregarded, there need to be procedures whereby the various inputs received from the community are made publicly available, and for the final policy to indicate the range of inputs received.

As was achieved with Service New Brunswick, it is desirable to have one point of responsibility for collating and maintaining property information, as well as related government services for the purposes of making such information accessible to the public. SNB has contracts with the professional associations for surveyors and lawyers respectively to allow licensed on-line updating of the graphical and legal information. The contracts also set out the liability provisions. In 2000 the Department of Local Government and Environment in NB started to establish a database of environmental information. It would be a powerful planning tool to put the property and environmental information together. It would also be a more complete picture that each landowner could access to understand what rights and responsibilities constitute their ownership as well as their local community's rights and responsibilities. LINZ in NZ takes a somewhat similar approach, because it takes care of the cadastral and topography layers too, but it does not act as a gateway to the services of other departments' services.

A highlight of the Canadian model of establishing sustainable development as a priority was the work of the Commissioner for Sustainable Development (CSD) that sits in the Auditor-General's Department. The placement of the CSD within the Attorney-General's Department had the advantage of placing sustainable development and stakeholder consultation into the criteria for measuring the performance of departments and ministries. The effect of such a scheme is that sustainable development is given some official position among other priorities because there is a link to the performance appraisal, and therefore the budget allocation process. This model also creates the official opportunity for Departments to review their role in supporting sustainable development, as well as for the Auditor-General to compile a picture of what is happening across the central government departments with regard to sustainable development. A similar model exists at provincial level.

The public sector reforms that were experienced by NZ as well as NB emphasised the need to set targets and determine measures of achievement. In the

area of sustainable development and land administration there is a need to start working out what these are. Articulation of outcomes is the easiest step. Linking them to benchmarks and designing a way to measure them is more difficult.

From an administrative perspective, there are some guidelines to be gleaned from the NZ and NB perspectives. Firstly, government departments need to build up effective procedures to confer with each other and respond more cooperatively and coherently to community efforts to find creative ways to overcome complex local problems. This refers to horizontal cooperation within relevant departments of the same tier as well as vertically across the various tiers of government. This requires not only policy, but also fiscal measures. Problems of coordination are not unique to land administration and sustainable development issues, but for them it has become an urgent problem.

Secondly, in seeking consultations, the onus should be on government departments to seek to coordinate their enquiries so as not to cause 'consultation burn-out' and depletion of cooperative social capital. People have limited time to spend in consultations or on advisory committees. Towards this end it is necessary to ensure that there is accountability and feedback to those who have been consulted, so they can see whether and how their input was of assistance. It may be necessary to provide some resources for community consultation insofar as there is a need for research and ongoing involvement, to train them in the work to be done as well as the correct methodology to go about it.

Thirdly, the onus should be on government to be able to confer between departments on issues put forward by communities. Communities should not be expected to work out how to dissect the issue at hand and their proposal for resolving it, and to determine which parts should be channelled to which government department/s and at which tier of government. The existence of horizontal cooperation and coordination in government will in turn assist with vertical cooperation through tiers of government and into the community. Vertical cooperation requires that there be some way to identify, at each tier of government, the right department or section within that department that would correspond to the one above or below it. It can be difficult to achieve cooperation and coherence if a department cannot work out which other department in other tiers of government should be involved in discussions about

a particular issue or proposal. Horizontal coherence between bodies in the same tier, requires that they strengthen their capability of responding coherently to issues and plans brought forward by communities and private owners. For example, the matching of local government with environment to form the Department of Environment and Local Government has provided New Brunswick with an opportunity to combine the two functions as well as the two teams of planners, i.e. land and water planners. There needs to be the capability to respond to issues and proposals from the community in a manner that is first consultative within government and then consultative with the community and other interest groups.

Fourthly, for each country there needs to be an overall view of the outcomes of the 'patchwork quilt' of planning processes around the country, whether it is within an industry like forestry, or wildlife conservation groups, or demographics, and so on. This requires the cooperation of the different layers of government through their various departments to put together the complete picture. This would be a good task for central government.

Fifthly, on land administration, specifically, the legal and map characteristics of cadastres need to be kept together. Whether this is done by close cooperation between the departments charged with keeping the maps and legal characteristics or by merging those departments is up to each country. These two fundamental layers of information need to be interoperable, and should be linked to an identifier such as an address that makes sense to the community at large. This way further layers of information relevant to rights and responsibilities over those land parcels can be built on them (Jacoby et al., 2002).

A system of discussing and deciding rights and restrictions over land not only has to be acceptable to society, but also has to be enforceable. Conflict resolution requires an environment of equity. Understanding that information is power means that there should be facilitation of access to information (especially spatial information) and analysis skills. Dispute resolution can take place in an informal or formal way.

It is clear from the case studies that informal dispute resolution does tend to take place at local government level, and the earlier the scientific and other factual data is debated the better. Lack of proper consultation, whether by local authorities or

corporate entities, is likely to create conflict, especially when what is being proposed affects existing property and use rights. Negotiation and mediation skills are becoming essential for local government planners and other government officials who are involved in consultations with the people. Such skills are also becoming more relevant to various members of the community in managing consultations and negotiations themselves. The methods of dispute resolution used by indigenous groups also need to be understood, as land and resources typically have a strong impact on their identity and actions.

Formal dispute resolution can take place as per administrative procedure set by a government authority or through Court processes. In some cases it may be useful to focus attention on the creation of a specialist court. In the NZ case, the Environment Court was the product of the RMA, and was able to specialise in the implementation and philosophy of the RMA.

The possible disadvantage of this specialised approach is when there are matters that are related to but extend beyond the confines of the particular piece of legislation and the mandate of the specialised court. There is also the concern about being able to provide sufficient support services and so on. This will need to be decided based on the individual country's resources and the degree of consolidation of legislation, or at least categorisation of legislation to allow the establishment of a specialist court on land and land use issues. There is a need for the informal and the formal processes to be accessible to disputants.

The following section will outline the key points that have been discerned from this research about each of the legal, institutional and technological aspects as well as the integration issues.

8.8 SOME LESSONS LEARNT

Land administration does have a role to play in better supporting sustainable development objectives, because rights and responsibilities for land and its use are key themes of the dynamic interface between the economic, environmental and social aspects of sustainable development.

Sustainable development objectives have had a significant effect on discussions about rights and responsibilities over land and its use. They have also had an effect on the processes of government and governance because changes to something as fundamental as people's rights and responsibilities over land and its use require processes of decision-making that are appropriate adequate to the task. Sustainable development strategies such as Agenda 21 have placed an emphasis on the decentralisation of power, and the making and implementation of policies. The effect has been accentuated by the phenomena of globalisation and privatisation, which have led to the 'downsizing' of governments.

Governments have placed a growing emphasis on seeking out 'the people' for consultations in the course of formulating policies. There are distinct groups constituting 'the people', which may be broadly categorised as the community, corporate entities and individuals.

The involvement of the people has extended beyond policy-making into policy implementation. Fiscal pressures, new public management thinking, and sustainable development objectives have all led the executive or administrative arm of government to delegate more tasks down to lower levels of government, to strike contracts with the private sector and to give the wider community more responsibilities. These changes have in turn given the democratic processes a different flavour, which deserves a coordinated legal, institutional and information response. This has set the scene for the development of a more specific framework for land administration reform to create a facilitative system for deciding and enforcing rights and responsibilities over land and its use.

Key principles for re-engineering land administration systems are set out below. These principles have been deduced from the findings of the case study countries. They might be expected to generally apply in countries that have sustainable development objectives, a commitment to decentralised decision-making and policy implementation, and an established system of land administration. The question of their applicability to other countries, in particular to those where one or more of these conditions do not apply, will be examined at the end of this section.

The legal system of the country concerned should be reviewed to determine whether there is a plethora of statutes that affect rights and responsibilities over land

and land use. If so, there needs to be a process of consolidating them into one or just a few acts. The consolidated legislation should provide mechanisms for consultation between the community, the private sector and individuals, as well as with government, about strategic local planning and proposed development projects. If there is a need to give any particular group a special position of involvement in consultations, e.g. indigenous groups, then this should be specified in the legislation. As disputes are likely to occur when diverse stakeholders are brought together, informal and formal dispute-resolution procedures should be developed to meet the current challenges of resolving the dynamic nature of discussions about rights and responsibilities over land and its use.

