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Hatched: The capacity for sustainable development

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Landcare Research
Manaaki Whenua



HATCHED THE CAPACITY FOR SUSTAINABLE DEVELOPMENT

HATCHED

Edited by Bob Frame, Richard Gordon and Claire Mortimer

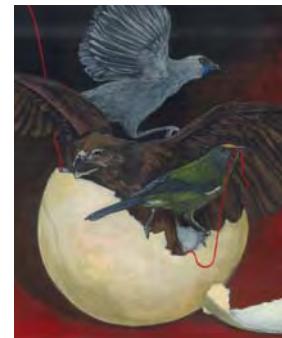
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In addition to the most welcome contributions from 30 authors, we must thank many colleagues for unstinting support during the project and the preparation of this book. Inadvertently we may well pass over those whose efforts were critical to our success. However we specifically thank Alison Dalziel, Ann Magee, Louise Marra and Andy Pearce for their commitment and encouragement to the programme especially in its formative stages. We seek to thank everyone involved for many long days, creative tensions and runaway successes which have helped to take the thorny issue of research into sustainability to a new level in New Zealand. For the present though we owe a huge thank you to Christine Bezar and Nicollette Faville for taking our rough-hewn copy and breathing professional design into it. As a group we have enjoyed the support of Michael Krausse, Diane O'Connor and Tamsin Rees and many others who continue to make Landcare Research a unique institution in New Zealand in which to undertake this important work.

Each chapter reflects the authors' work but also that of many others as researchers, participants, colleagues, contracting agents and stakeholders. While there are too many to thank individually, all 30 authors are grateful for the many contributions that lie behind these chapters and the many other activities that have taken place. However, the true test will be the resilience of these ideas and the continued support to really make a difference.

The painting 'Hatched' by Penny Howard, illustrates the CS Lewis quote, that at a personal and collective level we need to transform states to both survive and reach our full potential. Three New Zealand birds; the songbirds Korimako and Kōkako and the farsighted Kāhu, are shown hatched but not quite taking flight. The red thread in Penny Howard's paintings refers to bloodlines and I Nga Wa O Mua, the Maori world view, to look in front of us and to the past for guidance.



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contents

Acknowledgements	I
List of contributors	ii
Introduction	1
SECTION ONE—Thinking and acting for long-term success	3
Chapter 1: New Zealand, new futures?	5
Chapter 2: 100% Pure Conjecture – the Scenarios Game	17
Chapter 3: The Auckland Sustainability Framework	23
Chapter 4: Creating futures: integrated spatial decision support systems for local government	33
Chapter 5: Successful cities in the 21st century	43
SECTION TWO—Business as sustainability innovators	55
Chapter 6: Foodmiles: fact or fiction?	57
Chapter 7: Changing the game: organisations and sustainability	67
Chapter 8: Our journey from unsustainability: reporting about Landcare Research reports	77
Chapter 9: Coming of Age: a global perspective on sustainability reporting	87
Chapter 10: Sustainability and Māori business	95
Chapter 11: Life Cycle Management	109
Chapter 12: carboNZero	119
Chapter 13: Greening the Screen	127



SECTION THREE—Individuals – as citizen consumers

Chapter 14:	Sustainable consumption	135
Chapter 15:	We are what we buy – aren't we?	149
Chapter 16:	Seeking pro-sustainability household behaviour change	159
Chapter 17:	Supporting practice change through transformative communication	165
Chapter 18:	Education for sustainability in secondary schools	175



SECTION FOUR—Facing up to wicked problems

Chapter 19:	Sustainability Technologies 101: 'Wicked problems' and other such technical terms	187
Chapter 20:	Looking through a Governmentality lens – a bit more theory	197
Chapter 21:	Water allocation. Canterbury's wicked problem	205
Chapter 22:	Social learning – a basis for practice in environmental management	215
Chapter 23:	Sustainability appraisal techniques	227
Chapter 24:	Getting under the bonnet. How accounting can help embed sustainability thinking into organisational decision making	239
Chapter 25:	Stakeholder analysis	249
Chapter 26:	Supporting effective teamwork	255
Chapter 27:	We are not alone: National Sustainable Development approaches in New Zealand and Scotland	261



SECTION FIVE—The future as a set of choices

Chapter 28:	Sustainability: a conversation between business and science	275
Chapter 29:	Sustainable Development: responding to the research challenge in Aotearoa New Zealand	287
Unending		297

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“It may be hard for an egg to turn into a bird: it would be a jolly sight harder for it to learn to fly while remaining an egg. We are like eggs at present. And you cannot go on indefinitely being just an ordinary, decent egg. We must be hatched or go bad.”

C. S. Lewis



introduction

C. S. Lewis's egg provides a metaphor for humanity's defining choice: stay as we are and, through global resource depletion, climate change and social inequity, allow civilisation to crumble and decay, or, alternatively, transform and take flight.

More than 30 years of scientific evidence shows the trajectory that the developed world and New Zealand have pursued up till now cannot be sustained. Over the last two years the warning signals have become increasingly tangible: the collapse of banking institutions worldwide, melting Arctic sea ice, volatile oil prices as global supplies diminish, and the risk of water wars, domestically and internationally, that hides deeper issues of food security.

Developing new ways to live and do business will be the defining challenge of our age. Our last chance to hatch, or go bad...

Sustainability and long-term success require substantial change throughout society. Six years ago New Zealand appeared to many to be, as Lewis warned, 'an ordinary decent egg'. Some did not see any need to change, while others did not know where to start. In 2002, when editors Richard Gordon and Bob Frame designed the six-year research programme Building Capacity for Sustainable Development: the Enabling Research, we were guided by the government's thinking on sustainable development, which was later published in Sustainable development for New Zealand: Programme of Action (DPMC 2003). Our research programme, whose findings are explored in this book, aimed to identify and develop the capabilities needed in New Zealand to meet the government's call for 'a different way of thinking and working' in order for New Zealand to achieve sustainable development.

How is sustainable development defined in this book? There has been considerable debate over the concepts of strong and weak sustainability, and as a natural science institute we

appreciate that socio-economic systems are fundamentally dependent on robust natural systems. But the chapters within this book provide more nuanced perspectives of sustainability. Māori self-determination and cultural resilience, for example, lie at the heart of many sustainable Māori business models, while an urban sustainability concept considers how to balance those elements of city systems that require long-term stability with elements that need to constantly adapt and change. Sustainability in this book is not tightly defined but is explored within different contexts.

Hatched also describes some of the many branches of research that grew from the Building Capacity programme. Principal among these were:

- Regional futures: the development of three parallel projects: in the Waikato Region (integrated systems for decision support, Chapter 4), Canterbury Region (addressing the wicked problem of water as a constraining resource, Chapter 21), and the Marlborough Region (a network of champions for achieving carbon neutrality, which supported development of the EBEX21 and carboNZero programmes, Chapter 12)
- Certification standards: we believed that businesses and other organisations needed practical tools to achieve early wins (e.g. cost savings) and longer term, credible demonstration to their stakeholders of performance and integrity (carboNZero, Chapter 12, Greening the Screen, Chapter 13)
- Māori business: in our view, founding businesses on indigenous people's world views and values created a new business model that embodied many aspects of sustainable development (Chapter 10).

Hatched provides some of the findings, stories and tools

developed over the past six years. It's an eclectic mix – ranging from an historical review of what creates successful cities, to a stakeholder evaluation tool, to new theoretical approaches, to understanding governance. Despite the diversity, five thematic strands emerge from the research identifying key capacity needed for sustainability and forming the five sections of the book.

The first section explores the need to think and act for long-term success. We often make decisions assuming the future will resemble the present, but a short review of history will remind us this is not so. How do we stretch thinking beyond our limited imagination for change, beyond immediate demands of the present? Government has a particular role here; the market, which we have increasingly relied upon to shape New Zealand, has neither memory nor foresight to do this. Its strength is its agility to adapt and innovate; but it is not the marketplace but society and government who will need to deliberately envision and create pathways to a desired future.

The second section considers businesses as sustainability innovators. Businesses have the capability, creativity and resources to adapt and capitalise on future change and we found some of the most significant shifts in the last six years within the business sector. Globally, sustainability reporting is now a mainstream management and communications tool for large companies – with nearly 80% of the largest 250 companies publishing reports. In New Zealand the development has been more tentative, but the rewards in overseas markets for businesses that engage with sustainability issues (climate change especially) has led many to be innovative in the product, service and business models.

The third looks at individuals – as citizen consumers. Changing ourselves and how we live is extraordinarily complex. Our behaviour and consumption choices are influenced by our values, identity and knowledge, and by social norms and institutional constraints. Our research suggests that changing behaviours will require more than providing solid information. People need to learn from each other and create their own solutions. And at a fundamental level society will need to reactivate the concept of citizenship – of acting for the common good versus acting as the individual consumer.

The fourth is facing up to wicked problems. The complexity and value-laden nature of many global change processes is proving

too onerous for many tools developed for situations, for example, when resources were considered to be infinite. Such problems are being characterised as 'wicked', or 'super-wicked' in the case of climate change. Facing up to wicked problems requires new ways of working and new modes of thinking. Our research opens up the difficulty in achieving this, sketches some pathways forward and describes what those pathways might look like in practice.

The fifth and last section looks at the future as a set of choices. It is easier in the face of great challenges to believe in inevitability, safer to shuffle deckchairs, more human to deny change is happening. It is a mark of leadership, however, to believe that we can make choices – especially when those choices are hard and require a fundamental review of our assumptions. New Zealand has enormous potential to determine its own future but only if it acts decisively and proactively. In this last section we consider the next steps for sustainable development both in New Zealand's research and practice and beyond.

The aim of this book is to provide a representation of research findings in an accessible form for practitioners within the public, business and the wider community sectors. We hope readers will delve deeper into the academic papers listed at the end of each chapter. There is much more available on our website and we invite readers to contact our lead authors for our most recent work. General comments can be directed to buildingcapacity@landcareresearch.co.nz

This book does not pretend to cover all aspects of sustainability. It leaves out many great ideas, experiments and successes. It does not address biophysical science, for example in climate change, biodiversity, soils, land and urban ecosystems; that is a feature of the work of New Zealand's Crown Research Institutes. Instead our research has focused on supporting New Zealand's and international capacity for sustainable development. We believe that capacity has now, in C.S. Lewis's words, begun to hatch. We hope the insights within this book will continue to help individuals, organisations and communities to transition from the potential of the egg to the flight of the bird.

Claire Mortimer, Richard Gordon and Bob Frame

1 November 2009, Aotearoa New Zealand

section one



Thinking and acting for long-term success

As a small country, we like to think of ourselves as punching above our weight and of being in control of our future. The reality is that, on the whole, we receive the impact of external events and change rather than influence the course of global trends and shifts.

This is obvious when we contemplate:

- Geopolitical shifts, in particular the rise of China and subsequently India to super-power status over the next 30 years
- The impact of climate change on society globally and efforts to mitigate its impact along with resource constraint issues such as oil and water
- Transformational change in the way business is organised with the growth of global supply chains across international borders

Given these major external influences on New Zealand's future, what national capacity do we need to grow in order to be able to chart our own course, to capitalise on emerging change and to become future makers rather than future takers? What do we really mean by sustainability and what policies are likely to lead us in that direction?



New Zealand, new futures?

A brief history of futures studies in New Zealand and where the topic might be heading

100% Pure Conjecture – the Scenarios Game

A participatory game based on four future scenarios has been highly successful in engaging decision-makers in the long-term impacts of policy

The Auckland Sustainability Framework

A unique experiment in developing a long-term vision for our mega-city that highlights the elaborate processes needed to satisfactorily address complexity.

Creating futures: integrated spatial decision support systems for local government

An Integrated Spatial Decision Support System has been created for the Waikato Region as part of a process to link qualitative scenarios and deliberative methods to quantitative systems modelling

Successful cities in the 21st century

How might success for cities be defined, what are the key characteristics of successful cities, and what is needed to sustain city success over time?



Landcare Research
Manaaki Whenua

New Zealand, New Futures?

CHAPTER 1 : HATCHED

Bob Frame and
Stephanie Pride



Summary

New Zealand has a tradition of being forward looking and has been developing futuring capability over the last 30 years. This is reviewed to show the drivers and barriers to successful futuring work. More recent futures projects are then discussed in light of their contributions to the development of futuring.

This highlights the complexity of the underlying issues that Futures Studies should now address for the long-term sustainable benefit of all. Our research suggests that New Zealand needs to build more foresight into its governance processes if the outcomes of decision-making are going to deliver a sustainable long-term future.

This is unlikely to be effective by adopting scenario-making processes in a traditional sense, but requires new modes of engagement and communication that challenge our deep-seated assumptions (which we call myths) and help create meaningful change. We conclude by inviting readers to examine their own values and myths about society and to tell these stories differently.

INTRODUCTION

World-leading futurist Richard Slaughter warns¹ we must change paths from our current ‘overshoot and collapse trajectory’ to one that ensures sustainable continuation of human society. Achieving this will require wise decision-making informed by astute foresight across many domains. This, in turn, will depend on changes in decision-making systems and an accompanying rise in the level of futures capability across society. Just as in the past, when universal access to schooling raised the level of literacy and numeracy across entire populations thus changing the way societies could make decisions, we now need to raise ‘futures literacy’ (see Box 1)² across society to support decision-making processes geared for sustainable outcomes.

New Zealand has extensive natural resources and huge challenges. Historically society hasn’t understood the interdependence of ecological and socio-economic systems or their limits until they have been breached. Recognition that ecosystems are all interconnected, that systems have natural limits to their equilibrium and that in some areas we have pushed some systems to, or beyond their limits has only recently become widespread. In contrast, many of our decision-making models pre-date this understanding and are fashioned for a world where natural resources were presumed to be limitless. Although there have been some attempts to shift from governance for ‘limitlessness’ to governance for sustainability (e.g. the Resource Management Act) these have not been supported by widespread changes to capabilities and mental models needed to make those governance systems work well, and have been hampered by being operated within paradigms that pre-date the reality they are trying to address.

In terms of global systems – in many areas New Zealand is consigned to be a ‘futuretaker’ not a ‘futuremaker’. For example, however successful New Zealand is in reducing carbon emissions, the scale of impact of reduced emissions on temperature-related climate change will be highly dependent on other countries’ responses. This is not an argument for New Zealand not to act, but a clear-eyed contemplation of where and how we can be most effective in shaping our own future. At the same time a deep understanding of how global change processes might unfold will give New Zealand a much

box 1: FUTURES LITERACY

Riel Miller proposes that futures literacy is the capacity to think about the future. It is a skill like language literacy, that must be learned, and he suggests three steps to be taken sequentially and which, ‘like learning the alphabet before starting to read, ... cannot be skipped’. He describes:

Level 1 Futures Literacy is largely about developing temporal and situational awareness of change which enables people to shift tacit knowledge about preferences and expectations into a more explicit form, and thus ‘address similarities and differences and negotiate shared meaning’.

Level 2 Futures Literacy demands the ability to put expectations and values aside and engage in ‘rigorous imagining’ (which includes the discipline of social science modelling, but without causal or predictive ambitions) to construct a set of framing assumptions for the reation and exploration of possibilities.

Level 3 Futures Literacy requires the skills to reintroduce values and expectations to support decision-relevant insights.

Miller 2006: 15–16²

clearer understanding of the terrain in which it must operate successfully and the speed with which that terrain is changing. In other words it is increasingly important to know when we can and must be masters of our own destiny and how to put that into practice. New Zealand is, however, well placed to develop more widespread futures literacy and future-oriented decision-making systems and put them into practice.

NEW ZEALAND AS A PLACE FOR FUTURING

Many of the long-run global issues (e.g. transitions to peak oil and other resource limits, global warming, changes in relative economic and political influence, and technology-enabled shifts in values and patterns of social organisation) have been on the radar in many jurisdictions over at least the



Figure 1 1974 Ecological Society article on New Zealand's Future

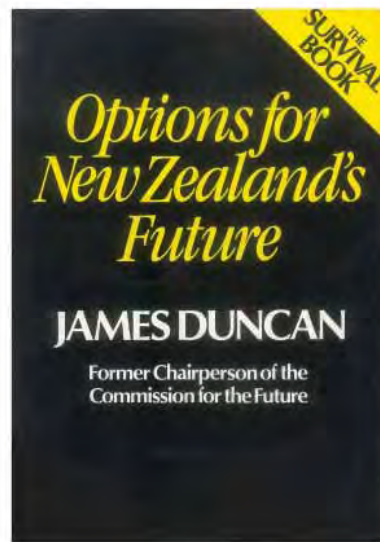


Figure 2 The Futures Commission book – Options for New Zealand's Future (1984)

last two decades. However, building a long-term, systemic perspective into the process for making decisions about responses has been hard to achieve. New Zealand has proved no exception to this.

As in other jurisdictions, much thinking about the future in New Zealand has, until recently, been undertaken as an extension to the standard tool kit for planning and forecasting, accepting and working within, rather than questioning current beliefs and ways of thinking. As a small society, with a relatively high emphasis on social harmony there has not been – in non-Māori culture at least – a tradition of widespread robust and critical public debate, particularly debate that challenges dominant values and ways of understanding the world. Until very recently, these two realities have limited either the sorts of futures work undertaken, or the impact futures work has been able to make on people's perceptions and decisions – or both.

FUTURING HISTORY

Various programmes and contributions over the last 30 years have sought to explore the future for New Zealand.³ This history is documented⁴ quite extensively at www.sustainablefuture.info. While there has been some exemplary and insightful New Zealand work, much of it has been undertaken under circumstances that limited its scope or its impact. Only recently, with the confluence of developments in futuring as a discipline and much greater awareness of long-term challenges have the conditions become favourable to a deeper integration of

futures thinking into New Zealanders' decision-making.

Thinking about futuring as an ecosystem, where there is an interdependency between the nature of futuring and the context in which it occurs, Futures Studies in New Zealand can be divided historically into *five* overlapping phases.

Phase 1: Strong seed, barren ground

The Commission for the Future was given a remit to explore 10–25-year possibilities for social and economic development in New Zealand, to discuss and disseminate these ideas with the public and with Parliament (see Box 2). However government appeared to find the long-term vision and recommendations unwelcome and the Commission was disbanded in 1982. Its functions were transferred to the New Zealand Planning

box 2: THE COMMISSION FOR THE FUTURE AND THE PLANNING COUNCIL

The Commission for the Future was established in 1976 to study 10–25-year possibilities of social and economic development in New Zealand, to discuss and disseminate these ideas with the public and with Parliament, and to report to their Minister. It was disbanded in 1982. During its tenure, it produced c. 20 publications (available at www.sustainablefuture.info).

The New Zealand Planning Council replaced the Commission for the Future and had scope to look 5–10 years ahead. It was dissolved by the incoming government in 1991.



Council which had scope to look 5–10 years ahead. With no increase in funding, it struggled to undertake long-term visioning work, although it was still challenging to short-term political agendas and was dissolved in 1991.

Several commentators⁵ have remarked on the contradictory position of the ‘owners’ to futures work commissioned by or within government: on the one hand, wanting a guide to today’s decisions in terms of the future; on the other hand, finding notions that question the status quo or a particular philosophical position deeply challenging. This may help explain why an intense and carefully structured investment of resource and expertise was dismantled once it had developed the confidence to challenge dominant issues of the day.

Phase 2: Native bush

The demise of two government-funded futures initiatives in New Zealand coincided with the rapid growth of environmental movements globally and the integration of long-run and system-oriented approaches from those movements with evolving technologies for futuring in America and Europe. The roots of the connections between ecological perspectives and futures perspectives of course go back to classic works such as the Nearings’ *Good Life*, Rachel Carson’s *Silent Spring* and Schumacher’s *Small is Beautiful*.

Whether because of the challenges of futuring within a government context, or because there was a strong, values-based impetus from outside government, this phase saw the development of a series of independent futuring groups (see

Box 3),⁶ some operating from a deep values base and often an environmental orientation. These fertile foundations have created the conditions for longevity for the Futures Thinking Aotearoa organisation, established in 1982 (as the New Zealand Futures Trust), and still active in championing the importance of futures.

Phase 3: Gleaning

Growing out of strategic planning and scenario-based approaches developed in America and Europe in the 1970s and 80s, horizon scanning as a specialist area within futures was assuming new sophistication and new value by the 1990s. Using a systematic approach to scanning enables participating agencies to reframe current thinking, better anticipate and respond to changes in the external environment, gain lead-time for important decisions, and facilitate a more innovative culture. In New Zealand, defence and intelligence services aside, the most well developed approach to scanning has been in the science sector. Building on the futures capability developed through their 1998/99 Foresight Project,⁷ the

box 3: INDEPENDENT-FUTURES-ORIENTED ORGANISATIONS

The New Zealand Futures Trust (now **Futures Thinking**

Aotearoa, www.futurestrust.org.nz) was established in 1982 and it continues to promote futures thinking through meetings and newsletters.

Sustainable Future (www.sustainablefuture.info) is developing a vision of a sustainable New Zealand in 2058.

The New Zealand Institute (www.nzinstitute.org) produces ‘creative, provocative and independent thinking’ about the economic and social future

Sustainable Aotearoa New Zealand (SANZ) (www.phase2.org), produce principles and scenarios for strong sustainability in New Zealand (2009)

Anew New Zealand (www.anewnz.org.nz) seeks to create public awareness of the wide range of issues and opportunities essential for achieving a sustainable future.

Ministry of Research, Science and Technology (MoRST) later launched its FutureWatch programme and then the Navigator Network⁸ (see Box 4) in 2005 to provide 'early alert' advice about emerging science trends and innovations, particularly in biotechnology⁹ and nanotechnology. While the products of FutureWatch have been well received, there is now a gap between the quality of the scanning intelligence and the capacity of policy developers and policy development processes to make full use of these early alerts.

Phase 4: Towards a more dynamic ecosystem

Over the last 10 years there have been positive developments in the futuring space in New Zealand to nurture new varieties. Their success has been supported by two factors.

box 4: NEW ZEALAND AND INTERNATIONAL SCANNING

Navigator Network (www.morst.govt.nz/current-work/futurewatch/navigator/)

The Ministry of Research, Science and Technology started the Navigator Network in 2005. It provides 'early alert' advice about emerging science trends and innovations and explores those that may raise significant economic, social or environmental opportunities or risks. The Network brings together around 12 scanners with insights into the dynamics of emerging science and technology innovation and social change and supported by a wider network.

Australasian Joint Agencies Scanning Network (AJASN)

AJASN is a whole-of-governments approach to scanning for emerging environmental issues by gathering and analysing information about the global environment, with the intention of identifying significant emerging issues before they become critical.

The group focuses on environmental issues such as climate change, water, energy and social change, but extends its areas of interest to technology; knowledge, skills and innovation; and the 'one health' concept that considers animal, human and environmental health to be inextricably linked.



Figure 3 MoRST FUTUREWATCH report *Biotechnologies to 2025* (2005)

Benign climate

By the end of the 20th century, New Zealand had developed a range of futuring capabilities, but acceptance of the value of futuring by decision-makers was, however, the exception rather than the norm. The climate was shifted toward acceptance, in the State Services, by the State Services Commission's (SSC's) recognition of the need to give more explicit consideration to demands on, and the possible shape of the state services of the future (during central government's Review of the Centre in 2002).

A range of futuring activities resulted, from a straightforward normative trend gathering and collation, to light-handed dialogic approaches across the cohort of chief executives, to more organic approaches to building futures capability by leveraging the strong ties and connections across the New Zealand State Services. The SSC established a Futures Forum in 2003, which has now grown to around 170 members across the State Services. Its aim is to promote learning and networking, encourage debate and peer review, and cross-fertilise ideas on the development and use of futures work undertaken across the State Services. These initiatives laid the groundwork for a wide range of futures projects within government agencies, primarily, but not exclusively, scenario based.

Fertile soil

Around the same time that futures work was gaining a higher profile within the State Services, in local government a significant piece of legislation, in terms of creating a positive ecosystem for futuring, was introduced – which extended the minimum period for planning to a decade.

The Local Government Act 2002 requires local authorities to develop Long Term Council Community Plans (LTCCPs) as a key mechanism for delivering a sustainable future for New Zealanders and requires that the LTCCP must 'cover a period of not less than 10 consecutive financial years'.

Local authorities vary greatly in size and in the nature and quality of the resources they can draw on and, as a result, capability to undertake this long-term planning work has been variable. Some local authorities have moved to take a specifically futures oriented approach, rather than a planning approach with a 10-year time frame. Of these, two pieces of work, the 100-year *Long-Term Sustainability Framework for the Auckland Region* and the *Creating Futures Project*, took significant steps forward in terms of rigour of framing and developing community involvement (see Box 5).

Through these and other initiatives there was again a shift in the baseline acceptance of the value of Futures Studies, along with some growth in the capability and number of futures practitioners. Together with developments in the futures



field related to both community engagement and cultural critiques, they created a supportive environment for forms of futuring that allow a deeper examination of current frames of reference, and open up a wider range of possibilities by calling fundamental assumptions into question.

Phase 5: New shoots

In the first decade of the 21st century, New Zealand was a test bed for three pieces of futures work that were characterised by the explicit examination of myths and givens in order to make space for new plausible futures. Two of them included widespread grass-roots capability building and all three had a focus on developing futures literacy. We will examine each in turn then look at their combined impact.

Building Capacity for Sustainable Development (2000–2009)

Possible futures for New Zealand were explored specifically with the intention of understanding what futures would be heading in more, or less, sustainable directions. Within this, innovative tools were developed by which end-users could engage with the futures described. Of these one was a paper-based gaming technology¹⁰ titled '100% Pure Conjecture' (see Chapter 2). Landcare Research's target was enabling much more future-proofed cities and settlements by working with decision-makers/influencers and to make the results relevant to a wide audience. In 2004 with a team from government, academia and business, four contrasting future scenarios were created as a screenplay¹¹ and as a book.¹² This was achieved over a three-month period using a series of participatory workshops supplemented by expert input and reflection.

Box 5: LOCAL GOVERNMENT FUTURES

The 100-year *Long-Term Sustainability Framework for the Auckland Region*¹ (see Chapter 3) was New Zealand's first. It addressed institutional issues and long-term growth with a long-term framework to guide future plans and policies for sustainable development. It was robust in its context setting, compelling and, most critically, consulted the wider community. The long-term planning process defined and articulated the vision, principles and goals of achieving a sustainable region which links the local to the national scale.¹

The *Creating Futures Project* (www.creatingfutures.org.nz) (see Chapter 4) created tools to inform communities about the long-term effects of current development patterns and trends, and to enhance community involvement in choosing and planning for desired futures. It integrated economic information, social/population statistics and environmental data across the Waikato Region within a spatial model.¹

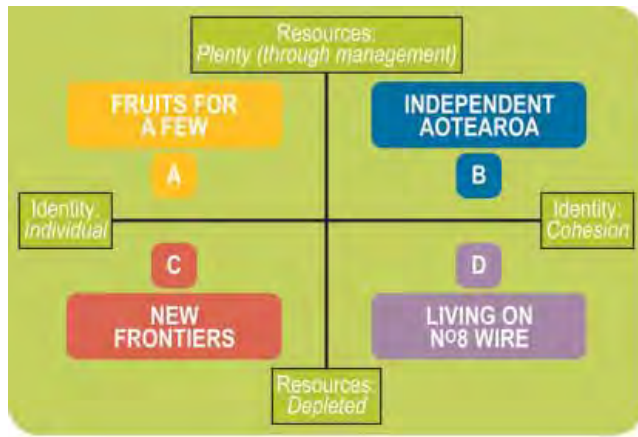


Figure 4 Landcare Research scenarios matrix as developed in 2007

None were predictions, none were favourites, though each was plausible and all contained storylines with positive and negative elements. They were used to stimulate considerable debate about the key drivers of change and future possibilities for the next 20–50 years linked across two axes of socio-economic and environmental characteristics. Use was made of material from the National Archives to illustrate the speed of change (or otherwise) in the previous 50 years. Graphic design and poems by national commentators created a visual text in keeping with the overall futures theme, while avoiding science-fiction and romantic back-casting, thought pieces.

While the process was independent of external influence and accepted as comprehensive and engaging, the scenarios created were similar to many others created globally at that time. None was clearly the authors' preferred or 'right' scenario. The research challenge was to establish how these scenarios could be used to enable a broad debate – regarding New Zealand's long-term future and its approach to sustainability – that was engaging while remaining impartial in terms of advocacy. The context for this was a New Zealand that was, in 2004, still deeply polarised between climate change sceptics and those who saw climate change as an opportunity for potential leadership in terms of global influence and a business opportunity in terms of new sustainability technologies.

As a result a participative process was developed to stimulate interest and debate in future directions for New Zealand, and to aid strategic-thinking. The process was made available to download. It involved groups discussing trends and descriptions

of future scenarios and examining their expectations.¹³ It was conducted with over 2000 people at 34 conferences and workshops held for various central ministries, local government authorities, business groups and community groups. This contributed to attitudinal shifts that increased engagement with the enormity of global change issues. There are also two other versions for specialist audiences: on biodiversity and for urban development.¹³ From a zero base, the team developed a strong network linking robust scanning of possible future developments with highly innovative ways of engaging end-users, including creative use of graphic design, archival images and facilitation approaches. It created longer term policy debate and support for other futures initiatives. The project came to a formal end in October 2009 and the various findings have been written up in this and other publications.¹⁴

Before discussing the various learnings it is important to consider the two other initiatives that took place during the same time frame using complementary technologies to stretch the boundaries of what could be attained.

Secondary Futures (Hoenga Auaha Taiohi, www.secondaryfutures.co.nz) (2003–2009)

Using futures methodology and a 20-year time frame, the purpose of this 5-year project was to have a wide-ranging conversation with New Zealanders about the future of schooling and to gather up their vision for a system that would make more students more successful. This was to be achieved through developing futures capability within and beyond the education sector. Other than this single outcome, it had no fixed goals or time frames. It was unique internationally, being fully funded by government, yet neither 'owned' nor driven by it. Its independence and integrity was overseen by four 'guardians' – four highly respected New Zealanders. The process of having the debate was itself an important outcome that could help provide a mandate for change. It produced a wide range of creative tools and papers to engage a wide range of interested people – mostly, but not exclusively, from the education sector. One of its most interesting features was its different modes and levels of operation. On the one hand, consciously building on the notion of futures literacy, it sought to use futures tools to engender energy for system change at a local level without trying to control the nature



Figure 5 *Work in Progress - four future scenarios for New Zealand (2005) - 1st edition*



Figure 6 *Work in Progress - four future scenarios for New Zealand (2007) – 2nd edition*

of that change, while on the other, it sought to gather up the consensus around the 20-year vision from the local conversations to guide decision-makers at the national level. The vision has provided signposts for policy development, a touchstone for communities and schools thinking about how they implement the new New Zealand curriculum and a greater sense for the sector of being on the same page. The project developed methodologies for agreeing on actions and ways forward by having future-focused conversations across diverse groups. These are also still widely used in the sector.

FutureMakers¹⁵ was an attempt, on a very modest scale, to make a space to open up the big questions facing New Zealand going forward over the next 20+ years and to explore them in ways which are not easy to do within today's normal processes. We did not aim for predictions but explorations of possibilities, a starting point for further work. FutureMakers was a first-stage collaborative project between three New Zealand institutions: Landcare Research, a Crown Research Institute; the Institute of Policy Studies, part of the School of Government at Victoria University of Wellington; and Secondary Futures, part of the OECD 'Schooling for Tomorrow' project, and an adjunct of the New Zealand Ministry of Education.

The FutureMakers partners were very clear that for New Zealand to position itself to understand and take advantage of all the choices available to it, there was a need to build more widespread futures literacy. Acknowledging the realities of the starting point, (pre- or on the threshold of Level 1 Futures Literacy), they saw the need for action to build a greater and more widely shared understanding about opportunities and challenges over the next two decades and beyond, as well as the anticipatory capacity needed to engage with the revealed possibilities.

There was a need to create opportunities to engage in thoughtful and well-informed conversation that opened up the ground beyond the immediate future and beyond today's ways of thinking and doing. There was a need to develop the infrastructure and capability, in the first instance, for having these conversations within a wider chronological and conceptual frame. On the one hand, achieving these aims clearly called for an experimental and theoretically based approach to 'futures discovery'. On the other hand, there was a strong set of expectations and needs, deriving directly from the empirical context, to be fulfilled (and, as always, with limited resources, including time). The project had to negotiate the territory between the two realities: to deliver in a way that was perceived useful to today's needs in today's frame (getting some quick runs on the board, in common parlance); but to leave enough space open for some different approaches that would move beyond predictive endeavours and traditional forms of reporting.

The response was, firstly, to frame the project broadly as 'a series of resourced conversations' where the endeavour was as much about process as about product, and to resist definition in the overall promise:¹⁶

'The project will bring together information and people in ways that illuminate the opportunities, challenges and the big questions facing New Zealand for the next 20 years, so that New Zealanders can choose to shape their future.'





Figure 7 Two of the Thought Starter cards from the set of ten devised as part of the FutureMakers project (2008) available at <http://futuremakers.ning.com>

Generally in futures work, people publish their polished findings; sometimes they publish their trend and input data. More often than not, they keep out of sight the part where the real work of integrating information and imagining happens iteratively. Sense-making and surfacing the cross-cutting issues are messy (see Chapter 19). The products of this phase are always incomplete and contradictory, full of gaps, and raise more questions than they answer. They are unnerving and destabilising. There is often low tolerance for this sort of product, especially in the public domain, and particularly in the policy arena.

By posting not just the raw meta-analysis, but also the raw accounts of the conversations in which the experts tested the meta-analysis findings, on the FutureMakers website (<http://futuremakers.ning.com>), we hoped to create a new platform for discussion of both content and modes of acquiring Level 1 capability in futures literacy. As we moved into the exploration of connections across domains and started to unearth a rich multiplicity of stories and their underlying myths, we wanted to capture this sense-making in ways that were accessible. Neither a standard report, nor a standard set of scenarios would have met these criteria. We wanted products that in their nature signalled a permanently unfinished, open-ended process.

Our solution was to devise a set of cards¹⁷ that explicitly emphasised the story-telling, narrative nature of the activity. Each card had a back story, now story and next story and posed next questions rather than conclusions. Across the stories

there were gaps, overlaps and contradictions. Dominated by an image rather than their text, each card opened up space for individual engagement with elaborating or changing the story. As a set, they resisted reinscription into a contiguous, coherent whole, or the privileging of one 'story' over the others. They were, in essence, a litmus test for the tolerances of the New Zealand decision-making environment for non-predictive futures products.

LEARNING ABOUT FUTURES LEARNING

Together, then, these three initiatives continued the tradition of futuring in New Zealand and were successful in bringing new insights and innovations to bear. Less clear is the extent to which these have, like their predecessors, will have an enduring impact. Similarly it is not yet clear what form a natural successor should take and how that should be structured. There is now significantly more interest globally in sustainable development issues and how these might impact on individuals, companies and communities. A 'perfect storm' of global change processes is approaching and many commentators are suggesting that there is increasingly little room to manoeuvre. However, in a post-recession New Zealand, the focus is more often on economic recovery than long-term sustainability and constraints on the public purse make the prospect of large think-tanks and grand projects unlikely. It is therefore important to understand what has made these futuring ventures successful and what next steps might be the most productive in the current environment.

In reviewing our learning from these futuring exercises that straddled different modes of operation, we were interested to note that working at multiple levels, with communities, with regional officials and with central decision-makers, appeared to be more effective than working with just one stratum. In the FutureMakers project, both the more and the less conventional products (the meta-analysis and the thought-starter cards respectively) yielded interesting insights about both futures literacy levels in New Zealand and effective tools for further building capability.

The meta-analysis, while acknowledging the conventional expectations that futures work should start with trends, yielded unexpected value back to the endeavour of raising futures literacy. The product demonstrated a startling degree of congruence across trend data, areas of focus, and assumptions in the New Zealand futures work. Instead of reassuring people that the factual contents were correct, producing this evidence of congruence opened up discussion across the community of futures practitioners about why there was so little challenge to generally accepted views about trend direction and speed and the inherent risks in this situation, and even among some, the limits to the value of trend data.¹⁸ It may be part of the learning process that people have to experience the limitations of data to be able to let go and swim without them. This may, ironically, depend on presenting the data about trend data and allowing people to confront the right questions about their value in an appropriate context.

In contrast, the story cards, which were a very gentle challenge to preconceptions about futures products, caused in some quarters a sense of bafflement and in others a sense of disappointment in the lack of 'answers', and in yet others were immediately working well as tools for assisting policymakers to widen their frame for contemplating questions about New Zealand's future. It is important to recognise that even for those who expressed bafflement, having the experience of being disconcerted was part of getting started in futures literacy, of developing greater awareness of change over time and confronting – often tacit – assumptions of how the future will unfold.

The diversity of responses suggests the importance of constant experimentation in ways to frame this capability-building context for decision makers and designing products of futures work that are simultaneously accessible and inherently provide the challenges that stretch minds and mental frames.

If futures products need to strive to be challenging and accessible at the same time, then decision makers also need to strive to equip themselves to receive and use them, otherwise the benefits to be had from foresight in terms of more deeply informed decision-making will be lost. This means decision-makers must constantly challenge their own frames of reference, processes and assumptions

To achieve this there is a need for mechanisms to create greater and ongoing engagement in debating future possibilities. This is especially urgent given the need to generate creative ideas, beyond today's conventions, to address needs and spot and develop opportunities for New Zealand.¹⁹ To achieve this, certain developments seem necessary:

- An institutional landscape equipped to handle uncertainty where stakeholders can draw on futures literacy to respond to changing external pressures and where solutions reside across agencies, both public and private
- Widespread capability to accommodate both short- and long term-views (including end-users strategic thinking capability)
- A critical approach that ensures insight into the values and assumptions that structure the present

Central to its success will be the role of myths.²⁰ The extent to which individuals understand that myths structure their world view, and can articulate and examine those myths, will determine the extent to which they can be enablers of change as well as constructs that can hinder. This means not accepting historical myths at face value but delving into them and understanding them. This needs both personal insight and institutional support to challenge existing myths, in processes that enable trust and permit risk.



FINALLY... AN INVITATION TO PARTICIPATE IN THE FUTURE

During the FutureMakers project we explored a set of myths about the New Zealand future. To encourage discussion around the topics a series of cards were produced as shown in Figures 4 and 7.

You are invited to look at these cards and think about your own version of these stories. What challenges them? How would you tell the story differently? If you have thoughts on this then please get in touch and let us know what you think.

Of course these are only stories developed at a single point in time and they will change. You will have quite different views in the future on what is important and how things might unfold.

What other stories need to be told? Do you have ideas about how these could involve others in their telling?

Do let us know and we will try to involve your thoughts in our research.

It's all about the future.

WANT TO FIND OUT MORE?

Contact buildingcapacity@landcareresearch.co.nz

For the Author's contact details see page ii

ACKNOWLEDGEMENTS

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100% Pure Conjecture

Future Scenarios

CHAPTER 2: HATCHED

Rhys Taylor and
Bob Frame



Summary

- A Future Scenarios game has creatively engaged New Zealanders in thinking about the future. People can step 20 and 50 years forward in time and then relate this experience to what is happening today.
- The game is based on four scenarios that were developed to explore the future of New Zealand society.
- Over 2000 people have participated in the game at conferences and workshops. They include local government organisations, tourism operators, conservationists, policy makers and community groups. It has been adapted for many interest groups and situations.
- Use of the scenarios and game in developing strategy around sustainability issues is an area of future research.

PLAYING WITH THE FUTURE

Hundreds of New Zealanders have taken part in a scenarios game that places them 20 years, and then 50 years, into the future. This game prompts people to think differently about the future. It enables them to step beyond everyday pressures and short-term concerns. Participants can take on roles, such as a grown-up grandchild in an occupation different to their own. By engaging with future possibilities, they can consider their experience of changes that may not happen for many years. For some, the game could generate a transformative moment, such as a grasp of what an abstract concept like 'sustainability' may mean.

FOUR FUTURE SCENARIOS

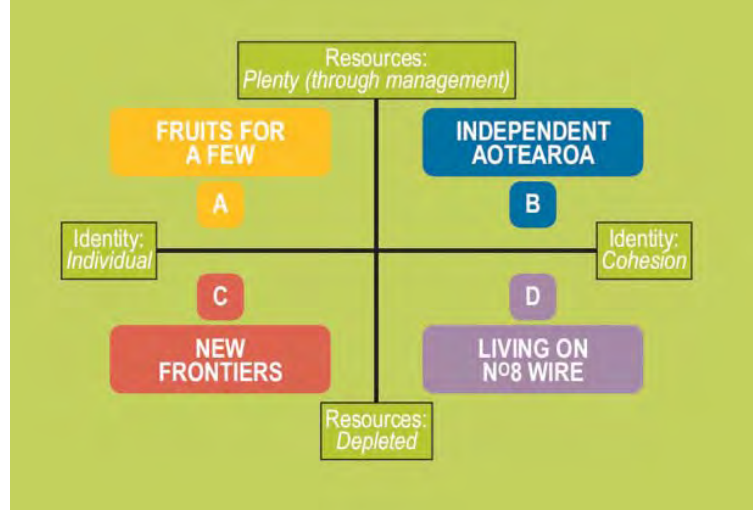
The game is based on detailed scenarios that Landcare Research developed with a team of participants from central government agencies.¹ These scenarios were initially developed in 2005, with a second edition in 2007 and an urban variation in 2008.²

The scenarios, shown in the diagram below, differ from each other according to the:

- extent of social cohesion (from competitive individualism to social collaboration)
- state of ecosystems and availability of natural resources (from conserved to depleted)

Each scenario diverges from today, so that in fifty years hence they resemble:

- An open economy with protected ecosystems but unevenly-distributed benefits: 80% of resources in the hands of business-political elite and 20% with the rest.
- A more closed economy and equitable society, with national efforts to improve a GPI (Genuine Progress Index or Indicator³) taking the place of GDP (Gross Domestic Product).
- A globalised open economy where winners prosper, until New Zealand hits a wall of resource shortage and ecosystem pollution. This results in a severe economic crash and social conflict.



The Four Scenarios

- After initial resource depletion trends (along the lines of C), strong social networks help to avoid the resource crash, creating a localised, inward-looking subsistence lifestyle.

HOW DO THE SCENARIOS DIVERGE?

All four scenarios follow broadly similar demographic changes over 50 years. These include an ageing population and relatively faster growth among Maori and Pacific families than Pakeha families. They differ a little in their inward and outward migration flows. Some global influences are common to all, such as more expensive fossil fuels and the effects of climate change, but the human response to these stressors varies between the scenarios.

The scenarios differ economically in the extent of global trade and tourism connections, uses of new technologies and reliance upon commodity exports. However, these are not statistical forecasts that project historic trends. The scenarios are a stimulus to creatively explore possibilities around existing 'signals' in society. They are not science fiction. They are plausible extensions or outcomes of discernable and competing social-economic trends that are detectable in New Zealand today.

A review of the scenarios in *Future Times* describes them as: "Robust stories that reflect the community we are now and might be in the future. None are what might be considered the worst or best possible outcome, but each includes positives and negatives that are realistic possibilities, given our present knowledge." None is "right" or "wrong"; none is a future forecast. Rather, they are all plausible alternative future states against which we can test our organisational strategies and policies

THE VALUE OF SCENARIOS

Scenario concepts, including the game, may be used in various ways:

- A narrative starting point or conceptual framework for *modelling future societies*. They can provide explicit assumptions for developing quantitative population, resource and economic models. A first version of this modelling has been developed by the New Zealand Centre for Ecological Economics, and published in Section 4 of the *Four Future Scenarios* book (2007)⁴
- A starting point or group-forming activity, identifying *desirable and undesirable vision(s)* of the mid-term future for an organisation, company, town or local government region. From this starting point, a back-casting process can take the work further, identifying steps required in the intervening years, towards the desired future. In New Zealand local government, for example, it could connect with the process of public review of Long Term Council Community Plans.
- An aid to *risk analysis, or future-preparedness* in business and government. For example, they can be used when facing uncertainty in designing long-term, resource-

intensive investments such as electricity generation, energy grids, road tunnels, airports and other communications infrastructure. Decision makers can consider in which ‘futures’ this infrastructure will be most effective, and in what circumstances it could become unviable or irrelevant.