Since information is vital to the processes of decision-making, dispute resolution and effective administration, statutes should also specify procedures for access to and sharing of information relevant to rights and responsibilities over land and its use. These would need to be translated into detailed procedures that apply within various government departments and tiers of government, and also between government, the private sector and the wider community.

Statutes would need to clarify liability issues for administrative tasks that have been delegated by the executive arm of government to the private sector or community.

Finally, constitutional reform may be necessary to address fundamental structural issues of government such as an unwieldy federal system.

Reform of the institutional structure and processes of government would need to streamline and improve accessibility to the basic property, planning and environmental procedures. There needs to be an examination of whether the division of powers and tasks within and between the tiers of government is structured in a way that encourages more cooperation and interaction on policy, consultations with the people, and implementation of policy. Part of this would be to facilitate better ‘community’ within and between tiers of government in order to respond to issues and proposals put forward by a more proactive community. Another part of this would be funding mechanisms that allow and encourage departments to cooperate within and between their respective tiers of government. There should be a mandate for the Auditor-General (or equivalent authority) to set performance indicators that promote

and encourage the pursuit of combined land administration and sustainable development objectives.

In order to support community participation, government should be prepared to supply technical skills and training to the various parts of the community in their efforts to implement policies in their local areas. Consideration should also be given to the establishment of funding mechanisms that can support the continued enthusiasm in the community to become involved in policy development and implementation.

To build the necessary information infrastructure there is a need to establish digital forms of the cadastral and topographical maps. These and the property and address information would form the fundamental spatial layer in the information infrastructure. There should be easy public access to the fundamental information infrastructure. Partnerships are the key to the sharing and maintenance of information from government and other stakeholders that are relevant to rights and responsibilities over land and its use. To this end, there needs to be mechanisms by which information gathered by the private sector or the community may be checked and integrated into the pool of information available from government to support decision-making and conflict resolution about rights and responsibilities over land and its use.

The insights gained from the NZ and NB case studies were similar. The added insights from NB were that federal systems do pose an extra layer of complexity, and that the federal layer can become an additional stakeholder in development and implementation of policies.

Problems of integration of the legal, institutional and technological components of government that were encountered in the case studies arose because these had developed separately, and were based on different philosophies and motives. It was the pressures of complex decision-making and negotiation across diverse stakeholders that put the spotlight on the need for integration based on the common objective of facilitating the ongoing dynamic nature of discussions about the content and administration of rights and responsibilities over land and its use. It is clear that the starting point for the development of better land administration systems must be the recognition of the inertia imposed by the existing legal, institutional and technological

components, and the determination to see that these must form parts of an integrated system.

Having made these findings, the question that comes to mind is whether these findings can be generalised beyond the case study countries. The findings about the effect of sustainable development and public sector trends on the balance of rights and responsibilities between different sectors of society and government would be common to most developed countries. The increased complexity of decision-making for sustainable development would clearly stand in any country. The observations about the fluid partnerships that form between government, private sector and the community would also apply. Facilitating dialogue between diverse groups is a trend that arises out of that increased complexity in decision-making.

In the developing country context, an additional layer of policy-making and complexity of decision-making to be considered apart from a country's tiers of government and sectors of the private sector and community would be that of the various donor agencies that are funding development projects. A study of major development programs in Brazil, India and Uganda confirmed the need for participatory and locally accountable aid programs and a selection of their findings indicated the need to (Feeney, 1998):

- foster partnerships between donors, different levels of government, and civil society;
- change institutional structures to improve transparency and accountability before funds are delivered;
- use culturally appropriate plans and prioritise preliminary training for local people to participate effectively;
- disseminate data to fine-tune planning and mobilise local participation;
- establish effective conflict resolution mechanisms.

The indigenous rights movement is a global one, and countries have different attitudes and approaches to dealing with them. For example, as mentioned in Chapter 5, the inability of some major aboriginal groups to fulfil the statutory requirements to

prove their rights in Victoria, Australia has meant that the institutional frameworks are not under the same pressure to respond to the extent observed in NZ and NB. In developing countries the issue would tend to be one of too many competing priorities. For example, whilst Indonesia has long recognised *hak ulayat* (customary land rights), Section 3 of the Basic Agrarian Law states that the implementation of *hak ulayat* shall be subject to national interest and statute (IndonesianGovernment, 1960). The practice has been that priority tends to be given to development pressures, thus the institutional, legal and information processes have not been geared towards giving effective form to indigenous rights (Ting, 1996).

There has been a trend in most developed countries since the 1980s to outsource more tasks that government administration used to perform, and also to involve communities more in tasks that the administration would normally carry out. Therefore, the issues about liability, accountability and facilitation encountered in the case studies would apply in most developed countries. This adds a layer of complexity to accountability and coordination—hence the need for a legal, institutional and information technology response that encourages accountability within and across jurisdictional lines.

The necessity for information and the advances in technology to store, disseminate and analyze across datasets would apply in general, as would the need for legal clarity about privacy, access and use rights, as well as clear guidelines regarding how to form partnerships to facilitate the spatial data infrastructures. Certainly, the potential of GIS to present information from different sides and move information quickly into the negotiation process between stakeholders is becoming well known, although not yet widely applied. Developing countries would likely be hard-pressed to afford the necessary technological infrastructure. But there are examples such as India, which has invested in a telecommunications upgrade and demonstrated commitment to information dissemination through various innovations. The ‘Simputer’ allows illiterate people to access the Internet through a handheld device that operates orally in a few Indian dialects rather than textually (Logan, 2001; Ward, 2001; Beary, 2001). There has also been a study that indicates the readiness of New Delhi slum children to use computers (BBC, 2001b).

In light of the generalised relevance of the institutional, legal and technological components, it also follows that similar integration issues would apply beyond the case study countries. In the case of developing countries, the issue is not just a matter of locating resources to purchase the technology—it is possible for information and spatial data to be made accessible in whatever form existing technology and resources allow. The more pressing issue is that of governance. From the case study work some key questions are apparent:

- Is government prepared to facilitate discussion of rights and responsibilities over land and its use with the diverse spectrum of stakeholders?
- Is there political will to facilitate the necessary institutional and legal reforms for a more integrated and accountable system of decision-making, policy-setting and policy implementation?
- Is a country's government and its people interested in capacity-building to enable improved access to discussions and information?

The findings from this research would be applicable to many developed countries and, based on the author's experience, the principal findings would also apply to developing countries, but there would need to be preparatory groundwork done on issues of government and governance.

The following chapter draws together the findings from this research and sets out the principles for an integrated approach to land administration.

9

CONCLUSIONS

The aim of this research was to determine what principles could guide the development of land administration infrastructures to address the governance needs of evolving rights and responsibilities between government, corporate bodies, community groups and individuals to better support sustainable development objectives. The focus was to be primarily on the legal and institutional aspects, but also aimed to take into account the potential role of advances in information technology.

The evolving relationship between people and land has always defined and re-defined the rights and responsibilities of people concerning land and its use, which parties hold these rights and responsibilities, and how they are administered. This research found that:

- Although there are still differences in interpretation, 'sustainable development' is a term that has come into common usage in government policies, and is a driver of land administration reform.

- Sustainable development has generally come into mainstream politics/policies at a relatively difficult time of major governmental re-structuring driven by fiscal difficulties related to economic recession and public sector trends towards focusing down to core business and the practice of cost-recovery.

- The environment as a driving force has had varying degrees of success in entering the political, legal and institutional arenas. In a few instances it has become so important as to be in danger of eroding other values and occasionally producing counter-productive results and behaviour.

- Indigenous rights issues have started to enter some parts of mainstream policy-making. The discussion of changing rights and responsibilities over land with indigenous peoples requires more knowledge and experience than is at present available.