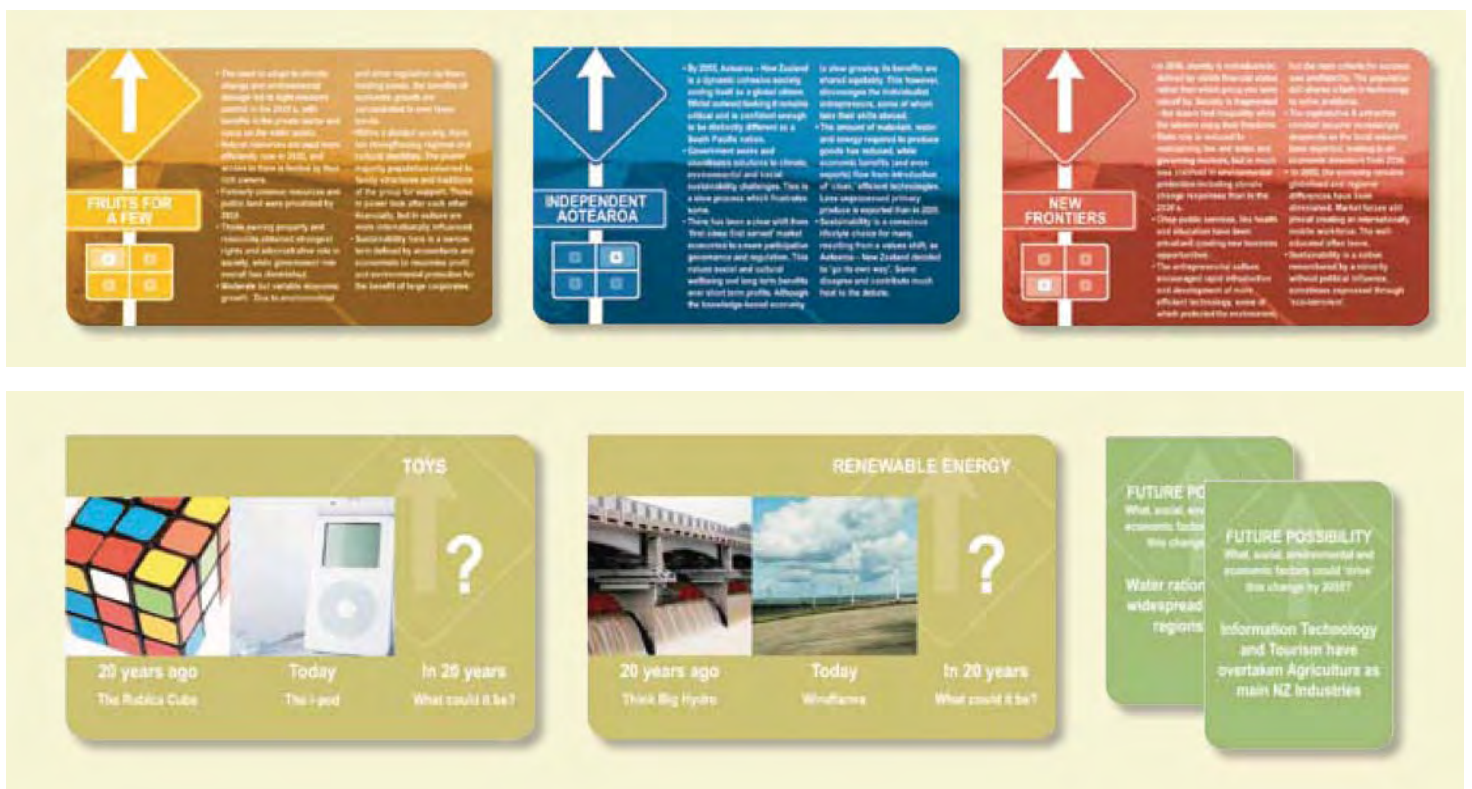
- A stimulus for personal reflection and, for *educational use* in groups. The relative appeal of these scenarios to readers differs between cultural groups and political perspectives. Playing the game prompts discussion about today’s society and its competing values, by focusing attention on some aspects that can be expanded into a future setting. A well-prepared teacher or facilitator has a key role to play here.

WHAT DOES THE SCENARIOS GAME INVOLVE?

The game is designed for gatherings of 16 or more people. It includes:

- a warm-up activity that looks back 20 years, using photos to show how much has changed recently in everyday life and inviting discussion of trends

A small selection from the Scenarios Game: role cards, recent trends, future possibility cards and ‘wild cards’.



- future possibility cards, to open discussion on new drivers of change
- a diagram showing key driver variables that distinguish the four scenarios (discussed above) and descriptions of the scenarios
- role cards, for what a future grandchild might be doing in 50 years as an adult
- wildcards (e.g. earthquakes and technology shocks), to test the resilience of the scenarios.



Chinese residents in Northcote use the scenarios game.

The full game kit is available on Landcare Research's website and includes notes for facilitators.

TAKING THE FUTURE BACK TO THE PRESENT

Researchers have used the game to examine New Zealanders views on the current direction of their society and their preferences for the future. Participants in the game were asked to identify the direction that they think New Zealand is currently taking and how this compares with the four scenarios. The chart below shows their responses.

Most game participants suggested that the current direction of New Zealand's society and economy is moving towards greater individualism and unsustainable exploitation of natural resources. Those same people reported a personal preference for travel in an opposite direction. They favoured more social collaboration rather than competition, and the conservation of New Zealand's ecosystems and resource base. The game thus provided a good discussion starter on sustainability themes and preferred futures, by presenting four contrasting futures for consideration.

FIGURE 5 Game Participants' Desired Location for NZ in 2055

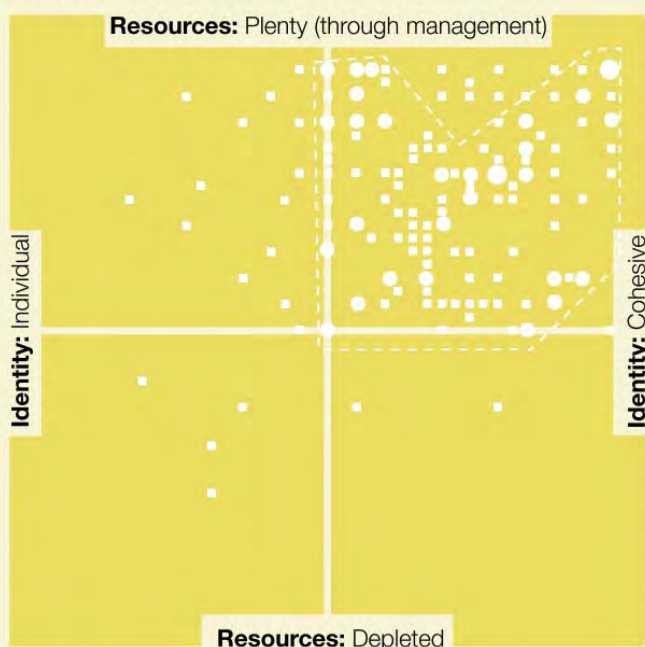
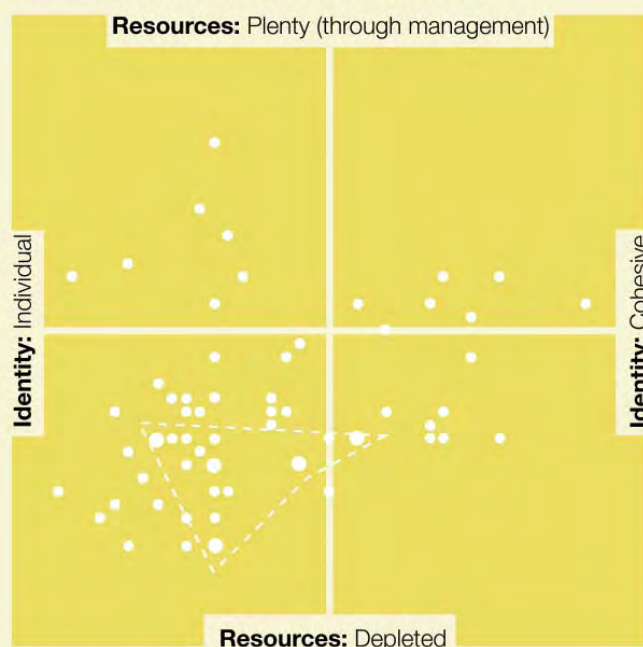


FIGURE 6 Current Trend Direction from 2006 (starting near the centre)



WANT TO FIND OUT MORE?

Contact buildingcapacity@landcareresearch.co.nz

For the Author's contact details see page ii

KEY PUBLICATIONS AND WEBSITES

The game resources, available for free download: <http://www.landcareresearch.co.nz/services/sustainablesoc/futures/>

The Four Future Scenarios book, available for free download: <http://www.mwpress.co.nz/store/viewItem.asp?idProduct=541>

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Published January 2010



Landcare Research
Manaaki Whenua

Development of the Auckland Sustainability Framework

CHAPTER 3 : HATCHED

Bob Frame, Claire Mortimer
and Sebastian Moffatt



Summary

- The Auckland Sustainability Framework (ASF) was created to provide direction to public sector strategies and plans within the Auckland Region. The framework has a 100-year planning horizon and is underpinned by sustainable development principles.
- The ASF is a unique example of sustainable development planning, developed over 15 months as a joint venture between all councils in the region and central government, with input from the academic, social and business sectors and iwi. As such it offers valuable insights into how sustainable development planning may unfold.
- The ASF and the participatory process it undertook stretched the thinking of many participants particularly in appreciating the rate of change the region will face over the next decades and the challenges these changes represent. It was also recognised that shifts from 'business as usual' were needed in the planning, design, and management of the region to meet these challenges and ensure the region's long-term success.
- Some participants considered the ASF an exemplar of an adaptive management process, while others felt the participatory process diluted some elements of, potentially radical, reform.
- As a 'living document' the ASF represents a paradigm shift in planning by providing a sustainability lens to consider public investments. However, to ensure that it genuinely guides public decision-making, its goals and shifts will require targets and progress monitoring, and council staff, stakeholders and the public need a programme that develops understanding of the ASF and the sustainable development concepts and values that sit behind it. Without this the ASF may not become firmly embedded within the region's new governance processes.

CONTEXT

A key element of sustainable development is the emphasis placed on long-term decision-making and impacts on 'future generations'. Many public decisions have generational impacts, for example the Auckland motorway development in the 1950s provided greater housing options for Aucklanders at the time, but also contributed towards Auckland's low density urban form and many of the environmental impacts and infrastructural costs Auckland faces today.

Public agencies therefore need to identify and address the long-term implications of their decisions. This is no easy task. As the rate of change accelerates due to the combined impacts of, for example, changing world views, new technologies, climate change and global resource depletion, decision-makers are required to operate in a climate of increasing uncertainty. If we look out further than 20–30 years we are, arguably, operating within a context of deep uncertainty. The purpose of thinking about the future therefore is not to predict precisely what will happen, but rather to be able to consider and prepare for a range of possibilities.

In this chapter the development of the ASF is reviewed as an innovative example of integrative long-term planning, which took place over a 15-month period in 2006–07.

Auckland is home to over 1.3 million people, about one-third of the national population. The region's population grew by 12.4% between the 2001 and 2006 censuses. Auckland is characterised by ethnic diversity with just over one-third (37.0%) of the region's residents born overseas.

Auckland Region's lifestyle and employment opportunities continue to attract new inhabitants but there have been drawbacks in such significant growth, namely a lack of cohesive and effective approaches to ongoing transport problems and concerns about the pattern and nature of urban growth. As a result the Auckland Regional Growth Forum (RGF) was established in 1996 as a co-operative forum of political representatives from the Auckland Regional Council and the region's seven territorial local authorities in order to develop and implement a strategy for managing the direction and effects of urban growth.



NEED FOR A COLLABORATIVE, REGIONAL-SCALE PROCESS

The interconnectedness of national and local Auckland issues, such as housing and education, with rapid population growth and the major investment required, created the need for complex and difficult decisions among multiple authorities. Considering Auckland's importance to the New Zealand economy, and areas of common interest such as transport and energy provision, central government had not taken a close role in directing regional and local government planning. Concern emerged that without agreement on an overarching regional strategic framework, decision making in the region could be ad hoc and adversarial if each stakeholder tried to influence outcomes from their own perspective, without cognisance of the region as a whole. As a result there was a clear need for coordinated strategic planning across the Auckland Region to ensure that Auckland could compete as a 21st-century city. This was responded to by the preparation of a regional growth strategy (2001) that aimed to provide a vision for what Auckland could be like in 50 years and which was backed up by a spatial growth plan and a legislatively binding metropolitan urban limit.

In parallel to the work on a regional growth strategy, a three year Auckland Sustainable Cities Programme (ASCP) was initiated in 2003. In 2006, as a result of the ASCP, the eight local authorities (Auckland City, Auckland Region, Franklin District, Manukau City, North Shore City, Papakura District, Rodney District, and Waitakere City) in collaboration with central government, at the instigation of their Chief Executives' Joint

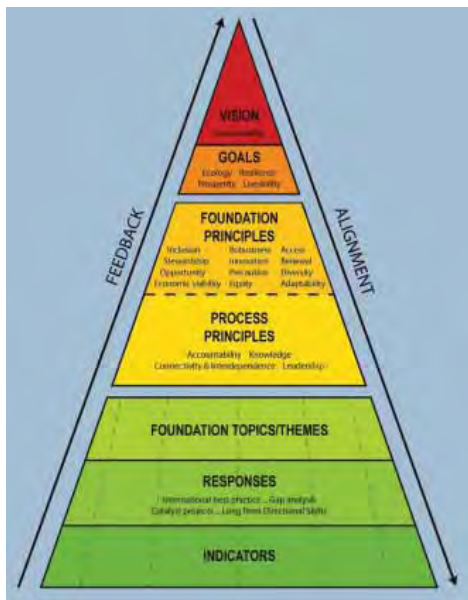


Figure 1 Prototype framework

Forum, engaged with central government to develop the long-term sustainability framework that eventually became known as the Auckland Sustainability Framework. Initially termed START (Sustaining the Auckland Region Together), it attempted to evaluate ‘forces’ that might play a more significant role over the next 100 years in Auckland, develop a vision and set of goals to align government effort, and create shared strategic directions. The purpose of the framework was to provide direction to regional strategies such as the RGS and Regional Land Transport Strategy, the eight councils’ Long Term Council Community Plans, and significant public sector decisions in the region.

MAKING A START: GATHERING INFORMATION

The START working group (comprised of representatives from Auckland’s local authorities and central government) developed a prototype framework with a cascading set of deliverables (see Figure 1). The prototype drew heavily on the Vancouver ‘Cities Plus’ model.¹ Critical to shaping of the framework was consideration of the ‘forces’ that could shape Auckland’s future over the next 100 years, namely:²

- *Climate change and natural hazards.* Auckland will experience more extreme weather events and gradual changes to sea level rises, which will result in increased exposure to storm surges and inundation of low-lying coastal land. More critically, the widespread global consequences of climate change such as climate change

refugees and the global economic costs of climate change will ultimately impact New Zealand.

- *Resource availability.* This is a key global issue that will almost certainly result in international conflict particularly around water, oil and food. Auckland is comparatively well placed for resilient water but is highly reliant on cheap sources of oil for its transport and much of its economy including its primary sector.
- *Demographics.* The growing, ageing and more ethnically diverse Auckland population will require more and different infrastructure and services in the future. Social cohesion may become an increasing issue due both to growing ethnic diversity and increasing geographic concentrations of social deprivation. The region might come under pressure to accept higher numbers of immigrants due to global climate change impacts.
- *Technological transformations.* One of the biggest areas of uncertainty lies in where technology will take society. Auckland’s ability to innovate and embrace new technologies is seen as critical to its future success and sustainability.
- *Worldviews.* Moving towards a sustainable society will, however, require more than new technology. World views and the values that underpin them shape what is possible. A transformation of social values away from short-term reward to longer term legacies may be critical for Auckland’s future.
- *Globalisation.* Cities rather than nations are increasingly being seen as the driving forces behind the world economy. How well placed is Auckland, as New Zealand’s only large city, to compete globally?

Questions were asked of how well equipped the region was in achieving desired goals in light of these forces. A critical insight from the analysis was that the region would face exponential change, much of which would be hard to predict and that a key response, therefore, would be to build resilience into urban, social and economic systems in order to respond to a range of possible shocks and unexpected change. The idea of building resilience as a future-proofing response continued as a key theme eventually being built into the ASF’s definition of sustainability (Box 1) and into its infrastructure goal.

Significant to the development of the ASF was the involvement of 'expert groups' including academics and experts from the business and community sectors, who through facilitated workshops developed seven papers on key themes identified in the prototype framework, namely, the built environment, urban form and infrastructure, energy, economic transformation, social development, cultural diversity and community cohesion, and environmental quality.³ Each group deliberated around four 'sustainability principles' – resilience, prosperity, liveability and ecology – and considered how the themes would be influenced by the six forces of change.

In August 2006 a 3-day design workshop enabled 140 representatives from local and central government and the community and business and research sectors to contribute expertise and perspectives into further developing the draft 100-year framework.

The workshop used a 'charette' format, which is a process where ideas emerge and evolve quickly. It is an interactive process that harnesses the talents of a range of parties to resolve planning challenges and is mostly used in engaging stakeholders and communities in the design of local (often neighbourhood or town centre scale) planning.

box 1: THE ASF DEFINITION OF SUSTAINABLE DEVELOPMENT

The concept of sustainability that lies at the heart of this framework is expressed through:

- Anticipating future challenges and opportunities
- Working within ecological limits
- Acknowledging social, cultural, environmental and economic interrelationships
- Learning from the past, enhancing Auckland's current well-being, and creating a positive and enduring legacy
- Developing a resilient region that can adapt to change by building strong communities and robust ecological systems, and designing flexibility into our economy, infrastructure and buildings

box 2: PARTICIPANT RESPONSES FROM THE EXERCISE ON MANAGING RESOURCES AT DIFFERENT SCALES

'The scale model works well for social issues – issues affect individuals, groups, society in different ways and we have to understand this.'

'We need local solutions which resonate with local people but are integrated to build the whole.'

In this case the tangibility of a single neighbourhood urban design was replaced by the more conceptual future planning of a region. This posed challenges in engaging participants and in developing concrete outputs that could be directly used in the framework. The charette therefore took on the form of a series of mini workshops aimed at participants increasing their understanding of the insights from the forces and the theme papers, approaches to long-term visioning and planning, looking at how different resources can be managed at different scales, understanding urban settlements as systems and applying the understandings gained from these to town and city centre development. The charette therefore became a capacity-building exercise whereby, over the course of 3 days participants learnt and applied new ideas on urban sustainability.

Participants came from very different walks of life and had very different perspectives. Several people commented that it took the three days to 'learn each other's language' and find commonalities as well as differences in each other's aspirations for the region.⁴ Challenges arose when some (often high profile) participants joined in only for very brief periods of time, as this required them to be brought into the process without disrupting it.

As a result of feedback and wider strategic discussions following the charette, the framework was then further developed to include:

- Eight 'shifts from business as usual' as a key component of the framework

- A stronger focus on the social aspects of sustainability
- The addition of leadership and goals for Māori
- A revised version of a regional vision developed by a youth forum
- Development of a draft set of indicators
- Development of the process and tools for applying the framework

DEVELOPMENT OF A PARALLEL MANA WHENUA FRAMEWORK – (TE KOHAO O TE NGIRA)

In a linked but parallel process a working group representing the Māori tribes (New Zealand's indigenous people) of the Auckland Region developed their own collective long-term framework – the Mana Whenua Sustainability Framework (2008) later named Te Kohao o Te Ngira. The Sustainability Framework and Māori working groups built bridges between the two frameworks, including a basic common structure, common analysis via the forces and theme papers, and a Māori goal in the ASF.

The Mana Whenua working group challenged the Brundtland definition of sustainability as maintaining an unacceptable status quo in which Māori would remain a deprived segment of New Zealand society. This led to the development of a specific definition of sustainability for the ASF outlined in Box 1 and

more specifically its fourth bullet point: *Learning from the past, enhancing Auckland's current well-being, and creating a positive and enduring legacy.*

The Mana Whenua (Te Kohao o Te Ngira) Framework went on to develop a specific concept for sustainability expressed below.

The Mana Whenua view of sustainability is anchored in a world view built on a holistic philosophy that recognises values and treasures everything's and everyone's interconnectedness. Stories, traditions, philosophies and values passed down from generation to generation underpin this world view. These traditions have combined to shape the Mana Whenua world view and their understandings and relationships with the natural world. They act to reinforce the various relationships between the land and people and will continue to do so for the present and future generations. Mana motuhake is the term that best describes Mana Whenua's concept of sustainability, as it focuses on the essence of those relationships between the land, people and atua. It is about self-identity, self-sustainability and self-determination at a whanau, hapū and iwi level. Mana motuhake encompasses creation (mana atua), the land (mana whenua) and the people past-present-future (mana tūpuna/mana tangata). The quality and effectiveness of how we care and give regard to these relationships will determine the quality and effectiveness of sustainable outcomes.⁵

The work undertaken in bringing iwi together to consider the long-term development for Māori in the region resulted in the establishment of a regional iwi forum, Tamaki Regional Mana Whenua Forum on 29 October 2009. The forum aims to

- act as a coordination point for tangata whenua
- act as an integration point for tangata whenua, local and central government
- deal with regionally significant issues, creating a distinction between rohe (regional) and takiwa (local) issues⁶

To date a number of regionally significant matters such as the region's 'One Plan', the Auckland Regional Policy Statement Review and the Rugby World Cup 2011, have been taken to the Forum by ARC and other agencies seeking tangata whenua input, collaboration or direction.



The Mana Whenua (Te Kohao o Te Ngira) framework is being used as a consistent compass and filter by many iwi trusts and Māori council staff when undertaking formal iwi consultation processes.⁵

STAKEHOLDER CONSULTATIONS AND INTER-AGENCY COORDINATION

Project governance was set up through a council officers' steering committee, sponsored by the Chief Executives' Forum responsible for final sign-off of the framework. Consultation with stakeholders and the public took place (February to May 2007) with 19 workshops and around 200 participants plus written submissions from several individuals, four organisations and the two neighbouring regional councils. A revised version, now termed the Auckland Sustainability Framework, was endorsed in September 2007 by the RGF after being endorsed separately by all member councils.

It also received high level support from central government via the then Minister for Auckland Affairs. The ASF's goals and vision were consistent with central government priorities and it was seen that the ASF would provide a tool to review how national policies would impact on Auckland and provide a means for integrated planning between central government and the Auckland councils. However, it was also recognised that better understanding was needed to understand how goals would be achieved and what indicators would be needed to assess progress.

The ASF is primarily to guide and align regional strategies and council plans, and the process of developing a framework was therefore highly inclusive, with many conversations feeding into the framework. The RGF, for example, facilitated region-wide discussion and joint political decision-making and a councillors' reference group provided political direction and support. As stated earlier, a key collaborative element was the relationship between central and local government with common governance elements, primarily through the Government Urban and Economic Development Office, including a joint commitment to developing a shared long-term view of a sustainable Auckland.



Figure 2 Key elements of the Auckland Sustainability Framework

THE FINAL FRAMEWORK

The final adopted framework (figure 2) comprised of:

- Identification of key sustainability challenges that the region will need to address
- A 100-year vision
- Eight long-term goals
- Eight shifts required from current business as usual to meet those goals
- Suggested strategic responses (actions to implement the framework were to be developed through the strategies and plans the framework guided)

The ASF was expected to develop after its adoption:

- A measurement framework and monitoring process
- A toolkit to apply the framework to strategies, significant decisions and plans and integrate regional planning

The framework's role is to:

- Align existing regional strategies and projects; e.g. the Regional Growth Strategy, the Regional Land Transport Strategy, the Auckland Regional Economic Development Strategy, local authorities' LTCCPs and significant investment and decision making
- Align future regional strategies and projects
- Guide the development of the regional 'One Plan' that prioritises a range of key public investments for the region

- Provide methods to adapt business-as-usual (e.g. local councils' 10-year Community Investment Plans)
- Identify strategic responses that must be undertaken to achieve sustainability goals

As stated in the document, 'It will provide direction so that our local authorities and central government agencies can work together with a common purpose to embrace the opportunities and face the challenges associated with developing a truly sustainable region.'

ASSESSMENT OF THE ASF PROCESS

Did it create new thinking?

The ASF, and especially the participatory process it took, stretched many participants' thinking in terms of:

- Recognising that the world and Auckland were going to experience exponential change over the next 50 years and we have limited time to prepare for those changes
- Needing to shift many of our business as usual practices so as to respond to those changes
- Expanding understanding of what sustainable development means especially through bringing a Māori perspective into the framework

The ASF was not intended to be about 'business-as-usual' but

about doing things differently. As an adaptive management process it was considered by some as an exemplar of adaptive learning with, for example, one senior executive stating: 'The framework encourages ongoing engagement and dialogue on the issues relating to the future sustainability of the Auckland Region'. Some also believed it set a standard in ways to involve a wide range of stakeholders in the development pathway of the city through an inclusive, information-driven development process. However, for some the participatory process had diluted some elements of, potentially radical, reform, while for others it was a heartening example of being a party to a joint document. This is not too surprising as, in the process of 15 months, there will be a dynamic towards a negotiated middle ground in some instances and areas of agreed trade-offs in others.

The process generated plenty of debate. One example was the tension between an ecological paradigm that there are limits to growth and the economic paradigm that Auckland must have sustained and increasing economic growth. Another example was concerns by some over the amount of Māori focus in the framework. The later debate appeared to reveal different people's perspectives of 'rights'. Proponents of a Māori focus argued for the indigenous rights of Māori to be distinguished within the framework. Others argued that if Māori were distinguished so should other cultures be, i.e. cultural rights superseding indigenous rights. Other proponents of a Māori focus took a human rights perspective – Māori should be there because they are disproportionately deprived within New Zealand society. In the end Māori remained a focus in the ASF, and as stressed by the Mana whenua working group, the Māori goal is framed as one of cultural strength and opportunity for New Zealand and not one purely addressing deprivation within the Māori community.

Did it provide robust analysis?

Although a range of experts developed theme papers for the charette, there was agreement that it was difficult to obtain reliable information that enabled considered judgements about developing long-term policy. Couple this with the lack of conventional targets and indicators (at the time of writing), and the ASF is open to criticism as a high level policy that lacks mechanisms of accountability. And it is in this area where the





ASF will be tested as an agent of genuine change. Indicators developed through a framework toolkit will provide a genuine insight into the region's attempt to be truly sustainable.

Has it been well embedded into the councils' decision-making?

The overall process created considerable buy-in at both political and administrative levels with the resulting framework being owned by all parties. However, there has been considerable change in political representation at a local and national level since the adoption of the ASF and many of Auckland's new political representatives were not involved in the ASF's development.

The rapid turnover of key individuals, in combination with changes to national policy, suggests that frameworks such as the ASF need to be well embedded in its councils and strongly supported by its public if they are to survive as intended. An ongoing programme of 'winning hearts and minds', an identified work-stream of the ASF, is required to continue exploring sustainability concepts and futures issues with the both councils and public. 'Winning hearts and minds' acknowledges the importance of a social learning process.

While the ASF was adopted as a guiding framework by councils in the region, no hard targets or threshold performance levels have been set for plans and strategies to meet. Without this the ASF may become a useful tool and aspiration by some parties and something simply to ignore by others. The new national government is currently restructuring all eight local government bodies within the region into a single unitary

council, and it remains to be seen whether this new council will adopt the ASF as the region's guiding framework.

Despite rapid political turnover, the framework has been used successfully to develop a collective investment plan referred to as 'One Plan'. It also has been used by local councils to guide strategic planning, including Manukau's 2060 strategic framework and Waitakere City Council's social strategy. As discussed previously the Mana Whenua Framework has been extensively used as a consistent lens for Auckland iwi in formal consultation processes and when providing technical advice to councils.

CONCLUSION

As an indicator of genuine progress, the ASF is seen as having 'great potential' to work as an 'additional lever for integrated thinking'. As a 'living document' it represents a paradigm shift in thinking and will, as noted above, be subject to the need for ongoing renegotiation and development. It will be important for the Auckland Region to not just monitor and review the ASF's impact over time, but also to establish processes for social learning and adaptive management.

Long-term sustainability frameworks, such as that developed in Auckland, have a growing place as new technologies emerge that support a shift to sustainability. However, the level of commitment in terms of time and energy and the hazards of messy collaborative approaches should not be underestimated. Successful frameworks are unlikely to develop behind closed



doors or over a weekend retreat. They will require extensive consultation in which conflicts need to be aired and managed (not necessarily leading to resolution through consensus) and where simple trade-offs may not be feasible. New partnerships need to be brokered and innovative processes developed to counter current unsustainable practices. Implementation is unlikely to be quick or easy and its quality may well be fickle and undetermined for much of the process. Conversely it is difficult to conceive of successful transitions to more sustainable practices without such a framework being developed (and frequently redeveloped). As such there is an interesting research seam opening up for both comparative and longitudinal studies to take place in a wide range of jurisdictions.

Much of this links to more theoretical work on Wicked Problems⁶ (see Chapter 19) and New Zealand's futures (Chapter 1). Sustainable development and its requirement to plan for the long term in an integrative way plan require new approaches and new forms of technology to research and

practice. While challenging these should offer New Zealand an opportunity to pilot and excel at innovative processes that will have international significance.

Bob Frame works for Landcare Research and undertook interviews with participants within the ASF process. Claire Mortimer was the ASF project leader for the second half of the ASF's development Sebastian Moffatt designed and led the ASF Charrette and led Vancouver's Cities Plus regional strategic framework, which was instrumental to the development of the ASF.

WANT TO FIND OUT MORE?

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Landcare Research
Manaaki Whenua

Creating futures

Integrated spatial decision support
systems for Local Government

CHAPTER 4 : HATCHED



Daniel Rutledge,
Liz Wedderburn,
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Summary

Tools that incorporate and integrate information and knowledge from different disciplines can greatly assist policy development of today's complex and interconnected issues and result in better informed decision-making. An Integrated Spatial Decision Support System (ISDSS) forms part of an overall process that links qualitative scenarios and deliberative methods to quantitative systems modelling. Its aim is to:

- Inform strategic planning
- Communicate and inform stakeholders & community
- Identify links between the economy, the environment and society, expose trade-offs and enable win-win situations
- Enhance local government capability and capacity

An ISDSS, dubbed the Waikato Integrated Scenario Explorer or WISE, has been developed in the Waikato Region that consists of a spatially explicit systems model operating at three scales: regional, district and local. The current temporal resolution is one year for all models incorporated and its horizon is set at 2050. The development of WISE has strongly emphasised the linkages and feedback loops among the different components (e.g. climate, hydrology, water quality, economics, population, land use and biodiversity), rather than on modelling all elements to the highest detail possible. Although ISDSSs are rapidly gaining traction for planning and policymaking only few are actually being used. Eight elements have been identified that determine the success or failure of the implementation of an ISDSS. We discuss to what extent the WISE fulfils these requirements and its likelihood for successful uptake by local government.

WHAT IS AN ISDSS?

Integrated spatial decision support systems (ISDSS) help deal with weakly structured and unstructured problems (Fig. 1) by helping users explore alternative scenarios by combining knowledge, data, and models in a flexible and easy-to-use manner. A good ISDSS will support different decision-making styles and adapt over time to meet the needs of the particular user through interactive and iterative processes. An SDSS has the advantage over a non-integrated, non-spatial DSS by being able to store and manipulate complex spatial data structures, conduct analyses within the domain of spatial analysis, and provide spatially explicit output (i.e. maps) and other reporting tools. This provides a robust framework for exploring resource management issues by highlighting potential limits to resources use (e.g., only so much land, water, energy, etc.), the consequences of different allocation schemes, and showing the trade-offs among different policy options

Effective design, development, delivery and use of an ISDSS presents interrelated organisational, scientific, and technical considerations including, but not limited to, how to decide what issues or questions to address (i.e. scope), how general or detailed to make the overall SDSS and/or individual components, what technologies are most appropriate, and who will use the SDSS and how will they use it? Overlaid on those are the typical constraints of time, resources, and performance associated with any finite, resource-limited project (i.e. 'reality') (Fig. 2).

CREATING FUTURES SCENARIOS FOR THE WAIKATO REGION

The Creating Futures (CF) project² is centred on the Waikato Region of the North Island, New Zealand. The region has a total land area of 25,000 km², a population of 400,000 people and comprises Environment Waikato (EW) and all or part of 12 district/city councils, which are New Zealand's smallest units of government. The CF project aims to help councils meet legislative requirements by developing new knowledge, processes and tools that support the Long-Term Council Community Planning (LTCCP) processes³ as required by the

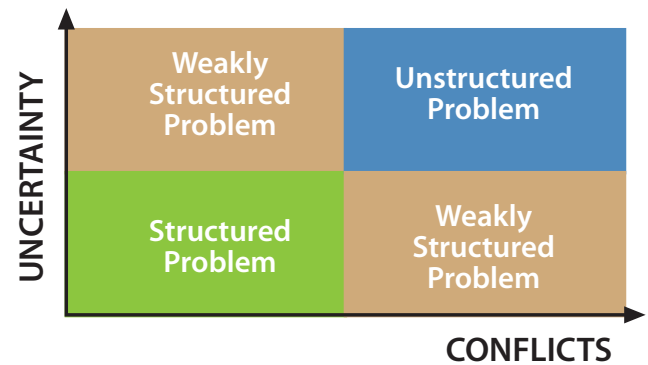


Figure 1 Conceptual categorisation of problems.¹

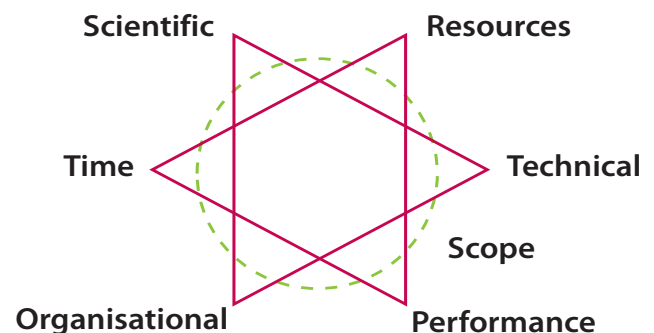


Figure 2 Key considerations and constraints in SDSS development

Local Government Act as well as other regional and sub-regional strategies and plans. The project (www.creatingfutures.org.nz) seeks development of future scenarios and deliberation processes; and an ISDSS to support both the scenarios and deliberation processes and council's strategic planning and decision-making.

To help guide and organise thinking about the region's future, the project has developed qualitative scenarios in consultation with stakeholders to help identify and explore key drivers and challenges that the region will face in trying to become more sustainable.⁴ The Waikato scenarios were developed with the

assistance of a facilitator in 2006/07, taking into account a wide range of information:

- A review of future scenarios developed around the world and in New Zealand
- A review of the academic and 'grey' literature about emerging issues and the major factors shaping change in the world, New Zealand and the Waikato Region
- Workshops⁵ with diverse groups of government, community and business stakeholders in the region
- A Futures Forum with Waikato businesses and industry sectors
- Insights of the CF project team and other council projects and initiatives.

Key drivers that could affect the region going forward are operating at a range of scales (Table 1). These trends and drivers provided an important input into the design of the ISDSS.⁶ The two key driving forces to influence the future of the Waikato Region were identified as (Fig. 3):

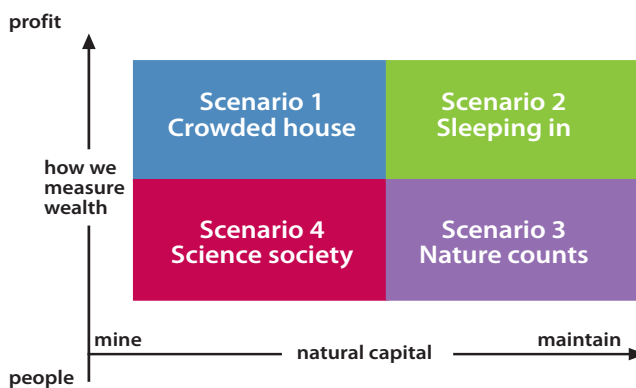


Figure 3 The four Waikato qualitative scenarios.

- How we will use our natural resources and the services they provide
- How we will judge and measure wealth.

These two factors were used as the axes to describe and group four diverse plausible futures for the Waikato Region (Fig. 3). Developing, discussing and deliberating these scenarios will

Table 1 Key trends and drivers affecting the Waikato region over the next 50–100 years

Scale	Key trends & drivers
Global	<ul style="list-style-type: none"> • Climate change: increased instability, extremes, and spatial variation • Population: migration trends, potential climate refugees • Market changes: number, size, access, preferences, locations • Globalisation: R&D investment
New Zealand	<ul style="list-style-type: none"> • Population – older, increasing proportion of people from Māori, Pacific Island, and Asian cultures; decreasing proportion of people from European cultures • Lifestyles: changing expectations, influence of technology • Economy: agricultural intensification, new metrics, bio-economy • Energy: availability, affordability, mix of renewable/non-renewable • Housing: affordability, increasingly urban culture
Waikato Region	<ul style="list-style-type: none"> • Land use: intensification; change trends; management and influence on intensity of flooding, erosion, slip • Auckland: urbanisation pressures • Economy: agricultural intensification • Governance: continued devolution versus greater central authority



enhance collective understanding of the issues that shape the future of the Waikato. These qualitative scenarios provide a high-level framework and starting point to derive quantitative input into the Waikato ISDDS. The scenarios, especially if combined with other tools, such as deliberation and ISDSS, provide a useful contribution for council to develop better, more integrated and resilient strategies, regional policies and sub-regional initiatives.

DELIBERATIVE PROCESS

The deliberative process and use of the associated tools are designed to assist the structured evaluation of strategies formed to address a particular set of issues or a problem.⁷ The CF project is applying a six-step deliberative process:

1. Identify the problem
2. Organise the problem (options/strategies to address the problem, identify stakeholders and their values)
3. Identify and mobilise tools for representation (e.g. maps, conceptual system diagrams, models, indicators)
4. Deliberate the consequences of the proposed strategy with regard to the identified stakeholders and their values
5. Prepare, validate and communicate the results and recommendations
6. Return to Step 1 as the deliberative process is iterative.

Stakeholders involved in a series of workshops chose land

fragmentation as a problem/issue to develop and trial the deliberative process and associated tools. We have found that Step 1, identification of the problem, is a key task. We have added an additional focus on defining the problem scope using causal loop diagrams of the relationships between the variables that land fragmentation influences, to reveal the different worldviews and mental models of stakeholders. The participants in the process also identified the need for the system to be spatially located within a specific context and a requirement for more data and information. This is the point in the process where links to the ISDSS are made by using:

- Information that can be accessed as outputs from the ISDSS and from other sources
- Information from the ISDSS that will in turn assist in verification of the conceptual maps and feed back into the choice of values and associated performance criteria by different stakeholders.

Using land fragmentation as an example, we will then evaluate the usefulness of translating the four qualitative Waikato scenarios (Fig. 3) to derive quantitative inputs for the ISDSS, and how the results delivered by the ISDSS add value as a feedback loop to the deliberative process.

THE WAIKATO ISDSS

The design and development of integrated systems models requires choices⁸ related to purpose, scope, prioritisation, scale and level of detail.

The Creating Futures ISDSS has three purposes:

- Provide a better understanding of society, the economy and environment in the Waikato Region and how these are connected
- Explore future scenarios of change and development, including examining the consequences of individual or collective actions over time and space on those systems
- Develop and review regional policies, e.g. for the LTCCP,⁹ by examining different future scenarios, evaluating trade-offs and identifying possible thresholds or limits.

Given these purposes, we chose to take a spatially explicit systems-modelling approach for the ISDSS. This will allow users such as EW to model stocks and flows in space and time of key aspects of the regional economy, environment, and society and the links and feedbacks among them. Initial scoping activities for the ISDSS involved:

- Identification of system drivers, processes and impacts to consider in the ISDSS
- Identification of potential uses and users of the ISDSS
- Development of a conceptual integrated framework that links the individual modules.

A draft specifications report was produced and circulated to all project team members, potential users and the project Advisory Group. Based on feedback from the report as well as several workshops and numerous informal meetings, the conceptual framework for the WISE and the detailed specifications for each component module were refined during an iterative process to produce a 'beta' version of WISE. Specifications for WISE will be finalised following a final round of testing and a major case study involving EW and four local councils during the final year of the project.

A key challenge to developing any ISDSS such as WISE is deciding on the scope of the system to study and prioritising the issues or questions to address.¹⁰ We began the ISDSS design by examining three key sources of information to identify recurring issues and themes:

- A shared set of community outcomes desired by the regional community (Table 2) and an associated set of 75 indicators that were identified by the stakeholders to measure and report on progress¹¹
- Key drivers and issues identified in four qualitative scenarios for the Waikato region (Table 1)
- Community outcomes from four other regions in New Zealand (Auckland, Bay of Plenty, Canterbury, Manawatu-Wanganui)

The broad community outcomes statements (e.g. *'the Waikato Region balances a thriving economy with looking after its people, places, and environment'*) proved difficult to interpret for quantitative modelling. Focus therefore shifted to how well the ISDSS would inform the associated set of 75 indicators. This and the findings from the qualitative scenarios confirmed that we included an appropriate set of models (e.g. economic,

Table 2 Choosing futures – Waikato high-level community outcomes

Theme	Outcome statement
Sustainable Environment	The Waikato Region values and protects its diverse, interconnected natural environments.
Quality of life	The Waikato Region is a great place to live, providing the services and opportunities we need to live well.
Sustainable Economy	The Waikato Region balances a thriving economy with looking after its people, places, and environment.
Culture and Identity	The Waikato Region identifies with – and values – its land, air, rivers and waterways, mountains, flora, fauna, and people.
Participation and Equity	The Waikato Region builds strong informed communities and has a culture that encourages

WISE System Design

- EW = Environment Waikato;
 ME = Market Economics;
 MW = Manaaki Whenua – Landcare Research;
 NIWA = National Institute of Water and Atmospheric Research;
 NZCEE = NZ Centre for Ecological Economics;
 RIKS = Research Institute for Knowledge Systems;
 UoW = University of Waikato.
 Coloured boxes are included in the first prototype.

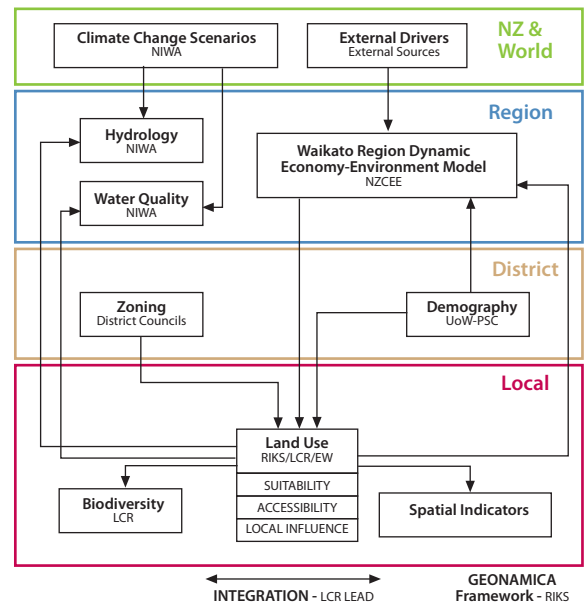


Figure 4 WISE system design

demographic, land use change, water quality) to address many of the potential drivers of future change and their impacts.

SCALE AND COMPONENTS

WISE is a multi-scale, spatially explicit, dynamic systems model linking components at three spatial scales (Fig. 4): regional, district and local (i.e. 200 x 200 m grid cells). Climate change scenarios and economic assumptions derived from global and national perspectives provide exogenous inputs into WISE. Simulations run for a period of 50 years, striking a balance between shorter (e.g. 10 years LTCCP planning) or longer (e.g. 100 years) time horizons suitable for a sustainable development context. A key principle of the Creating Futures project is information and knowledge sharing among all levels of government, businesses, other agencies and the local community.