- There has been a trend towards seeking more public participation in consultations leading to policy-making. It has been a challenge to determine how to weight the input of different groups and individuals. A community-interest group may have ten thousand members, but it does not necessarily follow that their policies or positions have been endorsed by or even disseminated to all the members. There is also the problem of some community groups and other forms of social capital becoming exhausted by the process of consultations/discussions. Interest groups such as industry groups with corporations as members usually have better resources with which to involve themselves in lobbying and networking with government and the community. Also, the trend for urbanites to move into country areas has changed the demographics and attitudes in many rural areas, which in turn affects the local governance and social capital in that community.

- Participatory policy setting and decision-making tends to be time-consuming and costly, but it appears that when done properly there are flow-on benefits from an economic, political and social perspective that need to be considered against the financial outlay.

- Decentralised government generally does not have the resources or infrastructure to track what is happening on a wide regional or national scale. Sometimes central government does not either.

- Benchmarks and performance indicators to measure quality of consultation processes and the efficacy of components of land administration policies that

affect rights and responsibilities over land and its use are either non-existent or emerging only sporadically.

- There is a need for vehicles of thought by which diverse stakeholders may express themselves navigate through the complex and competing considerations to reach a solution.

- Consolidated legislation can be a good focal point for thinking to develop on institutional strategies for reform; especially if the consultations across government and with the public have been thorough, but the level of institutional, social, human resources and funding reforms required has been underestimated.

- A common problem has been the lack of horizontal and vertical coherence of policies and of consultation strategies with the public, and a paucity of funding mechanisms that can encourage inter-departmental cooperation within and between tiers of government.

- A related problem is that governments have tended to encourage the public to be community-minded and seek local solutions to local problems, but when solutions are proffered their ability to respond across and between departments and tiers of government has tended to be limited.

- Complex, multi-stakeholder decision-making for sustainable development is demanding of information and science. It takes time for science to catch up with and provide the kind of data that is needed for decision-making that seeks to balance economic, social and environmental priorities. These problems range from not having the science yet to having a diversity of scientific opinions.

- Spatial data infrastructures are needed to deliver information that can be geographically related, and therefore assist with localised decision-making and policy setting. However, there are still serious technical questions about accuracy and interoperability of datasets. There are few legal and institutional

mechanisms for partnerships to share data and also to check and receive data from other sources such as community interest groups.

- Federal systems pose unique challenges because there is an additional layer of government, and therefore potentially more layers of consultation, policy-making, data-production and implementation that need to be coordinated.

In the light of these findings, the principles on which a suitable land administration system should be based can now be enunciated.

Coherent legal, institutional and information systems are the 'instruments of thought' necessary to integrate sustainable development values into appropriate decisions and actions, through a process of participatory policy-making and implementation. The emphasis here must be on reform that tends towards the facilitation of decision-making among diverse stakeholders and the minimising of prescriptive rules in favour of standards that are more receptive to scientific advances and evolving values.

The land administration system that best supports sustainable development would be one that integrates the legal, institutional and information technology components to enable the various sectors of society and government to effectively discuss, decide and enforce the content of rights and responsibilities over land and inform wider-scale policy-making and policy-implementation.

This integration requires that relevant legislation be consolidated and simplified so that it can provide a clear focal point for peoples' understanding of their rights and responsibilities and for discussion of these with government and other sectors of society. Such legislation would have to take into account both current and future economic, environmental and social needs. It would establish the requirement for governmental coordination and readiness from within and between government departments to consult with stakeholders and respond in a coherent way to issues and proposals put forward by sections of the community and private sector. There should be a requirement that government agencies build into consultation processes a mechanism of accountability to provide feedback to those consulted that can summarise the overall input and explain how and why the various inputs affected final decisions. Legislation would have to specify whether and how the needs of special

groups would be accommodated, and would have to develop skills to maximise understanding of how these groups discuss and manage their rights and responsibilities over land. Legal definition and protection for the involvement of members of the public in tasks that the executive has traditionally performed would be necessary. There would need to be a parallel review of other legislation and policies that drive the way people choose to exercise their rights and responsibilities, e.g. the taxation system.

The objective of the institutional and legal framework would be to facilitate partnerships and networks that allow the flow of information about rights and responsibilities over land and its use rather than to create a 'mega-registry' within government.

Policies and funding procedures would have to be modified to facilitate cooperation within and between government departments to complement and promote the activity of social capital. The divisions of powers and information-sharing between tiers of government should aim to facilitate service delivery and participatory policy-making as close to the local communities as possible whilst empowering higher levels in the tier to monitor overall progress across regions, and set broad-based strategies and standards. As far as possible a 'one-stop shop' should be set up for the public to deal with when pursuing issues or presenting proposals for overcoming problems.

Local government needs to be complemented with monitoring and consultative policy-making at central government level so that there will be opportunities at regular intervals to step back and see what is happening on a regional and national level. Such information should be made publicly available.

Partnerships must be formed within and beyond government to establish and maintain spatial data infrastructure to help stakeholders to present their views and supporting evidence more effectively in the discussions about land and its use for current and future generations. Therefore, the legislation and government institutions would have to be backed up by the design of a spatial data infrastructure system that would bring together the policies and information in a manner that was both easily accessible and open to challenge by government and the wider community. This system would emphasise the provision of support for the development of information

that was helpful in making decisions about the balance of economic, environmental and social priorities for current and future generations. More research is required about decision support systems from an institutional as well as technological perspective. Depending on institutional traditions it may be necessary for a department of government to take responsibility for the fundamental legal, fiscal and topographical layers of the information system. Such a department or partnership of departments may serve as the focal point/s to establish standards and procedures that facilitate the sharing of other layers of information by government, private sector and the community.

The technological component of the integrated land administration system would need to rise to three major challenges. The first is the preparation of accessible information. This will mean more than just digitising existing material. It will also include establishing standards of accuracy that establish a balance between certainty and creativity in data collection, integration and visualisation. It could include using coordinated cadastres and geographic positioning systems, and providing a comprehensive and seamless database of private and public lands, as well as means of recording indigenous concepts of rights and responsibilities in land in an appropriate manner.

The technological advances should provide a further option rather than be a substitute for simpler means of information transmission—again, the key consideration is what will best serve the diversity of stakeholders and depth of discussion required about rights and responsibilities in land and its use. It may even be that in some circumstances it is better to keep paper copies available. Thought must be given not just to disseminating current data but to determining what kinds of data are and will be needed so that it can start to be collected now. The respective advantages and disadvantages of cell-based systems versus vector-based systems mean that consideration should be given to how to continue to accommodate both. The second challenge is the partnerships and accountability mechanisms to maintain the information infrastructure at a trustworthy level, and the capacity building to match. Metadata standards and the techniques to properly layer information for interoperability are in need of further development. The third challenge is the application of technology to raise the standards and effectiveness of information used

in discussions between stakeholder groups and government. This would include not only the use of GIS, but also the capabilities of the telecommunications systems, dissemination and reception of information through the Web and the accessibility and portability of information through innovations such as wireless application protocols (Smith et al., 2001). An institutional process or range of processes that can link up to all available information that can be spatially related is a tool to support consultation processes, not a substitute for them. The ultimate goal is for technology to take its place as an additional 'instrument of thought' to facilitate the visualisation of knowledge.

It would be necessary to establish a system of benchmarks and performance indicators to indicate the progress on the main characteristics outlined above. This would assist in determining and fine-tuning policy and implementation strategies, resource allocation, research directions, and as a source of encouragement to government and the wider community. Care would need to be taken that the use of such a performance indicator system would enhance rather than discourage innovation.

The dynamic nature of the discussion and decision-making about the details of rights and responsibilities over land and its use by diverse sectors for sustainable development means that there is ultimately a need for accepted 'instruments of thought' to facilitate governance for land administration that supports sustainable development. The principles discussed in this work provide a guide for re-engineering the legal, institutional and information technology aspects respectively and their integration.

Table 9.1 summarises the key principles discussed in this chapter.

Table 9.1: Summary of Key Principles	
General	• Legal, institutional and information technology systems for land administration are the 'instruments of thought' to be integrated to facilitate dialogue about rights and responsibilities over land and its use that supports sustainable development.
Legal	• Consolidation and simplification of legislation can provide a focal point for expressing, discussing and promoting understanding of rights and responsibilities over land and its use. • Legislation should encourage consideration of current and future economic, environmental and social needs. • Statutory requirement for vertical and horizontal government cooperation to respond to issues and proposals from the public. • Provisions on consultation should be backed by guidelines as to mechanisms of accountability to provide feedback to those consulted. • Clarification by statute of which groups have special needs or rights to be consulted or at least criteria by which these special needs groups may be located. • Review of other legislation and policies that influence how people exercise rights and responsibilities over land and its use e.g. rates and taxes. • Legal definition of and accountability mechanisms for non-government groups and organisations that are involved in delivering tasks or undertaking responsibilities of the executive arm of government. • Clarification by statute of privacy and access issues related to information collection, use and dissemination. • Reconsideration of the federal structure of a country would likely require a review of the Constitution.
Institutional	• Division of powers between the tiers of government to facilitate service delivery and participatory policy-making as close as possible to local communities and supervision of monitoring to rest primarily with central or national government. • Monitoring information to be conducted and shared between all levels of government to allow snapshots and temporal analyses of situations at all levels of government as well as to be made available to the public. • Policies and funding procedures to be modified to prioritise at vertical and horizontal cooperation within government and into the community. Where possible, a one-stop shop approach should be made available to the public. • Rather than create a 'mega-registry of rights', emphasis should be on institutional arrangements to facilitate integration of information about rights and responsibilities, whether one government body coordinates this or whether by effective networking within and beyond government. • Institutional processes to develop a system of performance indicators and benchmarking that would indicate the progress on each of the legal, institutional and information components as well as the integrated system as a whole. • Institutional structures need to establish standards and procedures that strike a balance between certainty and accuracy and creativity in data collection, integration and visualisation by government, private sector and the community.

Information	• Goal is to provide accessible, accurate and relevant information to support dialogue about the content and exercise of rights and responsibilities over land and its use by diverse sectors of government and society. • Partnerships need to be formed within and between tiers of government as well as into the community in a way that will establish and maintain spatial data infrastructures (SDIs). • Fundamental legal, fiscal, topographical and demographic layers of the information hierarchy across private and public lands should be publicly accessible. • A primary aim of SDIs is to disseminate information as well as assist stakeholders in presenting their views and supporting evidence effectively in discussions about land and its use for current and future generations. • SDIs are a relatively new concept and so development of standards should tend towards the minimum necessary to encourage participation information exchange that will pave the way for more sophisticated, interoperable and reliable systems. • Detailed research about decision-support systems from institutional and information/communication technology perspectives for land administration that is relevant to a country's context is necessary. • Technical methods of accommodating indigenous or other special needs groups' concepts of rights and responsibilities in land/land use and boundary definition, sould be developed. • Emphasis should go beyond disseminating current data to determining what kinds of data are and will be needed in the future so that data collection can begin now and thus facilitate temporal analysis in the future. • Technological advances should provide a further option rather than completely substitute simpler means of information transmission and analysis because the key consideration is how to serve the diversity of stakeholders and their effective discussion of issues. • Ultimate goal is for information technology to take its place as another important 'instrument of thought'.

The principles derived in this work are conceptual; actual implementation would require detailed analysis of the political, economic, and social context as well as the legal, institutional and information frameworks.

As stated in the landmark Brundtland report, *Our Common Future*, sustainable development is about dealing with pressing current needs whilst considering future needs. Decision-making about the content of rights and responsibilities over land for sustainable development is a complex and ongoing task that spans economic, environmental and social interests. These interests are in turn expressed across a diverse range of stakeholders that include individuals (human as well as corporate legal entities), private sector, the community, and government.

The principles for an integrated system of land administration are a guide to harness the potential of the legal, institutional, and information technology components into coherent ‘instruments of thought’. ‘Instruments of thought’ are the tools by which to build trust, release creativity, and literally visualise common ground for multiple stakeholder problem-solving and decision-making about competing rights and responsibilities over land and its use—for our common future.

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APPENDIX 1

PAPERS PUBLISHED BASED ON PARTS OF THIS RESEARCH

Ting, L., Williamson, I., Parker, J. and Grant, D. (1998) 'The Evolution of Western Land Administration Systems. In Barry, M. (Editor), *International Conference on Land Tenure in the Developing World*, University of Cape Town, Cape Town, South Africa, pp. 536-548.

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Ting, L. and Williamson, I. (2000) 'Spatial Data Infrastructures and Good Governance: Frameworks for Land Administration Reform to Support Sustainable Development', *4th GSDI*, Global Spatial Data Infrastructure Conference, Cape Town, South Africa.

Ting, L. and Williamson, I. (2001) Land Administration and Cadastral Trends: The Impact of the Changing Humankind-Land Relationship and Major Global Drivers: the NZ Experience, *Survey Review*, 36 (281) 154-174.

Ting, L. (2001) 'Sustainable Development and the Case for E-Governance'. In Feeney, M. E. and Rajabifard, A. (Editors), *International Spatial Data Infrastructure Symposium*, Department of Geomatics, The University of Melbourne, Melbourne, Australia (10 pages).

Williamson, I. and Ting, L. (2001) Land Administration and Cadastral Trends - A framework for Re-Engineering, *Computers, Environment and Urban Systems*, 25 (2001) 339-366.

Jacoby, S., Smith, J., Ting, L and Williamson, I. (2002) Developing a Common Spatial Data Infrastructure between State and Local Government - an Australian case study, *International Journal of Geographic Information Science (in press).*

APPENDIX 2

INTERVIEWEES[43]

New Zealand Case Study

- Auton, Leigh. Director, Environmental Management, Manukau City Council, 13/07/99.
- Bennion, Tom. Barrister, Wellington, 16/07/99.
- Bethel, Hugh. Farmer, Pahau Pastures, Culverden, North Canterbury Region, 01/07/99.
- Bethel, Ross. Farmer, Swanson, West Auckland, North Island, 13/07/99.
- Bevin, Tony. Surveyor-General, Land Information New Zealand, 26/11/98; 20/07/99.
- Bilimoria, Gulab. Planner, Hamilton City Council, 06/07/99.
- Blair, Ngarimu. RMA Manager, Tainui Maori Trust, 09/07/99.
- Browne, Sam. Commissioner of Crown Land, Land Information New Zealand, 26/11/98.
- Browning, Michael. Manager, Survey and Mapping, Land Information New Zealand, 23/11/98.
- Came, Sharon. Acting Manager, Environmental Issues, Ministry of Commerce, 08/07/99.
- Chapman, Bruce. Carter Holt Harvey, 12/07/99.

[43] Handwritten notes of these interviews are held by the author.

- Christensen, John. Engineer and Planner, Bank Peninsula District Council, 25/06/99.
- Constable, Linda. Natural Resources Manager, Ngai Tahu Group Management, 30/06/99.
- Cosigin, Michaela. Planner, Rodney District Council, 12/07/99.
- Dakin, John. Property Council of New Zealand, 19/07/99.
- Davidson, Barry. National Manager, New Zealand Surveyors, 23/07/99.
- Dickinson, Jenny. Policy, Ministry for Transport, 23/07/99.
- Dickson, Jenny. Lecturer, Department of Planning, Massey University, 25/11/98.
- Dilley, Noel. President, North Canterbury Federated Farmers, 29/06/99.
- Drayton, Chris. Carter Holt Harvey, 12/07/99.
- Drey, Bob. Policy Analyst, Ministry of Fisheries, 13/07/99.
- Dryden, John. Planner, Christchurch City Council, 28/06/99.
- Duthie, John. Manager, Planning Group, Auckland City Council, 12/07/99
- Falloon, Phil. Manager-Member ServicesCanterbury Employers Chamber of Commerce, 05/07/99.
- Farnsworth, Garth. Landcare Program, Massey University, 25/11/98.
- Fierabend, Andrew. Planner, Hurunui District Council, 25/06/99.
- Fordyth, Trish. Rayonier (Forest products company), 07/07/99.
- Fuller, Jenny. Policy Analyst, Waitakere City Council, Waitakere City, 14/07/99.
- Glennie, John. Regional Policy Manager, Canterbury Regional Council, 02/07/99.
- Graham, Rob. Economic Policy Analyst, Waitakere City Council, 14/07/99.