STAKEHOLDER AND COMMUNITY ENGAGEMENT

An advisory group was formed early on in the project, comprising representatives of key organisations and groups with an interest in applying the ISDSS for their planning and decision-making. The advisory group is therefore an important link to the end-users. The purposes of having an advisory group for the research project are to (<http://www.creatingfutures.org.nz/spatial-waikato-model-2/>):

- Provide context for users and ensure effective links with stakeholders
- Debate project activities and give feedback to researchers on tool development and applicability of methods during the project so that the outputs are understood and meet the needs of users
- Build capacity for members of the advisory group, so they become effective advocates for integrated planning and can assist in the dissemination of the project outputs through their networks.

A wider stakeholder group is engaged at key milestones and contributes to the development of WISE, including conceptualisation and refinement of the model framework, validation, optimisation, and ease of use. This will take the form of workshops/seminars where the project's outputs and progress are presented and discussed. For example, a number of facilitated workshops with the wider Stakeholder Group in December 2008 following the release of the alpha version of WISE (<http://www.creatingfutures.org.nz/waikato-prototype-model-sdss-workshops-dec-200/>).

A survey of workshop participants showed enthusiastic support, but also revealed the importance of striking the right balance between simplicity and complexity (Table 3). For the benefit of all workshop participants, and those that could not attend, a comprehensive question-and-answer document was produced to address any issues and queries raised at the workshops.¹² This will be amended as necessary.

Table 3 Survey of usefulness of Waikato ISDSS (three workshops demonstrating prototype, December 2008)¹³

Theme	Agree	Diagree
My organisation would benefit from using the Waikato ISDSS	26	3
The Waikato ISDSS enables communication among planners and decision-makers	29	0
Waikato ISDSS is an easy-to-use and intuitive tool	17	5
I think learning to use Waikato ISDSS is worthwhile, considering the results I can obtain	27	0
I would prefer a more complex tool even if that requires more parameters to deal with	9	13

FACTORS FOR A SUCCESSFUL ISDSS

The extent to which the current version of WISE meets the requirements of some critical elements presented above and its likelihood for successful uptake by local government is now discussed. Based on practical experience¹⁴ eight elements seem to determine the success or failure of the implementation of an ISDSS:

1. Strategic value: to what extent does the system add value to the current planning practice?

Planning and policy development is often fragmented, issue-based and aimed at short-term results. An ISDSS enables a more comprehensive, integrated and longer term approach that is increasingly relevant to address the complexity of today's issues by using a systems approach and finding enduring solutions.

2. Availability of appropriate data and models: what is available at present or can easily be collected?

The development of WISE has helped to assess the availability and evaluation of quality data and robust models. Its integrated design has revealed new links between datasets or models. Current gaps in data, information and knowledge were

highlighted and can be prioritised.

3. Credibility of the system: do the users have faith in underlying assumptions?

All individual ISDSS components were peer-reviewed and most have been tested and used for a number of years. However, the overall integrated system requires additional calibration, validation and optimisation. This process is being undertaken by working closely with the Stakeholder Group. The use of real-life case studies of current projects that the users are involved in is crucial to ensure that the users have credibility in the system and associated assumptions, and gain confidence in using it. A user manual will be produced jointly with the end-users, supported by appropriate technical information and detailed metadata.

4. Domain language of the system: does it fit the users' worldview and connect to their perception?

Design of an ISDSS, its associated user manual, and – most importantly – the user interface (GUI) is a key success factor. While system designers and modellers may promote a more 'logic' approach, they need to seek, listen and be receptive to the ideas and views of the end-users.

5. Institutional embedment: where will the system be based in the organisation? Who will use it?

We are extremely fortunate that the CF project is led by a major end-user, the regional council (EW). This means council takes ownership and is committed for the long term, beyond the duration of the project. This is demonstrated by significant additional funding provided by the council for the next 10 years, mainly for institutional embedment and application, data management and further improvements.

6. Culture: are people committed to using the system and to integrating it into the planning process?

It is too early to answer this with confidence, but the results of a user survey show promise (Table 3).

7. Ease of use: is the user interface quick and simple to use and does it provide easy access to all functionality?

As above, it is too early to answer this question with confidence, but the results of a user survey are promising (Table 3).

8. Maintenance and support: are the data and models included regularly updated? Is there expert support to optimally use the model and analyse/interpret the results?

An ISDSS that is not regularly updated with newest data, whose models are not revised and which does not aim to incorporate new knowledge is doomed for failure. Effective data management processes, including agreements with data providers and agreements to cover any intellectual property issues, are all part of the CF project. WISE has been designed such that it can be readily updated with new information in the future. Its modular design allows adding new components to improve its utility, allowing WISE to be updated and reviewed as necessary, e.g. to incorporate new knowledge and emerging issues; and the ISDSS to be used for other regions. Most importantly, at least from a user perspective, is the benefit from bringing together and building enhanced capacity of a pool of researchers and experts from various disciplines. This will provide an ongoing source of advice in the use and application of WISE, e.g. for appropriate input parameters or to support the analysis and interpretation of outputs.

CONCLUSIONS

Key to implementing a sustainable development approach is the ability to build and act on knowledge integrated across social, cultural, economic and environmental domains.

This presents a significant challenge and requires a better understanding of our environmental–socio-economic systems and how they change over time and space. The CF project represents one example where researchers and end-users are working together to identify and prioritise key issues and have begun developing an integrated spatial systems model (e.g. ISDSS) in the Waikato. The development of the ISDSS is informed primarily by a set of desired outcomes and four plausible scenarios, both developed through a community consultation process.

The design of the ISDSS is influenced by the desire to build a tool usable by end-users rather than a model that remains under the control of researchers; the reliance on a systems dynamic modelling approach; the requirement to be spatially explicit; the choice of the software framework in which to

implement the ISDSS; and a focus on integrating sets of existing models rather than building new ones. The Waikato ISDSS will:

- Integrate results from different models and assess them at various spatial scales
- Allow non-technical users to create a scenario and analyse its impacts
- Be run during stakeholder processes (e.g. planning and analysis of scenarios, deliberation of options to address complex issues, integration of strategic planning, development of regional policies) to facilitate active learning and group understanding
- Provide a centralised repository of documentation (metadata) that can be transferred to the development of an ISDSS for other regions

The CF follows an iterative process in the development of the ISDSS, engaging end-users from an early stage. This is crucial to connect the system to the policy context, to build ownership and support for the uptake and use of the ISDSS.

Combining a qualitative participatory approach using scenario planning and deliberative processes with quantitative modelling in interactive stakeholder sessions facilitates awareness building, enables active learning, and provides a common understanding resulting in better informed planning and decision-making.



WANT TO FIND OUT MORE?

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For the Author's contact details see page ii

KEY PUBLICATIONS AND WEBSITES

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Landcare Research
Manaaki Whenua

Successful cities in the 21st Century

CHAPTER 5 : HATCHED



Megan Howell
and Claire Mortimer

Summary

As cities assume a greater significance in the global economy and as the world's urban population continues to swell, creating 'successful cities' is the subject of increasing policy attention. This chapter examines how success for a city might be defined, what the key characteristics are for successful cities, and what is needed to sustain city success over the long term.

- At their core, cities exist for people. They are expressions of the values, aspirations, skills, and innovation of the people who create them. A city's success will be assured by the success of all its citizens.
- Society is entirely dependent on the life-supporting functions of ecological systems, and therefore ecological success is fundamental to city success. A new environmental restoration function for cities is emerging, particularly due to cities' potential for efficiencies of scale.
- All the elements that go into creating a city – people, places, activities – may exist elsewhere, but it is the specific combination of density and diversity that makes them urban and underscores their success.
- Finding the balance of density and diversity – having enough of each but not too much – is an ongoing challenge for city management. It requires a sophisticated approach to urban development that goes beyond the current policy focus on land use and transport integration to address a broader range of design factors at different scales, from the house to the region.
- Successful cities need institutions and organisations that have a 'strategic capacity to implement decisions', and to achieve this both processes and policies matter.
- Success needs to be sustained over time, and will be dependent on the ability of a city's institutions and people to anticipate and adapt to new circumstances. A number of major transformations, including climate change, global resource depletion, new technology, and changing demographics, will drive exponential change within cities. Concepts of foresight, resilience and adaptive capacity will be critical urban management tools for 21st Century cities.
- As Jane Jacobs identified in 1961, there is no single key to successful cities. Rather, 'the mixture itself is kingpin'. Understanding cities as exercises in 'organised complexity' requires a different way of seeing and acting. By improving our understanding of complex city systems it may be possible that 'we will interfere less but in more appropriate ways' (Batty 2008).

This chapter provides a synthesis of the characteristics of city success categorised by their economic, social, symbolic and environmental functions, their physical and institutional dimensions and finally the characteristics which enable cities to be resilient and successful over the long term. Given the broad nature of the subject, the method adopted in this chapter is that of an exploratory literature review, seeking to highlight key concepts relating to interpretations of city success.

WHY CITIES MATTER

'Cities are back' (ODPM 2004). After several decades of declining priority, cities are the subject of a renewed policy drive. The prospect of a predominantly urban future (see box 1), the important role of cities in the global economy, and the pressing need for improved urban environmental performance are among the reasons for this renewed attention.

DEFINING SUCCESS

What makes a successful city? Success means 'the achievement of an endeavour; the attainment of a desired end' (OED 2002). So what is it that people are endeavouring to achieve within cities? What is their desired end? And where should the boundaries be drawn? Should a city's success be considered only in terms of its own population's needs, or does it contribute to a broader collective (e.g., national or even global) good?

The definition of city success will change over time, as societal values and priorities shift. For example, the emphases on equity and environment have not been consistent priorities of cities over time.¹ Success will also be defined differently by different people and different interest groups and often by those with the greatest power and influence in the city (Forester 1989; Hillier 2002).² Therefore we will begin by introducing our working definition of a successful city (which we have developed through this review) and the assumptions and values that underpin it.

DEFINITION OF A SUCCESSFUL CITY

A successful city is one where:

1. Citizens are able to meet their needs (and the needs of the nation) because the city contains economic, social, symbolic and environmental functions that make it distinctly urban – in brief, that it contains:
 - economically diverse, innovative and productive activities;
 - the critical mass of people necessary for social innovation and freedoms;

¹ Consider, for example, the very narrow definition of citizenship in Ancient Greece, which excluded women and slaves, or the clear hierarchy of roles in medieval cities (Arendt 1959).

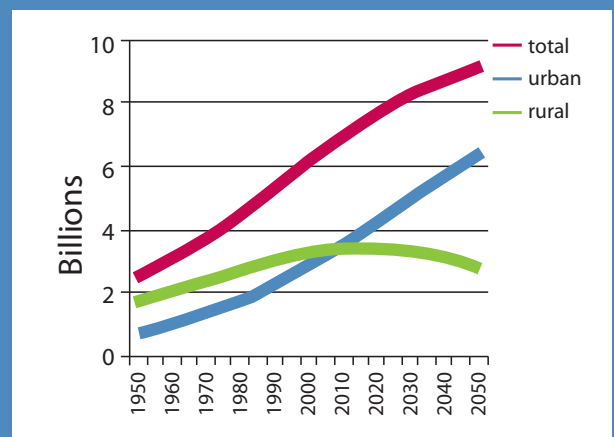
² Consider the shift of symbolic power in cities (as evidenced by the changing relative prominence of their buildings) from church and state to the corporate sector (Bell & Jayne 2004).

box 1: THE FUTURE WILL BE URBAN

The world urban population increased almost ten-fold over the 20th century and continues to grow (Satterthwaite 2007). Currently, almost 180,000 people (almost the population of Wellington City) are added to the world urban population each day.

The challenge will be how to make our urban future a sustainable one. The rapid growth of 20th century cities was supported by the unprecedented availability of cheap energy and resources – a situation that is not likely to continue for much longer (Droege 2006). Yet, cities contain great potential for resource efficiency and innovation – both essential to sustainable development.

Could cities be transformed, from engines of growth to agents of change? (Van Vliet 2002).



World Population: Urban and Rural 1950–2050

(source: UN Dept of Economic and Social Affairs, 2007)

- symbolic functions that differentiate it from other places and generate a collective urban identity; and
 - opportunities to provide equitably, efficiently and sustainably for the needs of dense populations in ecologically restorative ways;
2. City functions are delivered effectively and competing priorities are managed for current and long term success:
 3. The population is able to adapt to changing circumstances and maintain the city's success over time.

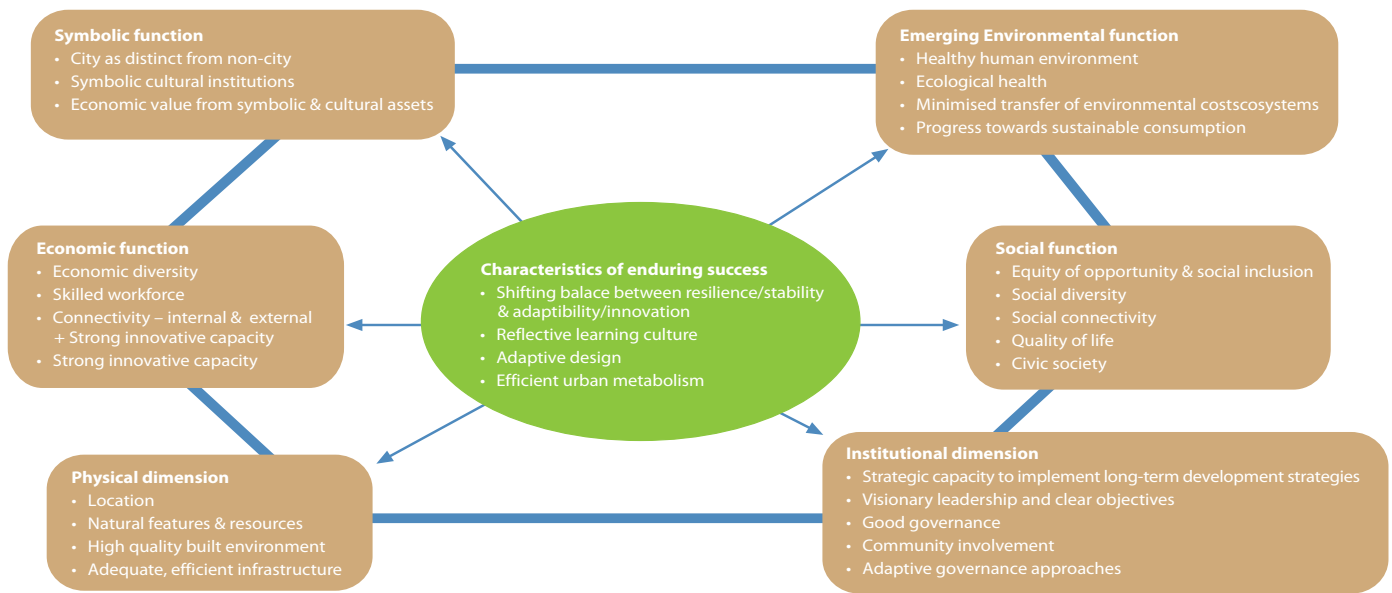


Figure 1 Synthesis of the characteristics of a successful city

The measures of success in our definition are holistic, attempting to integrate economic, ecological and social perspectives. We understand city success to be for all people and to be created by people; therefore people are at the heart of this definition. However, society's success is entirely dependent on the ecological systems on which we depend, and therefore ecological success is also fundamental to city success.

In this definition, success is understood not as an end state but as an ongoing and ever moving goal, and success will be dependent on the ability of a city to anticipate and adapt to new circumstances.

CHARACTERISTICS OF CITY SUCCESS

A broad range of city 'success characteristics' is identified in the literature. Some characteristics of success are inherent and immutable (such as location on a key trade route, or physical attributes such as a deep-water harbour). Some are the legacy of previous generations' investment (such as the entrenched social capital that underpins Northern Italian merchant towns (Putnam, 1993), or the extensive public transport infrastructure of first-order world cities). Other characteristics can, with time, be constructed through government and societal action.

We have developed a synthesis of the characteristics of city success (Figure 1), categorised by their economic, social, symbolic and environmental functions, their physical and institutional dimensions and finally the characteristics, which

enable cities to be resilient and successful over the long term. Each category is explored in more detail

1. Economic functions of cities

Cities are recognised as 'engines of economic growth' (Jacobs 1969) and as places where density and diversity allow for much greater specialisation of labour and trade (OECD 2006), table 1.

Table 1

Economic Success Characteristics	Selected Examples
Economic diversity ³	• Presence of knowledge-intensive service sector (Grimes 2007)
Skilled workforce	• 'Knowledge as the key factor of production' (Daniels & Bryson 2002)
Connectivity – internal and external	• Transport and ICT infrastructure • Location in relation to other cities and market
Strong innovative capacity	• Pool of skilled/educated workers; proximity of universities to research and production facilities (OECD 2006)

2. Social functions of cities

Cities provide the 'energized crowding of people' (Kostof 1991) that enables rapid social innovation and change. The scale of cities necessarily generates more complex social structures. Cities also allow for freer relations than those of traditional family and non-urban communities (as reflected in the medieval German proverb, '*Stadtluft macht frei*' – city air makes you free⁴), table 2.

3 Economic list adapted from Parkinson, Hutchins, Simmie, Clark and Verdonk (2004), and OECD (2006).

4 The proverb originally referred to the ability of serfs to win their emancipation by spending more than one year within the walls of a city, but soon came to associate cities more generally with individual freedom (Le Goff 2005). Cities still act as 'magnets of hope' (Rollnick 2006) for internal and international migrants wanting to improve their prospects.

Table 2

Social Success Characteristics	Selected Examples
Density of population and activity ⁵	<ul style="list-style-type: none"> • Critical mass to support urban levels of community facilities and services (Alexander 1965)
Equity and inclusion	<ul style="list-style-type: none"> • Affordable, appropriate housing, and access to education and employment (City of Vancouver 2005)
Social diversity and inclusion	<ul style="list-style-type: none"> • Ethnic and socioeconomic mix • Respect between social groups • Socially inclusive communities (City of Vancouver 2005)
Connectivity	<ul style="list-style-type: none"> • ‘Thick’ community networks, both formal and informal • Opportunities and places for social interaction throughout the community
Quality of life	<ul style="list-style-type: none"> • Personal and community health • Personal financial security • Safety (City of Vancouver 2005)

3. Symbolic functions of cities

Cities have important *symbolic functions*, generating a sense of collective identity and belonging arising from the distinct qualities of city life. Collective identity does not necessarily imply that a sense of community in cities is strong. In cities like Auckland, which are highly urbanized and have high levels of migration, many residents feel and act like “squatters” rather than members committed to their communities (Calwell 2005). This may indicate that individual and community identity is constantly changing, fragmented, and tenuous, table 3.

4. Environmental functions of cities

There is a question as to whether cities are developing an emerging *environmental restoration function*. Traditionally, cities have tended to develop at the expense of the environment on which they rely (Environment & Urbanization 2006); effects on air, water, land and human and ecological health have been managed as externalities of other city functions. With the prospect of a predominantly urban future, the positive environmental potential of cities is an increasingly important

question. Two particular areas of possibility are the density of cities as a means of achieving efficiency (e.g., in land and resource use), and how the biodiversity of cities can be improved to create more liveable environments – quite literally ‘green’ cities (Sorkin 2005), table 4.

Table 3

Symbolic Success Characteristics	Selected Examples
City as distinct from non-city (Kostof 1991)	<ul style="list-style-type: none"> • Physical boundaries, e.g., greenbelts, urban limits • Conceptual boundaries, e.g., city culture vs rural • The sense of place and of belonging to the identity of a particular city held by citizens
Symbolic cultural institutions (Bryson 2008)	<ul style="list-style-type: none"> • Museums, orchestras, visual and performing arts • City-specific festivals, traditions and events • Indigenous culture represented • Iconic buildings, places, monuments and landscapes (potentially different for locals and international audience)
Economic value from symbolic and cultural assets (Bell & Jayne 2004)	<ul style="list-style-type: none"> • City as an economic product (e.g., tourism destination), or as a branding tool for locally made products (creating value from symbolism of the city)

Table 4

Environmental Success Characteristics	Selected Examples
Healthy human environment	<ul style="list-style-type: none"> • Control of infectious and parasitic diseases via provision for basic needs: drinking water, sanitation, waste disposal⁶ • Reduced chemical and physical hazards incl. water pollution, air quality, and natural hazards
Ecological health (Rees 1992)	<ul style="list-style-type: none"> • Biodiversity • Programmes to restore and enhance environment

⁵ Social list adapted from Kostof (1991), Adelaide City Council (2005), and Parkinson et al. (2004).
⁶ These points adapted from Satterthwaite’s (1997) list of five environmental concerns for cities.

Table 4 (cont'd)

Minimised transfer of environmental costs	<ul style="list-style-type: none"> • Resource efficiency • Strong local supply chains – ‘Cities that are intimately engaged with their countryside’ (Kostof 1991; Wackernagel & Rees 1996).
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5. Physical dimension of successful cities

Physical characteristics such as the city’s location and the quality of its built and natural environment contribute to all the functions listed above. Physical characteristics of success, along with selected illustrative examples, are outlined in Table 5 below.

Table 5

Physical Success Characteristics	Selected Examples
Location	<ul style="list-style-type: none"> • Location on major trade route • Position within the region
Natural features and resources ⁷	<ul style="list-style-type: none"> • Local access to natural resources (e.g., water, fuel) • Climate • Scenic/amenity value • Intrinsic value of natural places
High quality built environment	<ul style="list-style-type: none"> • Public spaces as places for accidental encounter (Gehl 1987) • Attention to design at multiple scales – buildings incl. housing, streets, neighbourhoods, town centres, Central Business District. • Buildings and places designed in context to local climate, geography, biodiversity, vernacular style etc (City of Vancouver 2005) • Urban ecology – parks and recreation spaces
Adequate, efficient infrastructure	<ul style="list-style-type: none"> • Transport, communications, energy • Health and sanitation • Social infrastructure (e.g., schools, libraries, community centres)

6. Institutional dimension of successful cities

Although they now become virtual clichés, it is still true that all of

our competitive cities emphasise the notions of vision, leadership, partnership and politics in shaping long-term development. (ODPM 2004 pg 59).

The literature suggests that successful cities need to be supported by institutions that are able to maintain the conditions for success. For example, Leunig and Swaffield (2008, p. 8) conclude that the success of cities such as Hong Kong, Amsterdam and the Ruhr Region was supported by ‘flexible, effective and accountable city-led regeneration characterised by strong local leadership and innovative policy formulation.’ Healey (2006) has observed a ‘double rescaling’ of the focus of governance institutions away from their traditional local scale, simultaneously upwards to regional level and downwards to neighbourhoods, with a new emphasis on territorial (place-based) decision-making and the development of new modes of collaborative governance.

Two issues of particular importance to the institutional dimensions of a city are integration and the ability to take a long-term perspective. The importance of integration is outlined next. The need for long-term management perspectives is considered under characteristics of enduring city success table 6.

Integrated management: understanding which lens is being used

The need to integrate various perspectives can be best highlighted by examining what happens when they are not integrated. When one city function is given primacy, other functions will tend to be interpreted through that function’s lens. Figure 2 organises some of the phrases typically found in urban economic literature (e.g., ODPM 2004; Waite & Williamson 2007a, 2007b; Grimes 2007; and Sassen 1994, 1999) to illustrate the filtering effect of an economic lens. Other functions are viewed as instrumental to economic outcomes, rather than intrinsically valuable. Of course, the diagram is a simplification, without the feedback loops and context that make real-life decisions far more fine-grained and complex.

The implication of these ‘lenses’ is that achieving city success is very much dependent on the functions that are given priority. If we acknowledge that a city is complex, then success needs to be considered holistically (if not always equally) across all its functions.

7 Note that while city success can be enhanced by natural features, it is not a prerequisite. Many successful cities have been built in inhospitable places and transformed through infrastructure, urban development, and reliance on distant supply chains

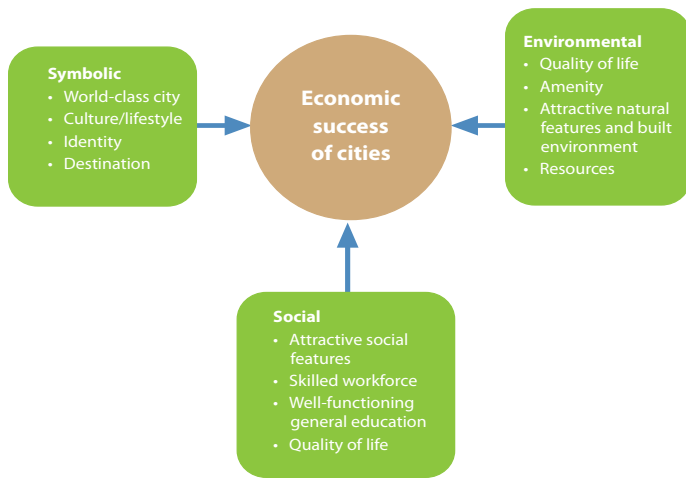


Figure 2 The filtering effect of emphasising one function

Creating integrative measurements of success

The right set of measures can highlight what is happening in the larger city system, allowing us to assess and communicate comparative progress across different city functions or goals. Measures also need to indicate progress towards a desired goal, otherwise city monitoring risks simply marking a general trend. Sadler et al. suggest collectively developing triple top and triple bottom lines in goal setting. Triple top lines are aspirational targets to be reached over time, and triple bottom lines are the thresholds below which individual city systems begin to collapse. City strategies are then designed to ensure the city never goes below the thresholds but are tracking towards targets.

Institutional characteristics of successful cities and selected illustrative examples are outlined in Table 6, below. Just as with the physical characteristics of success, these institutional characteristics contribute to the delivery of all four city functions.

Table 6

Institutional success characteristics	Selected Examples
Visionary leadership and clear objectives ⁸	<ul style="list-style-type: none"> • Recognising when change is needed and being able to build a proactive mandate for change • Development of vision and goals and evidence that decision-making and actions are aligned to vision and goals
Good governance	<ul style="list-style-type: none"> • Public institutions are transparent, accountable, responsive, consensus-oriented, effective and efficient, and follow the rule of law (UNESCAP n.d.) • Recognition of formal and informal processes, systems, structures and relationships (Adelaide City Council 2005) • Good relationships between levels of government (ODPM 2004)
Community involvement (see also Arendt 1959; Healey 1997)	<ul style="list-style-type: none"> • Access to information and involvement in decision-making processes • Support for community organisations and networks (City of Vancouver 2005) • Local networks that can deal with social tensions and understand market realities (OECD 2006) • Involvement in goal and target setting, clear communication of city progress
Strategic capacity to implement long-term development strategies (Parkinson et al. 2004)	<ul style="list-style-type: none"> • Networks and relationships between key players, e.g. in the public and private sectors, or local and national government • Effective financing mechanisms (Clark 2007) • Integrated decision-making across organisations and across city functions and goals • Integrative sets of measures, targets and monitoring

⁸ Institutional list adapted from (Golder Associates Europe, 2007) except where other sources specifically cited.

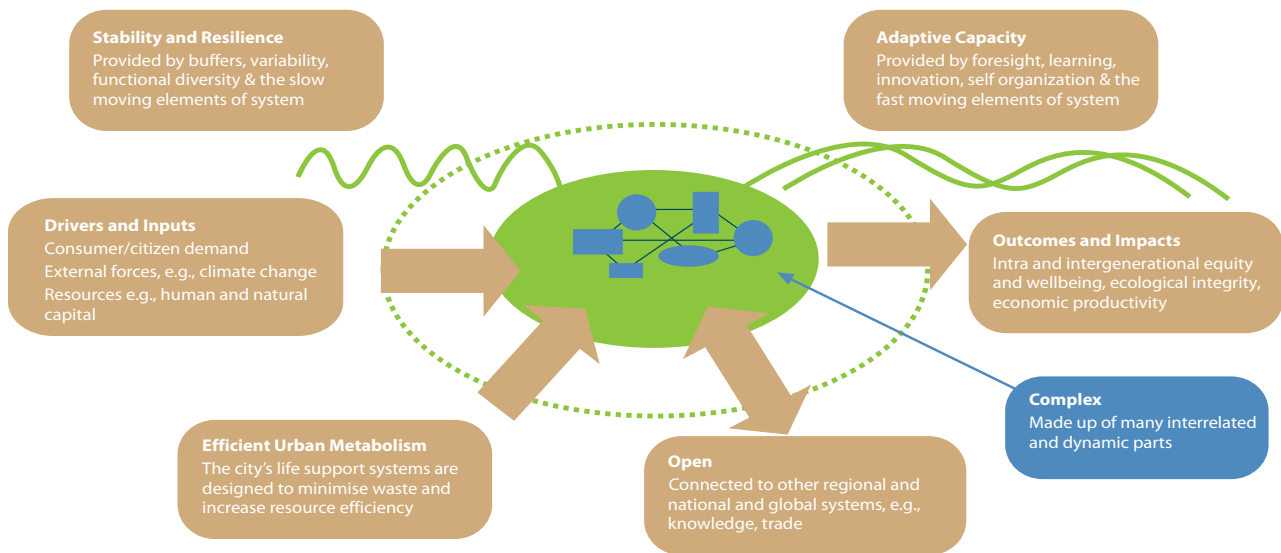


Figure 3 Cities as perceived as resilient and adaptive systems. Diagram adapted from Ravetz J, 2000.

7. Characteristics of enduring city success

Vital cities have marvellous innate abilities for understanding, communicating, contriving and inventing what is required to combat their difficulties. ...lively, diverse, intense cities contain the seeds of their own regeneration, with energy enough to carry over for problems and needs outside themselves (Jacobs, 1961, pp. 447–448).

Social change and technology have transformed cities over the centuries. Some cities have adapted and prospered while others have declined. Driven by the impacts of climate change, globalisation, technology, population growth, and resource depletion, the rate of change in the future is likely to be far greater than anything we have experienced to date. City success will increasingly depend on a city's foresight and its adaptive capacity to change. Indeed, cities worldwide may need to transform themselves not only to be successful but also to survive.

Resilient and adaptive cities

Strategic frameworks recently developed for the Auckland region (the Auckland Sustainability Framework; Auckland Regional Growth Forum 2007) and Vancouver (Cities^{PLUS}; Moffatt 2002) explored the concept of building resilience and adaptive capacity into cities in order to respond to an increasingly uncertain future. Urban resilience refers to the ability of cities to adapt to disruptions and rapid change with minimum loss of function and is determined by a combination of factors including available natural and physical resources, character of infrastructure, human and social capital, collective learning ability, and governance frameworks.

Urban resilience theorists conceive cities as dynamic and complex systems, made up of millions of individual parts constantly interacting with each other, and each city forming part of national and global systems (see Fig. 3). Conceiving of cities as complex adaptive systems may provide new insights into the core processes of urban dynamics, that is, how they respond to stimuli and move through cycles of decline and renewal, stagnation and innovation. This may offer possibilities for how cities might respond to the challenges and opportunities facing them.

Cities are made up of a shifting balance of adaptability and stability, which is critical to the sustainability of a system. Stability (through buffers, variability, functional diversity, and the slow-moving elements of the city, e.g. urban form and societal world views) ensures the ongoing integrity and robustness of the city. Adaptability (through diversity, innovation and self-organisation, and the fast-moving elements of the city, e.g. technologies, consumer trends) allows a city to respond positively to shocks and rapid change. Multiple systems within a city are continuously moving through adaptive cycles, aggregating resources during periods of stability, and periodically restructuring to create opportunities for innovation.

Managing the direct relationships between the slow and fast moving elements of a city is challenging. Batty evokes Schumpeter's (1950) 'creative destruction' oxymoron to describe the tensions that lie at the heart of urban life, 'between stability and change; between market forces and planning controls;

and between what is considered “natural” and “unnatural” in the growth of the city” (2007, p. 3). Characteristics of enduring success and selected illustrative examples are outlined in Table 7.

What makes some cities vulnerable to shocks and others resilient is still an emerging area of research, with much yet to be understood. Key questions include what resilience looks like in terms of social, physical, economic and ecological systems, to what extent resilience can be practically designed into systems, and how government and institutions can improve the resilience of their decision-making and investment

Table 7

Success characteristics of adaptive cities	Selected Examples
Shifting balance between resilience and adaptability	<ul style="list-style-type: none"> • Maintaining the overall function of the city system (Gunderson & Holling 2002) • A city and its institutions accumulates knowledge & resources • There is a reflective learning culture within society embeded by institutions • A city develops a diversity of resource sources and supply routes (Levin 1999; Pelling 2003), and minimizes reliance on resources from sources likely to be easily disrupted • A city has increased self-reliance for critical needs (e.g., water, energy) (Moffatt et al. 2008)
Adaptive governance approaches	<ul style="list-style-type: none"> • Planning for the future of the city is a visionary ‘debate and decide’ process, not a ‘predict and provide’ process (Kenworthy 2006) • Adaptive management is used to ensure constant feedback loops and flexibility to unpredicted circumstances (Gunderson & Holling 2002; Moffatt et al. 2008)

Adaptive design	<ul style="list-style-type: none"> • Flexibility, durability, and adaptability is designed into the built environments (Moffatt et al. 2008) using techniques including cellular design and compartmentalization • City systems are designed on the principle of subsidiarity (Moffatt et al. 2008)
Efficient urban metabolism	<ul style="list-style-type: none"> • The city has a compact, mixed-use urban form that uses land efficiently and protects the natural environment, biodiversity and food-producing areas (Kenworthy 2006) • There is extensive use of environmental technologies for water, energy and waste management – the city’s life support systems have moved as close as possible to closed loop systems (Kenworthy 2006)

ANALYSIS OF SUCCESS CHARACTERISTICS ACROSS ALL CATEGORIES

Four themes regularly emerge through the clusters of characteristics – density, diversity, connectivity, and quality.

All the elements that go into creating a city – people, places, activities – may exist elsewhere, but it is the specific combination of **density** and **diversity** that makes cities urban (Mumford 1937), allows them to perform economic, social, symbolic, and environmental functions that are different from other settlements, and provides the basis for their success. For example, urban density concentrates greater population and activities within a smaller space than non-urban settlements. It enables efficiencies of scale, specialisation of functions, and agglomeration of complementary economic activities. Diversity in the range of people, industries, activities and social opportunities is ‘the underlying foundation of city economic strength, social vitality and magnetism’ (Jacobs 1961, p. 408).

In management studies, diversity has been found to stimulate creativity (Webber & Donahue 2001), and – in the case of intellectual diversity – can produce better, faster problem-solving (Page 2007); however, diversity in groups can also have negative consequences, as discussed below.

Connectivity is, to a large extent, the product of the combination of density and diversity. It contributes to economic efficiency, social cohesion, and the symbolic value of a city (particularly in relation to its connectivity to world markets). It is also important to environmental functions – for example, the presence of urban green networks and corridors to enable birds and animals to move through the city.

Quality is a basic measure to assess the functions and characteristics of successful cities, and is a theme in innovation, quality of life, presence of symbolic cultural institutions, and the quality of the environment for human health. In the authors' opinion, emphasising quality does not necessarily imply that infrastructure, services, and other features of successful cities will be 'gold plated'. Indeed, many of the cities considered to be among the world's most successful are grappling with significant deficiencies in their infrastructure (City of New York 2007; New South Wales Department of Planning 2005). Being 'fit for purpose' is a more than adequate measure of quality.

Density and diversity are, as previously noted, the defining characteristics that make cities truly urban. That said, finding the balance – the "right" level of density, and the "right" level of diversity – is an ongoing challenge for city management.

How dense? A question of sustainability

Density is viewed by some as a cause of unsustainability, and by others as the solution (Kenworthy 2006). The former "rural commons" view emphasizes a more self-sufficient lifestyle (e.g., growing food and collecting energy and water on site), which is not possible at the urban densities projected for the next 50 years. This site-by-site approach is considered by Kenworthy (p. 71) as anti-urban, with potential to 'exacerbate many serious problems, particularly automobile dependence'.

The latter "urban commons" view is pro-urban. This view 'is less concerned with self-sufficiency than with the integrity of the

urban system' (Kenworthy 2006, p. 71). Concentrating urban activities should lead to more space being available for natural and cultivated green spaces, and allow for greener community-scale activities (e.g., green transport modes).

Efforts to increase urban densities have, however, come in for criticism. Whilst noting the benefits of compact city approaches, especially for transport efficiency, Jenks, Burton and Williams (1996) have identified concerns that implementation brought substantially higher costs than anticipated (including environmental and acceptability costs). They contended that much of the theory of compact cities – a romanticised generalisation of a European-specific urban form – had yet to be adequately demonstrated in practice in the many different urban settings that it was being applied to (an argument that could easily be applied to New Zealand's colonial cities). They argue for a more 'sophisticated' approach to sustainable urban development (Williams et al. 2000):

- addressing other design factors (e.g., size, mix of uses, and block layout and size, housing type, greenspace distribution) as well as compaction;
- broadening the range of issues addressed, beyond travel and fuel consumption to include effects of urban form on, *inter alia*, ecology, wildlife, natural resources, social conditions, behaviour and economic well-being;
- developing solutions at different scales, from the house, through to the block, the neighbourhood, the district, city and region; and
- developing different solutions to suit different urban forms (on the basis that there will be few new settlements, and much retrofitting of existing places), including growth options of intensification, extensification, decentralisation and new towns.

CONCLUSION

At the beginning of this chapter, we asked: what makes successful cities? What is their desired end? To answer these, the chapter has traversed the wide range of factors that contribute to a city's success. The economic, social, symbolic, and emerging environmental restoration functions of

cities, along with their supporting institutional and physical dimensions, have all been considered. The combination of density and diversity has been highlighted as providing the 'energized crowding' and mix of activities that distinguish cities from other, non-urban, places. The quality of the built environment, infrastructure and services become increasingly critical as density and diversity increase.

More important than the details of individual functions and characteristics is the understanding that cities are exercises in 'organised complexity' (Jacobs, 1961, p. 432). No one function can be successfully fulfilled independently of the other

functions. As Jacobs (1961) succinctly argues:

It is fruitless... to search for some dramatic key element or kingpin which, if made clear, will clarify all. No single element in a city is, in truth, the kingpin or the key. The mixture itself is kingpin, and its mutual support is the order (p. 376).

At the heart of city success, however, is the city's capacity to renew itself continually and maintain success over time. With the prospect of exponential change over the next 50 years, adaptability and agility may become defining characteristics of city success in the future.

WANT TO FIND OUT MORE?

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section two



Business as sustainability innovators

If the mission of business is to provide value to society, then the sustainability agenda addresses the manner in which that value is created. Businesses take interest in the sustainability agenda because their stakeholders (customers, staff, shareholders, suppliers, financiers, regulators, etc.) have an interest in the risks and opportunity that the agenda embodies.

Business interest in sustainability has taken many forms. Climate change has led to a focus on greenhouse gas emissions, carbon footprints and food miles. Businesses have looked for ways of measuring and reducing their impacts, especially on the environment, and for ways of certifying their performance. Life Cycle Management, which moves beyond an assessment tool to a product design and management tool, is gaining ground. Public disclosure of performance through sustainable development (or corporate social responsibility) reporting has become widespread with many large businesses using the Global Reporting Initiative or other formal guidelines.

Increasingly businesses are looking for innovative product, service and business models and the emerging Māori business model of New Zealand is becoming of interest to a global audience.



Foodmiles: fact or fiction?

How do New Zealand's exporters innovate for a world of sustainability conscious consumers?

Changing the game: organisations and sustainability

Why and how do organisations change to integrate a sustainability agenda?

Our journey from unsustainability: reporting about Landcare Research reports

Landcare Research's experiences at integrating and reporting on sustainability

Coming of Age: a global perspective on sustainability reporting

Allen White co-founded the Global Reporting Initiative. Here he gives us his perspective on where corporates are taking sustainability reporting

Sustainability and Māori business

Learning from the cultural practices and experience of tangata whenua

Life Cycle Management

Embracing the new design constraints and opportunities that arise in a supply-chain-conscious trading system

carboNZero

A global programme that helps businesses tackle their carbon footprints

Greening the Screen

The NZ Film Industry's world-leading industry environmental management programme



Landcare Research
Manaaki Whenua

Foodmiles: Fact or Fiction?

CHAPTER 6 : HATCHED

Sarah McClaren



Summary

The term 'food miles' describes the distance food travels from producer to consumer. The UK Government has explored the validity of using food miles as an indicator of sustainable development in the past, and food miles has gained currency in countries such as Canada because it provides a simple representation of environmental impacts within very complex globalised food systems.

The food miles concept poses a potential threat to the New Zealand economy because New Zealand is the most physically remote developed country in the world relative to major markets. Moreover, more than half of New Zealand's exports by financial value are agricultural products.

However, evidence suggests that food miles is not a robust indicator of the sustainability of food products because:

- From an environmental perspective, it is not possible to say that transportation is always – or is never – the most important life-cycle stage for all food products. Indeed, different life-cycle stages dominate for different food products due to the relative magnitude of environmental impacts at the agricultural and processing life-cycle stages compared with the transportation stage. For some food products, imported foodstuffs may be associated with lower greenhouse gas emissions than the same foodstuffs produced in the domestic marketplace.
- The mode of transport used is important as there are significant differences in environmental impacts per kilometre travelled between truck, train, ship and aeroplane. Transport by car between the retailer and home can easily dominate the life cycle of all food products.

Therefore the food miles concept can and should be challenged. In doing so, it is important to remember that three broad categories of motivation can be distinguished behind use of the food miles concept: protectionism (a desire to protect one's own economic activities over and above the economic activities of other countries or regions); a concern about climate change and other transport-related environmental issues; and support for local economies, communities and cultures. Responses to the food miles challenge should be framed with these motivations in mind. At the same time, it is critical that New Zealand exporters demonstrate the environmental and sustainability credentials of their products through life cycle studies.

To develop a better understanding of food miles from a New Zealand perspective, this chapter first explores what is meant by this concept (Meaning of 'food miles'), why it is used and by whom (Motivations for invoking food miles), the evidence for and against food miles (The evidence), and what this implies for our food exporters (Conclusion).

MEANING OF 'FOOD MILES'

The term 'food miles' was first used in a report by the SAFE Alliance in 1994.¹ Since that time, the term has been increasingly used in the UK. In 2005, the UK government's Department for the Environment, Food and Rural Affairs (Defra) published a report exploring the validity of using food miles as an indicator of sustainable development² and a variety of recent policy documents refer to food miles and/or local food.³

The same thinking has been popularised in Canada by the book *The 100-mile diet*,⁴ which recounts the experiences of a couple living in Vancouver, British Columbia, who decided to spend one year buying and gathering their food within a 100-mile radius of their home.

In the original SAFE Alliance report⁸ food miles were defined as the distance food travels from producer to consumer. However, the report Summary also states, 'But food miles isn't just about distances. This report explores some of the wider social and ecological implications of international food trade...' (p. i).⁸ In other words, in its original use, food miles was an umbrella term to refer to a variety of issues related to the production and transportation of food within a wider sustainability context.

Food miles can be seen as an example of an environmental representation. The idea is that some phenomena are too difficult to understand and act on, and in these situations people develop representations so that they are empowered to articulate their own values, make links between apparently disparate issues comprising the phenomena, take part in political debate, and actively support knowledge production.

In the case of food miles, the complex networks of individuals, organisations, and policies that constitute today's (largely) globalised food systems are difficult for individuals to understand, and in particular to know how to influence from a sustainability perspective. Food miles provide one way of understanding and articulating what is going on and how to act in this situation. In the literature on food miles, they are invoked to represent one or more of the following issues:

- Climate change: use of fossil fuels for transportation produces carbon dioxide and other global-warming gases.

WHY SHOULD NZ CARE?

From a New Zealand perspective, a focus on the distances travelled by foodstuffs from locations of production to export markets is of concern because New Zealand is the most physically remote developed country in the world relative to major markets.⁵ For example, within a 3.5-hour flight:⁶

- Auckland has access to 1% of world GDP and 0.4% of world population
- Hong Kong has access to 32% of world GDP and 42% of world population
- Paris has access to 27% of world GDP and 15% of world population
- Chicago has access to 25% of world GDP and 7% of world population.

Moreover, more than half of New Zealand's exports by financial value are agricultural products, and it exports these products to countries all over the world (the top five being the US, Australia, Japan, the UK and China).⁷

Therefore concerns in export markets about food miles are particularly relevant for New Zealand food producers and exporters, and for the country as a whole.

- Air quality: use of fossil fuels for transportation produces pollutants such as nitrogen oxides, particulate matter, sulphur dioxides, volatile organic compounds, and so on.
- Traffic congestion, noise, accidents and transport infrastructure: road vehicles contribute to a number of traffic-related problems.
- Organisation of food distribution systems: the move to use of regional distribution centres (RDCs) leads, in some cases, to apparent anomalies in logistics as foods are channelled through RDCs rather than directly from local producers to local retail outlets.
- Local economies, communities and cultures: it is argued that reducing distances between points of production and consumption leads to strengthening of local identities, building of social capital, and increased knowledge

and understanding of food, local food culture and distinctiveness.

- Fresh, tasty and safe food: some people associate transport and storage of food with negative impacts on its freshness, taste, safeness and nutritional quality.
- Disease and pest risks: as demonstrated by foot and mouth disease in the UK in 2001, long-distance transport of foods can increase the risk of spreading diseases and pests.
- Animal welfare: transport of live animals raises animal welfare issues.
- Food security: today's food systems are heavily reliant on fossil fuels for delivery to markets (as well as for agricultural production), and this makes these systems vulnerable to disruptions arising from conflicts in oil-producing regions, price rises, etc.

However, at the same time there is an ongoing debate about the appropriateness of food miles in representing the issues outlined above. Iles (2005)⁹ comments, 'reducing food miles is assumed to be inherently sustainable and transformative.' However, does a reduction in food miles actually promote sustainability? Hinrichs (2003)¹⁰ and Winter (2003)¹¹ note that 'local' foods do not necessarily equate with higher quality and/or more sustainable foods and farming systems. Indeed, from an alternative perspective, it can be argued that

increased food miles contribute to benefits such as increased consumer choice, more efficient and/or environmentally friendly production overseas, health benefits from imported fresh foods when they are out-of-season in the importing country, support for economies in developing countries, cultural links with other countries, and increased profitability of the food retailing sector.¹²

In fact, different stakeholders in society actually attach different meanings to food miles. Therefore when the term is invoked in any discussion it is important to understand the motivation underlying its use.

MOTIVATIONS FOR INVOKING FOOD MILES

In general, three broad categories of motivation can be distinguished for use of the food miles term: protectionism, a concern about climate change and other transport-related environmental issues, and support for local economies, communities and cultures.

Protectionism

In New Zealand, there is a general perception that the food miles concept is being used in the UK as a protectionist measure. For example, Wellington's newspaper *The Dominion Post* Editorial on Tuesday 15 May 2007 commented: '...there are groups in Europe with a vested interest in turning the erroneous food miles concept into an unofficial trade barrier.'

This perception is supported by reports such as the following from *The Dominion Post* on Friday 15 June 2007 titled 'Kiwi lamb snub angers farmers':

Waitrose said it would offer new-season Welsh and British lamb in all its branches from this month as long as it was available... Another chain, Marks & Spencer, last week told Irish farmers that it would have local spring lamb on sale in all of its stores later this week, five weeks earlier than 2006. The Irish Farmers Association had accused the retailer of damaging Irish lamb producers by stocking its shelves with New Zealand lamb when Irish-produced products were readily available at what it called a competitive price... British farmers have been protesting outside shops stocking

A farm shop in the UK has labelled its produce by distance travelled from point of production.



Kiwi lamb, saying they are being undercut by chilled lamb, which can be sold cheaper than their early-season spring lamb.

Environmental impacts: climate change, energy use, pollution issues

For many people, the debate around the validity of food miles concerns the possible trade-off in environmental impacts associated with transportation distances compared with agricultural production/processing in alternative countries. Essentially this is a question about whether agricultural comparative advantage is large enough to compensate for increased transportation distances to markets. The food miles report by the UK's Defra¹³ is an example of a study undertaken largely from this perspective. For example, its Executive Summary proposes four indicators for food miles and comments, 'These indicators focus on the direct impacts of food transport, such as congestion, accidents and pollution. Wider economic and social issues such as local sourcing of food are not addressed directly by this indicator set' (p. vi).¹³

From this perspective, quantitative environmental Life Cycle Assessments (LCAs) provide an appropriate analytical tool for investigating such trade-offs. In an LCA, the environmental impacts of products or services are quantified along the life cycle from extraction of raw materials, through processing and manufacture, distribution, retailing, use and on to waste management. For example, Sim et al.¹⁴ used LCA to compare apples, watercress and runner beans produced in different countries for final consumption in the UK; and Mila i Canals et al.¹⁵ compared primary energy consumption along the life cycle of apples produced in different countries for final consumption in Europe.

There has been some media interest in this approach to analysis of the benefits versus disbenefits of invoking food miles, particularly from a carbon-footprinting perspective. For example, an article in the UK *Telegraph's* online site dated 3 June 200¹⁶ discusses the trade-offs in some depth, commenting that:

Analysis of the industry reveals that for many foods, imported products are responsible for lower carbon dioxide emissions than the same foodstuffs produced in Britain. Even products shipped

from the other side of the world emit fewer greenhouse gases than British equivalents. The reasons are manifold. Sometimes it is because they require less fertilizer; sometimes, as with greenhouse crops, less energy; sometimes, as with much African produce, the farmers use little mechanized equipment. The findings are surprising environmental campaigners, who have, until now, used the distance travelled by food as the measure of how polluting it is.

Support for local economies, communities and cultures

A number of surveys have investigated the perceptions of UK consumers about food miles and local food. Interestingly, they suggest that the primary motivations for consumers buying local food are to support local businesses and the local economy, and/or taste and freshness – not reduction of environmental impacts. For example, the UK's Food Standards Agency published an Omnibus Research Report in March 2007,¹⁷ which found that, amongst consumers who said it was important to buy local food, the two top reasons concerned support for local businesses and supporting the local area and/or community (mentioned by 57% and 51% of consumers respectively). Environmental factors such as causing fewer air miles and less pollution were cited by just 12% and 9% of consumers respectively. Other relevant studies are discussed by Winter¹⁸ and Weatherell et al.¹⁹

THE EVIDENCE

In reviewing the evidence to support the food miles concept, it is worth asking, first, whether food should be a focus of attention from the perspective of environmental impacts; and second, what is the evidence concerning possible trade-offs in environmental impacts associated with transportation distances compared with agricultural production/processing in alternative locations?

Should food be a focus of attention?

Perhaps the most comprehensive study of the environmental impacts of food products compared with other products in the economy is a European Science and Technology Observatory (ESTO) project on the 'Environmental Impact of Products' (EIPRO).²⁰ The final report for this project reviewed seven existing studies and presented the results of a separate

environmental input-output study²¹ for final household consumption in the EU25 countries.

The impacts studied in the project were abiotic depletion, global warming, photochemical oxidation, acidification, eutrophication, human toxicity potential, and ecotoxicity. The study found that 'food and beverage consumption' accounted for 22–34% of total life-cycle impacts in all environmental impact categories (apart from eutrophication where it accounted for 60% of this impact).¹⁹ Focusing on global warming potential specifically, if restaurants were included then the food and beverage consumption category contributed 40% of the total global warming result for the EU25 countries.¹⁹

Focusing on global warming specifically, Garnett²² calculated that the life cycle impacts of food consumption contribute 19% of the UK's total global warming potential.

The *Journal of Industrial Ecology* published a special issue on priorities for environmental product policy in 2006. In the Editorial, Tukker²³ points out that about a dozen of the 'most influential and important studies on priority setting for final consumption activities from the last five years' all come up with similar headline results. According to all these studies:

Mobility (automobile and air transport), food (meat and dairy, followed by other types of food), and energy use in and around the home (heating, cooling, and energy-using products) cause, on most environmental impact categories, together 70 to 80% of life-cycle environmental impacts in society. It has been shown many times before and is well known among specialists that these three consumption categories are the most important ones, more relevant than, for example, clothing, health care, education and communication. (p. 2)²²

It is clear that food is quite rightly a focus of attention for those concerned about the environmental impacts of economic activity and consumption.

Is transportation important in the life cycle of food products?

A large number of environmental Life Cycle Assessment studies have analysed food products. In general they are not directly comparable as they often assume different system boundaries (e.g. one study on apples might include production of tractors

LIFE CYCLE ASSESSMENT (LCA)

Also known as 'cradle-to-grave analysis', LCA is the assessment of a product or service's environmental impacts (e.g. global warming potential) at each stage in its life cycle, including resource extraction, production, use, and waste disposal.

Source: Life Cycle Association of New Zealand www.lcanz.org.nz

and other farm machinery whereas another might exclude this aspect) and account for different types of environmental impacts. However, some general observations can be drawn from these studies.

First, it is not possible to say that transportation is always – or is never – the most important life-cycle stage for all food products. In fact, different life-cycle stages dominate for different food products (e.g.²⁴). However, total food transport for consumption in countries such as the US and UK has significant environmental impacts. For example, food transport is equivalent to 3.4% of the UK's annual carbon dioxide emissions (including both imports and exports) and 3.6% of its final energy consumption.²⁵ In the US, transport of raw and processed food products (excluding transport abroad) contributes 1.4% of total energy consumption.²⁶

Second, although there are always exceptions, in general transportation is more likely to be relatively important (compared with other life-cycle stages) for fresh fruit and vegetables. It is less likely to be relatively important for livestock-derived foods (meat and dairy products) from intensive farming systems, and other processed foods. The reasons are related to the relative magnitude of environmental impacts at the agricultural and processing life-cycle stages compared with the transportation stage.²⁷ An exception is fruit and vegetables cultivated in greenhouses when compared with outside cultivation in alternative countries. The environmental impacts associated with greenhouse cultivation may outweigh the impacts associated with transporting fruit and vegetables from countries where outdoor cultivation takes place. Some evidence for the existence of this trade-off is demonstrated by a study on tomatoes grown in Spain and the UK.²⁸

Third, the mode of transport is important in determining whether transportation-related impacts are relatively important in the life cycle of foods. There are big differences in environmental impacts per kilometre travelled between truck, train, ship and aeroplane. For example, transport by air is more significant than the others listed from the perspective of climate change and total energy use.²⁹

Last, transport by car between the retailer and home can easily dominate the life cycle of all food products. For example, McLaren (unpublished data) calculated that doubling the average distance travelled between the retailer and home in the UK, and changes in assumptions about the number of items purchased on a shopping trip, could add approaching 70% to the total-life-cycle global warming impact of milk powder produced in New Zealand and consumed in the UK. In another study, eight different scenarios for bread production in Germany were analysed using Life Cycle Assessment; it was shown that if the consumer travelled by car further than 1 km to buy bread, this life-cycle stage became more important than any differences between the eight scenarios in determining

primary energy use for 1 kg of bread.³⁰ This is due to the relative energy intensity of car transport compared with other activities in the life cycle of bread.

CONCLUSION – WHAT THIS IMPLIES FOR NZ FOOD EXPORTERS

A review of the literature and media reports on food miles indicates that judging food miles as either fact OR fiction is too simplistic. As discussed previously (Meaning of 'food miles'), the concept of food miles means different things to different people. For some, a reduction in food miles represents a reduction in climate change and pollution impacts, for others it represents support for local communities and economies, and for others it signals fresher food. It is arguable, however, whether a reduction in food miles does actually deliver these end results. For example, Hinrichs³¹ makes the point that 'local' speciality foods may not have a large enough market locally to support companies producing such foods; the economic survival of these companies is dependent upon national and international distribution.

Transport by car between the retailer and home can easily dominate the life cycle of food products.



However, the fact that the existence and popularisation of food miles as a concept led to commissioning of the UK Defra report, and that it is considered a legitimate topic for discussion, arguably indicates that this concept has succeeded in achieving its purpose. To requote Iles,³² food miles has succeeded in converting 'complex environmental and social phenomena into forms that people can access and use'. The danger is, of course, that it leads to simplistic interpretation of what can be considered as a sustainable food system. The UK Defra report concluded that 'a single indicator based on total food miles is not appropriate'.³³ They proposed that a suite of four transport indicators should be used instead:

- Urban food kilometres: representing most of the accident and congestion costs (plus impact of air pollution in urban areas)
- Heavy goods vehicle kilometres: representing the majority of infrastructure, noise and air pollution costs of food transport
- Air food kilometres: air freight has a higher environmental impact than any other transport mode
- Total carbon dioxide emissions from food transport: representing the climate change impacts of food transport

Use of a suite of more focused indicators effectively begins to inject greater transparency into the food miles debate by more accurately representing the issue that is considered important – i.e. the environmental impacts of transportation. However, as previously discussed, studies provide evidence that transport impacts are an inadequate proxy measure for evaluating the environmental impacts of food, and a broader interpretation of sustainable food is required that encompasses the fuller life-cycle environmental impacts of a product. When this is articulated, products exported from distant countries may be found to have lower environmental impacts than those produced more locally.

For New Zealand exporters, it is critically important to engage in the food miles debate and demonstrate the environmental and sustainability credentials of their products. New Zealand has highly productive agricultural systems and the vast

majority of its food products are shipped overseas rather than airfreighted. Several studies have indicated that New Zealand food products compare favourably with local production in export markets from a life-cycle perspective (e.g. ³⁴). Now is the time to convey these messages to export markets, and engage in constructive debate around conceptualisation of sustainable food systems.

WANT TO FIND OUT MORE?

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For the Author's contact details see page ii

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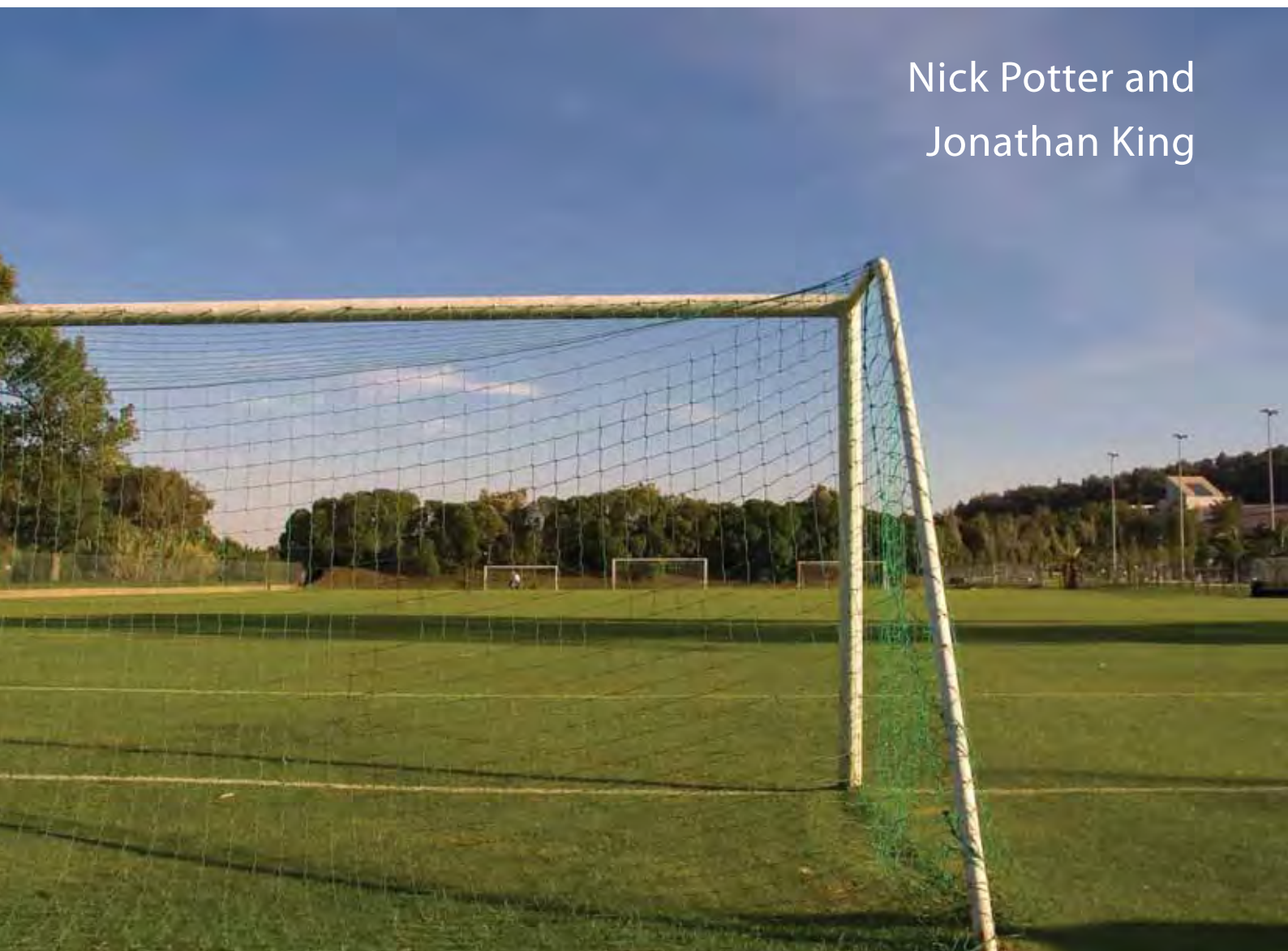
Landcare Research
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Changing the game

Organisations and Sustainability

CHAPTER 7 : HATCHED

Nick Potter and
Jonathan King



Summary

All organisations have the potential to be change-makers. Organisations with a pro-sustainability culture, coupled with effective learning capabilities, can be leaders. Most of the time though, organisations do not actually create change. They respond and adapt to changes that have emerged elsewhere in society. For example, social movements often arise in reaction to environmental damage and/or social injustice. When these movements generate institutional changes, they create new 'rules of the game' that organisations need to meet to maintain their legitimacy. Organisations do have a choice, though, in how they respond to pressures for change.

Organisations will face growing pressure to make pro-sustainability changes in years ahead. For example, international and domestic action on climate change will necessitate major institutional changes. Proactive organisations can anticipate the direction of these changes now, and position themselves to benefit from the shifts that are underway.

There are many actions that organisations can take to cultivate sustainability. These include internal actions (e.g. energy and waste management within their operations) and external actions (e.g. supply-chain management) that influence others. Actions of both types are connected.

Organisations can build their capacity as sustainability change-makers. This involves developing a strong intent to become sustainable, being highly adaptive and innovative, and demonstrating accountability. Organisations with well-developed networks can also spread changes through their field.

Organisations have various reasons for making pro-sustainability changes. Most organisations are also motivated by the financial benefits of actions that improve their efficiency or lead to new business opportunities. In many cases they are seeking to ensure their license to operate by meeting social expectations (e.g. of customers and local communities). Some organisations are more strongly driven by their own sense of social and environmental responsibility.

This chapter looks at what organisations can do to cultivate sustainability, why they make changes, and how they can become leaders. It gives examples related to business action on climate change, including case studies of New Zealand winemakers and taxi companies becoming carbon neutral.

PURPOSE AND STRUCTURE

This chapter looks at organisations and sustainability and is mostly aimed at businesses, but insights will also be relevant to government agencies and community organisations.

The chapter is organised into five sections:

- Thinking about organisations and sustainability
- Why organisations make pro-sustainability changes
- What organisations can do to cultivate sustainability
- How organisations can become sustainability leaders
- Concluding comments on changing the game.

THINKING ABOUT ORGANISATIONS AND SUSTAINABILITY

When looking at organisations and sustainability, it is important to keep in mind that organisations are not isolated entities. They are part of systems (i.e. sets of interconnected parts). As Figure 1 highlights, there are four layers to consider when looking at why organisations change, and how they can cultivate sustainability:

1. *Broader systems* - including environmental aspects (e.g. ecological cycles that sustain life), social aspects (e.g. accepted norms and values) and economic aspects (e.g. rules for generating, exchanging and accumulating wealth).
2. *An organisation's field* - the community that an organisation most frequently interacts with (explained in detail in the next section).
3. *An organisation* - a network of people working together to achieve a purpose.
4. *Individuals* - the people who form part of organisations.

Changes at an organisational level can come from both directions in this diagram. That is, organisations change through the individuals who constitute them, and organisations face pressures to change from others in their field and the broader system. The next section explores this in detail.

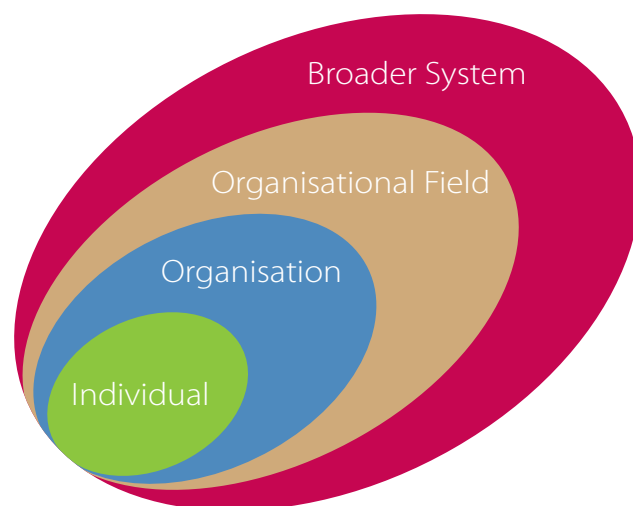


Figure 1 Organisations and systems

What is meant by sustainability?

'Sustainability' in this document refers to how organisations can be sustained through sustaining people and the living systems of which people are a part.

At a societal level, actions are pro-sustainability if they:

- regenerate ecological systems, or at least do not cause long-term damage
- improve the quality of people's lives and surroundings, particularly the lives of the world's poorest people
- do not compromise the livelihoods of future generations
- let people participate in important decisions that affect them.¹

Organisations can explore how they contribute to these elements. An action may be considered 'pro-sustainability' if it meets some, but not necessary all, of these elements. However, actions that meet one or more of these elements while causing harm elsewhere cannot be regarded as sustainable.

WHY ORGANISATIONS MAKE PRO-SUSTAINABILITY CHANGES

To understand organizational change, it is useful to explore what drives change. This section highlights why it is important to consider the four levels highlighted in Figure 1 by giving examples of action on climate change.

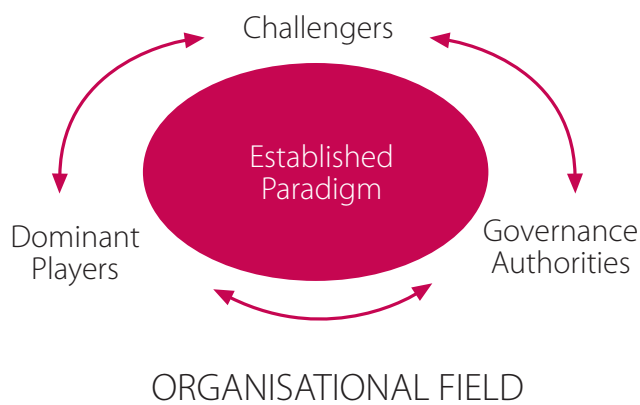


Figure 2 Players interacting in an organisational field

The broad systems level

Most of the time organisations do not actually create change. They respond and adapt to changes that have emerged elsewhere in society.² For example, social movements often arise in reaction to environmental damage and/or social injustice. When these movements generate institutional changes, they create new 'rules of the game' that organisations need to follow to maintain their legitimacy. Major events such as economic collapse or ecological disaster can also disrupt established patterns and trigger an opportunity for innovation to occur.³

As box 1 highlights, New Zealand businesses will face growing pressures and/or greater incentives to make changes due to climate change in years ahead. These pressures may emerge through a combination of factors such as increased scientific evidence of human harm and damage, growing social movements, international agreements, changes in regulations in export markets, and new technologies. Changes anywhere in the global system may influence New Zealand businesses, in particular changes that emerge in valuable export markets.

The Organisational field level

Organisations, and the individuals who constitute them, are always interacting with those around them. They tend to interact with some 'players' more frequently than others. These players form their 'organizational field'. For example, businesses in the same industry tend to share many of the same contacts and they act on information from many of the same sources.

box 1: CHANGES ARE COMING, READY OR NOT

Global and domestic action on climate change, which is connected with all other sustainability issues, will force many organisations to adapt in the future unless they initiate their own changes now. As recent comments emphasise:

The best question for the business community is whether we can be certain that climate change presents a substantial risk; a risk that will have a profound impact on society and the economy? To this the answer is clearly 'yes'... The issue at hand is serious and requires an immediate response. Action taken sooner is both better and cheaper – *CBI: the United Kingdom's leading business lobby group*⁴

"I couldn't care less if somebody thinks that the science of climate change is unproven... What I do care about though is that our customers are increasingly concerned about those issues... whatever your private view on climate change science might be, the marketplace is making a judgment about that... and we need to be responding to that judgment." – *CEO of a major NZ business*⁵

If no new policy actions are taken, within the next few decades we risk irreversibly altering the environmental basis for sustained economic prosperity. To avoid that, urgent actions are needed to address in particular the "red light" issues of climate change, biodiversity loss, water scarcity and health impacts of pollution and hazardous chemicals. – *OECD*⁶

The initial financial shocks that hit Australia in the 1890s, central Europe and the industrial world in the 1930s, or Indonesia in the 1990s... changed political institutions fundamentally and as permanently as human institutions can be changed. They shifted the whole trajectory of economic growth. Unmitigated climate change, or mitigation too weak to avoid dangerous climate change, could give human society such a shock. – *The Garnaut Climate Change Review (Australia)*⁷

A field may include businesses, citizens, consumers, regulatory agencies and community organisations. These players may perform one or more of these roles:

- *Dominant players* – established individuals, groups and organisations that a field tends to revolve around.
- *Challengers* – those seeking to challenge the position of dominant players, or to achieve major changes in a field.
- *Governance authorities* – those that exercise authority.⁸

As organisations in a field interact, they learn from and influence one another. Through this process they tend to develop similar patterns in how they think and act. That is, they develop a shared paradigm (see Figure 2).

An example of an established paradigm is a shared view on climate change. Many people in an industry may develop the view that climate change is not a relevant business issue, or that action on climate change is only a cost to their business. Some people may challenge this view, perhaps because they see the opportunities for making positive changes.

Research into the ‘greening’ of organisations shows that established paradigms are highly resistant to change.⁹ One reason for this is that a shared paradigm provides people in a field with a sense of stability. When stability turns into rigidity, people become insulated from ideas in other fields or sectors of society and new learning becomes limited. This point is returned to in the section “How organisations become leaders in sustainability”, further on.

Research also suggests that major organisational changes, at least in established fields, tend to be driven by challengers on the fringes of organisational fields.¹⁰ Changes seldom come from dominant players that are satisfied with the status quo (see boxes 2 and 4 for examples).

The Organisational level

Organisations themselves have many reasons for making pro-sustainability changes. Research shows that businesses, in particular, tend to have three major motivations:

box 2: HYBRID ELECTRIC TAXIS IN NZ - CHANGES FROM THE FRINGES

The introduction of hybrid electric vehicles in New Zealand’s taxi fleets provides a good example of a change that emerged on the fringes of an established field. The first company to develop a fleet of hybrid electric taxis in New Zealand was a new entrant to the taxi industry. ‘Green Cabs’ marketed themselves as an “environmentally friendly” alternative with lower fares than existing players. Their rapid growth demonstrated the benefits of using hybrid electric vehicles and challenged the competitiveness of other industry players. Shortly after Green Cabs entered the market, the dominant taxi operator in Wellington ‘Wellington Combined Taxis’, created a new policy that no new petrol-only vehicles would be introduced into their fleet. A year later they achieved carboNZero^{Cert}™ certification for their organisation and service.¹¹ Hybrid electric vehicles are now likely to make up a growing share of New Zealand’s taxi fleet in years ahead.

- *competitiveness* – improving efficiency and adding value
- *legitimacy* – meeting society’s expectations, including social regulations, norms, values and beliefs (i.e. ‘being seen to do good’)
- *responsibility* – being driven by internalised social/ environmental values (i.e. ‘doing the right thing’).¹²

Research shows that legitimacy, meeting society’s expectations, is usually the strongest motivator for businesses.¹³ All organisations are concerned about their image and reputation, and they are under constant pressure from others in their field to demonstrate their legitimacy. They need to maintain a ‘licence to operate’ in society to ensure their ongoing viability. An implication of this is that organisations are likely to demonstrate more action on climate change if there are growing social expectations for organisations to play a constructive role in this area.

A concern for demonstrating legitimacy also helps to explain why many large organisations report on their social and

box 3: WHY NZ WINEMAKERS ARE BECOMING CARBON NEUTRAL

Our research has explored why a growing group of NZ winemakers has chosen to undergo carbon neutral certification through the carboNZero programme. It could be argued that these winemakers are simply responding to pressures for change. Over 65 percent of NZ wine is exported, and there has been growing concern in international markets about the issue of 'food miles' (i.e. the distance food travels from producer to consumer, and the associated greenhouse gas emissions). One of the perceived benefits of becoming carbon neutral is that it can reduce the risk of trade restrictions. Yet these winemakers are not currently facing significant pressures directly.

For most of these winemakers, the decision to achieve carbon neutrality for their wineries and wine products was driven by individuals within the companies who had a strong sense of environmental and social responsibility. This was mixed with a desire to maintain and improve their organisation's long-term competitiveness. These individuals played a crucial role in encouraging change (see Box 4 for an example).

Responsibility was not the strongest motivating force for all organisations. In the case of the NZ Wine Company (NZWC), responsibility was initially driven from two individuals within the company but it was necessary to develop the commercial arguments to convince company directors that becoming carbon neutral was the right thing to do for their business. NZWC received major media exposure and high-profile attention after it became carbon neutral. It also benefited financially, with a major increase in demand for its products, especially from UK supermarket chains. This in turn helped to legitimize the practice of becoming carbon neutral in the wine sector and influenced another winemaker to undergo certification aiming to repeat NZWC's commercial success. Some winemakers commented that NZWC made it easier for them to become certified, because NZWC is seen as a credible organisation and becoming carbon neutral therefore looked credible too.

For many of these winemakers, the decision to become carbon neutral may have also appealed because it strengthened each organisation's identity as environmentally progressive and/or caring family-owned businesses

environmental performance, and not just their financial performance. Reporting is a technique that can improve accountability through communication with stakeholders.

2.4 The Individual level

It is also important to recognise the essential role that individuals play in generating change within organisations. Every individual has the potential to create and encourage change, although some individuals are more effective at this than others. This often relates to their formal role. For example, senior managers have more ability to influence decisions than entry-level staff. A person's ability to influence change is shaped by their personal attributes, such as self-awareness, and skills such as communicating effectively and being good at building relationships.¹⁴

3. WHAT ORGANISATIONS CAN DO TO CULTIVATE SUSTAINABILITY

Organisations can take many actions to cultivate sustainability. The term 'cultivate' is used here because the impacts of actions can grow and develop over time. These actions can be directed:

- internally – within an organisation, and/or
- externally – to influence an organisation's field.

Examples of internal actions include:

- using resources such as energy, water and raw materials efficiently and reducing, reusing and recycling waste
- switching to renewable forms of energy
- developing innovative products, services and technologies that are harmless or good for people and the environment.

Examples of external actions include:

- directly influencing other organisations in a field (e.g. requiring suppliers to meet social and environmental criteria)
- collaborating to change the 'rules of the game' (e.g. creating voluntary industry agreements, or seeking changes in government regulations).

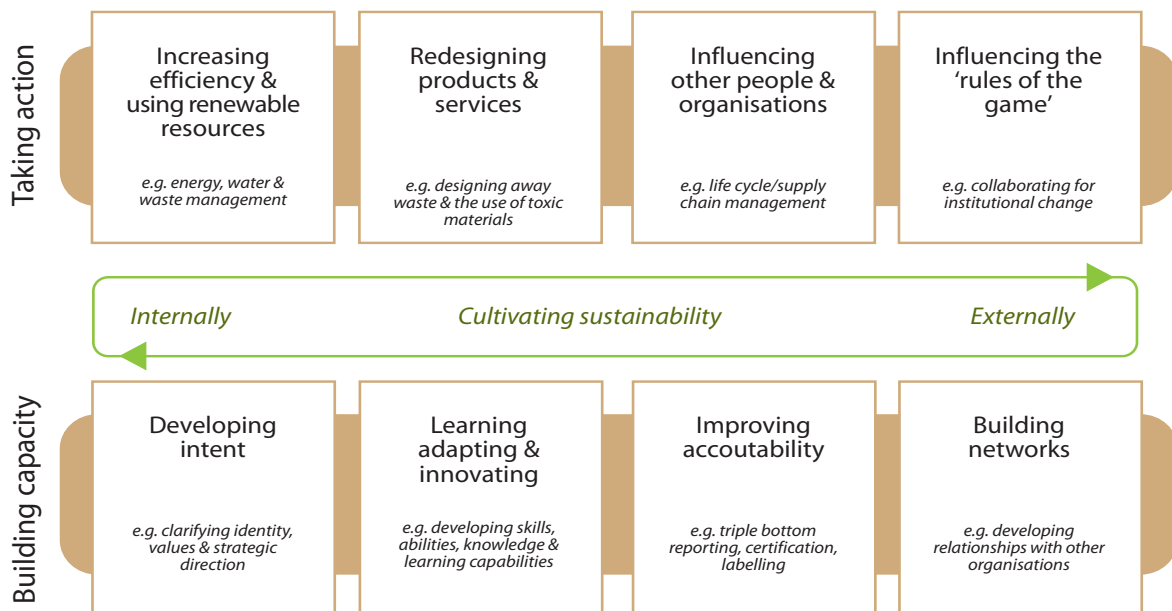


Figure 3: Areas where organisations can promote sustainability

As Figure 3 above highlights, internal and external actions are connected. For example, organisations influence their field and the natural environment when they use resources more efficiently, because they require relatively fewer resources. From the opposite angle, organizations can remove obstacles to being more sustainable when they develop changes in their field. For example, businesses in some countries have closely collaborated for action on climate change.¹⁵ They have exerted major pressure on government to make legislative changes that would encourage many businesses to reduce their greenhouse gas emissions. By creating rules that all industry players need to meet, they are seeking to create a ‘level playing field’ that rewards good behaviour and does not penalise firms (relative to their competitors) for investing in new technologies that may create higher costs. Voluntary industry agreements are another example of organisations seeking to shift the ‘rules of the game’.¹⁶

What organizations need to be able to act

It is easy to focus on what actions organisations can take to promote sustainability, but organisations equally need to have the capacity and capability to implement those actions effectively. That is, they need sufficient motivation to commit to an action and the appropriate skills, capabilities and resources to achieve it. By developing their networks, organisations can also become more active in their field and potentially collaborate on changes with others. Figure 3 highlights these two layers (i.e. taking action and building capacity). Both

levels are connected. The following section looks at what organisations can do to build their capacity as sustainability leaders.

4. HOW ORGANISATIONS BECOME LEADERS IN SUSTAINABILITY

Organisations that wish to lead changes, rather than just respond to pressures as they emerge, need to consider three key areas: their motivations, identity and adaptability.¹⁷

Motivations

Organisations that are aiming only to maintain their legitimacy are unlikely to be leaders in sustainability. This is because they usually only adapt when they face sufficient pressure from stakeholders in their field. In contrast, organisations that can see a clear competitive advantage in changing, or are driven by a strong sense of responsibility, can be a major force for change.¹⁸

Identity

It is also important to consider each organisation’s identity, as the unique purpose and intent of each organisation strongly influences their activities. An organisation’s identity is related to questions of what an organisation ‘is’, ‘stands for’ or ‘wants to be’ in its relationship to the environment, stakeholders and society at large. It provides an important reference point around which to organise. People may find it difficult to let go

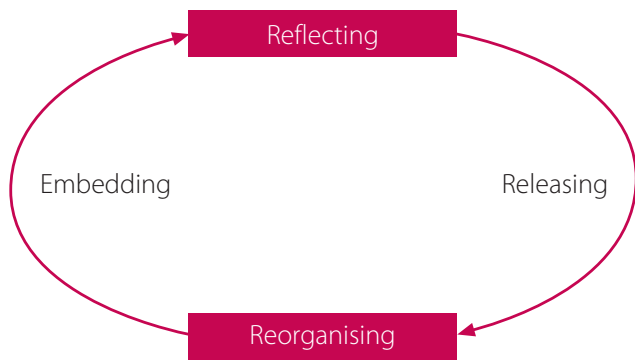


Figure 4: Active learning and adaptation

of existing practices if they do not have a clear sense of what their organisation stands for and what it is seeking to be.¹⁹ In contrast Wheatley (2006) comments:

*When an organization knows who it is, what its strengths are, and what it is trying to accomplish, it can respond intelligently to changes from its environment. Whatever it decides to do is determined by this clear sense of self... The presence of a clear identity makes the organisation less vulnerable to its environment; it develops greater freedom to decide how it will respond.*²⁰

It is also important to consider whether values associated with sustainability are aligned with an organisation's identity and core purpose. Where there is a large mismatch between an organisation's raison d'être and their espoused social and environmental practices, deep changes may be needed to transform organisational practices.²¹ This can be very challenging, because organisations also have powerful inclinations not to change when that change threatens their sense of security or identity.

Organisations can therefore develop their capabilities as sustainability leaders by clarifying what their organisation stands for (i.e. their identity), what it is seeking to achieve (i.e. their purpose and long-term strategy) and how these relate to sustainability.

Adaptability

Adaptability is also important. Being a highly adaptive business means recognizing new risks or opportunities earlier than competitors. Most importantly being adaptive involves

continuous learning. As depicted in an earlier section (Why organisations make pro-sustainability changes), different organisations in a field tend to develop similar patterns of thought and behaviour as they interact. This can limit new learning if organisations become isolated from, and unresponsive to, broader influences in society.

Established patterns in thinking and practice can be intentionally changed through active learning. This involves being conscious of what and how people are learning. It can be encouraged through reflection (e.g. closely observing practices and asking questions about their effectiveness)²², imagining (e.g. envisioning alternatives) and/or 'sensing' (e.g. investigating intuitions).²³

As people become more aware of established patterns, they can create new ones. For this to occur, changes need to be embedded. It is also beneficial to observe the impacts of these changes on the organization so that new learning can result. This suggests that an ongoing process of active learning and adapting is needed (see Figure 4).

Various authors have represented a similar cycle in which organisations can initiate change through 'stepping back' (reflecting and releasing any resistance to change) and 'stepping in' (reorganising and embedding).²⁴ It is also important to consider how people are involved in decision-making processes. This is because "people don't resist change. They resist being changed."²⁵ Literature on organisational change consistently emphasises the importance of meaningfully involving organisational members in decision-making processes to enable change.

Influencing a field

For organisations to be leaders in sustainability, a further important factor is their ability to influence their field (e.g. peers, stakeholders, or value chain). Large organisations often exert considerable influence in a field as dominant players. Small organisations have less resources, but they can also influence their field through inspiring others or developing innovative services or technologies. As noted above, players on the fringes of organisational fields actually tend to be sources of change more often than dominant players. Box 4 provides an example of small winemakers influencing their field.

box 4: WINEMAKERS INFLUENCING THEIR FIELD

carboNZero certified wineries and wine products are part of a field that includes other winemakers, governance authorities, suppliers, distributors, consumers, and the local communities in which they are based. Winemakers that have been certified so far are not dominant in their industry. To some extent, they adopted a new practice and they are encouraging other winemakers to do the same. Staff of the NZ Wine Company, in particular, have been very active in building networks and attempting to influence other winemakers. Smaller winemakers, however, expressed some frustration about their inability to influence larger players due to their size.

All these winemakers met considerable scepticism when they became carbon neutral. This was based on doubts about the environmental and/or business benefits of becoming certified. Yet the success of these businesses, coupled with praise from New Zealand leaders and significant media attention, has helped to legitimise their decision to become carbon neutral. There is a sense among these winemakers that more people within their field are beginning to understand and accept the practice of becoming carbon neutral.

It is too early to tell how widespread this practice could become. If other winemakers try to mimic the successes of these early leaders, or if NZ winemakers face stronger pressures to take action on climate change, this practice could become an accepted part of normal business. It could also spread more quickly if a dominant industry player were to become certified.

There may be limits to how much impact the wine industry can have without changes in the wider system. The certified winemakers suggest that substantial reductions are largely outside of their control, as they rely on changes throughout society. Carbon neutral certification can play a useful role in promoting sustainability, but it needs to be complemented by other factors (e.g. shifts in consumer purchasing choices; legislative changes) to achieve major changes. Such changes are being seen for example in the UK with major retailers (e.g. Tesco, Marks & Spencer) taking leading positions on the need to calculate greenhouse gas emissions embedded in products.

Organisations can also increase their influence by developing networks and collaborating with others. Examples of this include the Sustainable Business Network and the New Zealand Business Council for Sustainable Development.

5. CONCLUDING COMMENTS ON CHANGING THE GAME

This chapter concludes with some key points to keep in mind when exploring ways to develop pro-sustainability changes among organisations:

- Organisations can take specific actions to promote sustainability, but they also need to develop their capacity to implement actions effectively. It is important to look at each organisation's intent, adaptability, accountability and networks as these contribute to the capacity to change.
- Learning is particularly important to encourage adaptability and challenge established paradigms.
- Although organisations are often motivated by the financial benefits of making changes (e.g. cost savings from efficiency), many organisations are more strongly motivated by the desire to 'be seen to be doing the right thing'
- Social movements and governance authorities often play a major role in changing the 'rules of the game' that organisations must meet to achieve success. Organisations can benefit when they anticipate changes and respond quickly.
- Organisations can also collaborate with other players in their field to develop rules that reward pro-sustainability behaviours.
- There are many points of intervention for achieving change within an industry or sector. Organisations on the fringe of a field are often more innovative and responsive to change than dominant players. However dominant players can play an important role in legitimising changes because of their established credibility.
- Individuals also play a crucial role as change-makers in organisations. Although this aspect was not explored in-depth in this paper, it is also important to develop the capacities of individuals to create and lead change.

WANT TO FIND OUT MORE?

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For the Author's contact details see page ii

KEY PUBLICATIONS AND WEBSITES

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ACKNOWLEDGEMENTS

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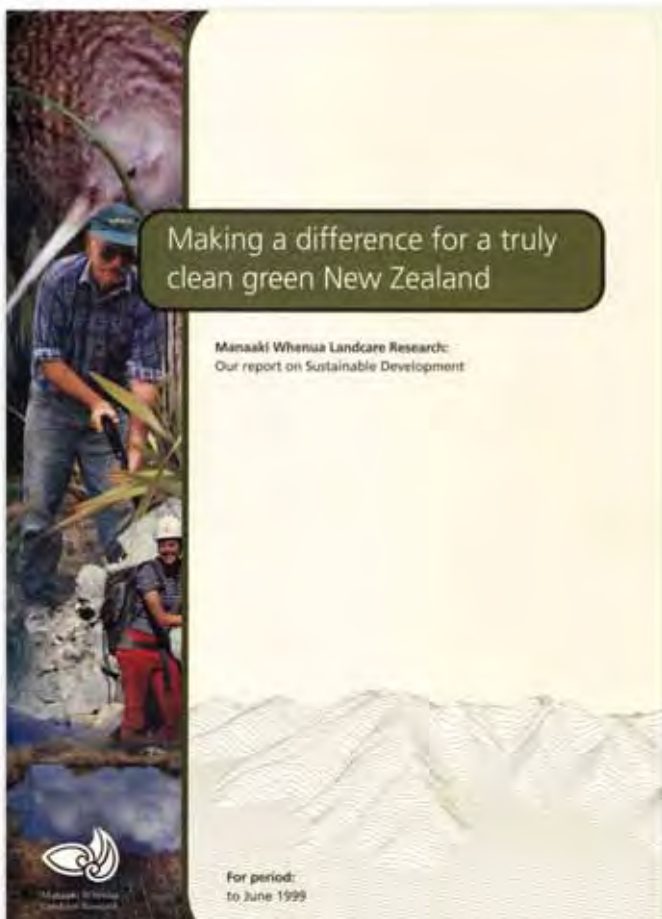


Our journey from unsustainability

Landcare Research corporate reporting

CHAPTER 8 : HATCHED

Judy Grindell and
Richard Gordon



Summary

'Sustainable development is not an option; it is an imperative. It is not a destination, but a direction.'