- Grant, John. General Manager Special Jurisdictions, Chief Registrar Maori Land Court, 23/07/99.
- Gresham, Paddy. Ministry for the Environment, 23/11/98; 21/07/99.
- Hawke, David. Tomato Farmer, Christchurch, 29/06/99.
- Henare, Robert Tai. Maori Liaison, Canterbury Regional Council, 02/07/99.
- Hill, Wade. Lands Trust Officer, Ngai Tahu Group Management, 30/06/99.
- Hughes, Phil. Principal Environmental Investigator, Office of the Parliamentary Commissioner for the Environment, 19/07/99.
- James, Dylan. Employers Federation of New Zealand, 16/07/99.
- Jebsen, Michael. Director, Sustainable Resource Use Policy, Ministry for Agriculture and Forestry, Wellington, 19/07/99.
- Johnston, Doris. Principal Policy Analyst, Department of Conservation, 22/07/99.
- Kandandice, Judge Shona. District Court, Wellington, 16/07/99.
- Kerr, Roger. New Zealand Business Roundtable, 21/07/99.
- King, Grant. Senior Policy Analyst, Sustainable Resource Use Policy, Ministry for Agriculture and Forestry, Wellington, 19/07/99.
- Kroon, Glenys. Policy Analyst, Federated Farmers of NZ (Auckland), 14/07/99.
- Lawson, Alison. Regional Manager, Real Estate Institute of New Zealand, Inc., 23/07/99
- Lawson, Craig. Policy, Ministry for the Environment, Wellington, 21/07/99.
- Love, Morris. Director, Waitangi Tribunal, 22/07/99.
- McCallum, Laurie. Natural Resources Planning Manager, Canterbury Regional Council, 02/07/99.
- McDonald, Jenny. Planner, Waitakere City Council, 14/07/99.

- McFadden, Grant. Senior Policy Analyst, Ministry of Agriculture and Forestry, 05/07/99.
- McFadden, Jamie. Farmer, The Acheron, Cheviot, North Canterbury Region, 01/07/99.
- McKay, Brett. Planner, Wellington City Council, 21/07/99.
- Martin, Graham. Chairperson of Canterbury Tomato Growers, 29/06/99.
- Meech, Gabrielle. Regulatory and Tax Policy section, Treasury, 23/07/99.
- Meister, Professor Anton. Ecological Economist, Victoria Unievrsity of Wellington, 22/07/99.
- Memon, Professor Ali. Professor of Environmental Management, Lincoln University, Canterbury, 01/07/99.
- Mitchell, Philip. Partner, Environmental Partnerships (Environmental Consultants), 15/07/99.
- Morgan, Kate. Policy Analyst, Department of Conservation. 05/07/99.
- Newfield, Jim. Carter Holt Harvey, 14/07/99 (telephone interview).
- Ogilvie, Rob. Senior Policy Analyst, International Coordination, Ministry for the Environment, 21/07/99.
- Peat, Brian. CEO, Federated Farmers Christchurch, 29/06/99.
- Penter, Bob. Planner (RMA), Ngai Tahu Group, 30/06/99.
- Player, Pippa. Policy Analyst, Local Government New Zealand, 21/07/99.
- Ponter, Daran. Policy, Ministry of Maori Affairs, 20/07/99.
- Phillips, Stephen. Director, Christchurch Community Boards, 28/06/99.
- Price, David. Assistant Planner, Christchurch City Council, 28/06/99.
- Reid, Alan. Senior Policy Analyst, Sustainable Resource Use Policy, Ministry for Agriculture and Forestry, Wellington, 19/07/99.
- Rennes, Lex. Group Manager, Policy, Environment Waikato, 06/07/99.

- Richardson, Pam. Federated Farmers of New Zealand (North Canterbury), 04/07/99.
- Riezebos, Donald. Policy, Internal Affairs Department, 16/07/99.
- Ross, Don. Director, Landcare NZ, 28/06/99.
- Sadler, Julie, Pig farmer, Canterbury, 29/06/99.
- Sage, Eugenie, Forest and Bird Protection Society, Christchurch, 02/07/99.
- Salmon, Guy. Director, Ecologic Foundation, 13/07/99.
- Shearer, Craig. Policy, Auckland Regional Council, 08/07/99.
- Smith, Max and Valda. Farmers, Sandhurst, Weka Pass, Waikari, North Canterbury, 01/07/99.
- Steele, Kevin. International Policy (Trade and Environment), Ministry for Agriculture and Forestry, Wellington, 19/07/99.
- Stewart, David. President, New Zealand Surveyors, 23/07/99.
- Storey, Mark (and Michelle Rush). Senior Environmental Economist, Agriculture New Zealand, 20/07/99.
- Taege, Trevor. Farmer, Kowai, Bush, Springfield, Canterbury, 29/06/99.
- Tainui Maori Trust, 06/07/99
- Talbot, John. Group Manager, Resource Management, Canterbury Regional Council, 02/07/99.
- Tawhai, Muriel. Iwi Liaison Officer, Auckland City Council, 07/07/99.
- Taylor, Bryan. Chief Executive, Auckland City Council, 07/07/99.
- Undorf-Lay, Alison. Policy Analyst, Federated Farmers of NZ (Christchurch), 29/06/99.
- Webster, Penny. Dairy farmer, North Island, 19/07/99.
- Wells, Christine. Policy, Ministry for the Environment, Wellington, 21/07/99.

- Whare, Tracey. Iwi Liaison Officer, Wellington Regional Council, 20/7/99.
- Wilkinson, Brian and Jeff. Farmers, McMilland Rd, Cheviot, North Canterbury Region, 01/07/99.
- Wilson, Kent. Planning Officer, Banks Peninsula District Council, 25/06/99.
- Woudberg, Lesley. Policy Analyst, Ministry for the Environment, 02/07/99.
- Young, Donald. CEO Waimakariri Irrigation Ltd., 29/06/99.

New Brunswick, Canada Case Study

- Ayer, Bill. Director, Environment and Local Government—Sustainable Planning (Branch), 12/10/00.
- Belliveau, Gerard. Shediac Municipal Council, 27/10/00.
- Belzile, Gilles (and Tessier, Scott). Director, Intergovernmental Affairs, Fisheries Canada, 06/11/00.
- Bonnell, Brian. Model Forests Program, Natural Resources Canada, 09/11/00.
- Charron, Andre. Atlantic Canada Opportunities Agency, 03/11/00.
- Christoff, Barry. Legal Department, Association of First Nations, 07/11/00.
- Cluskey, Wayne. Commissioner for Sustainable Development, Office of the Auditor-General of Canada, 07/11/00.
- Coon, David. Director, New Brunswick Conservation Council, 26/10/00.
- Culham, Doug. Natural Resources Canada, 06/11/00.
- Dauvergne, John. Industry Canada, 08/11/00.
- Davies, Jessie. Director, Environment and Sustainable Development Research Centre, University of New Brunswick, 21/09/00.

- de Marche, Peter (and Harvey, Ken). Director, New Brunswick Federation of Woodlot Owners, 19/10/00.
- Dick, Bob. Manager, Natural Resources and Energy—Forest Management Planning (Section), 24/10/00.
- Dillon, Michael. Department of Agriculture, Fisheries and Aquaculture, 13/10/00.
- Ferguson, Craig. Environment Canada, 10/11/00.
- Gamble, Bob. President, Service New Brunswick, 27/09/00.
- Gray, Parker. Senior Policy Adviser, Environment and Local Government—Policy and Planning (Branch), 03/11/00.
- Griffiths, Jennifer. Director, Rural Development Planning Commission, 17/10/00.
- Kennedy, Julia. St Mary's First Nation Band, 02/11/00.
- Ketcheson, Doug (and Welsh, Dan). Natural Resources Canada—Forest Service, 09/11/00.
- Lavalle, Betty-Anne. Director, New Brunswick Council of First Nations, 01/11/00.
- Lefebvre, Alexander. Environment Analyst, Agriculture and AgriFood Canada, 08/11/00.
- McKendy, Michael. Vice-President, Service New Brunswick, Operations Division. 11/10/00.
- McKenzie, Rod. Managing Director, Attorney-General's Department (previously Vice-President Legal, Service New Brunswick), 26/09/00.
- McLaughlin, John. Vice-President, University of New Brunswick, 25/10/00.