With those words, Landcare Research began corporate sustainability reporting 10 years ago. In the beginning, few people understood what we were talking about. People were quite frankly puzzled as to why we were reporting all that extra detail when we didn't have to. Ten years on is a good time to reflect on why we started the journey and what we've learnt along the way.

WHAT WE STAND FOR

Landcare Research is focused entirely on sustainability – ‘science for sustainability’; this in itself puts us in a very different position to many other reporters. Our business model is research, science and technology addressing three linked outcomes of national and global importance: sustaining and restoring biodiversity, sustaining land environments, and sustainable business and living. In each outcome area we generate new knowledge to understand the pressures that society puts on its biophysical environment, the state of the environment, and the ways in which economy, society and environment interact. We provide tools that help organisations to understand their role in that triangle of economy, society and environment; what are the material issues, what are their impacts, their options, and the ways of achieving change within their organisations.

BEGINNINGS OF OUR JOURNEY

Our corporate sustainability reporting started internally in the mid- to late 1990s, when John Tan (Chief Financial Officer) and Richard Gordon (Science Manager) were working on environmental accounting with an expatriate New Zealander in the UK (Jan Bebbington – now Professor of Accounting and Sustainable Development, St Andrews University, UK, and Vice-Chair (Scotland) of the Sustainable Development Commission). Together they developed and promoted a corporate strategy to move into the field of business and the environment, which was launched through publication in 1999 of a report on the environmental impacts of our activities — that is, to start applying these environmental accounting protocols to ourselves as an environmental research organisation. These ‘green accounts’ included an assessment of our wastes and emissions from energy and travel, and the costs of offsetting through vegetation – an eco-balance project that was the forerunner of the carboNZero programme.

We had almost completed this report when our then Chief Executive (Andy Pearce) took the bold step of deciding that we should be publicly transparent in reporting our social impacts as well. For those of us producing the report, this decision was a bit scary as the social aspects were uncharted lands for us. But, recognising that this was the proper challenge, we went

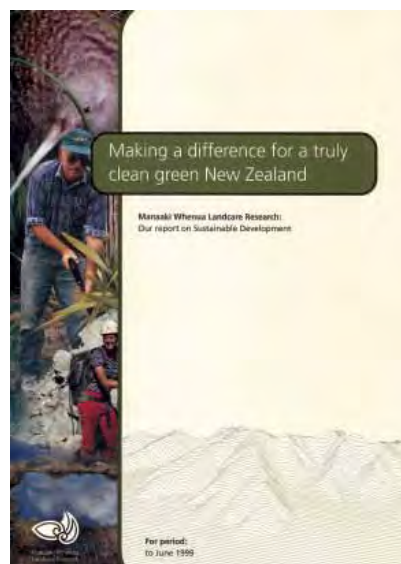


Figure 1 Cover of Landcare Research's Annual Report 1999

back to the drawing board and produced a new report for 1999, published in early 2000. We called it ‘Making a difference for a truly clean, green New Zealand – our report on Sustainable Development’. We learnt an awful lot with this first report, simple as it was.

Initially the triple bottom line (TBL) concept itself was challenging to put into practice. While we understood that it encompassed our environmental, social and economic performance, we struggled with how to parcel up our reporting into those ‘silos’. Every which way we tried it, there seemed to be too many links and interrelationships to make clear-cut delineations as to how we reported performance in these areas. I guess that was the first fundamental lesson in why we were embarking on the TBL journey: it is indeed difficult to separate economic activity from environmental and social impacts, and reporting financial performance in isolation, as per conventional annual reports, told us relatively little about our organisation. The nature of our business (environmental science) further compounded difficulties with the silo approach to reporting. In the end, we found the easiest way to tackle our reporting was to cut the TBL cake a different way altogether: the more pragmatic ‘what we did with others’ and ‘what we did ourselves’. This distinction reflected our thinking that although we had direct impacts as an organisation (e.g. waste, energy use, greenhouse gas emissions) (see Box 1, overleaf), our bigger impact was in the influence that we had through the users of our science (e.g. government policy for the environment, business actions to reduce their footprint). We included a verification report from external auditors.

box 1: WHAT DO RESEARCHERS CONSUME?

Fortunately, the amount of paper we recycle has continued to increase steadily, and since 2001 we have consistently recycled more paper than we purchased. In 2004, there was a significant spike in paper sent to recycling...almost entirely due to office cleanouts in Auckland in preparation for a major relocation to new purpose-built facilities across town! We believe the smaller spike in recycling in 2009 is due to further office cleanouts as some staff moved to refurbished open-plan offices. Obviously science staff hoard paper as well as use lots of it!

In our 2004 report, we converted some of the company performance data to individual consumption, just to make some data more meaningful. Our recording systems were such that we could calculate that an individual scientist used 5700 sheets of paper in a year (30 kg), 150 envelopes, 6 pens, 8 pencils, 50 paperclips and drank their way through 2 kg of coffee beans.

Another lesson from this first report was to not make assumptions, such as how good our environmental performance would be. For example, research organisations, where all staff have PCs and access to printers and photocopiers, use an astonishing amount of paper. Of course we had paper recycling bins around the offices, but when we actually measured how little paper we recycled and how much went to landfill, we were honestly shocked and embarrassed. So the second fundamental lesson from that first report was the truism of 'measure to manage' – everything that is material to your business and your stakeholders. It can be an unpleasant wake-up call initially but this is all the more incentive to improve. It's an attitude translated into operational management, accountability and transparency.

This can take courage. Right from the outset, we decided we would report on our use of animals in our research on protecting biodiversity and managing pests (see Box 2). This was and still is a highly sensitive issue for many people. The

reason for including it in our reporting was two-fold. One, we were willing to stand by our research with its Animal Ethics Committee oversight, duty of care to all animals, good field practices and benefits for New Zealand. Two, we hoped that open reporting would engender a level of trust and help diffuse some of the emotive tensions around animals used in research. Similarly, we have consistently reported our use of genetically modified organisms and new organisms such as the importation of new insects for the biological control of weeds.

Looking back on that first report now, it seems extraordinarily low key. Yet it was ranked highly in a global benchmarking exercise (see Box 3, page 82). While we did not have the same reporting resources as the large multinationals probably had, all the thinking we had done in exploring how to apply the TBL concept to our reporting, plus the support from our Chief Executive and senior managers, had paid off. The approach was firmly embedded in the organisation and put us in a very good reporting position. It also meant that we were 'on the journey' with a number of other organisations (companies and at least one local council) in New Zealand who started similar assessments of their performance in 2000.

OUR MOTIVATION

Landcare Research's decision to adopt sustainability as a business strategy was founded on two assumptions: first, that there would be a business opportunity in providing research, science and technology in this emerging field, and second, that being the organisation we were, dedicated by government mandate to support the sustainable management of natural resources, we should be able to lead by example.

Therefore our sustainable business model had two components: what we do ourselves and what we do for others. What we do ourselves was to include understanding our sustainability impacts (environmental footprint, social and economic performance) (see Box 4, page 82), and going about improving those features. What we do for others was to include developing tools for businesses to enable them to increase their competitiveness and decrease their risks, and to provide government with tools like sustainability indicators and to

Box 2: ANIMALS IN RESEARCH

Animals are essential to our research on protecting biodiversity and managing pests. Manaaki Whenua has a genuine commitment to the welfare and well-being of all animals (endangered native species or introduced pests) that goes beyond the minimum standard. Our duty of care involves preventing undue pain or distress. Researchers and our Animal Ethics Committee (AEC) work together so that pain and distress can be avoided or minimised. Animals kept in captivity are housed in purpose-built facilities. All our research involving manipulations of live animals in the field or in captivity is approved by Manaaki Whenua's AEC, which comprises two Manaaki Whenua scientists, and representatives of the New Zealand Veterinary Association, the Society for the Prevention of Cruelty to Animals (SPCA), Māori and the public. The AEC's role is to ensure our use of animals for research is kept to a minimum, complies with the Animal Welfare Act, and follows strict ethical guidelines and operating procedures. In the 2003 calendar year, applications were approved to use animals as part of 3 ecological studies of native and introduced species, in 26 trials of new and improved methods of pest control, and 2 studies of the role of animals in transfer of Tb between species. Work where animals are handled, including catching and banding birds, requires prior approval from the AEC. Trapping possums in the field does not require AEC approval. Nevertheless, staff have a responsibility to minimise suffering and must dispatch trapped possums quickly and humanely. At the conclusion of AEC-approved projects, the number of animals 'used' and their fate are reported to the Ministry of Agriculture and Forestry (MAF) on a calendar-year basis as required. This information is on our website. As part of our efforts to monitor and reduce the number of non-target animals caught during fieldwork, we record all animals caught during all fieldwork — including AEC-approved fieldwork and trapping where no AEC approval is required. These data are summarised here, with more detail available on our website.



http://www.landcareresearch.co.nz/sustainability/indicator_details.asp?SustainabilityIndicator_ID=152

Accidental by-catch of native species

	2004	2005	2006	2007	2008
Studies	24	26	18	19	19
Target animals captured	9,838	10,720	8,984	6,489	5,675
Non-target introduced animals captured	319	364	248	498	150
Non-target native animals captured	72	96	62	22	44
Non-target native animals killed	4	9	0	6	2

Summary of main findings for the 2008 calendar year and key comparisons with previous years

The number of non-target vertebrate captures continues to decline, and at 177 for the calendar year is easily the lowest on record (cf. the figure of 1944 non-target captures in 2001).

Two robins found dead in traps targeting rodents represent the only native species killed as by-catch. With the exception of 19 endemic skinks captured and released unharmed in traps also primarily targeting rodents, only 4 other native animals were caught (3 kea and 1 hawk, all released apparently uninjured).

box 3: LOCAL SOLUTIONS, GLOBAL RECOGNITIONS

Landcare Research's (and New Zealand's) first TBL Annual Report in 2000 was ranked 14th in the world by SustainAbility / United Nations Environment Programme Global Reporters Survey. The 2001 Report was ranked 22nd in the same global report the next year ('Trust Us') (see Frame et al. 2003a, b) and Bebbington et al. 2009)^{1, 2, 3} and the following report was ranked 15th.

At the same time the Institute of Chartered Accountants for New Zealand awarded Landcare Research annually for its reports and its contribution to sustainability in New Zealand. After winning the sustainability section in the ICANZ awards for five consecutive years, Landcare Research decided not to enter the awards in 2005 but to sponsor the awards instead. However, the 2005 report did win the best sustainability report in Australasian Reporting Awards (ARA).

Having firmly established itself in the sustainability field, the organisation decided not to enter further awards but to focus on exploring new ways to move its reporting forward, particularly via the Web.

support policy-development and programmes that they would run for New Zealand's sustainability.

Initial investment in the strategy came at the expense of other areas and was not universally supported within the organisation. As a science organisation we confronted views that sustainability was not real science, and that it was a passing fad. Outside the organisation we confronted views that sustainability was anti-business, and that it was a passing fad. But there were business leaders who supported the notion and saw value to their businesses, to New Zealand and the world as a whole.

REPORTS – WHAT'S IN A NAME?

Given that our 1999 Sustainable Development report was not published until early 2000, about six months before our 2000 Annual Report was due, we decided to hold off on another report until we could fully integrate it with our Annual Report in 2001. From there on, we tended to refer to these reports as 'annual reports covering all dimensions of our performance', a concept that was easier for people to understand and was widely recognised as a market leader (see Boxes 3 and 4). In 2002, we introduced the notion of sustainability, and by 2004, we were firmly using this concept rather than the TBL. However sustainability reporting was still in its infancy in New Zealand so, to help readers make the connections, we introduced 'Helpful Harriet' who popped up as a footnote throughout the report to explain aspects of various articles in terms of economic, social and environmental sustainability.

We continue to use the term 'sustainability reporting'. TBL reporting seems to have fallen out of favour (possibly because it seems to embody a 'silo' mentality). Corporate Social Responsibility (CSR) is a term widely used overseas but is synonymous with sustainability reporting or Sustainable Development Reporting (SDR). Fully integrated reports whereby the CSR information is presented along with the audited financial statements are still in a minority and are considered innovative.

box 4: THE GLOBAL REPORTING INITIATIVE

The GRI framework (www.globalreporting.org) provides an internationally accepted protocol for sustainability reporting. Landcare Research was an organisational stakeholder and contributed senior staff time throughout 2000 – 2007 to GRI technical working groups and the Stakeholder Council. We remained an organisation stakeholder up until 2009. GRI checked and confirmed that our sustainability reporting Web pages published in October 2008 met their A level.

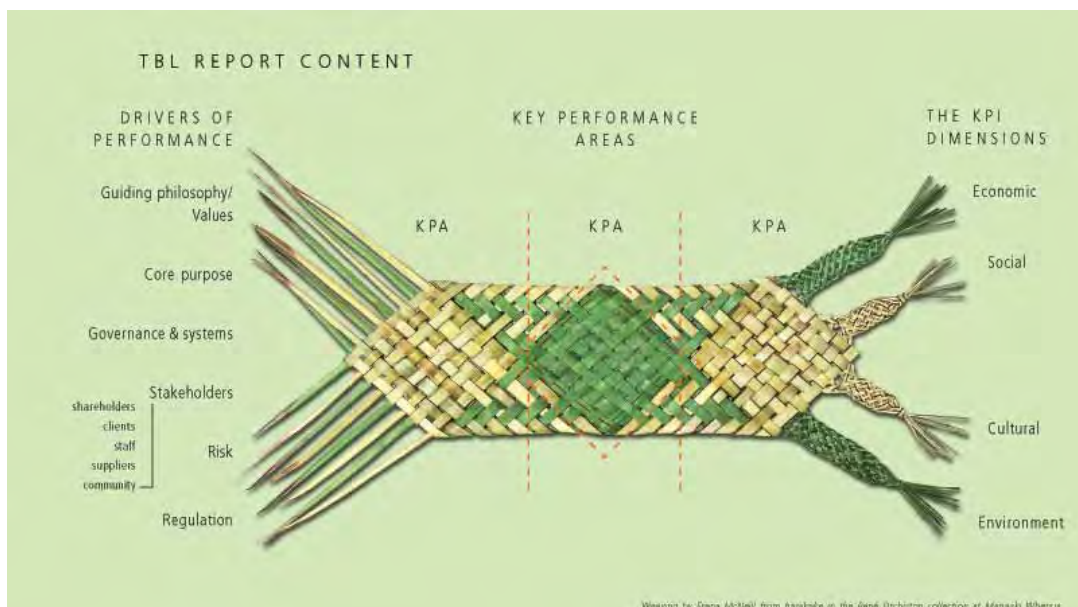


Figure 2 Schematic diagramme in Landcare Research's 2001 Annual Report

MAKING STRIDES... A BIT OF HISTORY

By 2001, our reporting was more confident and more sophisticated, as illustrated with the weaving diagram that shows how the various factors driving reporting meshed together into the management fabric (key performance areas) for an organisation. The key performance indicators (KPI) strands are the measurable data on how well the management systems and strategies are performing.

We used another schematic diagram in our 2005 Annual Report (see figure 3). The drivers (blades of flax) were broken down into a myriad of strands firmly integrated into the body of our organisation (strands wrapping around the anchor stone). The various strands were woven together into reporting areas, which formed the sections of the 2005 Annual Report. We were still using much the same KPIs but presented them in a different structure. In that report, we also started taking a harder look at governance issues and more transparency around how our Board of Directors operates.

We had initiated a robust system in place for documenting each KPI, including who produced the data and who verified it as correct, where the data were held in the organisation and any other information relating to calculation methodologies and what was included and what was not. This system has formed the backbone of external verifications and our reporting ever since; we still retain the same basic numbering system as this makes it very easy to track KPIs across multiple years despite changes to staff and operating systems. We

review these indicators each year to ensure they remain aligned to our drivers and management priorities.

We continued to commission an external audit and verification of our non-financial reporting until 2006. This process is demanding in that an already tight reporting timeline is condensed further (Crown Research Institutes have a statutory obligation to deliver a printed annual report to Parliament three months after the end of the financial year). Nevertheless, the external audit added considerable value by challenging us to explain *why* we chose to report what we did as well as examining and verifying *what* we reported. The downside of formal external verification is the quite considerable cost. With extensive restructuring of the organisation and a new Chief Executive, it was decided that the cost could no longer be justified for the 2007 and subsequent reports. However, we have retained various external certifications of best practice performance such as ISO14001, our carbo neutrality, and tertiary (the highest) level in the Accident Compensation Commission's Workplace Safety Management Programme.

CULTURAL REPORTING

By 2001, we were starting to grapple with the concept of adding a fourth (cultural) dimension to our reporting. Our commitment to the Treaty of Waitangi is embodied in our Guiding Philosophy, developed in 1993, and working with Māori as tangata whenua (indigenous people) is part of our core business. We believe

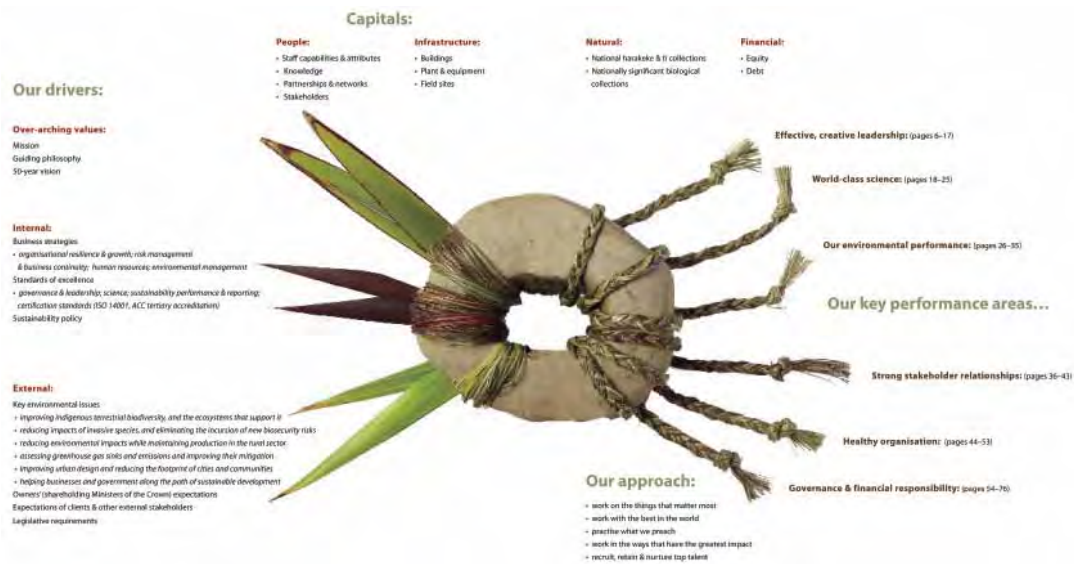


Figure 3. Another schematic approach depicting our 2005 report. It still uses much the same KPIs but the reporting is structured differently. The reporting areas formed the sections of our 2005 Annual Report.

cultural reporting means covering issues important to Māori and from a Māori perspective of enriching traditional culture such as values, language and knowledge.

In 2002 and 2004, we produced short bilingual summary reports where the translations were not literal or word-for-word. This approach, led by our Treaty Responsibility Manager, went against conventional practice at the time but was very well received by Māori. In alternate years, we included either a short quotation from a prominent Māori stakeholder or a well-known Māori proverb...initially with translations only on our website, not in the printed report! Needless to say this unexpected approach startled a few (Pākehā) readers.

Following restructuring and extensive staff changes in 2006, we stopped producing the bilingual summary reports largely because of resourcing issues as the organisation restructured.

BUSINESS AS USUAL

While Landcare Research took a leadership position on sustainability reporting, it is not an end in itself. It is a means of engaging more effectively with stakeholders to determine what are the material issues for an organisation, and to the end of improving performance and establishing a reputation in the market. For Landcare Research to build a reputation for sustainability it needed to go beyond reporting to enable its clients and partners to make a significant difference.

GOING FORWARD WITH OUR REPORTING...SUSTAINABILITY WEB PAGES

In 2007/08, we looked at how we were reporting and our rationale for doing so. The move to IFRS almost doubled the length of our financial statements, which are of interest to only a narrow sector. With this as a driver, we decided to print the annual report in two parts but with a much reduced number of copies of the financial section. We decided to move our sustainability reporting away from the printed report (summary information only) in favour of developing comprehensive sustainability web pages (see Box 5).

box 5: WHY DEVELOP A SUSTAINABILITY WEBSITE?

- Sustainability is our core business
- Stakeholder expectations
- Reduce resources used in printing
- Greater flexibility than printed report
- Provide more context & links with research
- More connections between strategy & performance
- More opportunities to move into challenging spaces e.g. the 'Voices' section



Figure 4 Landcare Research's Sustainability Reporting online. In 2007/08, we shortened our printed Annual Report and moved our sustainability reporting to an extensive new section on our website. This has enabled us to report more comprehensively and to tackle new challenges. The more conventional sustainability reporting issues are covered under Our sustainability aims and Our sustainability progress. Visit <http://www.landcareresearch.co.nz/sustainability/>

This exercise has had its own challenges but has opened up many new opportunities for our reporting. One of the key benefits is that we can now make stronger links with our science.

One of the issues we've tackled is thinking around science as a product, and hence how do we manage 'product responsibility' issues? This is stepping into unfamiliar territory but it is a great way to learn and challenge ourselves.

Another opportunity has been to develop the 'Voices' section, which has three components, one of which is fairly common practice, one is less common, and the third is definitely going to cause a few more furrowed (Pākehā) brows!:

1. Internal comment on topical issues from senior leaders within Landcare Research
2. Invited contributions from well-known public figures in New Zealand or overseas. These 'thinkpieces' are included verbatim and are intended to challenge us as well as other readers
3. The cultural aspects of sustainability – the role of Māori knowledge and values (matauranga Māori) and Māori people in sustainable management of resources based on holistic value systems, different concepts of 'ownership' and accountability, and different monitoring frameworks

This is a particularly challenging and exciting space for developing sustainability concepts and a significant paradigm

shift away from the financial reporting models prior to the financial crash, as explored in Chapter 9 by Allen White of the Tellus Institute.

The journey hasn't ended yet. The road isn't straight and every time we round another bend or surmount another hill, we see more looming! Ten years on and the words we started with are still true:

'Sustainable development is not an option; it is an imperative. It is not a destination, but a direction.'

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KEY PUBLICATIONS AND WEBSITES

<http://www.landcareresearch.co.nz/sustainability/>

<http://www.landcareresearch.co.nz/publications/reports.asp>

<http://www.accountability21.net/>

<http://www.sustainability.com/>

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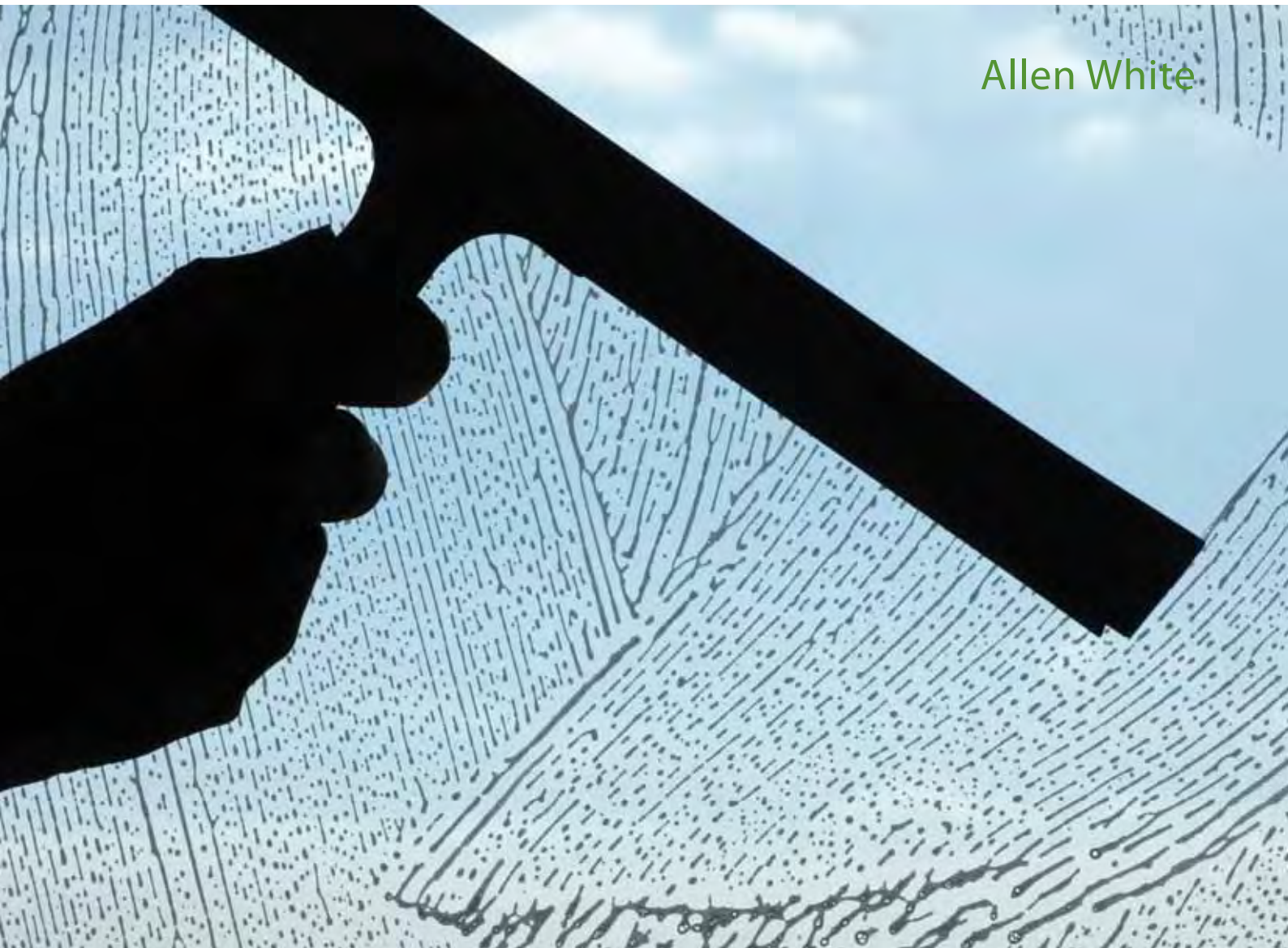
Landcare Research
Manaaki Whenua

Coming of Age

A Global Perspective on Sustainability Reporting

CHAPTER 9 : HATCHED

Allen White



Summary

The demand for increased transparency, greater accountability and responsibility has resulted in not just a boom in the reporting aspects of corporate behaviour but also a dramatic shift in the supporting business case for reporting and the consumer expectation of integrity. This chapter documents global changes that have developed over the last ten years such that:

- Sustainability reporting is now a mainstream expectation of companies
- While transparency provides a powerful ethical case, the conventional business case is equally compelling with purely financial returns positive
- Reporting acts as a proxy for other practices that represent the kind of mindset associated with business leadership and innovation
- Intrinsic to sustainability performance are three interrelated value propositions, and excellence in sustainability reporting provides an indispensable tool for measuring and communicating this
- Share price is as much market psychology as it is true value, and sustainability reporting may play an increasingly significant role in strengthening share price
- Sustainability reporting helps mitigate adverse effects of brand risk, as developing a sustainability report may reveal risks in the value chain that could spur consumer protests; and it identifies possible corrective action
- Sustainability practice is as much about positioning a company for opportunity as it is about enhancing its ability to effectively manage risk
- Companies use sustainability reporting to strengthen stakeholder relations to advance business objectives

Making the business case for sustainability reporting cannot be distilled to measurement of traditional financial indicators. Business benefits are nuanced, multifaceted, and indirect, combining both quantitative and qualitative returns. Sustainability reporting serves as a management and communications tool that mirrors a more general trend in the evolution of 21st century business – that wealth creation itself is a multidimensional concept and must be measured and reported as such. Successful companies of the future will be the ones that recognise this multidimensionality and manage the organisation to enrich concurrently human, social, and natural capital alongside financial capital.

THE TRANSPARENCY IMPERATIVE

In less than a decade, the concept of sustainability reporting (SR)¹ has moved from the extraordinary, to the exceptional, to the expected among organisations worldwide. While the number of reporters still represents a small fraction of the world's enterprises, the drivers that gave birth to SR¹ in the late 1990s continue unabated and, in all probability, will intensify in the post-recession years ahead.

What lies behind this rapid ascent? At the core of SR is the notion that all organisations, regardless of size, product or service, sector or location are creations of government, licensed to exist under terms and conditions designed to protect and enhance the public interest. This is so regardless of whether the organisation is for-profit or not-for-profit. In return for this licence to operate is a set of expectations – a social contract – in which organisations are obliged to meet certain standards of behaviour. These, of course, are manifested in a wide array of formal laws and regulations and informal societal expectations that vary across countries and cultures.

Amid all this diversity, however, are emergent, generally accepted norms that reflect the globalisation of business enterprise. Prominent among these are: international core labour standards promulgated by the International Labour Organization (ILO); rules of corporate governance advocated by the Organisation for Economic Co-operation and Development (OECD); international financial reporting rules developed by the International Accounting Standards Board (IASB); global rules for trade negotiated by the World Trade Organization (WTO); a framework for responsible investment advocated by the UN Principles for Responsible Investment (PRI); universal values for business conduct of the UN Global Compact; and, most relevant to the present inquiry, a framework for disclosure of economic, environmental, social, and governance information designed by the Global Reporting Initiative (GRI).² As the forces of globalisation continue unabated, these types of international norms and principles will continue to expand their influence as enterprises worldwide strive for recognition, legitimacy, and competitiveness in the global arena.³

One of the key components of this emergent suite of norms

is the emergence of transparency as a generally accepted element of business conduct in the 21st century. The reasons for this are several. First, the ascendance of the corporation since World War II as a force in shaping the well-being of people and the environment has reached unprecedented levels. This trend has rendered the centuries-old concept of a social contract between citizens and their government a partial reality. In the contemporary political economy, the business sector as a third party to the social contract is increasingly prominent in the struggle to build sustainable societies. Indeed, in this planetary phase of civilization,⁴ some multinational corporations control assets that exceed those of whole nations. Business' assertiveness on the global stage has spawned rising expectations for accountability, the notion that privileges and entitlements must be balanced with duties and obligations, a core one of which is accountability to the stakeholders within the company's sphere of influence.

Second, technology has enabled business news – favourable and unfavourable – to circulate around the globe at warp speed in a contemporary 'CNN world'. Revelations of tainted products, reports of sweat shops operated by contract factories, and allegations of child slavery and human rights violations are available to audiences worldwide within minutes after initial disclosure. In what has been called 'the naked corporation'⁵ organisations, either willingly or unwillingly, actively or passively, are subject to a level of scrutiny unimaginable even a decade ago.

Third, transparency increasingly is viewed by companies themselves as a critical management tool. The case for managing the business in a prudent, forthcoming fashion is a critical factor; building investor and customer trust, and creating a stock of goodwill and resilience in the event of unexpected revelations of environmental damage, product defects, or governance lapses. Leaving the initiative to communicate in the hands of the news media runs the risk of biasing disclosure in a way that misleads company stakeholders. Over the long term, a strong alignment between what the company says it is doing and what it actually does is the surest force in building and sustaining its reputation and brand value in the global market.

While the transparency imperative has intensified in recent years, it is likely to do so even more amidst the current global economic crisis. Why? Because, in the eyes of many observers, the crisis itself is in large measure a reflection of a massive transparency breakdown. The failure of financial institutions to estimate and disclose – much less fully and clearly explain – the existence and risk of exotic financial instruments on their balance sheets has created a virus of failed financial institutions. These practices have been a major force in the precipitous drop in share prices in financial institutions and the investor anxiety over the viability and gradual government control of such organisations.

Transparency breakdowns have sent shock waves through global capital markets, occasioning economic contraction, soaring unemployment, reduced global trade, and a global credit crisis. In an interdependent global economy, neither distance nor protectionism create safe havens of insulation against the impacts of such failures. As governments grapple with the formidable challenge of rebuilding the global financial architecture, higher levels of transparency are widely viewed as a precondition for fashioning a system – a ‘Bretton Woods II – capable of managing the complexities and risks of the 21st century economy.’⁶

GLOBAL TRENDS

SR stands among the most concrete manifestations of the transparency imperative. From its conception little more than a decade ago, SR is now widely recognised as a best practice for all companies, and especially those seeking recognition and reputation for their products and services in the global marketplace. The Global Reporting Initiative framework, the de facto global standard for SR,⁷ has reported that 43% of the world’s most valued brands produce SR reports based on the GRI.⁸ From a curiosity a decade ago, the absence of an SR report among companies that operate – or seek to operate – in global markets today raises questions about their willingness and/or capacity to conduct themselves according to emerging international norms.

A recent survey by KPMG tells the story.⁹

- Nearly 80% of the largest 250 companies publish worldwide SR reports.
- Among each country’s largest 100 companies, Japan (88%) and the UK (84%) report.
- Though still uncommon, blending of SR and financial reporting is on the rise: 12% of the largest firms in France and Norway, 20% in South Africa.¹⁰
- SR reporting is no longer the exclusive domain of developed countries. Large firms in Brazil (78%), South Africa (45%) and South Korea (42%) are increasingly visible SR reporters.

KPMG observes: ‘The question is no longer “Who is reporting?” but “Who is not?” Corporate responsibility reporting is now a mainstream expectation of companies. . . we can expect this trend to roll out rapidly at the country and sector levels in coming years.’

Other research corroborates these trends. The Corporate Register¹¹ estimates that between 1992 and 2007 SR reporting grew from 27 to an estimated 2500 annually. Regionally, while Europe is still the dominant region with nearly 1500 reporters, North America and Asia now account for nearly 400 reporters each. And from a negligible showing in 2002, firms in South America and Africa and the Middle East have emerged as measurable contributors to global totals. Accompanying these numbers is an equally noteworthy trend: report content has evolved rapidly from a decidedly environmental focus in 2000 to balanced disclosures in 2007 that encompass the spectrum of economic, environmental, and social topics.

Although SR reporting at the global scale remains largely a practice among large companies, reporting by small and medium-size enterprises (SMEs) is on the rise. Already, GRI SME reporters are found in countries as diverse as Brazil, Chile, China, Indonesia, New Zealand, the Netherlands, and Spain. Examples include: Bodega Pirineos (Spain – food and beverages), City West Water and Watercare Services (public water utilities in Australia and New Zealand, respectively), Landcare Research (New Zealand – science), Florestas (Brazil – organics, cosmetics), Abufrut (Chile – fruit processors), Landwasher (China – ecological public toilets), and PT Intaran

(Indonesia – sustainable forestry). In all probability, a large number – even the majority – of SMEs that prepare SR reports are not yet included in current sources such as GRI and Corporate Register listings. Many undoubtedly are prepared in the non-English-speaking world and many do not have the resources or inclination to promote their SRs overseas. Nevertheless, it is likely that the numbers will grow, for at least two reasons: (1) large companies over time will demand SR reporting among their suppliers as selection, risk management and quality control measures; and (2) the tools and methods available to SMEs for SR reporting are becoming more abundant and refined.¹²

MAKING THE BUSINESS CASE

While the transparency imperative may present a powerful ethical case for reporting, is a more conventional business case available and equally compelling? The answer, it turns out, is ‘yes,’ with caveats.

Setting aside societal expectations for accountability, the balance of evidence suggests purely financial returns to reporting are positive, if not overwhelmingly so.¹³ These may occur in the form of lower volatility of share price, lower cost of capital, higher gross margins, and strengthening of intangible assets such as brand and reputation – some difficult to measure but all significant in determining a company’s market capitalisation whether or not it is publicly traded.

A recent study¹⁴ exemplifies the kind of association that tends to emerge in studies that hypothesise an association between SR and financial performance. In a study of 60 large companies, a generally positive association between SR and five financial indicators was found: gross margins, return on sales, return on assets, cash flow, and shareholder return. In a similar vein, sustainability performance indices and ratings groups such as the Dow Jones Sustainability Index and KLD regularly find strong sustainability performers with share prices equal to or exceeding overall market performance.

To be clear, findings of this kind of association do not imply causality. Like virtually all studies of this genre, the positive

finding likely occurs because SR reporting is acting as a proxy for other behaviours or practices: forward-looking management; long-term, strategic investments in operational improvements; consistent attention to nurturing brand and reputation – in short, practices that collectively represent the kind of mindset associated with business leadership and innovation. At the same time, the association tends to produce a virtuous circle: SR documents and communicates sound management practices, and sound management practices lead to a commitment and continuous upgrading in SR reporting, and so on. A deeper look at this dynamic is made possible by unbundling a number of aspects of the business case.

The many flavours of value

Intrinsic to assessing the sustainability performance of a company are three interrelated propositions. First, sustainability practices in the long term create value for both shareholders and other stakeholders of the organisation. Second, such value is expressed in many forms which collectively enrich multiple forms of capital – financial capital, natural capital, social capital, and human capital. Third, over the long term, this enrichment process leaves the company both more profitable and more valuable in terms of its societal contributions. The multidimensional nature of value creation means that SR must capture and communicate multiple-value drivers and outcomes – tangible and intangible, quantitative and qualitative – that together constitute the essence of a sustainable company contributing to the sustainability of society.

For sectors with a deep and extensive environmental footprint such as mining, forestry, and agriculture, the business case for SR may rest on the intangible benefits of contributing to building strong local connections to communities and regulators who decide whether resource extraction will be permitted and/or expanded. For a consumer goods manufacturer of appliances, automobiles, or toys, SR provides a critical vehicle for informing stakeholders what the company’s future product mix incorporates, for example, renewable energy and safe materials, in the design of such products. In the retail sector, attraction and retention of high-quality store managers and staff may be enhanced by SR that demonstrates, in a balanced and rigorous fashion, the company’s commitment

to livable wages, healthy working conditions, and the sale of safe products and services. In short, 'value' is multidimensional, and excellence in SR provides an indispensable tool for measuring and communicating this multidimensionality.

Share price

Share price is as much, or even more, market psychology as it is true value. While an array of forces drive share price – from external geopolitical conditions to national interest rates to consumer spending forecasts – it is fair to say that an information-rich environment overall tends to modulate swings in share price of both individual companies and capital markets in general. SR may play an increasingly significant role in strengthening share price and modulating swings when market conditions experience upswings and downswings.

Why might this occur? First, investors place a high premium on quality of management. Indeed, in the eyes of many, quality of management is *the* most important determinant of a company's future financial performance. As much as, perhaps more than, financial reporting, SR offers the opportunity to demonstrate, in specific and concrete terms, how management identifies, tackles, and meets opportunities and risks facing the organisation. Said another way, SR at its best offers investors a view of the 'mind' of the company – its problem-solving capacity, its capacity to innovate, to think strategically. Challenges remain, of course, in convincing investors of these benefits. But this in no way dilutes the rewards to those that are awakening to their business relevance.

Second, because SR contributes to an information-rich capital market, it helps tame share price volatility. A 2004 report¹⁵ by a UK consultancy found that 300+ GRI reporters experienced lower share price volatility (as well as higher operating profits and revenue growth) than firms that did not publish sustainability reports. In a related assessment, Standard and Poor's, the rating agency, in a 2002 study¹⁶ of 1500 companies, found that 'the amount of information companies provide in their annual reports is correlated to the market risk and valuations, specifically high price-to-book ratios and the ability to lower the cost of capital'.

Of course, studies such as these show association, not causality.

But the underlying logic of their findings is intuitive. Capital markets do not look kindly on surprise disclosures. Conversely, evidence suggests they do reward companies that consistently disclose high-quality information, both non-financial and financial. Even when the disclosures reveal temporary operational, product, or other shortcomings, evidence in SR that such problems are being prudently managed will tend to have a calming effect on investors who might otherwise be inclined toward turning over shares.

Risk management

Warren Buffet, generally regarded as one of the world's most successful investors, once observed: 'It takes twenty years to build a reputation, and five minutes to ruin it.' More than any other attribute, trust is the undergirding of reputation; and reputation, in turn, is the foundation of building strong brands.

Examples of how brands may survive or suffer are reported in the media with regularity. The classic case of Johnson & Johnson's recall of Tylenol in the 1980s is often cited as a textbook case of superior risk management – rapid, unequivocal, public response to product tampering. In a similar vein, Mattel's decisive handling of the recent tainted Chinese toy imports has helped maintain the company's reputation as an industry leader. In contrast, the Vioxx drug case involving Merck, the pharmaceutical company, is generally viewed as seriously flawed from the standpoint of brand corruption and reputation damage owing to breakdowns in transparency and timely disclosure of drug risks and trial information.

SR helps to mitigate adverse effects of brand risk in at least two ways. First, the process of developing an SR report helps to reveal in a *pre-emptive* fashion where risks loom in the value chain that spur citizen protests. Further, it identifies what corrective action is needed: e.g. in substandard labour conditions in contract factories that may be exposed in the mass media; in defects in product materials; or in unsustainable water use by food and beverage companies in localities abutting a production facility. The SR process can serve as a vehicle for both risk identification and risk management, providing both the organisation and its stakeholders with the confidence that the company is solidly positioned to manage risks whenever and wherever they arise.

SR provides a cushion for mistakes that inevitably occur, even in cases of excellence in risk management. Companies known for their high standards of transparency have a greater cushion – in effect, a stock of goodwill – to soften the adverse effects of mishaps. When they regularly receive high-quality sustainability performance information, stakeholders view such adversity through a different prism than in cases where a company is known for opacity. This, in turn, helps to buy time for the organisation to implement corrective action and put in place management systems to prevent recurrence of the problem.

Opportunity assessment

In managing a business, sustainability practice is as much about positioning a company for opportunity as it is about enhancing its ability to effectively manage risk. Companies with an eye toward the future, adept at imagining new markets, and alert to new technologies and product development opportunities that address pressing social and environmental needs, may use SR as an instrument for identifying prospects for top-line growth. They understand that behind many risks await lucrative opportunities to provide goods and services that align with society's quest for sustainable development.

Examples of such opportunities are proliferating. Grameen-Danone Foods of Bangladesh, a joint venture of the Grameen Group and Danone, the French dairy company, provides nutrition to the low-income and nutritionally deprived population of Bangladesh. BP has launched an alternative fuels venture in India in partnership with NGOs, to vastly reduce indoor air pollution among the poor, one of the greatest health hazards facing the 'bottom of the pyramid.' And Procter & Gamble has developed and, in conjunction with UNICEF, is marketing an affordable, home-based purification product to address pervasive unsafe drinking water among millions of poor households in developing countries.

High-quality SR can help sharpen awareness of such opportunities by 'connecting the dots' between global challenges and new product and service markets.

Stakeholder engagement

The transparency revolution of the last two decades is a mirror of the changing world in which companies operate.

Insularity and opacity are simply no longer options because technology, financial debacles, and a surge in regulatory disclosure requirements have irreversibly altered stakeholder expectations for responsible company practices. Companies that fail to recognise these new realities are destined to fall behind the competition because consumers, employees, activists, communities and, ultimately, investors will lose trust in their products and services. Further, companies also will lose a critical opportunity to help shape the terms of engagement with their stakeholders rather than wait, reactively, for the next accident, boycott, or misstep to unleash stakeholder animosity.

Companies have used SR to strengthen stakeholder relations to advance business objectives. Dell, the computer maker, has shifted in the face of shareholder resolutions from a position opposed to sharing information to one of multifaceted engagement. In addition to seeking input and arranging dialogues with shareholder activists, the company gradually has moved toward more robust GRI reporting.

Bristol-Myers Squibb and Novartis have been leading innovators in sustainability reporting. BMS was one of the very first GRI reporters in the late 1990s. The company also has been a leader in use of the Internet to inform its stakeholders of operations and progress against targets. An interactive website is used to both inform and collect feedback.

Novartis is one of the first global companies to fully integrate financial and sustainability reporting in the belief that the two are inseparable and mutually supportive in terms of communicating company performance to shareholders, consumers, communities, and other stakeholders. Procter and Gamble, widely recognised as one of the most successful brand managers in the world, has used innovative reporting methods to reach its stakeholders through various web-based disclosures within an overall triple-bottom-line framework. A reporter since 1999, Procter & Gamble views SR as integral to its commitment to developing processes and products that meet the needs of both rich and poor countries.

Logically, then, SR adds to such value in diverse ways. Because it catalyses new insights, new conversations across business functions, and new procurement and marketing strategies in

a company, value emerges as much from the *process* of SR as from the end product, a sustainability report.

REFLECTION

In a globalising world functioning as an increasingly tightly woven web of trade, information, capital, and technology flows, companies of all sectors, sizes, and locations find themselves scrutinised by stakeholders who seek, and deserve, a steady flow of credible, timely, and usable information. Whether by choice or mandate, responsible companies are rethinking the nature of their obligation to operate transparently both to manage risk and exploit opportunities in the coming decades. It is a wise thing to do and the right thing to do because

accountability – the ‘right to know’ – has emerged as the universal norm in business–society relations.

Making the business case for SR cannot be distilled to measurement of traditional financial indicators. Instead, business benefits of SR are nuanced, multifaceted, and indirect, combining both quantitative and qualitative returns to the organisation. SR serves as a management and communications tool that mirrors a more general trend in the evolution of 21st century business – that wealth creation itself is a multidimensional concept and must be measured and reported as such. Successful companies of the future will be the ones that recognise this multidimensionality and manage the organisation to enrich concurrently human, social, and natural capital alongside financial capital.

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- 9 KPMG 2008. KPMG international survey of corporate responsibility reporting 2008. Available at: <http://www.kpmg.com/Global/IssuesAndInsights/ArticlesAndPublications/Pages/Sustainability-corporate-responsibility-reporting-2008.aspx>.
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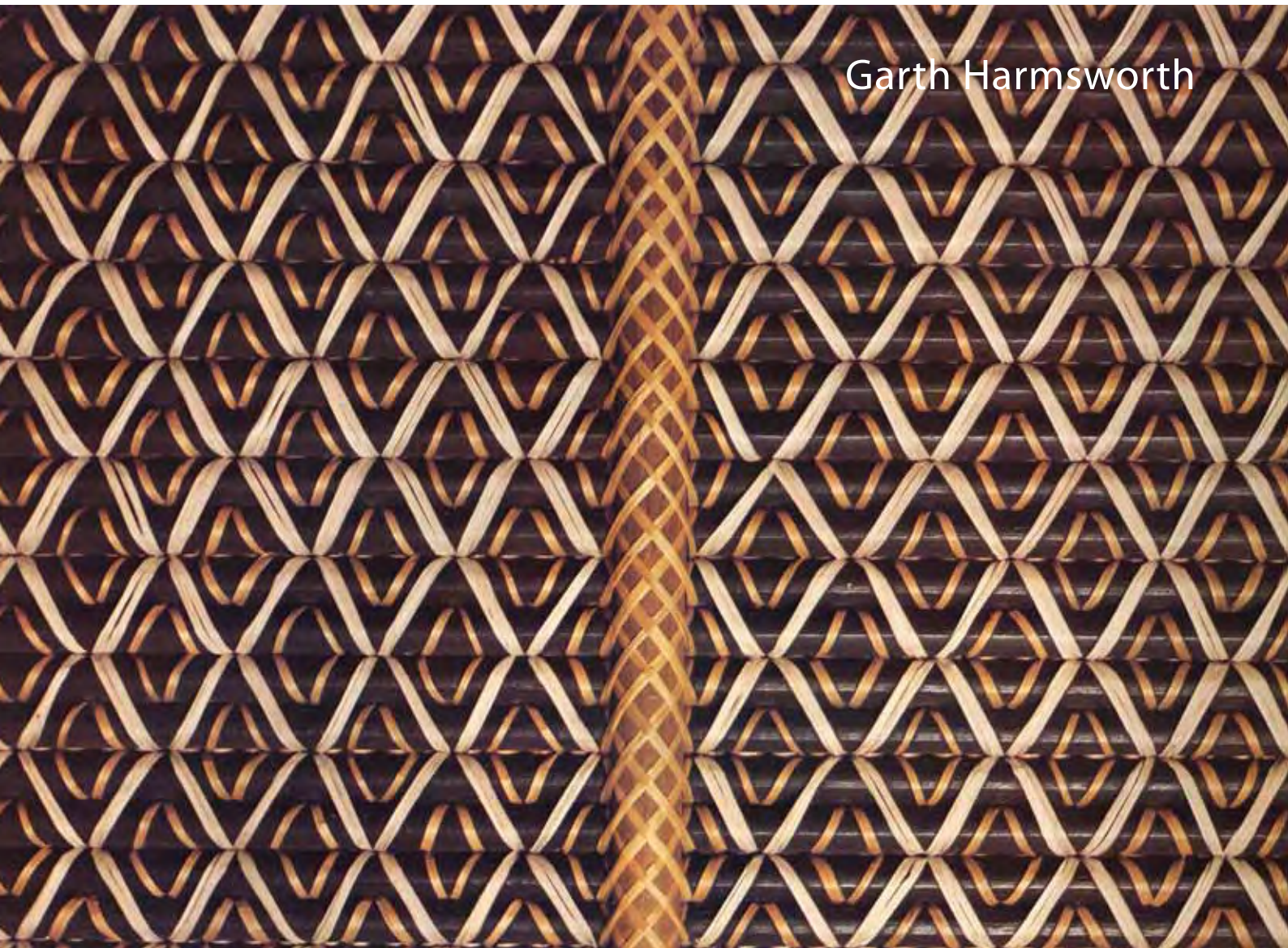


Landcare Research
Manaaki Whenua

Sustainability and Māori business

CHAPTER 10 : HATCHED

Garth Harmsworth



Summary

- Businesses lie at the heart of a progressive move by Māori to achieve economic prosperity and self-determination (*tino rangatiratanga*), as well as facilitating social equity, building human and cultural capital and protecting and managing natural and cultural environments.¹
- Māori business governance models have evolved from traditional to modern forms, with many successful companies combining corporate capitalist practice with strong cultural and environmental values and ethics. As such Māori governance of businesses and organisations provide effective models for sustainable business approaches globally.
- However, these sustainable governance models are far more complex than standard corporate models. Many Māori businesses face the challenge of balancing financial imperatives with broader social, cultural and environmental goals. A Māori business's constituency (e.g. shareholders, iwi/hapū, consumers) will rate its performance and define its success by looking beyond profit margins and short-term planning. This has led many Māori businesses and companies to develop long-term (often generational) strategies and undertake sustainability reporting.
- Māori culture remains unique forming a key element of Brand NZ which is believed to be worth billions of dollars. It is critical that Māori branding is protected and used with integrity to maintain its cultural and economic value.
- The Māori economy is emerging steadily within the wider New Zealand economy. Māori organisations and businesses have made significant long-term investments in human and financial capital. This investment, combined with treaty settlements, will enable the Māori economy to play a significant and growing role in New Zealand's long-term prosperity. The long-term and holistic focus that Māori businesses take reflect the spirit of sustainable development: '*Manaaki Whenua, Manaaki Tangata, Haere whakamua*' (*Care for the land, Care for the people, Go forward – Wakatu*).



INTRODUCTION

Sustainability implies a holistic set of goals, not just economic growth, but also improved standards of living, social equity and ethical standards, and caring and protecting the natural environment. A sustainable business, therefore, is one that reduces its impact on the natural environment, while seeking to provide benefits not only to shareholders and consumers, but also to stakeholders, communities and society at large. Māori corporations and businesses commonly embrace these multiple goals providing effective models for sustainable business.

This chapter introduces seven research topics related to Māori business and sustainability:

1. A historical background to Māori business
2. How Māori values and sustainability principles are incorporated into business
3. The Māori economy - a definition and current status
4. An evolving definition of Māori business
5. Governance of Māori organisations and business
6. Sustainability performance reporting – a cultural perspective
7. Māori business branding

The full research papers from which these topics are drawn are referenced at the end of the chapter.

HISTORICAL BACKGROUND TO MĀORI BUSINESS

What characterises Māori business models today reflects the past, the dynamics of the present, and the Māori aspirations for the future. Therefore we start by tracing the history of Māori economic development.

Before colonisation, Māori lived and worked together in small, geographically distinct groups as part of larger hierarchical tribal structures (*iwi*, *hapū*, *whānau*). Trade between tribal groups was advanced and Māori technological and economic activity was sophisticated, entrepreneurial and resilient, albeit based largely on subsistence and survival.^{2,3} Following the arrival of Europeans in the early 1800s local and export trade

increased dramatically and Māori were effective in developing their resources for markets, as illustrated⁴ below:

In 1857 in the Bay of Plenty, Taupo, and Rotorua, Māori (about 8000 Māori inhabitants) had upwards of 3000 acres of land in wheat, 3000 acres in potatoes, nearly 2000 acres in maize, and upwards of 1000 acres in kumara. They owned nearly 1000 horses, 200 head of cattle, 5000 pigs, 4 water power mills, and 96 ploughs, as well as 43 coastal vessels averaging more than 20 tons each, and upwards of 900 canoes.

However, colonisation brought in a raft of Crown Government interventions that alienated Māori from their resource base. In 1840 Māori controlled largely all of New Zealand's natural resources. By 1998 Māori customary land had diminished to only 6% of the total New Zealand area⁵ and Māori access to land, forests, coastal and marine (e.g. fisheries) resources was severely curtailed. The Māori resource base has re-emerged and increased since 1975 with redress from over 1000 land, resource and property claims under the Treaty of Waitangi tribunal process. Many tribal organisations are now positioning themselves to manage 100's of millions of dollars of assets, while other Māori businesses and enterprises have been highly successful and have flourished outside the Treaty process in the last 20 years.

Māori social structure has been an enduring feature of Māori business and governance models. Up until the 1950s Māori were largely populated in rural settlements. Today 85% of Māori now live in urban settlements, resulting in a complex and fragmented Māori social structure. However, most Māori continue to affiliate with hierarchical groups such as *iwi*, *hapū*, and *whānau* based on *whakapapa* (ancestral lineage). The basic unit of Māori society is still the *whānau*, the extended family. The next level up is the sub-tribe or *hapū*, made up of extended

families or *whānau* originating from a local geographic area and distinct ancestral line. The largest geographic-cultural-political grouping is the *iwi*, a distinct tribe or nation belonging to a larger geographic area. Traditionally, *whānau* was the residential unit with designated areas of land where each individual had a right to share resources equally. Today, the *hapū* or *iwi* and *urban Māori* are the main groupings involved in pooling resources for programmes relating to economic development, health, education, housing and environmental and resource management.

Whānau and *hapū* groupings still provide the basic unit for decision-making for specific blocks of land, local business activities, coastal and fisheries resource management and for utilising specific natural and human capital.

Traditionally, Māori beliefs and values (*tikanga*) gave rise to a communal society where Māori lived and worked together, shared common goals, managed natural resources and collectively cared for each other and adapted to change. These are still very important concepts within Māori society, although colonisation and Western law and economics have greatly affected and altered Māori collectivism and resource ownership.

Māori businesses today take many modern forms, from *whānau*-based trusts and incorporations, to *rūnanga* (councils, *iwi* governance boards), to limited liability companies and privately owned businesses/enterprises. The large majority of businesses have a distinctly Māori dimension, which is reflected in their governance, strategic planning and networks and style of entrepreneurship.

HOW MĀORI VALUES AND SUSTAINABILITY PRINCIPLES ARE INCORPORATED INTO BUSINESS

Values⁶ are becoming increasingly important as a sound basis upon which to plan sustainable development. In business, organisational values are described as the 'invisible threads between people, performance, and profit', and 'every organisation has values, whether it consciously realises this or not'.⁷ Those organisations that understand their values can

guide their own destiny and create 'sustainable competitive advantage'.

The traditional values that underpin a modern Māori business include:⁸⁻¹²

- *Whakapapa* (ancestral lineage, ancestral rights)
- *Tikanga* (custom, tradition, protocols)
- *Rangatiratanga* (status, authority and control)
- *Mana, mana whenua, mana moana* (based on *whakapapa*, represents power, control, status, leadership)
- *Manaakitanga* (caring for, looking after, hosting)
- *Whānaungatanga* (relationships, family connections)
- *Kotahitanga* (unity, consensus, participation)
- *Urunga-tu* (participation)
- *Tohungatanga* (the retention and use of knowledge to benefit the tribe or business)
- *Kaitiakitanga* (environmental guardianship)
- *Tau utu utu* (reciprocity, giving back what you take)
- *Wairuatanga* (spiritual well-being, taking into consideration the spiritual dimension)

Māori values may be reflected in any aspect of the business. The challenge for many Māori businesses is how to balance aspirations for cultural enrichment, such as values, language and knowledge, with those more modern elements of advancement: commerce and economic development. This challenge is explored further into this chapter within the section on Governance of Māori organisations and business.

DEFINING THE MĀORI ECONOMY

The term 'the Māori economy' has been used since the late 1990s to indicate a Māori dimension within the New Zealand economy that is largely culturally and ancestrally based.¹³ It is difficult to distinguish and quantify the Māori economy as a separate entity from the wider economy as the two are closely interconnected.^{14,15,16}

In 2002 and again in 2007, Te Puni Kōkiri, the Ministry of Māori Development, gauged Māori contribution in the New

box 1: STATUS OF THE MĀORI ECONOMY

The Māori economy is defined as assets owned and income earned by Māori – including trusts and incorporations, businesses, and service providers. The Māori commercial asset base¹⁷ was reported to be worth \$16.5 billion in 2007, and largely concentrated in primary industry (52%) – farming, forestry, fisheries, and agriculture. Māori organisations now control around 10% of New Zealand’s forestry holdings. Estimated value of Māori exports in 1999/2000 was \$650 million¹⁸ and in 2002 the Māori economy contributed around \$700 million or 7.4% of New Zealand’s total annual agricultural outputs. In 2001 the total annual tax contribution from the Māori economy was \$2.4 billion¹⁹ and Māori were lenders to the New Zealand economy. For some Māori enterprises this commercial asset base is growing rapidly and becoming a major part of local and regional economies. The number of Māori businesses such as tourism, food and beverage, and fisheries has increased sharply in the last 10 years. However, Māori continue to be greatly under-represented in most knowledge-based and technology industries.²⁰

Zealand economy. This report and others^{11,12} identified that Māori economic development has markedly improved since 1992, after a sharp decline between the mid-1980s and 1991. As described in Box 1, the Māori economy now contributes significantly to the New Zealand economy and this contribution and its future potential is expected to grow.

Within the Māori economy, Māori can express their collective interests and aspirations. It is commonly believed that greater Māori economic development based on Māori collectives and joint partnerships would strengthen Māori cultural identity, well-being, and *tino rangatiratanga* (self-determination). It is therefore important to increase Māori participation rates in the New Zealand economy across a range of sectors through initiatives that include partnerships and joint ventures.

DEFINING MĀORI BUSINESS

Māori business has been defined in many ways^{21–26} and includes various levels of participation by Māori.^a To identify

a Māori business from any other, Durie²⁷ proposed criteria that took into account the business’s contribution to Māori development and advancement, which helps distinguish a Māori business in the Māori economy. This proposition was developed into a number of specific questions, which led to six key outcomes that could be used to separate a Māori business from another and determine its special characteristics. A Māori business could therefore be measured by:

- Its focused contribution to Māori development and advancement
- The part it plays in a Māori network such as a *hapū*, *rōpu* (group) or community
- How it adopts Māori values in both governance and management
- The principles and goals it uses to shape a Māori business ethic
- How it is geared towards Māori realities and recognises Māori diversity, and lastly
- How it creates choice for Māori consumers²⁸

In addition, to be effective nationally and internationally, a Māori business should operate in a bicultural way that should not ignore established global principles such as international ethics, fairness, and sustainability principles.

Six guiding principles²⁹ that underpinned the ethics of a Māori-centred business and enabled achievement of quadruple-bottom-line goals were then identified (Box 2, overleaf).³⁰

The principles were then incorporated along with economic, social, environmental and cultural goals into a Māori business framework (Fig. 1, overleaf). The framework shows the importance of key underpinning principles for achieving economic, social, environmental and cultural goals that together raise the Māori business ethic that reflects Māori values. Together these tools and frameworks for describing and evaluating a Māori business challenge the idea that Māori must adapt to the ‘conventional business environment’, and argue instead for Māori to adapt the mainstream business model to ‘reflect the Māori position rather than confusing the Māori position’.³³

^a Key characteristics can include various levels of participation by Māori: Māori operate the business; Māori own the business; the business employs Māori staff; the business incorporates a distinctly Māori style of governance and management; the business may focus on *kaupapa* Māori.

GOVERNANCE OF MĀORI ORGANISATIONS AND BUSINESS

To achieve sustainability, businesses need to adopt a multidimensional approach to performance, where governance boards have 'responsibilities that look beyond the single bottom line'.³⁵ Those responsibilities have progressively broadened from providing benefits to shareholders to providing benefits to local

box 2: SIX GUIDING PRINCIPLES UNDERPINNING A MĀORI-CENTRED BUSINESS³¹

Tūhono is related to issues of agreement and alignment. In a business context *tūhono* affirms that a Māori-centred business will be aligned with Māori aspirations and involve substantial consultation with other Māori.

Pūrotu (transparency) requires a Māori business to be responsible not only to its funders but also to the wider Māori community who are its stakeholders.

Whakaritenga (balanced motives) acknowledges that, beyond the profit motive, there are culturally based motives such as heritage (for land- and sea-based industries), as well as social and political motives, that must be balanced through wise governance.

Paiheretia (integrated goals) outlines the need for good management of a range of diverse goals even when they contain an element of conflict. The single overarching goal and the single measure of the accounting 'bottom line' are rejected.

Puāwaitanga (best outcomes) suggests the 'best possible return' for shareholders and beneficiaries must consider the wider social, cultural and economic perspective by endorsing the use of multiple measures.

Kotahitanga (unity and alliance) encourages Māori to foster a spirit of cooperation rather than competition (i.e. isolation and fragmentation), and considers the benefits of economies of scale through alliances and joint ventures, leading to greater product range, better employment, higher levels of capital investment, and the opportunity to capture niche markets.³²

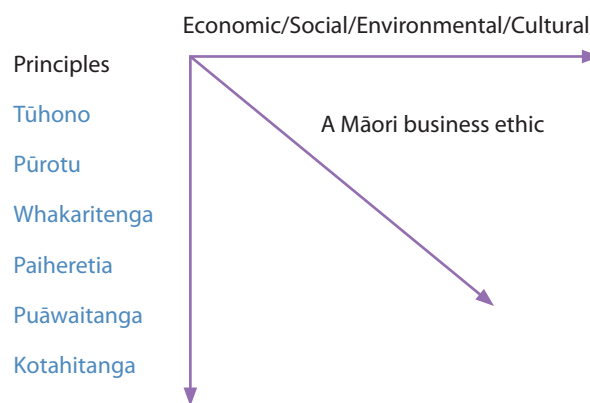


Figure 1 Framework for exploring a Māori business's principles and goals.³⁴

Acting for these broader interests is considered by many as essential if a business wants to become an internationally competitive and responsible corporate.³⁶

Role of governance in Māori business

While Māori businesses have traditionally taken this multidimensional role, it is a challenging task. Most Māori organisations have to be financially viable before they can address environmental, social and cultural goals. Many tribal organisations also grapple with separating the management of their investment and revenue from the management for distributing income for a wider collective good. Problems can arise, for instance, when there is a lack of impartiality, for example if board members and managers are also shareholders. However, the main complexity arises when an organisation tries to be too many things for too many people and is challenged by trying to meet a multitude of cultural, social, and environmental imperatives, as well as financial ones Māori organisations and businesses have attempted to overcome these challenges by developing more effective governance models.

Cultural and historical drivers of the Māori business governance model

In New Zealand, business governance models reflect local legislative and accountancy requirements and any international standards required for global markets. A number of mainstream governance models are followed, which typically have a top-down structure from directors to managers to shareholders (Fig. 2).

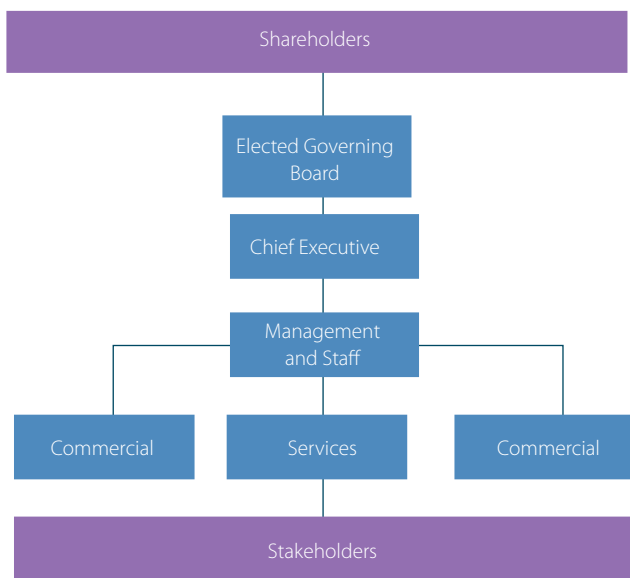


Figure 2 Standard international business governance model.

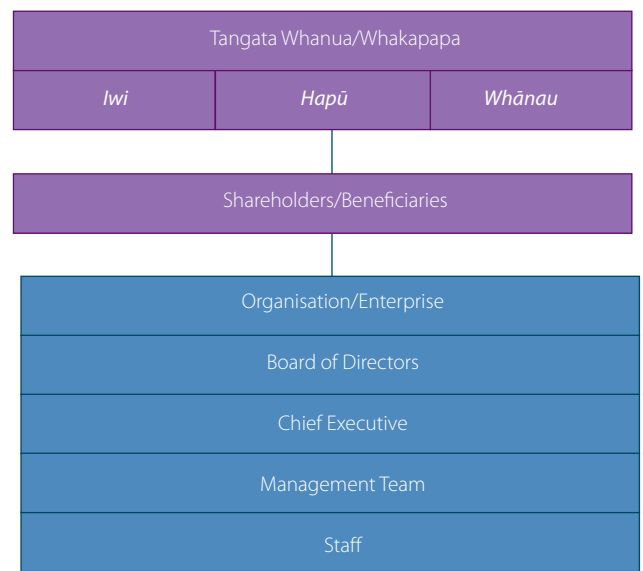


Figure 3 A typical Māori governance model with shareholders/beneficiaries from iwi/hapū/whānau.

These mainstream governance models are commonly modified by Māori businesses and intertwined with cultural elements and responsibilities.³⁷ This adds to the complexity of many Māori businesses and specific cultural drivers can contribute to their organisational success or failure.³⁸ Most tribal organisations and businesses are typically influenced by (and must consider) the following cultural drivers:

- The historical basis or purpose on which the business has developed or evolved (e.g. tribal connections – *whakapapa*, culture, *tikanga* – customary practice)
- Ancestral or tribal assets of the shareholders or beneficiaries
- The geographic resource base or asset base being, or to be, utilised
- Core values (e.g. derived from Māori culture) of the individual or group that have set up the business
- Values and ancestral connections of key players, directors, managers etc.
- Aspirations for a collective good, multiple goals (purpose, expectations, and responsibilities conferred on the business by shareholders or beneficiaries)
- Desired target outcomes and goals
- The time frame in which the business is planning and operating

Therefore some of the ‘unique Māori cultural elements’ that have to be taken into account in many Māori business models and dictate governance include:

- Communal ownership (and distribution of resources)

- Guardianship over ancestral lands
- Guardianship over resources (*taonga*) and sacred areas
- Non-transferability (out of the collective), and
- Multiple accountabilities/relationships

In the business world, such communal ownership and accountability, cultural guardianship, multiple relationships, and focus on multiple goals are often seen as mixed blessings, adding complex layers and challenges to achieving objectives. James Johnston suggests however ‘it is more of a question of finding those things Māori that add value to the governance process.’³⁹

Contemporary Māori governance models

The most effective Māori governance model will reflect the organisation’s core values and purpose, and balance commercial objectives with social, cultural and environmental objectives. The model will also be based on increasing the amount of objectivity, accountability, experience, and professionalism within the business. The common governance structures to date have split the commercial, social, cultural and environment into divisions that can be then overseen together by a governance board, managers and stakeholders.⁴⁰

A number of Māori governance models illustrate the way larger Māori businesses and enterprises in New Zealand have developed structures to serve their constituencies.^{41,42} The common Māori governance model (Fig. 3) is typically driven from the shareholders and beneficiaries downwards and the organisation is often set up to serve a dynamic cultural, social, historical, and political constituency. Many of these structures

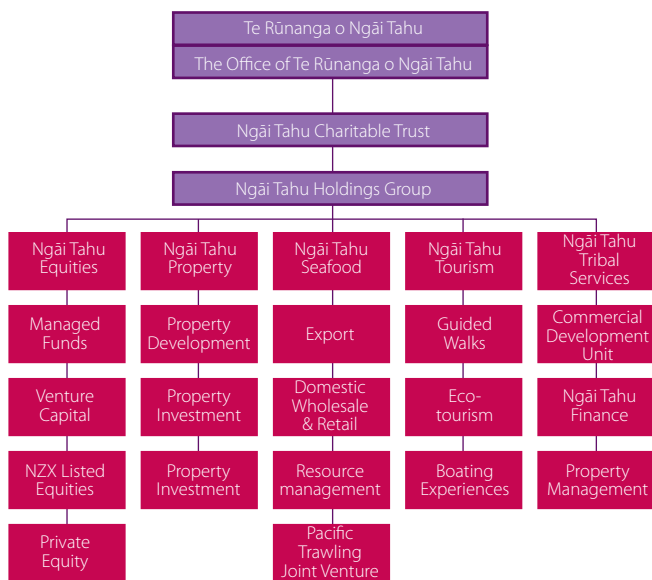


Figure 4 Te Rūnanga o Ngāi Tahu governance model (2004).

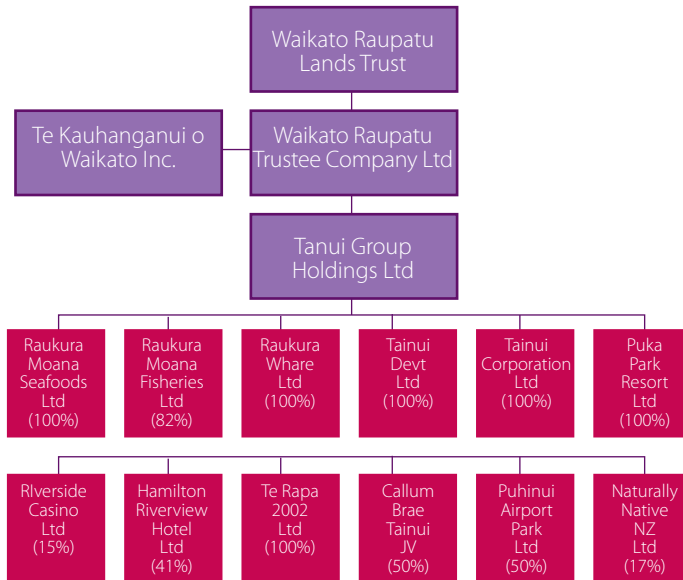


Figure 5 Waikato Raupatu Lands Trust governance model as at 2004.

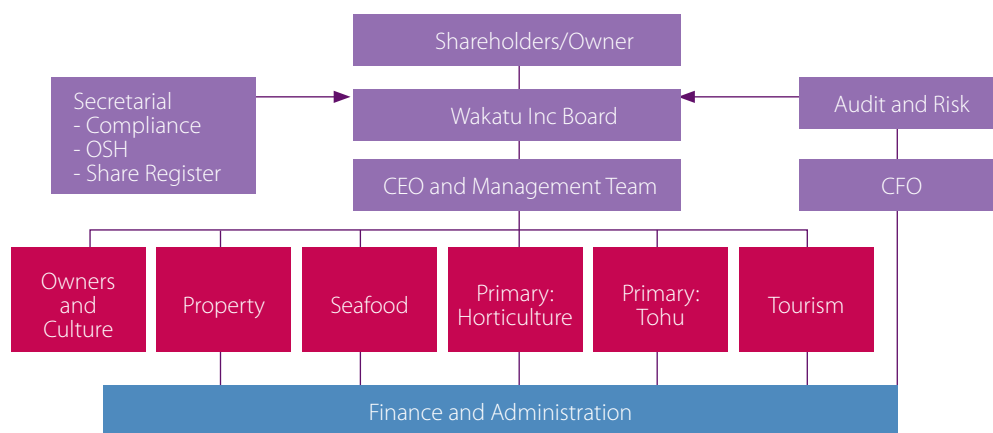


Figure 6 Wakatu Incorporation governance model (2006).

have progressively evolved to respond to changing politics and business and sustainability outcomes.

Figures 4–6 shows three examples of Māori organisations, for Te Rūnanga o Ngāi Tahu, TRONT (Fig. 4), Waikato Raupatu Land Trust, WRLT (Fig. 5), and Wakatu Inc. (Fig. 6). In Fig. 4 the governance of TRONT is based on an 18-member tribal council that makes all major decisions and is accountable to tribal members. From a corporate theory perspective this has been criticised for not being objective enough, and a more independent structure has been suggested.⁴³ There is, however, a clear demarcation between the entity responsible for making money and protecting and growing the Ngāi Tahu asset base (trading as Ngāi Tahu Holdings Group), and that of the Office of Te Rūnanga o Ngāi Tahu, which is charged with delivering social and cultural benefits to the tribe. The iwi actively promotes growth and development at the board and executive level.⁴⁴

Because of early major governance problems and large

investment losses in the mid-1990s, the WRLT embarked on a major organisational reform in the late 1990s to the current governance model shown in Fig. 5⁴⁵. The more commercial structure has allowed Tainui to develop a focused and well-supported vision and greatly increase accountability and performance. Again, there is clear demarcation between its holding group and its entities delivering social, environmental and cultural benefits.

Wakatu Inc., another successful Māori company, is founded on a complex ancestral history, historical land grievance and retention, and more contemporary cultural aspirations. The formation of Wakatu Incorporation goes back to the 1970s. The owners and now shareholders are all descendants of Te Tau Ihu (northern South Island) iwi groups. The company is currently worth well over \$200 million. The present structure (Fig. 6) shows the ~3000 shareholders sitting above the board of directors, with a clear demarcation between the side of the company focusing on assets and financial performance (i.e.

primary industry, property, seafood, tourism), and the side delivering social, cultural and environmental benefits.⁴⁶

Criticisms

The major criticisms of Māori business governance models, largely based upon mainstream corporate governance theory, have pointed to the lack of independence or objectivity of the elected or nominated governance board, the lack of independence and skills of management personnel, and the overall conflicting control and structure of operations, accountability, and delivery. For many Māori businesses the governance board, management teams and general staff either originate from, or are associated with, constituent *iwi/hapū/whānau* shareholders or beneficiaries. The need for more high calibre business professionals in the Māori business sector is constantly raised by many Māori businesses and organisations.⁴⁷

A range of more appropriate structures and models have been proposed⁴⁸ to lift performance and accountability, and improve professionalism and objectivity in strategic planning and decision-making. They aim to increase the number and calibre of elected representatives on governance and advisory boards, and increase the number of business professionals appointed to positions of chief executive, management teams, and staff. These developments are attracting more Māori into the business sector with high quality skills such as accountancy, law, marketing, business, science and technology.

Futures planning: the long-term vision and strategies

Strategic planning has become an integral and ongoing part of business. Most Māori businesses carry out some type of strategic planning on a 1- to 5-yearly basis. Many strategic planning approaches have been developed by *iwi* and *hapū* groups throughout Aotearoa-New Zealand, and a large number of strategic planning documents have been produced.⁴⁹

Many Māori organisations today have to administer large amounts of assets on behalf of their constituents; and provide services to and to represent their constituency in a range of political, social and economic forums – especially following Treaty of Waitangi settlements. This responsibility means the organisation must have a clear purpose and strategic direction and explain its present activities and future plans to its constituency.

Some of the best examples of long-term planning are at the tribal level,^{50,51} where 100- to 1000-year visions and planning are not unusual. Within this tribal context Māori businesses tend to strategically plan within 5- to 50-year time frames. Māori ownership of assets and respective organisations and businesses is typically long term (e.g. >100 years) and is always discussed as intergenerational across at least five generations. Because land and resources are often collectively owned and held in perpetuity under governance structures and legislation, strategic planning has to reflect long-term ownership and aspirations and therefore sustainability.

One of the first groups to use a strategic planning approach that identified a collective vision to achieve social, cultural, physical and economic goals was Ngāti Raukawa, centred in the Manawatu–Feilding–Horowhenua–Kapiti districts. Their early planning initiatives in the 1970s were led by Dr Whatarangi Winiata along with several other tribal leaders responding to concerns that the increasing urbanisation of Māori was weakening the institutional and cultural fabric of the tribe. The 1975 approach '*Whakatupuranga Rua Mano*',^{52,53} created a vision, strategy and tribal goals to map out how Ngāti Raukawa should move into the 21st century. It prioritised education and culture as key pathways, leading to the establishment of several educational and cultural initiatives for the tribe, including the *Whare Wānanga o Raukawa*, the Māori University at Otaki.

In recent years (<20 years), a number of Māori organisations, especially at the *iwi* tribal level, produced long-term strategies and vision statements. Ngāti Raukawa often discusses a 1000-year vision and plan, while other groups have discussed plans and vision documents between 20 and 100 years. Ngāi Tahu (South Island *iwi*) has recently prepared a document *Ngāi Tahu 2025*, while Tainui (Waikato) have produced their 2050 strategy '*whakatupuranga 2050*'. In addition Chapter 3 describes the development process of a long-term sustainability strategy undertaken by the *iwi* of the Auckland Region.

Strategic priorities are usually based on creating intergenerational equity and on accumulating capital over long periods of time. Examples include educational scholarships, training, employment initiatives, housing for the elderly (e.g. *kaumātua* housing), mentoring systems for young Māori



scholars, and annual dividends to tribal resource owners. One of the largest tribal organisations in New Zealand – Te Rūnanga o Ngāi Tahu – provides low interest housing loans and savings accounts to all Ngāi Tahu shareholders (of proven ancestral lineage), and many tribes have discussed forming their own banking systems because of the difficulties of raising capital on perpetual collectively-owned, inalienable assets.

While these priorities distinguish emergent Māori business, they also have relevance in a world seeking a new social contract between business and society.⁵⁴ They look to the long-term sustainable future: '*Mō tātou, ā, mō kā uri ā muri ake nei*' (for us and our children after us – Ngāi Tahu), and they express the spirit of sustainable development: '*Manaaki Whenua, Manaaki Tangata, Haere whakamua*' (Care for the land, Care for the people, Go forward – Wakatu).

SUSTAINABILITY PERFORMANCE REPORTING – A CULTURAL PERSPECTIVE

To meet new performance targets, an increasing number of businesses are shifting their performance reporting from a single bottom line to a triple or quadruple bottom line (see Chapters 8 and 9). Many businesses now use standard business reporting frameworks and social, environmental and economic performance indicators to achieve and report on sustainability goals. Reporting frameworks include sustainability indices,⁵⁵ the Global Reporting Initiative,⁵⁶ ISO 14001,⁵⁷ sustainability assessment), and standard environmental management system approaches such as Enviro-Mark[®]NZ.⁵⁸

A cultural framework for reporting

Very few frameworks and indicators internationally and in New

Zealand show a means for cultural reporting. Distinct cultural goals are important parts of Māori business performance, for example, 'are there things which are special to each Māori business – that support Māori values being incorporated into the business culture and use cultural values strategically to reinforce cultural identity'. It was found in *Waka Tohu* (2004–2008) project research⁵⁹ that very few Māori organisations had mapped their core values across into their business strategies and plans, and few, if any, Māori businesses were reporting cultural performance, either as a dimension in its own right (i.e. as in quadruple bottom line reporting⁶⁰), or as a subset of the social dimension (triple bottom line reporting⁶¹).

A cultural performance reporting framework and checklist of performance indicators was developed by the author⁶² for specific cultural reporting by Māori organisations and other related businesses. The framework was divided into a number of key aspects (categories), consistent with the Global Reporting Initiative (GRI) framework and indicators⁶³ and designed to be used in conjunction with reporting social, environmental, economic sustainability performance indicators (Table 1). To date the framework has not been used formally; it was first sent out only for discussion in 2006 and serves as a guide for reporting in the cultural dimension.

MĀORI BUSINESS BRANDING

Since World War II commercial brands have been developed to differentiate products in danger of becoming 'hard to tell apart' and to build relationship equity and loyalty with consumers.⁶⁴ Today, branding includes visual imagery (logos, text, advertising), as well as the distinctive qualities of the product or service associated with that brand (e.g. luxury, budget priced, trusted, clean and green). Brands can also reflect the relationship and experiences built over time between a customer and a company, expressing the distinctive qualities of the brand. Trademarks, copyrights, symbols, images, and patents have become essential to protect the intellectual property associated with branding.⁶⁵ A company brand states what the company stands for – beyond profits.^{66,67} Branding around being environmentally or socially sustainable is increasingly mainstream.

Māori branding has always been an integral part of Māori culture and is an active expression of the culture. Elements⁶⁸ that typify the culture include: *Te Reo Māori*, geographic and cultural placenames, all aspects of *whakairo* (carving, sculpture) and *toi* (Māori artwork – including design, symbols, images), *raranga* (i.e. weaving), structural building and design inside and outside meeting houses (e.g. *whare tupuna*, *whare whakairo*, *wharenuī*, *tukutuku*, *kowhaiwhai*, *taniko*), and tattoo – *tā moko*, *mokomokai*. Māori branding has been defined as:

*A unique cultural association of stories, images, names, and symbols which serves to differentiate competing products or services, providing physical and emotional triggers to create relationships between consumers and the product, service, or enterprise.*⁶⁹

Following colonisation (since 1769), Māori cultural elements have been increasingly used and exploited by outside cultures. A key driver for this exploitation by foreign cultures was the fascination of something uniquely different from their own culture. British Society in the 19th century, for example, saw Māori culture as deeply rooted in Polynesian culture, of mystical ancient quality, and completely exotic. Intellectual property right issues are an ongoing significant issue for Māori.^{70,71} Within the context of Māori trade activities, six distinct time periods – first contact (1769–1800); pre-colonial (1801–1841); 19th century (1842–1899); first-half 20th century (1900–1945); second-half 20th century (1946–1999); and early 21st century (2000–2006) – were identified⁷², exhibiting trends in the way Māori branding was used with the growth of commercialisation, adaptation, and exploitation.

Branding has become a significant part of New Zealand's strategy for expanding economic development and diversity.^{73,74,75} and authenticity and distinctiveness are cited as central to defining a national identity. The International Anholt-GMI Nation Brands Index⁷⁶ ranked New Zealand as the 10th strongest nation brand in the world in 2005,⁷⁷ calculating a brand-value figure of US\$102 billion for New Zealand for that year⁷⁸. The question of what makes New Zealand companies, products, and services distinct from those of other countries has been widely discussed in the last 10 years by a number of New Zealand agencies and commentators.^{79,80,81} It was

concluded that most national brands have been leveraging off New Zealand's size, geographical isolation, history and indigenous culture.⁸²

At the heart of Māori business is a pride in being Māori and a desire to communicate that to the world. Indigenous branding appears well positioned to play a major role as part of Māori business and Brand NZ in global markets but needs to be strongly aligned to what the business stands for, its purpose and values, and be strategically planned to gain competitive advantage. If brands reflecting Māori culture are used without integrity, the uniqueness and IP of the overall Māori brand are threatened.

CONCLUSION

Businesses lie at the heart of a progressive move by Māori to achieve multiple goals across economic, social, cultural and environmental domains, to advance Māori as Māori, and achieve desired standards of living, quality of life and well-being. Māori business governance models are responsive to the complex and dynamic environments they exist in. They have evolved and adapted from traditional and historical to modern forms, reflecting a fusion between cultural elements, values, goals, responsibilities and modern corporate capitalist ideals and compliance. They are commonly connected to the past through cultural and historic contexts, values, and assets that are intergenerational. This shapes the modern look of the Māori business and defines its purpose. A major challenge for many Māori businesses and organisations has been balancing aspirations for cultural enrichment and identity with economic imperatives, realities, and goals. Traditional Māori values are still integral and resonate strongly in many Māori businesses. Values guide behaviour, help set and clarify goals, and define success and performance.

The Māori culture remains unique, and central to a New Zealand identity.⁸³ Māori business has a significant role in contributing to Māori advancement and cultural resilience, to sustainability outcomes, and lies at the heart of New Zealand economic prosperity and aspirations for quality of life and well-being.

Table 1 A cultural performance reporting framework and checklist of performance indicators.⁸⁴

Aspect:	Themes (examples):	Values (examples):	Key performance indicators (examples):
Governance (cultural values are integrated across all levels in the business)	Mission; goals; policy; strategic plans; asset management; values; cultural responsibilities; indigenous rights	Whakapapa, tino angatiratanga, whakakotahitanga, manawhenua, mana moana, whakapono, matakite	Business goals are aligned with shareholder aspirations and cultural priorities) (core) The business has a core set of cultural values and principles (integrated into strategy and policy) (core) Māori values are recognised & endorsed by the board of directors (core) The business measures and reports economic, environmental, social, and cultural performance (core) Mandate and performance measure for executives and managers to integrate cultural values across the organisation (optional) Cultural values are applied across the whole organisation. Evidence (optional)
Cultural practices/tikanga (business retains, promotes, & advances cultural values, custom, practices, & activities)	Cultural training; taonga; marketing; intellectual property; community	Tikanga, te reo, kawa, manaakitanga, akoranga, mauri, tapu, noa	The business develops cultural & social capital (strategies and practices are implemented)(core) Cultural heritage and values are taken into account in all decision-making? (optional) Successful outcomes for protecting & maintaining cultural values in all business activities (e.g. restoring mahinga kai, cultural harvest sites, food gathering sites, wahi tapu) (core) Describe significant adverse impacts or activities the business has had on cultural values (optional) Examples of indigenous branding for any products/services by business (optional) List of cultural taonga (treasures) protected by the business (e.g. artworks, carvings, paintings, weaving, symbols etc.) (optional) Examples of cultural training/cultural practice/tikanga in the workplace Cultural performance is regularly reported to shareholders and stakeholders (core) Policy and main mechanisms in the organisation for protecting indigenous cultural property and cultural values (core)
Economic (profits are used to advance and reinforce cultural values, social capital, social & cultural responsibility)	Financial accountability; financial performance; financial reports, e.g. financial performance is fully reported to shareholders & stakeholders in annual reports	Whai hua, ngākau tapatahi, pono, tika, pūtea, kaikōkiri	Proportion of spending profit and revenue to integrate and promote cultural values (e.g. cultural development, heritage, cultural practices, cultural activities, cultural investments) (core) Proportion of spending profit & revenue to achieve cultural goals and objectives (e.g. cultural capital investments) outside of the organisation (core)
Environmental sustainability (the business contributes to environmental & cultural protection/guardianship)	Kaitiakitanga practice; environmental policy & management; compliance	Kaitiakitanga, awhinatanga, arohatanga, manaakitanga, tau utuutu, taonga tuku iho, te ao turoa	Describe kaitiakitanga practices in place to achieve 'sustainability goals & practice (e.g. carbon mitigation, managing and limiting pesticide use, herbicide use, insecticide use, increasing sustainable resource use, resource allocation, recycling, energy conservation, water conservation, energy & paper, resource management, recycling and waste management) (core) Kaitiakitanga practices to safeguard and protect cultural values, such as culturally significant areas, cultural sites (core) State the environmental policy, registers, manuals, records, procedures, such as an environmental management system (EMS), that includes a set of specific objectives & targets consistent with ISO 14001 standards (core)
Social (the business redistributes success and wealth back to the community, shareholders, stakeholders, & workers)	Community; employment; training & education	Whānaungatanga, manaakitanga, awhinatanga, whakakoha, turangawaewae	Programmes that advance cultural practices & activities in the community Training and educational funding (e.g. employment, scholarships) (core) Jobs created & proportion of Māori employed (optional) Examples of housing for shareholders and community (optional) Examples of savings schemes, bank loans for shareholders, businesses, tribal or development or social capital initiatives (core) Examples of business mentoring to the community, or to Māori entrepreneurs, other Māori businesses, or to advance cultural entrepreneurship (optional)
Spiritual (the business has a soul & recognises a spiritual dimension and purpose above & beyond service, products, & profit)	Policy; tikanga; custom; ethics; principles; practices	Wairuatanga, tohungatanga, taonga tuku iho, atua, ihi, weh	Cultural frameworks & policy (or policies) for cultural practice(s) and protocols (i.e. tikanga, kawa) Spiritual values central to the company philosophy, vision, and mission (core) Examples of cultural values incorporated & practised routinely in the business (e.g. te reo Māori, whaikōrero (oration, speech), karakia (prayer), & waiata (song) Policy for bereavement (tangi) leave, cultural beliefs and practice (core)

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KEY PUBLICATIONS AND WEBSITES

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Life Cycle Management

CHAPTER 11 : HATCHED



Jake McLaren
and Sarah McLaren

Summary

World-leading companies are gaining competitive advantage through adopting external, product-focused environmental management programmes. They are responding to increasing demand from consumers and business-to-business markets for transparent accountability with respect to the sustainability performance of their products. At the same time these leaders are well placed to comply with new environmental legislation, which increasingly takes account of the cradle-to-grave impacts of products.