- Metcalfe, Vicki (and Hood, Bruce). Chief, Strategic Policy and Regulation, Department of Fisheries Canada, 10/11/00.
- Methven, Ian. Director, Centre for Property Studies, University of New Brunswick, 03/10/00.
- Mulholland, Greg. PhD student, University of New Brunswick, 13/10/00.
- Nussey, Brian. New Brunswick Department of Finance, 03/11/00.
- Oliver, Bruce. Director, New Brunswick Federation of Agriculture, 02/11/00; 17/11/00.
- Pearson, Mark (and Frehs, Jim). Natural Resources Canada, 08/11/00.
- Poitras, Ivon. Executive Director, New Brunswick Forest Products Association, 18/10/00.
- Reddick, Andrew. Policy Researcher, New Brunswick, 01/11/00.
- Rural Team New Brunswick Meeting, Sussex, New Brunswick, 30/10/00.
- Scott, Jackie. Natural Resources Canada, 08/11/00.
- Scott, Susan. Environment Canada, 10/11/00.
- Smith, Jack. First Nations Program, Natural Resources Canada, 09/11/00.
- St.-Onge, Johnny. Officer, Environment and Local Government—Local Governance Development (Unit), 17/10/00.
- Stacey, Cynthia. Lecturer, Kinesiology, University of New Brunswick, 20/11/00.
- Timms, Jane. Manager, Environment and Local Government—Integrated Environmental Planning Section (Unit), 18/10/00.
- Tse, Wendy. Planner, Fredericton Municipal Council, 16/10/00.
- White, Brent. New Brunswick Office of the Auditor-General, 17/11/00.

- Wiber, Melanie. Professor, Department of Sociology, University of New Brunswick, 16/10/00.
- Wood, Daniel (and Hallward, Peggy). Environment Canada, 08/11/00.
- Wyse, Peter. Department of Indian and Northern Affairs, 08/11/00.

APPENDIX 3

QUESTIONNAIRES: NEW ZEALAND AND NEW BRUNSWICK

SURVEY

New Zealand Field Research
June/July 1999

The Reason for this Research

Sustainable development has been the catchcry across the globe since the mid-1980s. Yet in many countries, the implementation of seminal documents such as Agenda 21, Habitat II and so on, has been disappointing.

New Zealand was the first country to introduce a Minister for the Environment and has been a forerunner in the implementation of sustainable development on a national scale. One clear example of the cutting-edge role has been the Resource Management Act 1991. It is significant that such reforms came at a time of restructuring of the public-private partnership. Sufficient time has now passed for a study of what lessons can be learnt from the New Zealand experience, especially from a land administration perspective.

One key to meaningful implementation is an effective network of institutions and organisations that have an existing or potential role to play in sustainable development. This brief survey aims to gather some basic data about the current role of different groups that form a part of the bigger picture for sustainable development and land administration in New Zealand.

The results of this survey and the discussions at any subsequent meeting will be kept confidential. No individual will be identified in the written work that results from this study. The details requested are important for the researcher's understanding and analysis of the overall network of organisations and their impact on sustainable development objectives. Please return the completed survey by:

- Fax: + 61-3-9347 2916; or
- Post: Lisa Ting, PhD candidate, Dept of Geomatics, University of Melbourne, Parkville, Victoria 3052, Australia.
- Hand: If we are already scheduled to have a meeting, you may choose to hand this survey back during my meeting with you in New Zealand.

Any additional information you may wish to provide by way of background or to promote discussion would be most welcome.

Your participation in this study is much appreciated.

Lisa Ting (BA/LLB, LLM) PhD candidate
Direct Tel: + 61-3-9344 9696
Email: l.ting@eng.unimelb.edu.au
[Supervisor: Professor Ian Williamson]

Department of Geomatics
The University of Melbourne Parkville Victoria 3052 Australia
Telephone: + 61 3 9344 6806 Fax: + 61-3-9347 2916
Email: geomatics@eng.unimelb.edu.au
URL: http://www.sli.unimelb.edu.au

Organisation: _____

Purpose of Organisation (You may prefer to attach some printed material). _____

Name and position (optional) _____

1. Classification of organisation *(Tick the most appropriate one)***:**

☐ Central government ☐ Regional government ☐ Local government
☐ Government corporation ☐ Private sector enterprise ☐ Community organisation
☐ Other (please specify): _____

For the purposes of this study:

- **sustainable development** means development that effectively incorporates economic, social, political, conservation and resource management factors in decision-making on development.
- **land administration** means the system for administering and managing land.

2. Based on the above definition of "sustainable development", to what extent does your organisation have a role to play in sustainable development?

Circle one:	None at all	Minor role	Significant role	Very Significant role
	1	2	3	4

3. Based on the above definition of "land administration", to what extent does your organisation have a role to play in land administration?

Circle one:	None at all	Minor role	Significant role	Very Significant role
	1	2	3	4

4. What do you consider to be the main objective/s of the Resource Management Act 1991 ("RMA")? *(Tick as many as you wish)*:

☐ Environment ☐ Rural planning
☐ Sustainable development ☐ Resource development
☐ Indigenous rights ☐ To facilitate responsible business
☐ Urban planning ☐ Land-use planning
☐ Other/s (please specify, if any): • _____
• _____ • _____

5. Do you consider that the RMA has achieved the objectives that you ticked in Question 4?

Circle one:	Strongly disagree	Disagree	Agree	Strongly agree
	1	2	3	4

6. When the RMA was introduced in 1991, what kinds of skills were needed to implement the RMA's objectives in your organisation? *(Tick as many as apply):*

☐ New management skills ☐ Environmental science skills
☐ Spatial information management skills ☐ Planning skills
☐ Land-use planning skills ☐ Indigenous culture/liaison skills
☐ Information technology skills ☐ Specialist RMA legal skills
☐ Ecological science skills ☐ Environmental economics skills
☐ Other skill/s (please specify, if any): • _____
• _____ • _____

7. Was your organisation able to hire or have access to the skills ticked in Question 6?
*Circle one***:** YES / NO

8. Do you consider that geographic information systems have an important role to play in achieving sustainable development for New Zealand? *Circle one:* YES / NO

9. There are two parts to the following question on government organisations:

- **In the first column, tick those organisations that you consider have a role in sustainable development** *(Tick as many as you wish)***;**
- **In the second column, indicate the extent of involvement of these organisations in your organisation's projects/policies that have sustainable development implications** *(Tick the approximate percentage of involvement):*

Which government organisations have a role to play in sustainable development? (Tick as many you wish):	*Approximate % of involvement in your organisation's projects/policies that have sustainable development implications:*			
	>50%	***25%-50%***	***<25%***	***None***
Central Government:				
☐ Department of Prime Minister & Cabinet.....	☐	☐	☐	☐
☐ Te Puni Kokiri (Maori Affairs).....	☐	☐	☐	☐
☐ Department of Conservation.....	☐	☐	☐	☐
☐ Ministry of Transport.....	☐	☐	☐	☐
☐ Immigration Service.....	☐	☐	☐	☐
☐ Inland Revenue Department.....	☐	☐	☐	☐
☐ Land Information NZ ("LINZ").....	☐	☐	☐	☐
☐ Titles Office (LINZ).....	☐	☐	☐	☐
☐ Surveyor-General (LINZ).....	☐	☐	☐	☐
☐ Valuer-General (LINZ).....	☐	☐	☐	☐
☐ Ministry of Education.....	☐	☐	☐	☐
☐ Ministry of Research, Science and Technology	☐	☐	☐	☐
☐ Ministry for the Environment.....	☐	☐	☐	☐
☐ Ministry of Fisheries.....	☐	☐	☐	☐
☐ Occupational Health and Safety Service.....	☐	☐	☐	☐
☐ Ministry of Housing.....	☐	☐	☐	☐
☐ Statistics New Zealand.....	☐	☐	☐	☐
☐ Ministry of Commercial Affairs.....	☐	☐	☐	☐
☐ Ministry of Health.....	☐	☐	☐	☐
☐ Ministry of Agriculture.....	☐	☐	☐	☐
☐ Treasury.....	☐	☐	☐	☐
☐ **Regional government**.....	☐	☐	☐	☐
☐ **Local government**.....	☐	☐	☐	☐
☐ **Other government group/s** (specify, if any)**:**				
•	☐	☐	☐	☐
•	☐	☐	☐	☐
•	☐	☐	☐	☐
☐ **Government corporations** (specify, if any)**:**				
•	☐	☐	☐	☐
•	☐	☐	☐	☐
•	☐	☐	☐	☐

10. There are two parts to the following question on non-government organisations:

- **In the first column, tick those organisations that you consider have a role in sustainable development** *(Tick as many as you wish)***;**

- **In the second column, indicate the extent of involvement of these organisations in your organisation's projects/policies that have sustainable development implications** *(Tick the approximate percentage of involvement):*

Which non-government organisations have a role to play in sustainable development? (Tick as many you wish):	*Approximate % of involvement in your organisation's projects/policies that have sustainable development implications:*			
	>50%	***25%-50%***	***<25%***	***None***
Community Groups:				
☐ Maori organisations.....	☐	☐	☐	☐
☐ Environmental organisations.....	☐	☐	☐	☐
☐ Farmers organisations.....	☐	☐	☐	☐
☐ **Other community group/s** (specify, if any):				
•	☐	☐	☐	☐
•	☐	☐	☐	☐
•	☐	☐	☐	☐
Private sector enterprises:				
☐ Spatial data industry.....	☐	☐	☐	☐
☐ Resource management service industry	☐	☐	☐	☐
☐ Industries e.g. mining, timber, fisheries, etc	☐	☐	☐	☐
☐ Utilities e.g. gas, electricity, water, etc.....	☐	☐	☐	☐
☐ **Other private enterprise/s** (specify, if any):				
•	☐	☐	☐	☐
•	☐	☐	☐	☐
•	☐	☐	☐	☐
Professional associations:				
☐ Planners.....	☐	☐	☐	☐
☐ Surveyors.....	☐	☐	☐	☐
☐ Valuation experts.....	☐	☐	☐	☐
☐ Engineers.....	☐	☐	☐	☐
☐ **Other professional association/s** (if any):				
•	☐	☐	☐	☐
•	☐	☐	☐	☐
•	☐	☐	☐	☐

11. Does the land market (i.e. buying and selling land or land rights) **have a crucial role to play in sustainable development?**

Circle one:	Strongly disagree	Disagree	Agree	Strongly agree
	1	2	3	4

12. Any additional comments will be most welcome. (Please write overleaf or on another sheet of paper)

Thank you for taking the time to respond to this survey.
Any queries may be directed to Lisa Ting (contact details on the front cover of this document).

SURVEY
New Brunswick, Canada
2000

Lisa Ting (BA/LLB, LLM), PhD candidate
Dept of Geomatics, The University of Melbourne
Melbourne, VIC 3010, Australia
Direct Tel: 03-8344 9696; Fax: 03-9347 2916
Email: l.ting@eng.unimelb.edu.au

[Supervisor: Professor Ian Williamson]

The Reason for this Research

Sustainable development has been the catchcry across the globe for over a decade, but the overall progress has been limited.

Sustainable development means development that effectively incorporates economic, social, political, conservation and resource management factors in decision-making for development. The challenge of balancing these competing tensions in sophisticated decision making requires facilitative legal/institutional infrastructure as well as access to accurate, relevant and comprehensible information by interested parties.

The purpose of this research is to determine whether and how the legal and institutional infrastructures for land administration could be re-engineered to better support sustainable development objectives.

Objective of Case Study

To examine the policies and practices of a cross-section of government, private and community groups to determine the following broad issues:

- Do they have a role in sustainable development? If so, describe that role.
- Do the laws operate coherently? E.g.:
  - Are they sufficiently flexible to recognize the range of rights, restrictions and responsibilities related to land and land use?
  - Are they supportive of institutional linkages for sustainable descisionmaking?
- Do the institutional infrastructures facilitate sustainable decisionmaking? E.g.:
  - links between government, private sector and/or community groups?
  - facilitate information exchange to support sustainable decisionmaking?
- Do the information infrastructures, (e.g. spatial data infrastructures) meet the complex demands of sustainable decisionmaking in terms of:
  - types of data available; quality of data; accessibility (or privacy).

The results of this survey and the discussions at any subsequent meeting will be kept confidential. No individual will be identified in the written work that results from this study. The details requested are important for the researcher's understanding and analysis of the overall network of organisations and their impact on sustainable development objectives. Please return the completed survey by: **Post** (to arrive by 15th November 2000) to: Lisa Ting c/o Dept of Geodesy and Geomatics Engineering, University of New Brunswick, PO Box 4400, Fredericton, New Brunswick, Canada E3B 5A3; or **Fax**: (506) 453 4943.

Any additional information you may wish to provide by way of background or to promote discussion would be most welcome. Lisa Ting's contact number at UNB: (506) 447 3261 or 458 7085 (c/o Linda O'Brien).

Your participation in this study is much appreciated.

Organisation: _____

Section in Organisation: _____

Purpose of Organisation _____
(You may prefer to attach some printed material). _____

Name and position (optional) _____

For the purposes of this study:

- **sustainable development** means development that effectively incorporates economic, social, political, conservation and resource management factors in decision-making on development.
- **land administration** means the processes of:

a) supporting land markets
b) resolving conflicts about ownership and use of land
c) providing security of tenure
d) regulating land and property development
e) providing access to land
f) regulating the use and conservation of land
g) gathering revenues from the land through sales, leasing and taxation

1. Based on the above definitions, to what extent do you consider that land administration has a role to play in supporting sustainable development?

Circle one:	None at all	Minor role	Significant role	Very Significant role
	1	2	3	4

2. To what extent does your organisation have a role to play in sustainable development?

Circle one:	None at all	Minor role	Significant role	Very Significant role
	1	2	3	4

3. Based on the above definition of "land administration", to what extent does your organisation have a role to play in land administration?

Circle one:	None at all	Minor role	Significant role	Very Significant role
	1	2	3	4

4. To what extent is the environment a priority for your organization?

a) Top priority
b) High priority (in the top 3 priorities)
c) Medium priority (in the top 6 priorities)
d) Low priority

5. To what extent is economic development a priority for your organization?

a) Top priority
b) High priority (in the top 3 priorities)
c) Medium priority (in the top 6 priorities)
d) Low priority

6. To what extent is Social/Cultural development a priority for your organization?

a) Top priority
b) High priority (in the top 3 priorities)
c) Medium priority (in the top 6 priorities)
d) Low priority

7. Circle the areas of land administration in which your organization has a contributing or participating role:

a) Supporting land markets
b) Resolving conflicts about ownership and use of land
c) Providing security of tenure
d) Regulating land and property development
e) Providing access to land
f) Regulating the use and conservation of land
g) Gathering revenues from the land through sales, leasing and taxation
h) Other (please specify):

_____

8. Is your organization involved in developing/promoting/protecting/regulating any rights, restrictions or responsibilities in land/resources such as the following: *(Tick as many as apply)*:

- ☐ Urban planning
- ☐ Rural planning
- ☐ Conservation
- ☐ Environment
- ☐ Sustainable development
- ☐ Resource management
- ☐ Indigenous rights
- ☐ Economic development
- ☐ Community participation e.g. development/conservation
- ☐ Land-use planning
- ☐ Other/s (please specify, if any): • •