Life Cycle Management (LCM) provides a pragmatic system to improve the sustainability of products and services over their complete life cycle; this encompasses supply chains from initial extraction of raw materials through to end-of-life management. LCM embeds life cycle thinking throughout an organisation's decision-making, and delivers products and services that support sustainable production and consumption in society, while adding economic and social value to stakeholders in the value chain.

Formway Furniture is an example of a New Zealand company that developed and has maintained a pre-eminent position in environmental products, including the LIFE chair, through the early adoption of LCM in 1998.

While LCM can provide some quick 'win-win' benefits to a company, it takes a number of years to fully implement. New Zealand businesses will need to move rapidly to adopt LCM approaches in order to build market advantage and maintain the authenticity of New Zealand's clean green brand in the longer term.

INTRODUCTION

Companies worldwide are facing increased pressure from key stakeholders around a number of environmental issues. These include climate change and carbon management, water scarcity, and the rising cost of raw materials, energy and transport.

During the 1980s and 90s policymakers, researchers and innovative companies working towards sustainability typically focused on supply-side measures such as cleaner production and eco-efficient design. In recent years attention has increasingly shifted towards the question of how to stimulate new models of sustainable consumption as well as production.¹ In response there is growing evidence that sustainability is emerging as a substantial business opportunity area, and some of the world's leading companies are seeking competitive advantage through adopting external, proactive and product-focused environmental programmes. Some examples are given in *Green to Gold* published by Yale University Press.²

For these companies, environmental management and wider corporate responsibility issues are integrated at the visionary, strategic and operational levels of corporate decision-making. The market drivers may originate from business-to-business markets and government purchasing programmes, as well as from sectors of the public who are increasingly informed and have various motivations to purchase 'sustainable' products.

This shift in focus can be recognised through the development of product-oriented environmental management systems. These management systems use life cycle thinking as their basic conceptual approach to consider environmental impacts along product life cycles.

WHAT IS LIFE CYCLE MANAGEMENT?

Life Cycle Management (LCM) is the systematic application of life cycle thinking in business practice with the aim of providing more sustainable goods and services. It involves the development and implementation of a product-oriented management system; this seeks to improve the sustainability of

an organisation's product portfolio(s) across the entire life cycle and value chain.³

Organisations adopting an LCM approach will embed the principle of continuous environmental improvement within their management practices. Furthermore, they will support their visionary, strategic and operational decision-making with information and data that describe the complete life cycle and value chain of their products.

LCM is not a single tool or method but a product management system. It provides a framework for organisations to structure activities, and product-related information to improve product sustainability from an environmental perspective. It requires an organisation to expand the scope of its environmental management activities from specific operations and/or sites, to encompass the complete product life cycle from cradle to grave (and beyond); this is commonly termed life cycle thinking. The same type of thinking is described in the book *Cradle to Cradle* by William McDonough and Michael Braungart.⁴

An organisation implementing an LCM programme commonly considers organisational aspects, internal LCM project areas, and communication of the company's environmental profile, as illustrated in Fig. 1, pg 4.

Organisational aspects

Successful implementation will depend upon solid integration within the organisation. A clear and compelling vision and well-defined strategy are important foundations. However, embedding responsibility, accountability and defined processes to deliver a strategy are critical to successful implementation. In particular, because LCM is by nature a cross-disciplinary business area, implementation requires several business functions to embrace the concept and take responsibility to drive forward LCM strategy and practice. Business management must signal a clear mandate that sustainability is an organisational priority; otherwise action owners may perceive LCM tasks as low priority.

Certain aspects of life cycle thinking may require additional expertise and/or specific skills to be developed. For example, the use of life-cycle-thinking tools, specific technical issues

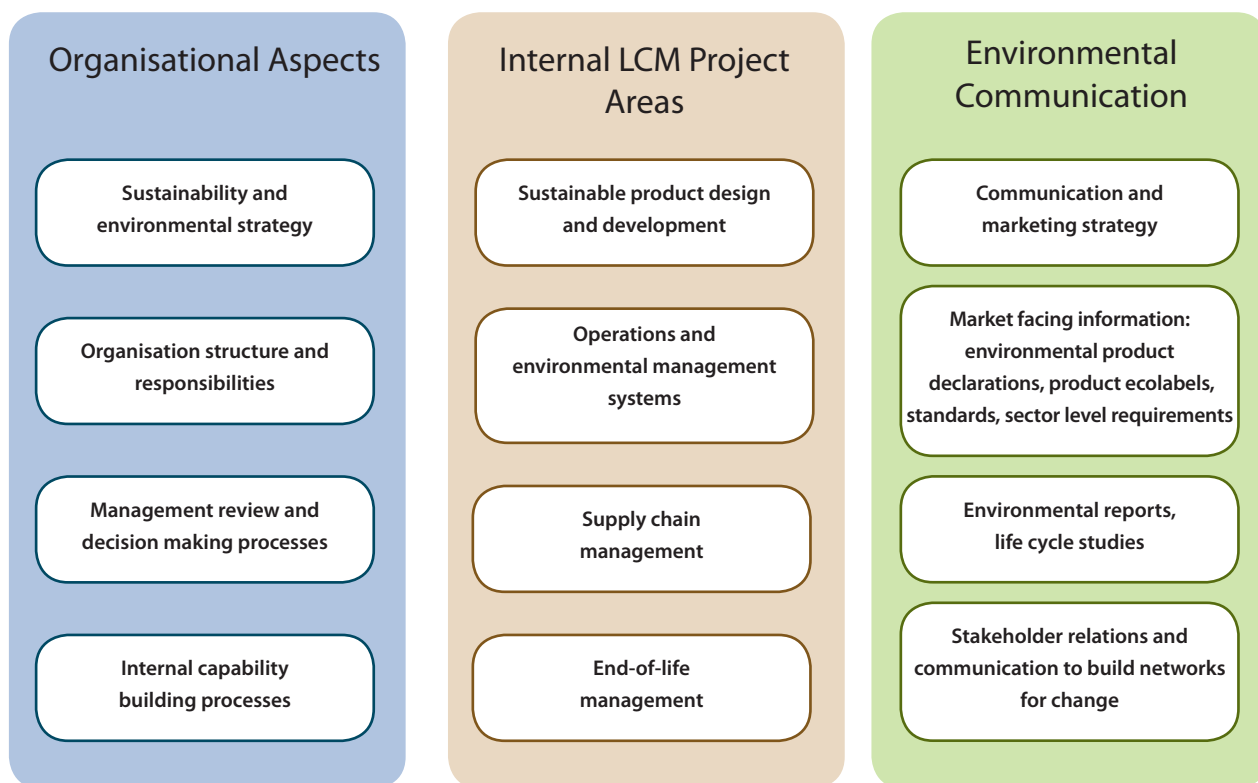


Figure 1 Elements of corporate Life Cycle Management.

about the environment, and development of environmental management systems are aspects of LCM that may require an organisation to gain new knowledge and competence.

Internal project areas

LCM provides an overarching framework for coordinating responsibility and staff engagement within relevant business functions, and encompasses all stages of a product's life cycle. Internal projects will typically focus on addressing key priorities at selected life-cycle stages.

Sustainable product design and development requires both analysis of the issues and creativity to find the best solutions. For research and development of new and/or improved products, embedding life cycle thinking and the use of life cycle tools are priorities for implementing LCM.

Another key aspect is innovation in *supply chain management*. Ensuring key suppliers are improving the environmental performance of their own products and processes can lead to a cascade of sustainability insights, learnings and opportunities to create value. Maximising collaboration along the supply chain is critical to both managing risk and delivering improved transparency and sustainable product performance.⁵

With respect to *operations and environmental management systems*, in-house environmental issues may be diverse and include energy efficiency, carbon management, manufacturing efficiency and waste reduction, process emissions, product packaging and efficient logistics, as well as communications and marketing aspects. Environmental management systems such as the Landcare Research Enviro-Mark® NZ scheme⁶ are recognised methods to systematically manage these issues, in line with the globally recognised standard for environmental management, ISO14001.

Product stewardship (or product *end-of-life management*) is an increasingly visible area of organisational responsibility, which may offer first-mover advantages and opportunities to strengthen customer relationships. An effective end-of-life strategy often provides key input for product design, operations and business strategy as well as a route to strengthen communication with markets and other life cycle stakeholders.

Communication of company profile

Consumers and business-to-business markets increasingly expect transparency and accountability regarding the sustainability performance of products. In particular, New

Zealand food and beverage exporters need to be critically aware of consumer concern around our nation's distance to export markets. Offshore market perceptions of 'food miles' and the authenticity of sustainability claims are issues that require proactive use of life cycle tools and adoption of LCM approaches by exporters.⁷

Communication and management of brand reputation regarding sustainability are a growing business requirement in many industrial sectors. LCM enables organisations to communicate with integrity, firstly by demonstrating a detailed understanding of their product's life cycle environmental performance, and secondly by building proactive improvement programmes based upon life cycle thinking and an understanding of an organisation's strategic product-related environmental issues and opportunities. In short, LCM supports businesses in communicating with integrity and validating market claims appropriately.

BENEFITS AND DRIVERS FOR LCM

The more generic benefits of LCM are summarised in Box 1. It can be seen that a company may use LCM to differentiate itself in the marketplace, achieve competitive advantage, and reduce its liabilities.

One of the main drivers for realising these benefits is ecolabelling. Manufacturers that develop products with improved life cycle performance will be better positioned to meet the market requirements embodied in product ecolabels, Environmental Product Declarations (EPDs), and – increasingly – other business-to-business contractual arrangements. For an introduction to the types of ecolabels relevant to specific markets, see the UK Government's document on ecolabelling⁸ and the NZ Government's ecolabelling directory.⁹

Also, product environmental legislation is moving towards a consideration of product-life-cycle issues, rather than specific policy instruments focusing on individual issues or life cycle stages. The EU Directive on the Eco-design of Energy-using Products (EuP Directive) is an example of this more recent life-cycle policy approach. The EuP Directive requires producers or

importers of specific product types within the EU to perform an 'assessment of product life cycle performance', and to publish a product 'ecological profile'. The European Commission recently communicated a proposal to extend the scope of this directive to a wider range of products with 'significant environmental impacts'.¹¹ This communication included proposed measures such as *minimum requirements* and *advanced benchmarks*. Offshore policy changes such as these ones may be relevant to New Zealand exporters.

It is worth noting that product-oriented environmental policy is most developed in the European Union. Producers in Europe are increasingly held responsible for their products' environmental performance at all stages of the product life cycle due to Extended Producer Responsibility (EPR) directives in several product sectors and Integrated Product Policy (IPP) initiatives.¹²

box 1: BUSINESS BENEFITS OF ADOPTING AN LCM APPROACH

- Product and service innovation
- Insight and foresight to proactively engage with emerging market trends and adapt to the sustainability paradigm
- Product and brand differentiation
- Increased competitive advantage and improved access to markets
- Improved reputation and customer relationships beyond the point of sale
- Improved efficiencies, and reduction in regulatory costs
- Liability and risk reduction
- Social responsibility including staff engagement and retention through alignment of company values with personal and employee values

SUPPORT TOOLS FOR LCM

Life cycle thinking is a conceptual approach that considers the 'cradle to grave' impacts of products, that is, impacts occurring during the extraction of raw materials, processing, manufacture, distribution, use and end-of-life stages. It is the

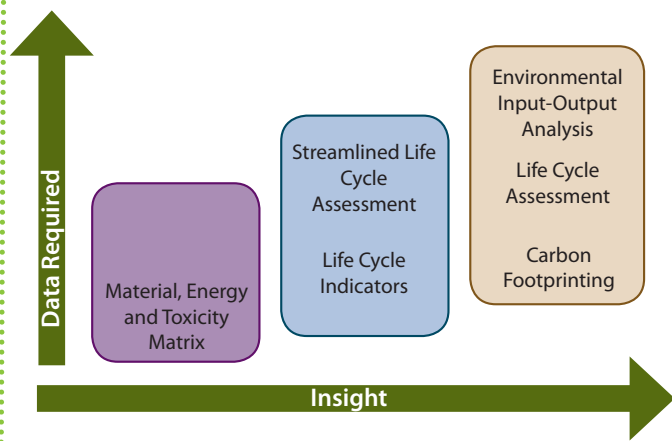


Figure 2 Examples of Life Cycle tools.¹³

key principle underlying Life Cycle Management, and expands the focus of attention from specific processes or life cycle stages to include the impacts of a product over its entire life cycle.

A range of life cycle tools exist for guiding life cycle thinking. These range from quantitative analytical assessment methods to targeted use of creative tools such as brainstorming and scenario modelling for sustainable ideation. Figure 2 shows a number of analytical tools positioned in relation to increasing data complexity and insight delivered. Generally the more data that are included within a model, the greater the insight gained.

Appropriate use of these tools will support an organisation in prioritising work and focusing on the relevant stages of their product's life cycle(s). It is important to note that undertaking a comprehensive Life Cycle Assessment (LCA) is not necessarily a prerequisite for implementing LCM: LCM is a dynamic process and can start with a small goal, using limited resources available, and get more ambitious over time.

STEPS TO IMPLEMENTING AN LCM PROGRAMME

For a business to implement LCM, an essential prerequisite is a positive *attitude and desire* to reduce environmental impacts, to engage with the complex sustainability agenda, and ultimately to expand the scope of traditional management responsibility along the product life cycle. Some businesses have a clearly defined sustainability vision for their organisation that provides a mandate for life cycling thinking; for others, a process of

organisational 'soul searching' may be required before adopting an LCM approach. Some of the more challenging aspects associated with this shift in thinking are: accepting the need for greater disclosure and transparency regarding environmental issues, recognising the need to communicate and work with a wider range of stakeholders, and taking more responsibility for the upstream and downstream impacts of the business's products.

There are three (overlapping) stages to adopting an LCM programme:

- Review and develop an understanding about the life cycle issues associated with the organisation's products and product portfolios
- Define an LCM strategy and prioritise actions
- Implement LCM projects within an organisation.

The first stage involves developing a better *understanding of the life cycle issues associated with the organisation's product*, and reviewing marketplace requirements. This is commonly achieved by conducting a quantitative life cycle study of the product or service. Key aims of a life cycle study may be to:

- Identify environmental 'hotspots' in an existing or proposed product
- Compare the environmental impacts associated with two or more products
- Identify opportunities for innovation and greater efficiency
- Inform the direction of an LCM strategy and key environmental improvement goals
- Educate the organisation in life cycle thinking.

A streamlined LCA may be sufficient initially, but conducting a more comprehensive LCA study may be appropriate if existing data are poor, or greater insight is required. Alternatively a focused literature review may identify previous studies and give some indication of the key environmental impacts and relevant issues.

A life cycle study typically focuses on the quantifiable environmental impacts, but a review of market-related

environmental issues is equally important to define an appropriate LCM strategy from a commercial perspective. This may include consideration of existing and developing issues such as environmental product requirements (mandatory or voluntary), market and customer needs and perceptions, competitor activity, new materials and technology trends, and any other factors affecting the market.

Following the environmental review from both a scientific and market perspective, the second step is to *define an LCM strategy and prioritise actions* the company should take forward. Defining a clear environmental or wider sustainability vision is likely to be part of this process. The LCM strategy will typically address stakeholder and market issues, while also aiming to reduce the overall life-cycle environmental impacts. Actions may initially be prioritised by focusing on environmental 'hotspots' (areas of the product life cycle that account for significant environment impact) and areas of 'low hanging fruit' where rapid progress is possible.

It should be noted that environmental issues are often categorised as relevant based on a mix of both subjective perceptions and scientific understanding. These two sets of justifications may not always align, and a company's strategy and actions may have to respond to both interpretations of 'green'. For example, a company may prioritise improvement of the environmental performance of product packaging due to customer or staff perceptions, while also being aware that the improved packaging contributes relatively little to reducing the overall life-cycle environmental impacts of the product.

The third stage is *implementing LCM projects within an organisation*. This revolves around two tasks:

- Embedding an environmental improvement mindset and associated action plan into an organisation's deliverables
- Empowering individuals to take ownership of issues or new projects within their already busy work lives.

Regarding the first task, turning an executive-level strategy PowerPoint slide presentation into a culture of continuous environmental improvement is not easy! However, it is fundamentally important to explicitly recognise and define

where environmental issues fit among other competing business targets and priorities. This is a key aspect in motivating individual action and organisational accountability.

The issues to be resolved often require cross-disciplinary action, with responsibility and activity driven by teams comprised of representatives from several business functions. In some cases LCM may justify new resources to facilitate the process. However, even with new resources, the key implementation method remains cross-disciplinary integration. In other words, management personnel must be willing to accept responsibility for the environmental issues identified as relevant to their organisational area, and actively encourage their staff to deliver according to an organisation-wide prioritised plan.

It will be obvious that implementing an LCM programme that 'makes a difference' is no small task, and takes a number of years to become embedded in an organisation's vision, strategy and operations. The next section discusses an example of this process in action at the company Formway Furniture.

FORMWAY: A NEW ZEALAND LIFE CYCLE MANAGEMENT CASE STUDY

Formway is a medium-sized New Zealand business that has developed an LCM approach within its business. Formway designs and manufactures commercial office furniture for sale in Australasia and has built significant commercial partnerships internationally through licensing and royalties on intellectual property. Formway's products include the LIFE chair and the innovative HUM workstation system.

During development of the LIFE chair in 1998, Formway identified that sustainability and, in particular, environmental issues were emerging as a potential point of differentiation in the global marketplace. A strategic decision was made to design the LIFE chair with a central aim to 'lead the target market with best product environmental performance'. When the LIFE chair was launched to the market in 2002, the marketing included statements describing the product's environmental performance over the whole life cycle, the overall product environmental concept and benefits to the



Figure 3 Formway LIFE Chair: assembled and disassembled.

user, and the raw materials and manufacturing processes.

Since the launch of the LIFE chair, the number of environmental product standards and certifications applicable to furniture products has increased and there were more than 20 around the world by 2008.¹⁴ Although several competitor 'eco-designed' office seating products are now available, the LIFE chair has continued to retain its pre-eminent position by securing recently developed 'Type 1' environmental product labels in several offshore markets, as well as being the first furniture product in New Zealand licensed by the Environmental Choice New Zealand ecolabel.¹⁵ Meeting the requirements of these third-party-audited ecolabels has enabled the LIFE chair to access the rapidly expanding global markets for green building products, and is proving to be a significant business advantage for both Formway and its international business partners. The insight and proactive attitude of the design team back in 1998 has enabled Formway to build an improved product environmental profile and strong product marketing story, and has ensured longevity of the product in the marketplace.

In addition to product certifications, a detailed LCA study of the LIFE chair has been completed to gain deeper insight into the

life cycle environmental impacts of the product and identify improvement areas for subsequent product development. The LCA study was co-authored with staff at Landcare Research and the University of Auckland, and recently published¹⁶ in the peer-reviewed *International Journal of LCA*, which added credibility to this design approach.

After the LIFE chair launch in 2002, the company continued to use external consultants and in-house student projects to conduct several LCAs and streamlined life cycle studies of products, materials and processing technologies. By 2006 demand in the marketplace had increased to the point where Formway could justify employing a full-time environmental manager to develop its Life Cycle Management Programme involving all relevant aspects of the organisation.

Figure 4 shows the focus areas of Formway's LCM programme. The four main project areas are:

1. 'Eco-Innovation' during product design ensures products are designed with a robust approach to reducing life cycle environmental impacts. LCA studies are undertaken that underpin the decisions made during design and development.^{15,17} The results of these LCA studies are

LIFE CYCLE MANAGEMENT AT FORMWAY

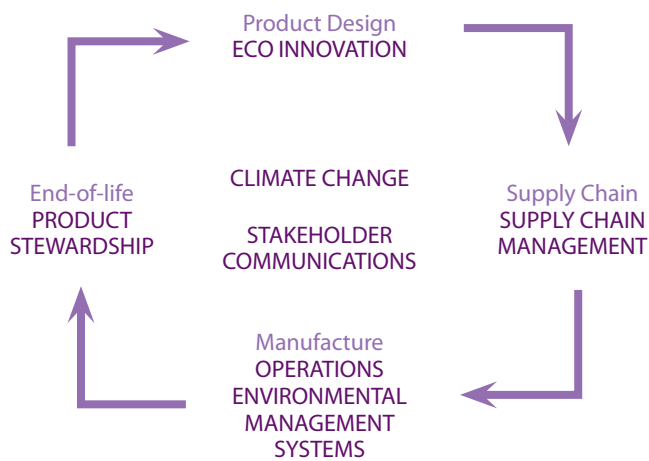


Figure 4 Life Cycle Management at Formway.

now informing and steering the company's environmental strategy, as well as detailed design decisions within product development projects.

2. 'Supply chain management' concerns procedures and specific projects that aim to improve the sustainability of products and services purchased by Formway.
3. 'Environmental management systems' are in place to improve in-house processes and operations within Formway's own manufacturing sites. These have been developed and certified using the Enviro-Mark®NZ scheme.⁶
4. 'Product stewardship' for end-of-life furniture is an area of developing importance to Formway. A number of practical options are currently under development and being trialled by the company for customers.

Climate Change and Stakeholder Communications have been identified as two priority overarching project areas that require coordination across the company's functions.

Additional details about Formway's LCM activities can be found described on Formway's website,¹⁸ and in the Ministry for the Environment case study 'Sustainable design at Formway'.¹⁹

In summary, the life-cycle-thinking approach has gained traction across the company in recent years and has led to several projects including, most recently, development of a product stewardship programme for end-of-life furniture. The evolution of LCM at Formway is fairly typical of companies adopting an LCM approach. Often an early step involves commissioning a life cycle study of a selected product. This

enables the company to become familiar with life cycle techniques and acts as a springboard for integrating life cycle thinking into other activities. Over time, a coordinated strategy and set of activities emerges around product-oriented environmental management, and LCM becomes institutionalised within the company.

CONCLUSIONS

An increasing number of businesses are now embracing life cycle thinking, realising that they have a responsibility to consider the upstream and downstream impacts of their products – and that competitive advantage can be gained from adopting such a perspective. Life Cycle Management (LCM) provides a pragmatic framework to implement proactive, product-oriented environmental management strategies based on life cycle thinking. The key aim of LCM is to embed life cycle thinking within an organisation's decision-making, and deliver products and services that support sustainable production and consumption in society, at the same time as adding economic and social value to stakeholders in the value chain.

In summary, successful Life Cycle Management provides a foundation for the development and delivery of products that provide pragmatic solutions to sustainability issues while also adding commercial value to organisations.

WANT TO FIND OUT MORE?

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ACKNOWLEDGEMENTS

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KEY PUBLICATIONS AND WEBSITES

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InterfaceFLOR: <http://www.interfaceflor.com/Default.aspx?Section=3&Sub=4>

Other companies do not use the term 'Life Cycle Management' but are effectively implementing life cycle thinking in their operations and management systems.

Examples include:

Nokia: www.nokia.com/A41039019

Resene Paint: www.resene.co.nz/comn/envissue/howgreen

Some international links

The Life Cycle Initiative supported by the United Nations Environment Programme (UNEP), and SETAC is coordinating international activities to support implementation of Life Cycle Management: <http://lifecycle.unep.fr/>

The International Conference on Life Cycle Management takes place every two years. Presentations at the 3rd International Conference, held in August 2007, can be found at: www.lcm2007.org

The LCA Centre, Denmark, has a page of links to companies using the life cycle approach: <http://www.lca-center.dk/cms/site.aspx?p=4015>

A Life Cycle Management business portal is hosted by EPA Victoria in Australia:

www.epa.vic.gov.au/lifecycle

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carboNZero^{Cert}™ programme

CHAPTER 12 : HATCHED



Summary

- Global trade faces a carbon-constrained future and exporters will have to reduce their greenhouse gas emissions to maintain or grow market share.
- New Zealand businesses need to wholeheartedly embrace carbon management. Early adopters are realising the financial benefits.
- The carboNZero^{Cert™} programme enables individuals and organisations (and their products, services and events) to reduce their impacts on climate change. It guides participants through a three-stage process of measuring, managing (reducing) and mitigating (offsetting) their greenhouse gas (GHG) emissions, prior to independent verification and then certification.
- Organisations benefit from another 'm' – the marketing of credible improvements in their environmental performance.
- The carboNZero programme is the first ISO 14065 accredited GHG verifier outside the USA and the first GHG certification programme in the world to receive international accreditation from the Joint Accreditation System of Australia and New Zealand (JAS-ANZ) which comes under the auspices of the International Accreditation Forum (IAF).
- The carboNZero programme and CEMARS[™] (Certified Emissions Measurement And Reduction Scheme – the measurement, management and certification steps of the carboNZero programme) are now being rolled out internationally through a partnership with Achilles Information.

HOW THE CARBONZERO PROGRAMME WAS DEVELOPED

Like many good things the carbonNZero^{Cert™} programme started with a moment of serendipity. A Landcare Research scientist looking at business carbon management practices had a restaurant discussion with a colleague looking at how landowners could get a return on their regenerating native bush. They saw a possible connection.

Building on over a decade of research on climate change, GHG measurement and carbon monitoring, Landcare Research established the carbonNZero programme in 2001.

Combining Landcare Research science with international best practice, the programme, headed by Professor Ann Smith, worked with a pilot customer, the New Zealand Wine Company (NZWC), to establish proof of concept. The programme continued to evolve and in 2006 certified NZWC (which included a number of owned and contracted brands: Grove Mill, Sanctuary, Frog Haven, Southern White and Thresher's Origin – see Box 1) as carbon neutral.

The carbonNZero team then worked with AsureQuality and PricewaterhouseCoopers to develop the certification programme with future international accreditation as the goal even though there was no accreditation options available at that time.

Ever since certifying the world's first carbon neutral wine, the carbonNZero programme has certified a further six wineries and has been successfully helping some of New Zealand's leading organisations products and services reduce their operational costs and gain market access in key overseas markets e.g. Meridian Energy, Urgent Couriers, Christchurch International Airport, Antipodes Water, Pitango, Snowberry (Endue Ltd), Wellington Combined Taxis.

In 2008, the carbonNZero programme developed a licensing agreement with UK-based Achilles Information, which has over 40,000 clients in the oil and gas, transport, public, pharmaceuticals, mining, construction, and communications technology sectors in 24 countries. Many of Achilles' clients,

together with a large number of New Zealand organisations, are keen to manage down their GHG footprint without making a commitment to being fully carbon neutral. In 2008 CEMARS[™] (Certified Emissions Measurement and Reduction Scheme – the measurement, management and certification steps of the carbonNZero programme) was launched.

By August 2009, the carbonNZero programme had completed over 200 certifications (largely organisations, their products, services and events), and about 100 organisations were working towards certification through the CEMARS and carbonNZero programmes. A total footprint of over 5.7 million tonne of CO₂-equivalent GHG's has been verified since the programmes' inception, with over 154,000 tCO₂e GHG's offset.

The carbonNZero programme has three goals – to maintain their position as one of the top three GHG schemes in the world, to be a recognised New Zealand export product in their own right and to reduce global greenhouse gas emissions by more than New Zealand's deficit.

HOW THE carbonNZero PROGRAMME WORKS

The programme focuses on measuring and reducing GHG emissions and then offsetting any remaining unavoidable emissions by purchasing verified carbon credits from credible projects that sink, reduce or avoid emissions, e.g. EBEX21 (www.ebex21.co.nz) (sink), energy efficiency projects (reduce) and renewable energy generation (avoid).

Measure

Daily operations (e.g. vehicle use, lighting, heating and refrigeration) using energy sources such as electricity, natural gas and petrol emit GHGs into the atmosphere. By measuring consumption of these various resources, we can calculate the amount of GHG released into the atmosphere and enable businesses to understand their emissions profile or carbon footprint. We provide guidance and tools to help businesses prepare their GHG inventory. The carbonNZero programme's measurement requirements meet and exceed the requirements of the international standards: GHG Protocol for corporate

accounting and reporting and ISO 14064-1. The measurement for products and services includes additional GHG lifecycle emissions relevant to the type of carboNZero certification being sought.

Manage

Making a commitment to manage and reduce GHG emissions at source is the most important aspect of the programme. The carboNZero programme provides guidance to help organisations, products, services and events identify and implement cost effective reduction opportunities. Reduction efforts are monitored by annually re-measuring their GHG emissions and comparing their profiles against their Key Performance Indicators (KPIs).

Mitigate

Mitigation is about 'offsetting' the effects of the unavoidable GHG emissions released into the atmosphere by an organisation. Offsetting emissions is undertaken by purchasing carbon credits through verified schemes such as regeneration of native forests, energy efficiency and renewable energy generation.

Verification

carboNZero certification is awarded only after independent verification of the measure, manage and mitigate steps by authorised verifiers (AsureQuality, Deloitte, PricewaterhouseCoopers, Telarc SAI and Verification NZ). The use of the carboNZero certification marks is also examined during verification.

Authorised verifiers are employed by reputable firms and have auditing qualifications and prior experience and proficiency in greenhouse gas emissions measurement, management and mitigation. To be authorised, verifiers must complete the carboNZero programme training course, pass an examination and be observed undertaking a verification.

Market

Organisations that gain carboNZero certification or CEMARS can be confident that the certification awarded by the carboNZero programme has both credibility and integrity as it has been verified against a global standard.

box 1: THE NEW ZEALAND WINE COMPANY – THE FIRST CARBON-NEUTRAL-CERTIFIED WINERY

Within a year of achieving carbon neutral certification, Marlborough winery The New Zealand Wine Company (NZWC), which includes Grove Mill, Sanctuary and Frog Haven, had doubled its sales to UK supermarket chain Sainsbury's and doors were opened to other European markets. The carbon neutral status was also credited with helping to boost the parent company's share price.

We've been winning awards for our wines for years, but its carboNZero certification that has made people want to talk to us. – NZWC CEO, Rob White.

An economic analysis¹ conservatively estimated the value of carboNZero certification to the NZWC to be over 15 times its investment in earning carbon neutral certification. carboNZero certification produced wide-ranging benefits for the NZWC including:

- A significant increase in sales of NZWC wines, especially in the UK
- A 30% increase in share price in the year following certification. Though other factors such as success in competitions potentially influenced share price, carboNZero certification was considered by NZWC management to be the most significant factor in this increase
- A greatly enhanced market impact – estimated by a NZWC UK sales manager to represent a 50-fold return on marketing investment
- Considerable positive exposure through media attention on this world 'first'
- Differentiation from competitors, and the ability to 'cut through' in negotiating with trading partners
- Cost reductions through energy savings and other efficiencies associated with certification
- Influencing the company's supply chain towards carbon neutrality
- A degree of 'future-proofing' – defence against potentially negative impacts of 'food miles', and a timely brand image of environmentally responsible production when demand for products with demonstrated low environmental impact is rapidly escalating

The NZWC's carboNZero certification demonstrated to New Zealand businesses the significant economic gains to be achieved from carbon neutral certification, through increased sales and cost efficiencies in production.

By August 2009 a further six wineries and wine products had also achieved certification: Cape Campbell Wines, Dry River Wines, Huia Vineyards, Kaimira Ventures, Wairau River Wines and Yealands Estate Wines.

Why carbon neutrality?

New Zealand businesses – particularly those with an export focus – need to wholeheartedly embrace carbon management. The early adopters are realising the financial benefits but there is potential to achieve more. For example, if New Zealand's entire export wine industry shifted to carbon neutral production and achieved only half the revenue return achieved by the NZWC, additional export revenue of almost \$70 million² could be generated. However this assumes a premium for carbon neutral products, which will not always be the case as other producers and other markets move to the same standard. Key to all this is the potential for carbon neutral certification to limit risks to overseas markets for New Zealand's agricultural and horticultural exports.

If global efforts to address climate change are to be meaningful, all organisations must develop strategic responses to the challenge of a carbon-constrained future. In key agricultural and horticultural export markets, New Zealand's trading partners are both cutting their own greenhouse gas emissions and increasingly importing products with demonstrated low environmental impact.

Food miles have an important international profile even though the underlying research is still emerging. In the Northern Hemisphere a 'green finger' is being pointed at New Zealand because of our distance from markets. carbonNZero certification provides a significant edge in competitive international trade by providing independently verified proof that New Zealand can provide environmentally responsible products that markets now seek. For example, the value of secure access to UK markets for New Zealand's agricultural and horticultural produce is currently about \$1 billion³.

WHY ARE COMPANIES ADOPTING CARBONZERO CERTIFICATION?

Strong business demand exists for simple and robust GHG measurement and reduction certification schemes that empower organisations and enable them to make public statements around their carbon credentials with confidence.

Both the carbonNZero programme and CEMARS are important for businesses that need to report for compliance reasons to the likes of the Emissions Trading Scheme (ETS) or Carbon Pollution Reduction Scheme (CPRS), for voluntary reporting reasons under the Carbon Disclosure Project (CDP) or annual corporate reporting.

Key benefits of joining the programme include to:

- Understand potential risk exposure
- Address consumers', shareholders' and investors' concerns
- Understand inherent carbon liabilities
- Avoid the cost of carbon and rising energy prices
- Reduce operating costs
- Reduce reputational risk and cost
- Gain competitive edge and market access
- Improve business networks and reach
- Demonstrate proactive corporate leadership and increase in staff morale
- Avoid accusations of greenwash (unsubstantiated or misleading environmental claims, e.g. deceptive marketing)

Christchurch International Airport used the carbonNZero programme to become the first airport in the Southern Hemisphere to attain carbon neutral certification. As the South Island's largest international tourism gateway, the airport viewed carbon neutrality as an opportunity to reinforce the 'clean green' New Zealand brand promoted to international visitors.

We wanted to do our bit by making our organisation as environmentally friendly as possible. The main contributors to our GHG emission profile are electricity, fuel and energy consumed in maintaining our runway assets. We have programmes in place for managing and reducing those emissions. For example, we have a building management system that controls and monitors lighting, heating and security inputs. That includes heat curtain technology that prevents draughts being created between the back-of-house baggage hall

area and the baggage claim area. We also use runway pavement recycling and new pavement application technologies that reduce our profile. – Rhys Boswell, Manager Asset Planning & Environment

Meridian, New Zealand's largest renewable electricity generator, sought carbon neutrality for both philosophical and commercial reasons.

Sustainability is simply our business approach. We question how and why we do things to ensure that we get the best outcome from a social, environmental and economic perspective. We are proud of where we have got to on this journey, and are striving to do more.

Meridian is proud to be New Zealand's only supplier of carbonNZero certified electricity – Tim Lusk, Chief Executive

State-owned Meridian wanted to show leadership in reducing and offsetting its emissions because it is itself a seller of carbon credits and is a strong advocate for the establishment of carbon pricing. There were also three commercial objectives in obtaining the certification: gaining a competitive advantage, helping its customers achieve their sustainability objectives, and to be well positioned when sustainability inevitably becomes a fundamental requirement for doing business.

Has Meridian achieved a commercial return on its investment? It's too early to assess. But they have a long-term outlook and sustainability is a long-term strategy.

CEMARS – MEASUREMENT, REDUCTION AND CERTIFICATION

CEMARS is the measurement, reduction and certification steps of the carbonNZero programme. It recognises the actions of businesses and organisations that measure their GHG emissions, understand their carbon liabilities, and put in place management plans to reduce emissions.

Based on our market research and feedback, CEMARS has an important niche in the carbon measurement sector, particularly with larger corporations for whom carbon neutrality is not currently a viable option, but for whom carbon management is a key strategic issue that needs to be addressed.

CEMARS uses the same methodology as the carbonNZero programme's measure and manage steps. This methodology for producing an organisational carbon footprint is aligned with the internationally recognised Greenhouse Gas Protocol (GHG Protocol) for corporate accounting and reporting, and with ISO 14065-1 specification and guidance at the organisational level for quantification, reporting of GHG emissions and removals. The CEMARS carbon footprint exceeds the technical requirements for GHG emissions reporting of the Carbon Disclosure Project (CDP).

By October 2009 twelve businesses had successfully achieved CEMARS certification including: Achilles Information, New Zealand government's Energy Efficiency and Conservation Authority (EECA), EFI (Energy for Industry), Palliser Estate Wines of Martinborough and Westpac New Zealand (an Australian-owned bank).

box 2: WESTPAC – THE FIRST BANK WITH CEMARS CERTIFICATION⁴

Westpac New Zealand achieved CEMARS certification as part of a strategy to reduce its carbon footprint.

CEMARS was aligned with Westpac's philosophy of focusing first on emissions reduction before considering offsetting. At Westpac, sustainability is a core component of its culture and its corporate strategy, and the bank is committed to minimising its direct environmental impact. Although operating in a voluntary carbon market, Westpac sought to take the first step in a transition to a low carbon business and measure the full scope of its greenhouse gas emissions across its head office and national branch network.

We chose CEMARS to assist us in understanding the impact our business operations have on the environment and where we could make the biggest changes. From here we worked with all business units to develop an ambitious, yet achievable, reduction plan that includes a target of reducing our total emissions by 20% per active customer by 2012. – Westpac's Acting Chief Executive, Bruce McLachlan

Westpac has detailed its strategy for actively reducing its emissions intensity — or emissions per active customer. Its current carbon footprint is 14,059 tonnes of CO₂e, which is made up of electricity and gas usage, car fleet and other vehicle use, air travel, paper usage, waste to landfill, and New Zealand hotel accommodation.

By including paper in its greenhouse gas inventory, Westpac has voluntarily expanded its carbon footprint scope. Mr McLachlan says Westpac is the only bank in Australasia to report on paper usage – *It's about disclosing an honest appraisal of where your business has a major environmental impact. For the banking and financial services industry, paper is still unfortunately a significant contributor. Increasingly our customers are banking online, which is encouraging, but there is still a portion of banking that requires paper use such as cheques, statements and deposit slips.*

Mr McLachlan says the bank's focus on emissions intensity enables it to balance its focus on emissions reduction with economic growth, whether that's organic or by acquisition.

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Landcare Research
Manaaki Whenua

Greening the screen

CHAPTER 13 : HATCHED

Nick Potter and
Jonathan King



Summary

- Film and television have an enormous potential to inspire, challenge and educate people to make changes for sustainability.
- *Greening the Screen*, a toolkit for the industry, enabled organisations and individuals (including contractors and subcontractors) to identify simple steps to reduce their environmental impacts. It made issues meaningful for them and highlighted the benefits of change.
- The toolkit has successfully been used in the film and television industry and has generated international interest. However, more significant changes are needed to develop higher levels of motivation and responsibility in the industry to make changes for sustainability.

WHY DID WE BECOME INVOLVED WITH NEW ZEALAND'S FILM AND TELEVISION INDUSTRY?

*Film and television make a significant contribution to New Zealand's economy and export earnings, as well as being very powerful media through which we express our national identity and assert our unique brand.*¹ – Former Prime Minister Helen Clark

Screen production (film and television) has been for a priority in New Zealand's economic development.² It has played a leading role in raising the profile of New Zealand's technical and artistic creativity. It has also benefitted other sectors such as tourism, seen for example when the *Lord of the Rings* movies showcased New Zealand's natural environment to the world. There is a compelling case for this industry to adopt more environmentally sustainable practices. First, the industry has many direct impacts on the environment, both on location (e.g. in sensitive natural areas) and in the studio (e.g. using energy and producing waste, including hazardous materials). Second, there is a strong relationship between the industry profiling a 100% Pure New Zealand image and the industry itself contributing to maintaining that asset. Third, as recognised by leaders in the industry, film and television have a powerful potential to influence society through the stories told on screen. This is therefore a pivotal industry in New Zealand's shift towards sustainability.

WHAT APPROACH DID WE TAKE?

Our involvement began with South Pacific Pictures, a production company in Auckland famous for the movie, *Whale Rider* and television drama, *Shortland Street*.³ Discussions revealed that there was a high level of commitment within this organisation to be proactive on environmental matters. They were concerned about their electricity use, but they did not have the resources to understand how to be more environmentally responsible in their wider operational activities. Professor Ann Smith from Landcare Research proposed to work with them on developing ways to reduce

their environmental impacts. By starting with one organisation, the intention was to develop a model for other film and television organisations and professionals in New Zealand and the industry as a whole.

In February 2005, *Greening the Screen* began as a partnership between Landcare Research, the Ministry for the Environment, Waitakere City Council and South Pacific Pictures. The purpose of the project was to develop environmental guidelines for the New Zealand film and television industry to:

- Encourage film and television organisations to improve their environmental performance
- Help protect New Zealand's natural, historical and cultural heritage and the value of the 'clean green' brand
- Contribute to sustainable economic development
- Enhance the reputation and competitiveness of the industry
- Demonstrate sector-wide leadership in environmental responsibility.

The project involved four major steps:

- Researching initiatives by film and television companies and productions elsewhere in the world

box 1: INFLUENCING NEW ZEALAND TELEVISION

South Pacific Pictures' exposure to Greening the Screen has brought home to us how we can actually make a difference. With very little effort we can make significant improvements to the way we use resources while we reduce our waste. And to our surprise we have realised that whilst we make these improvements and reductions we are going to save money. We're very excited to have led the Greening the Screen project and we're absolutely committed to achieving results that will help us and the environment. – John Barnett, South Pacific Pictures

The *Greening the Screen* team have worked on a variety of prime time television productions, including *Shortland St*, *Wa\$ted* and *Mitre 10 Dreamhome*.

- Undertaking an environmental review of South Pacific Pictures, as a pilot to develop draft guidelines for the industry
- Engaging significantly with industry professionals across various crafts to involve them in developing a toolkit
- Providing and publicising a toolkit for environmental management⁴

A key success factor was the placement of researcher from Landcare Research who worked alongside staff for some six months. This facilitated relationship-management and built trust with the organisation.

The final toolkit, *Greening the Screen*, is freely available in hardcopy or online at www.greeningthescreen.co.nz. It has stand-alone sections for different audiences:

- **The Business Case** – explains the importance of corporate environmental responsibility for senior managers and business leaders
- **Management** – provides instructions for identifying and managing environmental impacts
- **Tools** – gives simple explanations, suggestions for

improvements and a menu of practical tips for different film and television activities (in the office, behind the screen, on location, on screen, and off screen)

WHAT INFLUENCE HAVE WE HAD?

The Greening the Screen Toolkit has been an integral resource for [our] project. I have found the information to be constantly helpful and supportive, providing excellent guidance, templates and ideas adaptable to the boundaries of the project. – Elly Flower, Sustainability Project Manager for a NZ film production company.