9. Please describe the rights, restrictions and/or responsibilities you ticked in Question 8:

10. What kinds of skills are needed to carry out work in promoting, protecting, regulating and/or developing these rights, restrictions and/or responsibilities?
(Tick as many as apply):

- ☐ Management of diversely skilled teams
- ☐ Environmental science skills
- ☐ Geographic information systems skills
- ☐ Planning skills
- ☐ Land-use planning skills
- ☐ Indigenous culture/liaison skills
- ☐ Information technology skills
- ☐ Community consultation skills
- ☐ Ecological science skills
- ☐ Environmental economics skills
- ☐ Agricultural science skills
- ☐ Legal skills
- ☐ Economics skills
- ☐ Surveying skills
- ☐ Other skill/s (please specify, if any): • •

11. Was your organisation able to hire or have access to the skills ticked in Question 10?
Circle one: YES / NO

12. How would you describe the community that you service or work with?

13. Which of the following best describes your organisation's experience of working with the community in policy development?

a) Community consultation
b) Community involvement
c) Community empowerment
d) Community control
e) Other (please specify)

14. Which of the following best describes your organisation's experience of working with the community in policy implementation?

a) Community consultation
b) Community involvement
c) Community empowerment
d) Community control
e) Other (please specify)

15. Do you consider that any of the following are an important tool in supporting decision-making for sustainable development? *Circle as many as you wish:*

a) Geographic Information Systems[1]
b) The Internet
c) Spatial data infrastructures
d) Computer access for every resident

16. There are two parts to the following question on government organisations:

a) In the first column, tick those organisations that you consider have a role in sustainable development *(Tick as many as you wish)***;**

b) In the second column, indicate the extent of involvement of these organisations in your organisation's projects/policies that have sustainable development implications *(Tick the approximate percentage of involvement):*

Which government organisations have a role to play in sustainable development? (Tick as many you wish):	Approximate involvement your organisation has with these government organisations:			
	More than half the time	Less than half the time	Less than a quarter of the time	None
Federal Government:				
☐ Atlantic Canada Opportunities Agency	☐	☐	☐	☐
☐ Department of Agriculture and Agri-Food	☐	☐	☐	☐
☐ Canada Customs and Revenue Agency	☐	☐	☐	☐
☐ Department of Canadian Heritage	☐	☐	☐	☐
☐ Canadian International Development Agency	☐	☐	☐	☐
☐ Dept of Citizenship and Immigration	☐	☐	☐	☐
☐ Dept of Environment Canada	☐	☐	☐	☐
☐ Dept of Finance	☐	☐	☐	☐
☐ Dept of Fisheries and Oceans	☐	☐	☐	☐
☐ Dept of Foreign Affairs & International Trade	☐	☐	☐	☐
☐ Dept of Health	☐	☐	☐	☐
☐ Dept of Human Resources Development	☐	☐	☐	☐
☐ Dept of Indian Affairs and Northern Development	☐	☐	☐	☐
☐ Dept of Industry Canada	☐	☐	☐	☐
☐ Dept of Justice Canada	☐	☐	☐	☐
☐ Dept of Labour	☐	☐	☐	☐
☐ Dept of National Defence	☐	☐	☐	☐
☐ Dept of Natural Resources	☐	☐	☐	☐
☐ Dept of Public Works & Government Services	☐	☐	☐	☐
☐ Economic Development Agency of Canada for the Regions of Quebec	☐	☐	☐	☐
☐ Solicitor–General of Canada	☐	☐	☐	☐
☐ Dept of Transport	☐	☐	☐	☐
☐ Treasury Board Secretariat	☐	☐	☐	☐
☐ Dept of Veterans Affairs	☐	☐	☐	☐
☐ Western Economic Diversification	☐	☐	☐	☐
☐ Others (please specify):	☐	☐	☐	☐
☐ •	☐	☐	☐	☐
☐ •	☐	☐	☐	☐

[1] Geographic Information System: a system of capturing, storing , checking, integrating, analysing and displaying data that is spatially/geographically referenced i.e. that can be related to a specific place/area.

Which government organisations have a role to play in sustainable development? (Tick as many you wish):	Approximate involvement your organisation has with these government organisations:			
	More than half the time	Less than half the time	Less than a quarter of the time	None
Provincial Government: New Brunswick				
☐ Agriculture, Fisheries and Aquaculture	☐	☐	☐	☐
☐ Business New Brunswick	☐	☐	☐	☐
☐ Education	☐	☐	☐	☐
☐ Environment and Local Government	☐	☐	☐	☐
☐ Family and Community Services	☐	☐	☐	☐
☐ Finance	☐	☐	☐	☐
☐ Health and Wellness	☐	☐	☐	☐
☐ Intergovernmental Affairs	☐	☐	☐	☐
☐ Investment and Exports	☐	☐	☐	☐
☐ Justice	☐	☐	☐	☐
☐ Natural Resources and Energy	☐	☐	☐	☐
☐ Office of the Comptroller	☐	☐	☐	☐
☐ Office of the Premier	☐	☐	☐	☐
☐ Public Safety	☐	☐	☐	☐
☐ Supply and Services	☐	☐	☐	☐
☐ Training and Employment Development	☐	☐	☐	☐
☐ Transportation	☐	☐	☐	☐
☐ Aboriginal Affairs Secretariat	☐	☐	☐	☐
☐ Culture and Sport Secretariat	☐	☐	☐	☐
Provincial Agencies				
☐ NB Emergency Measures Organisation	☐	☐	☐	☐
☐ NB Human Rights Commission	☐	☐	☐	☐
☐ Premier's Council on Status of Disabled Persons	☐	☐	☐	☐
☐ Regional Development Corporation	☐	☐	☐	☐
☐ Service New Brunswick	☐	☐	☐	☐
☐ Status of Women	☐	☐	☐	☐
☐ Supply and Services	☐	☐	☐	☐
☐ Workplace Health, Safety & Compensation Commission	☐	☐	☐	☐
☐ Youth Council of NB	☐	☐	☐	☐
☐ Communications New Brunswick	☐	☐	☐	☐
☐ **Municipal/Local Government**	☐	☐	☐	☐

17. Are the provincial systems for participation by residents of Unincorporated Areas in decision-making sufficient? *Circle one*: YES / NO

If not, then please suggest how this could be improved:

_____

_____

_____

_____

_____

18. There are two parts to the following question on non-government organisations:

a) In the first column, tick those organisations that you consider have a role in sustainable development *(Tick as many as you wish)***;**

b) In the second column, indicate the extent of involvement of these organisations in your organisation's projects/policies that have sustainable development implications *(Tick the approximate percentage of involvement):*

Which non-government organisations have a role to play in sustainable development? (Tick as many you wish):	Approximate involvement your organisation has with these government organisations:			
	More than half the time	Less than half the time	Less than a quarter of the time	None
Community Groups:				
☐ Aboriginal organisations	☐	☐	☐	☐
☐ Environmental organisations	☐	☐	☐	☐
☐ Farmers' organisations	☐	☐	☐	☐
☐ Foresters' organisations	☐	☐	☐	☐
Other community group/s (specify, if any):				
•	☐	☐	☐	☐
•	☐	☐	☐	☐
Private sector enterprises:				
☐ Spatial data/Geographic information industry	☐	☐	☐	☐
☐ Industries e.g. mining, timber, fisheries, etc	☐	☐	☐	☐
☐ Utilities e.g. gas, electricity, water, etc.....	☐	☐	☐	☐
☐ **Other private enterprise/s** (specify, if any):				
•	☐	☐	☐	☐
•	☐	☐	☐	☐

19. Do you consider that land and water policies/administration could be better coordinated?

Circle one:	Strongly disagree	Disagree	Agree	Strongly agree
	1	2	3	4

If so, how?

20. Does the land market (i.e. buying and selling land or land rights) **have a crucial role to play in sustainable development?**

Circle one:	Strongly disagree	Disagree	Agree	Strongly agree
	1	2	3	4

If so, how?

21. Any additional comments will be most welcome. (Please write overleaf or on another sheet of paper)