When the project began, New Zealand had few resources for environmental management in the film and television industry. The industry was also lagging behind overseas initiatives in this area. *Greening the Screen* has successfully provided New Zealand's film and television industry with tools to manage their environmental impacts. It has received strong support from individuals and organisations within the industry (see Box 1) and received international attention (see Box 2). It has also influenced the production of some high profile television productions within New Zealand, such as *Wa\$ted*.

Although *Greening the Screen* highlights the potential for film and television organisations to positively influence their audiences, it primarily offers tools and practical tips. Promoting better environmental management (e.g. producing less waste) was seen as a first step in promoting sustainability.

box 2: INFLUENCING THE WORLD

The toolkit has received praise within the international film and television community for the wide range of topics covered, its practical nature, and its free availability online. In 2005 the toolkit was the only one of its type in the world, although others have now been initiated. Comments include:

In the course of my research, I found your Greening the Screen handbook which I found very helpful and well written. I have viewed others in the US but your version is the most comprehensive. I would like to share the contents with our clients in Hollywood who produce film and are looking for green locations like your country. – Zahava Stroud, iHollywood Forum, USA (2007)

I'm frequently referring to your website, as I believe the Greening the Screen project is my only TRUE resource at this point. – Christina Thayer, Independent Consultant, USA (2007)

THE CHALLENGES OF INFLUENCING A SECTOR

It has been a major challenge to encourage the film and television industry to become more sustainable, as the industry has had little experience in this area. Many discussions were held with industry professionals to raise awareness of the issues and opportunities. We worked with influential industry bodies such as the Screen Production and Development Association of New Zealand, the New Zealand Film Commission, Film New Zealand, the Screen Council, Actors Equity, and the Screen Directors Guild.

Produce less. Act more.

From the outset, however, some industry members were concerned that the toolkit and website would be insufficient on their own to ensure that good environmental practices would be embedded. They suggested that further support would be needed. The Ministry for the Environment provided 18 months of additional funding and Landcare Research staff worked directly with production companies to help them implement the toolkit.

Since the end of the contracts with the Ministry for the Environment were completed, Film New Zealand has licensed the toolkit from the Ministry for the Environment and in June 2009 took over responsibility for updating the content of the website and toolkit and relaunching it to the screen production industry. Film New Zealand re-presented the sustainability issue to the industry at the SPADA annual conference in 2008 and hosted an industry sustainability meeting where it was decided to set up a sustainability working group with pan industry representation to guide and inform the industry's approach to sustainability. The working group is now setting up an industry organisation solely focused on sustainability in order to support the changes required within the industry.

Film New Zealand will be maintaining Greening the Screen as an important resource and practical cornerstone for all working in screen production in New Zealand. Preserving New Zealand as one of the world's best screen production destinations is fundamental to Film New Zealand's core business and drives our commitment to maintaining Greening the Screen. It represents a valuable tool in our global marketing initiatives. – Judith McCann, CEO Film New Zealand

WHAT MORE NEEDS TO BE DONE?

Responsible and ethical environmental practices within the

screen production sector are essential to the healthy future of New Zealand. These need to be more than lip service... they should be taken to the heart of our industry work practices.– Screen Directors Guild of New Zealand (2005)

Film and television industry professionals are talented, innovative and usually receptive to environmental and social messages. Many show great concern for the environment and recognise that more needs to be done to improve their industry. *Greening the Screen* has made a valuable contribution, but more needs to be done to:

- Develop greater support within the industry for taking action on sustainability issues
- Embed environmentally sustainable practices across the industry
- Consider how the industry can play a more significant role in promoting sustainability through its influence on society.⁵

To develop better practices, institutional changes need to be considered. Film New Zealand is taking responsibility for the toolkit/website and is establishing the industry sustainability organisation. These are examples of progressive institutional change. Other examples that could be taken on by the new sustainability organisation include providing relevant material in film school curricula, integrating environmental considerations into the screen industry Code of Practice for Health and Safety, and developing sector-specific environmental performance indicators.⁶

It is also vital to keep an eye on the bigger picture. Previous research suggests that media and entertainment companies usually focus on the direct environmental impact of their operations (e.g. waste and energy use), rather than on the far greater, though indirect, influence that they have on audiences through their communications.⁷

Film and television can play an enormously positive role in inspiring, challenging and educating people to make changes

in their society. Will New Zealand's film and television industry rise to the more challenging role of influencing broader social change? Some examples are emerging, such as *Wa\$ted* television series and TVNZ's revised draft charter which includes the statement that TVNZ will 'feature programmes that support, encourage and highlight environmental awareness'.⁸ In the meantime, it is important to remember that there isn't a back-up location for this planet.

WANT TO FIND OUT MORE?

Contact buildingcapacity@landcareresearch.co.nz

For the Author's contact details see page ii

KEY PUBLICATIONS AND WEBSITES

McConachy E, Smith A 2006. *Greening the Screen: A model for sector engagement in sustainable development*. Lincoln, Landcare Research. Available at: <http://www.nzsses.auckland.ac.nz/conference/2007/papers/McCONACHY-Greening%20The%20Screen.pdf>

www.greeningthescreen.co.nz – The online toolkit

www.wastedtv.co.nz – A local television program focusing on households and waste

www.filmnz.com - contains a Green Screen section

www.theoutlookforsomeday.net – A sustainability film challenge for young New Zealanders

www.ema-online.org/ – The Environmental Media Association (Hollywood) honours people who increase public awareness and inspire personal action on environmental issues

ACKNOWLEDGEMENTS

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- 2 Screen Production Industry Taskforce 2003. Taskforce report to Government. New Zealand Trade and Enterprise. Available at: <http://www.nzte.govt.nz/section/13680.aspx#screen>
- 3 This discussion emerged during an interview, when South Pacific Pictures participated in one of Auckland Regional Council's pollution prevention initiatives. South Pacific Pictures mostly does television work but also some film production.
- 4 McConachy E, Smith A 2006. *Greening the Screen: A model for sector engagement in sustainable development*. Lincoln, Landcare Research. Available at: <http://www.nzsses.auckland.ac.nz/conference/2007/papers/McCONACHY-Greening%20The%20Screen.pdf>
- 5 For additional research on encouraging change within organisations and sectors, see Potter N, Frame B, McLaren S 2008. *Organisations, institutions and transitions to sustainability*. Landcare Research Working Paper. Lincoln, Landcare Research.
- 6 McConachy & Smith (2006). Significant institutional changes were made several years ago to market New Zealand's film production industry to the world (see <http://www.nzte.govt.nz/common/files/govt-response-main-mr.pdf>). Apart from Film New Zealand's recent move to take responsibility for the Toolkit and website, there has not been a similar degree of attention on making institutional changes to improve the environmental performance of the industry.
- 7 SustainAbility and WWF-UK 2004. *Through the Looking Glass: Corporate responsibility in the media and entertainment sector*. London, Calverts Co-operative.
- 8 See <http://tvnz.co.nz/content/1206682>

section three



Individuals – as citizen consumers

The choices people make – to consume certain products or live certain lifestyles – can either sustain the environment or harm it. When we factor in the upstream and downstream activities associated with these choices, our lifestyles account for the majority of environmental impacts globally.

While the previous section, Business as sustainability innovators, focused on changing production patterns, this section explores whether consumption patterns might be changed. But to do so is a staggering task. So what knowledge and approaches are needed to increase sustainable consumption? And what exactly is sustainable consumption?



Sustainable consumption

What is it and what will it mean for society?

We are what we buy – aren't we?

How personal and group identity influences consumption

Seeking pro-sustainability household behaviour change

What works? Profiling the Sustainable Living programme

Supporting practice change through transformative communication

How communication can create change

Education for sustainability in secondary schools

Is our secondary education system able to equip students for a complex-decision-making environment?



Landcare Research
Manaaki Whenua

An introduction to sustainable consumption

CHAPTER 14 : HATCHED

Helen Fitt
and Sarah McLaren



Summary

- People consume goods and services for many reasons, varying from survival to symbolic communication, to a need to comply with social expectations.
- Consumption has been growing rapidly since the Second World War and, despite a temporary slowdown caused by financial instability, this growth is set to continue.
- Increased consumption does not always improve the quality of life of individuals in developed countries. Indicators of social well-being show limited connections to material wealth.
- Consumption of goods and services leads to significant environmental damage and current levels and patterns of consumption are unsustainable over the long term.
- The public sector spends large sums of money on influencing consumption through tools such as information campaigns, taxes, and subsidies (e.g. for energy saving).
- Understanding the wider context for consumption – and what drives people to consume – can help in the design of interventions that are more effective in changing consumption.
- It is unlikely that promoting sustainability as requiring sacrifice (e.g. in terms of standards of living) will lead to wholesale and lasting uptake of sustainability initiatives.
- Necessary interventions are likely to include sustainable production initiatives, promotion of more environmentally friendly forms of consumption, and an alternative to the current consumption paradigm that is strongly based on assumptions of continued economic growth.
- Improvements in happiness and well-being could be promoted to improve the palatability of sustainable consumption initiatives. This approach would embody a different social paradigm

AN INTRODUCTION TO SUSTAINABLE CONSUMPTION

This paper considers key questions around sustainable consumption including:

- What is sustainable consumption?
- Why is sustainable consumption important?
- What drives people to consume goods and services?
- How can consumption be influenced?
- What broad strategies exist for moving towards sustainable consumption?
- What progress is being made towards sustainable consumption policies around the world, and in New Zealand?
- Could sustainable consumption be a good thing for New Zealand?

WHAT IS SUSTAINABLE CONSUMPTION?

The most commonly used modern definition of sustainable consumption is that agreed at the Soria Moria Symposium on Sustainable Consumption and Production in Oslo in 1994:

The use of goods and services that respond to basic needs and bring a better quality of life while minimising the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardise the needs of future generations.

Numerous other definitions have been proposed and have slightly different emphases. In general, the focus includes all, or a subset of, the following subjects:

- Satisfying human needs
- Protecting the environment
- Endorsing inter- and intra-generational equity
- Improving well-being and quality of life
- Ensuring economic growth
- Assigning responsibility for action

This paper discusses sustainable consumption specifically in the context of meeting needs, improving well-being and protecting the environment for both present and future generations. This

focus reflects the prevalence of these themes in sustainable consumption literature. However, it is acknowledged that other aspects of sustainable consumption (including those relating to social and cultural sustainability) may be equally pertinent.

In this section 'consumption' refers to goods and services which are used, or used up, by individuals or households. This paper focuses on individual and household consumption rather than consumption by, for example, businesses or the public sector. Focusing on goods consumed by individuals and households does not preclude consideration of the lifecycle impacts of these goods consumed in other sectors (e.g. during production). It does, however, allow more detailed consideration of the reasons for consumption and the possible interventions to alter consumption than would be possible under a broader approach to consumption in different sectors.

A BRIEF HISTORY OF SUSTAINABLE CONSUMPTION AND 'NEEDS'

Sustainable consumption is a relatively new term; it entered common usage only after the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992¹. However, discussions of notions similar to sustainable consumption can be traced back at least as far as Aristotle, and his construction of consumption is still useful today. Three categories of demand for goods can be identified through Aristotle's work on desires:²

- Items that human beings need to survive (e.g. food); acquiring these things is always 'good' because they are necessary for survival
- Items that are desired (but not needed) and which are not harmful (e.g. strawberries); acquiring these things is good because they increase satisfaction with life even though they are not necessary to meet fundamental needs
- Items that are desired (but not needed) and that have harmful effects (e.g. cigarettes); acquisition of these items is bad because, while they may be desired, they are actually detrimental to well-being

This classification, and its distinction between 'good' and

Hereafter, the term 'goods' is used to refer to both goods and services

'bad' consumption, is mirrored by many modern definitions of sustainable consumption (including that from the Oslo Symposium quoted above). Both Aristotle's classification and many definitions of sustainable consumption prioritise the meeting of needs, maximisation of satisfaction with life, and avoidance of the harmful effects of non-essential consumption. These three elements will be revisited in the next section.

Aristotle also firmly acknowledged, alongside material needs and desires, the existence of non-material needs and desires such as friends, political power and security. Expansions and clarifications of what a person 'needs' have been attempted by more recent authors. Abraham Maslow, in 1943,³ famously ordered different human needs in a hierarchy according to the priority that is placed on achieving them. He put survival needs (e.g. food and sleep) first; needs for safety, love, esteem and self-actualisation (which includes elements such as creativity and spontaneity) follow in that order.

In the 1980s, Amartya Sen pushed for disengagement of the dominant economic association of 'needs' with material possessions. His Capability Approach considers not the material possessions belonging to people, but those people's abilities to function in society and to transform resources into valuable activities. He suggests that we should ask:

*Are [people] well nourished? Are they free from avoidable mortality? Do they live long? Can they take part in the life of the community? Can they appear in public without shame and without feeling disgraced? Can they find worthwhile jobs? Can they keep themselves warm? Can they use their school education? Can they visit friends and relations if they choose?*⁴

Sen's work in this area was part of a 'humanist revolution' in welfare economics and contributed to the creation of the United Nation's Human Development Index (HDI). The HDI has been credited with popularising understandings of well-being in human development and is now used as an alternative to measures of material wealth (e.g. GDP) in measuring human development across countries and over time.⁵

History, then, indicates a longstanding connection between notions of consumption and human needs and desires. The

next section considers the relevance of this topic in modern society.

WHY FOCUS ON SUSTAINABLE CONSUMPTION?

A basic enquiry into the sustainability of consumption of any given good or service could still ask the same questions that Aristotle asked over 2,300 years ago:

- Is consumption needed?
- Does consumption improve satisfaction with life?
- Does consumption cause harm?

Each of these questions is addressed below in the context of consumption in New Zealand.

Is consumption needed?

Clearly, consumption in New Zealand today includes many goods and services that are desired but not required. People cannot survive without food, but can easily do so without ipods, home spa pools, and jet boats. In fact, only a small proportion of what is consumed in New Zealand now is actually necessary for survival. This means that most of the nation's current consumption is desired rather than needed – which means that its value can be judged according to whether it improves satisfaction with life and whether it causes harm.

Does consumption improve satisfaction with life?

Although people desire material wealth, there is a large body of evidence showing that material wealth, beyond a certain point, does not improve satisfaction with life. For example, in the UK the percentage of people reporting themselves as 'very happy' declined from 52% in 1957 to just 36% today despite a doubling of real incomes⁶. Similar results showing little or no increase in happiness as wealth rises are available from other studies^{7,8}. This suggests that while a certain level of material wealth (one that allows individuals to meet their needs) is important to happiness, ever-increasing wealth does not lead to ever-increasing happiness⁹. Figure 1 shows a clear pattern in which happiness appears to increase with wealth up to a point and then level off. Indeed, residents of New Zealand report

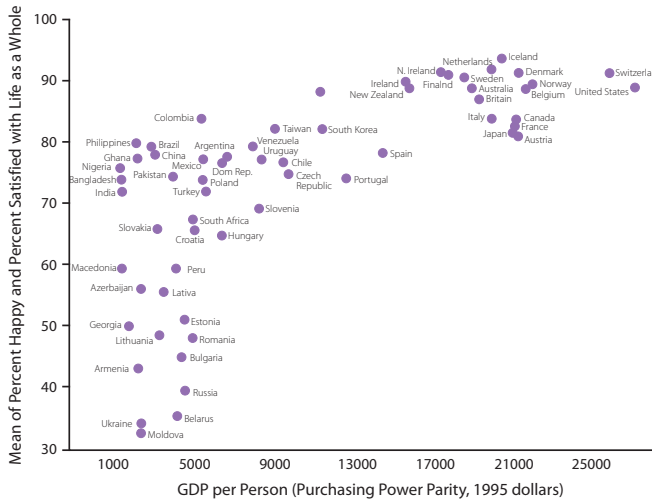


Figure 1 Happiness and average annual income (from Inglehart & Klingemann¹²).

themselves as being happier than those of countries like Japan, France and Canada despite considerably lower incomes.

Research has also shown that increasing material wealth does not, again after a certain point, lead to improved social outcomes in terms of qualities such as life expectancy, health, and participation in education¹⁰. The lack of a direct positive correlation between wealth and both happiness and good social outcomes has led to suggestions that countries like New Zealand could have the same kinds of social outcomes as currently experienced and have happier populations – with lower levels of consumption.

A reduction in consumption could be accompanied by shorter working hours, more time to connect with friends and family, more time for self-enhancing pursuits (e.g. education and community involvement), and indeed greater feelings of self-worth and fulfilment. This view matches assertions (including those by Aristotle, Maslow and Sen) that non-material needs are important. Furthermore, it is supported by evidence suggesting that individuals with *intrinsic value orientations* (which include elements such as personal growth, relationships and community involvement) are both happier and likely to have higher physical and psychological well-being than those individuals with *extrinsic value orientations* (including concerns such as financial success, physical attractiveness and image¹¹).

Does consumption cause harm?

Some types of consumption (e.g. binge drinking and smoking)

cause direct harm to individuals, and the New Zealand Government already invests in campaigns and legislation to minimise these kinds of consumption. Examples include the 2004 implementation of a ban on smoking in many public places, and the activities of the Alcohol Advisory Council of New Zealand, which pursues a remit of discouraging the overconsumption of alcohol.

Other types of consumption cause harm to the natural environment and this is a more common focus of attention in sustainable consumption debates. It is argued that consumption is putting pressure on the natural environment through activities such as:

- The generation of greenhouse gases: global carbon emissions have risen by 40% since signing of the 1990 Kyoto Protocol, which was intended to stabilise emissions of these gases amongst signatories¹³
- The unsustainable use of resources: e.g. it is estimated that since the development of industrial fisheries in the 1950s, stocks of large ocean fish have been reduced to 10% of pre-industrial levels¹⁴
- The use and release of toxins: e.g. use of certain agricultural fungicides has been linked to reproductive problems and birth defects in exposed animals; there is concern that similar problems could be experienced by exposed humans¹⁵

Material consumption has been consistently growing since at least the Second World War. While global population growth is, in part, responsible for this trend, population growth is slowing and is commonly forecast to continue to gradually stabilise.¹⁷ Conversely, per capita growth in consumption remains strong and current levels of consumption are considered by many to be unsustainable in environmental terms.¹⁸

In summary, it seems that some types of modern consumption are unnecessary, may not improve satisfaction with life, and cause harm to the natural environment. Why, then, do we continue to pursue these types and patterns of consumption?

Drivers of Non-necessary Consumption (low–mid)

low

EXTENT OF INFLUENCE OF OTHERS ON INDIVIDUALS' CONSUMPTION DECISIONS

mid

FUNCTIONALITY

Something that isn't necessary to survival can be useful and desirable because of the function it is designed to perform.

E.g. chocolate tastes good, lights make it easier to see in the dark and washing machines reduce the time and effort needed to clean clothes:

A decision based purely on the function of a good can be an individual decision.



SELF-IDENTITY & PERCEPTION

Consumption can adjust and reinforce consumers' own identities through the socially defined symbols attached to goods.

E.g. an individual may purchase organic vegetables for taste. Successive purchases lead the individual to adopt other self-perceptions symbolically linked to organic produce, such as opposing the use of synthetic chemicals in the production of food:

The consumption decision does not relate directly to others but the symbolic meanings attached to goods are socially defined and influence the consumer's self-identity



DREAMS & IDEALS

Consumption provides a link for consumers between their real worlds and their dreams and aspirations.

E.g. new clothes may not make an individual more successful or more wealthy, but (through reference to social symbols around what the clothes mean) they may make the individual feel as though those achievements are closer, or that they can identify with social groups with those qualities:

This is usually seen as a subset of self-identity and perception.



CONSPICUOUS CONSUMPTION

Symbolic consumption can be an important means of communication between individuals and groups.

E.g. Thorstein Veblen used the concept of 'conspicuous consumption' in 1899 to describe the nouveau riche using their wealth to show membership of the upper class. Fashion is often an example of conspicuous consumption:

The consumption decision is not only influenced by socially defined symbols but is also used to influence others' perceptions of the consumer



Figure 2 Drivers of non-necessary consumption

Drivers of Non-necessary Consumption (mid–high)

mid



SOCIAL & SEXUAL COMPETITION

Individuals competing for status are driven to buy items which are attractive to others and demonstrate desirable traits in themselves.

E.g. "...the Bentley is tantamount to the...peacock tail"²⁰. A peacock's tail demonstrates fitness and attracts a mate, similarly a Bentley may be a demonstration of wealth and success and may attract other people:

This is usually seen as a subset of conspicuous consumption.

EXTENT OF INFLUENCE OF OTHERS ON INDIVIDUALS' CONSUMPTION DECISIONS



SOCIAL NORMS

Guidelines about the kinds of behaviours, attitudes and beliefs that are acceptable in a group or society; failure to conform to social norms can attract disapproval, criticism or exclusion from social groups:

E.g. it may be considered unacceptable to attend a wedding or baby shower without taking a gift:

Consumption decisions are influenced or constrained by social norms.



LOCK-IN

A situation in which social, physical, and economic structures restrict the choices consumers can make about purchases:

E.g. it becomes necessary to own a computer as more social functions require them:

Consumption may appear optional but in reality there are few or no available alternatives.



ECONOMIC GROWTH

Growth in consumption is embedded in modern capitalist economies; without it social, political and economic stability are threatened.

E.g. governments have recently released stimulus packages to deliberately drive consumption and keep economies growing;

Consumers are constrained by national and international social, political and economic structures that pervade many aspects of life.

high

Figure 2 Drivers of non-necessary consumption (cont'd)

DRIVING THE DESIRE TO CONSUME

The drivers of non-necessary consumption are complex and multifaceted. Economics offers perspectives that can help in understanding the consumption decisions people make; however, there is some disagreement around the existence or importance of certain influences on consumption decisions. In particular, there is a great deal of debate around the extent to which consumption decisions are the result of individual rational choices or are influenced (or constrained) by the social, physical and economic structures within which individuals live. Standard neoclassical economics is based on the assumption that, in general, decisions are the result of individual rational choices; it is recognised that individuals have different preferences, but neoclassical economics stops short of investigating the origins of these preferences. Behavioural economics, in contrast, argues that each person's behaviour is strongly influenced by, and in turn influences, the structures and social groups within which that person lives.¹⁹

Some drivers of non-necessary consumption are illustrated in Figure 2 (previous page), these are roughly ordered according to the extent to which they imply individual decisions (towards the left) or decisions influenced by others (towards the right). Of course, these drivers do not occur in isolation from each other and complex interactions between them may influence a single consumption decision.

In addition to social influences on consumption, theories of rational choice fail to incorporate choices that may be individual but not rational. For example, habitual behaviours that remove the need for an individual to consciously evaluate alternatives in a decision-making situation are outside the scope of neoclassical economic theory.¹⁹ A combination of neoclassical and behavioural economics can help explain both the individual and social, rational and less rational, consumption decisions made by individuals and households.

INFLUENCING CONSUMPTION

The drivers of consumption are complex and multifaceted. Any attempt to influence consumption will need to take account of

the reasons *why* consumption of any particular good or service is occurring and focus on interventions that address those drivers. For example, individuals who would like to reduce their consumption of goods and services may be completely unwilling to do so if this means breaking a social norm and experiencing the disapproval that may result. Similarly, if owning a fast car is regarded as a symbol of wealth and success then taxing fast cars to make them more expensive may reinforce the symbolism and have very little damping effect on the purchase and use of these cars. In contrast, promoting the notion that successful individuals are those who can afford to spend more quality time with loved ones could have a more significant impact on consumption (and probably also well-being).

There is no strong, documented reason why habits, identities, symbolism, social norms, lock-in and so on should not be used to encourage adoption of a consumption paradigm that is compatible with environmentally friendly behaviours and happier and healthier lifestyles. However, a commonly cited argument against strategic attempts to influence consumption is that of consumer sovereignty. At its most extreme, it is argued that, in a liberal democracy, the individual has a *prima facie* right to self-determination and any attempts to restrict or alter consumption choices amount to unjustified coercion. Rebuttals of this argument focus on the principle that *'the need to prevent harm is always an appropriate reason for coercion'*²¹. Application of this principle is displayed in regulations such as smoking and alcohol licensing laws.

Further rebuttals argue that individual choices are so inextricably caught up with different social dynamics that they cannot be considered free from external influence. For example, marketers commonly attempt to manipulate peoples' aspirations and consumption, and the State has a strong influence on social norms through legislation, education, spending priorities and so on²². Under these conditions, it can be argued that consumer sovereignty is a flawed notion and that conscious attempts to influence consumers towards sustainable consumption are unlikely to be any more damaging to self-determination than are existing influences on consumption.

Economic growth, however, may be a more significant challenge to attempts to influence consumption. The diagram showing drivers of consumption (Fig. 2) included 'economic growth' on the far right-hand side, indicating that economic growth has a strong influence on individual decisions; this warrants further discussion. Economic growth, which requires the continued consumption of goods, is often regarded as a fundamental – and desirable – feature of capitalist economies; it is also commonly considered necessary for the maintenance of social, political and economic stability²³.

The rationale for support of continuous economic growth can be articulated as follows:

- Companies are driven (by profit motives and competition) to improve efficiency
- Improvements in efficiency lead to an ability to produce the same amount of goods with fewer staff.
- If demand for goods remains constant, and the same goods can be produced with fewer staff, then unemployment results
- Unemployment reduces demand for goods, which leads to further unemployment, reductions in well-being, diminishing social and political satisfaction and, eventually, unrest²⁴
- Growth in consumption of goods is therefore required to avoid a 'vicious circle' of decreasing demand, increasing unemployment, and decreasing welfare and stability

Consumers are therefore locked into increasing consumption through their participation in a society and economy that is dominated by a paradigm of economic growth. This paradigm is so dominant that it is very, very difficult for most people to see any alternative at all. The perceived need for economic growth drives government policy, financial decision-making and social expectations.

Nonetheless, as explained above, ever-increasing wealth and consumption do not necessarily lead to ever-increasing happiness, and evidence is accumulating that increasing wealth can be accompanied by decreasing levels of well-

being.²⁵ Recent history has shown that economic growth, increases in consumption, and the growing negative effects of consumption have gone hand in hand. The next section explores whether these links can be broken.

STRATEGIES FOR MORE SUSTAINABLE CONSUMPTION

The literature suggests that there are (at least) two alternative strategies for moving towards more sustainable consumption:

- Breaking the link between consumption and negative impacts within the current economic growth paradigm
- Developing a new paradigm for society that is not dependent on economic growth and ever-increasing consumption

Each of these strategies is discussed below.

Breaking the link between consumption and negative impacts

Historically the negative impacts of consumption have been addressed through a focus on more sustainable production, assuming that negative environmental impacts can be reduced through more efficient production of goods. However, as the World Business Council for Sustainable Development has recently commented:

... it is becoming apparent that efficiency gains and technological advances alone will not be sufficient to bring global consumption to a sustainable level; changes will also be required to consumer lifestyles, including the ways in which consumers choose and use products and services ²⁶

This statement echoes an increasingly common view that sustainable production initiatives need to be complemented by initiatives focusing on sustainable consumption. Campaigns aimed at breaking the link between consumption and negative environmental impacts are now common around the world; often they focus on discouraging the consumption of products with poor environmental credentials and encouraging the consumption of those products thought to be less damaging

to the environment. Examples of these kinds of initiatives include:²⁷

- The (voluntary or compulsory) labelling of products to show whether they can be recycled / whether they are organic / how much energy they require to run / etc.
- Taxes levied on electricity consumption / inefficient vehicles / plastic bags / etc.
- Subsidies and incentives applied to 'environmentally friendly' consumption such as the installation of home insulation, or the purchase of fuel-efficient cars
- Communication campaigns including 'Clean Air Days', 'Earth Hour' and 'Zero Waste' initiatives
- Environmental education schemes – mostly through schools but expanding in some countries to more general consumer education
- Corporate reporting and marketing to encourage consumers to choose products produced by firms taking action on sustainability
- Sustainable procurement policies implemented in public sector institutions

While some of these kinds of initiatives take account of the different drivers of consumption discussed above, many operate assuming that the provision of accurate information about goods and the use of differentiated prices will result in individuals making rational economic decisions. The effectiveness of these initiatives may be improved through consideration of the drivers for the consumption behaviours that they attempt to change, and how to influence these drivers.

The initiatives described above most commonly aim to shift consumption between close alternatives (recyclable plastic instead of non-recyclable plastic, more efficient vehicles instead of less efficient vehicles, etc.). More fundamental shifts in consumption may also be possible, and moving consumption towards goods and services with high economic values but low environmental impacts may allow much greater reduction in the negative impacts of consumption. For example, a famous painting may have a high financial cost but a low

box 1: DECOUPLING

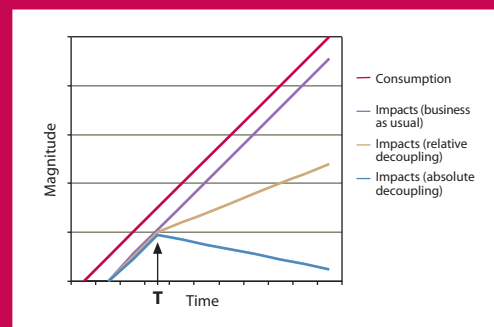
Decoupling is a commonly used term in sustainable consumption debates. It basically refers to breaking the link between (or 'decoupling') consumption and negative impacts.

Absolute decoupling – describes a situation in which the negative impacts of the goods consumed gradually fall even if the amount of goods consumed continues to rise over time.

Relative decoupling – is used to describe a situation in which each individual good consumed has gradually lower negative impacts over time but the total magnitude of impacts can continue to rise if the amount of goods consumed increases.

This diagram illustrates the impacts of consumption under three different scenarios (each taking effect from time 'T').

- under business as usual, impacts track consumption over time
- with relative decoupling, impacts increase but more slowly than consumption over time
- with absolute decoupling, impacts fall over time



environmental impact; in contrast, one litre of petrol used to fuel a car may have a much lower financial cost but a much higher environmental impact²⁸. While artwork and petrol may not be direct substitutes for each other, different ways of living may allow for the emergence of different combinations of consumption. Through shifting consumption to high value but low impact goods and services it may be possible to increase consumption while reducing environmental impacts.

Politically, 'decoupling' of consumption and negative impacts (see Box 1) is appealing because it avoids the uncomfortable perception that living sustainably necessitates reducing consumption of goods and services and so requires self-sacrifice.²⁹ If absolute decoupling is successful, rates of consumption can continue to rise while negative impacts of consumption fall. However, even if this can be achieved initially, decoupling can be compromised by the so-called 'rebound effect'. The rebound effect describes the way in which, as impacts fall, consumers feel able to consume more – which then increases impacts. This effect has been demonstrated in areas such as increased use of energy efficient appliances: as appliances become more efficient and cheaper to run, consumers buy more appliances and use them more often.³⁰



Hairshirts were used in some religious traditions to induce some degree of discomfort or pain as a sign of repentance and atonement. They are commonly associated with self-sacrifice.

From: http://en.wikipedia.org/wiki/Hair_shirt

Another significant criticism of decoupling is that the link between consumption and impacts may be so strong, and the magnitude of impacts so great, that it will be difficult to reduce negative impacts sufficiently while consumption continues to increase. Changing consumption habits towards 'greener' goods has been described as '*...at best, a form of advertisement for the idea that we should live sustainably*',³¹ which in practice has very limited benefit in environmental terms. Similarly, Tim Jackson highlights the enormity of the challenges of sustainable production with an example showing that technologies to reduce the carbon intensities of economic outputs would need to be developed at a rate 10 times faster than is currently happening just to meet current targets for greenhouse gases.³² A massive step-change in the levels of commitment to, and rates of progress toward, this goal would be necessary for this strategy to be successful.

Developing a new paradigm for society that is not dependent on economic growth

The second potential strategy for achieving sustainable consumption is to develop a form of social organisation that is not dependent on economic growth. This would allow

If needs and desires can be met more fully with less – rather than more – consumption, then notions of hairshirts may be misplaced, and notions of silk shirts more appropriate.



consumption to stop growing and introduces the possibility of consumption actually declining. As consumption falls, the negative impacts of consumption could be expected to fall accordingly. This strategy has been described as politically unpalatable³³ as reductions in consumption have previously been associated with falling standards of living and notions of 'hairshirts'. Furthermore, without changes in the drivers of consumption, any strategy to reduce consumption would be likely to be resisted by consumers. However, as to the possibility that meeting needs and desires more fully with less material consumption (e.g. with shorter working hours and more fulfilling use of leisure time) is more widely considered, the unpalatability of consuming less can also be questioned:

*If social and psychological needs really are ill-served by modern commodities, then it should be possible to live better by consuming less, and in the process reduce our impacts on the environment.*³⁴

A pertinent question, then, is how can the needs and desires that consumption addresses (including those relating to social status, dreams and ideals) be met by non-consumptive activities? This question has not yet been answered but is attracting considerable attention. Economists are engaged in developing economic models based on stable consumption rather than expectations of continued growth. For example, Canadian economist Peter Victor has developed a model of the Canadian economy that includes a no-growth scenario that sees falls in unemployment, poverty, debt and greenhouse

gas emissions, while allowing for increases in leisure time³⁵. Victor's recent book *Managing without Growth: Slower by Design, Not Disaster* emphasises that it may be possible to design an economic system outside the paradigm of growth while acknowledging that slowing down without careful planning for this scenario could be disastrous.

Choosing a strategy for sustainable consumption

This section has discussed two alternative strategies for moving towards more sustainable consumption:

- Breaking the link between consumption and negative impacts within the current economic growth paradigm
- Developing a new paradigm for society that is not dependent on economic growth

Each strategy has its own merits; for example, some negative impacts of consumption have already been reduced through initiatives improving the efficiency of production and directing consumption towards the least damaging of the available goods and services. Simultaneously, new work by ecological economists is suggesting that it may be possible to strategically and systematically move to lower consumption and a non-growth economy at the same time as reducing the negative impacts of ongoing consumption. If a shift to a non-growth economy incorporates strategies to facilitate improvements in well-being and happiness, then this option may also avoid the political unpalatability with which it has commonly been associated.

At this stage it is difficult to determine which strategy, or combination of the two strategies, can most effectively contribute to realisation of more sustainable patterns of consumption.

MOVING FORWARD...

...globally

A wide variety of policies and actions target consumption issues. These are organised differently by different governments and intergovernmental agencies. Those intergovernmental agencies and governments that have put together coordinated sustainable consumption strategies have, to date, largely

prioritised policies attempting to decouple consumption and negative impacts. For example, the website of the European Commission's Directorate-General for the Environment states:

*The great challenge faced by economies today is to integrate environmental sustainability with economic growth and welfare by decoupling environmental degradation from economic growth and doing more with less.*³⁶

However, the publication of *Prosperity without Growth?*, a recent UK Sustainable Development Commission report calling for an end to economic growth, is a first step towards opening up a debate about alternative economic paradigms that may deliver more sustainable consumption. Charles Siegel (Sierra Club Sustainable Consumption Committee member) wrote:

*When a British government commission publishes a report calling for an end to economic growth, it suddenly seems that we live in a world that is changing its direction.*³⁷

A change in direction is certainly the goal of the Marrakech Process, a global, multistakeholder process led by the United Nations Environment Programme (UNEP) and the United Nations Department of Economic and Social Affairs (UN DESA) and with the participation of national governments, development agencies and civil society. The Marrakech Process supports the development of a 10-year 'Framework of Programmes' on sustainable consumption and production aimed at promoting greener economies, greener business models, and more sustainable lifestyles. The Framework of Programmes is due to be launched in 2011 and will see sustainable consumption and production prioritised at an international level into the 2020s.³⁸

Alongside various bodies of the UN, the Organisation for Economic Cooperation and Development (OECD³⁹) and the European Union (EU⁴⁰) have also prioritised work on sustainable consumption. In addition, a number of individual countries including the United Kingdom, Austria, France, Norway, and Sweden have overall national strategies for sustainable consumption.⁴¹

...in New Zealand

While decoupling has historically been the preferred option of the New Zealand Government, recent statements have

contained indications of a growing acceptance of the idea of reducing consumption. For example, the summary of the report 'Environment New Zealand 2007' states:

Today, many New Zealanders are interested in reducing the impact of their purchasing habits on the environment. We can do so by buying only what we need, choosing products with less packaging, and choosing durable products instead of disposable ones.

This appears to advocate a combination of decoupling and of targeted reductions in consumption. Formalising such a mixed approach could potentially lead to innovative new policy in this area.

The debate over decoupling versus reductions in consumption is likely to intensify on global political agendas. As environmental degradation worsens and environmental impacts such as climate change and resource depletion become more pronounced, calls for action are likely to become stronger and more frequent. New Zealand exporters will be increasingly exposed to scrutiny in their key international markets. The development of a coherent sustainable consumption strategy would facilitate a proactive response and integrate current policies on consumption (taxes, subsidies, ecolabels, etc). Beyond the critical economic and environmental needs that can be addressed with sustainable consumption policies, New Zealand also has an opportunity to focus on improving the quality of life of New Zealanders through establishing better ways to fulfil the needs and desires of citizens through non-consumptive activities.

A VISION

It is entirely plausible that New Zealand could strive to become a society in which consumption is sustainable; that is, a society in which needs are met, satisfaction with life is high, and damage to the environment is minimised.

Lessons can be drawn from the existing literature about how to influence and encourage formulation of a more beneficial consumption paradigm. This new paradigm may include green consumption, cleaner production, and an alternative to growth economics. Living sustainably is currently often promoted as

requiring sacrifice or 'doing without'. It seems unlikely that promoting sustainability in this way will lead to widespread and lasting uptake of sustainability initiatives. This means that it is necessary to identify something that is *better* than current lifestyles and standards of living so that this can be promoted to New Zealanders. Could there be a satisfying way of living that facilitates high cost but low impact consumption?

Society faces a choice between inaction (which is likely to result in reduced well-being and happiness, and ongoing degradation of the environment) and concerted action to create something altogether better. It is time to start seriously investigating the possibilities.

WANT TO FIND OUT MORE?

Contact buildingcapacity@landcareresearch.co.nz

For the Author's contact details see page ii

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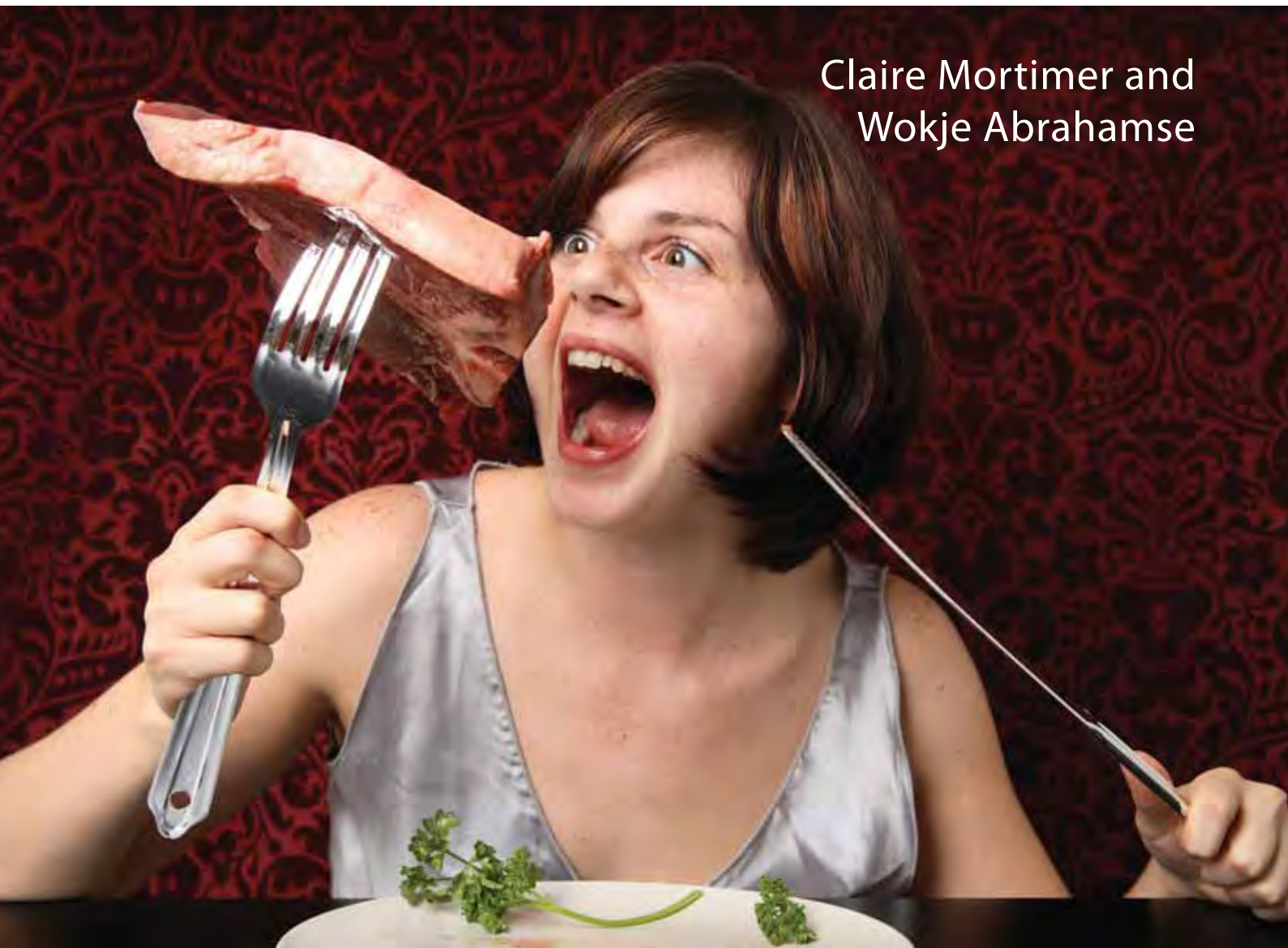


We are what we buy - aren't we?

The influence of identity on behaviour and consumption

CHAPTER 15 : HATCHED

Claire Mortimer and
Wokje Abrahamse



Summary

What influence does identity have on people's behaviour and consumption, and should this influence be considered within sustainability policies and programmes?

Concern over the social and environmental impacts of modern lifestyles and consumption patterns has generated a range of new policies and programmes aimed at shifting consumer behaviour in a more sustainable direction. Internationally the public is increasingly being encouraged for instance to drive less, consume less and recycle more¹.

However, changing consumer behaviour is extremely difficult because our behaviour driven by a multitude of factors including *motivations* (e.g. attitudes, values, norms), *abilities* (e.g. skills, knowledge) and *opportunities* (e.g. price, availability). One of these motivational factors – the role of self-identity and group identity in consumer behaviour – is receiving increasing attention.

Material goods and services often have strong symbolic meanings which people use (consciously or unconsciously) in order to construct their self-identity, to communicate that identity to others, and to align themselves with certain ideals and social groups. Therefore because consumption choices often reinforce self-identity and a sense of affiliation to social groups, people may not be willing to change their consumption choices even when presented with knowledge, opportunities and incentives to do so.

In order to be successful, interventions aimed at changing a specific consumer behaviour will need to identify any barriers created by the target audience's symbolic association with the desired behaviour. For example, research for one public transport programme found that the target audience associated travelling by bus with a lack of professional success² and this association created a barrier in getting them to reduce their car trips and use the bus service.

Communication messages may be tailored to specific audiences so as to address identity barriers. For example, if people associate their meat consumption with a healthy diet and being a health conscious person rather than with environmental impacts and being an environmentally conscious person, messages aimed at reducing meat consumption may be better framed around the negative health implications of eating (too much) meat rather than on appeals to help the environment.

However, to significantly shift consumption patterns within society, the symbolic meanings of many material goods and certain lifestyles will need to be renegotiated; for example, using public transport will need to be perceived as something that smart and sophisticated people do. Because symbols are inherently a social process, this renegotiation will be undertaken both at an individual and societal level and will require interventions that collectively target individuals, groups and society³.

Considering the social processes involved and the commercial marketing budgets that have been spent in creating symbolic associations with goods and lifestyles, this is a challenging and long-term task. But successful examples do exist: internationally, anti-fur campaigners used shock advertising to shift attitudes and norms around wearing fur garments; and after years of social marketing, support programmes and regulation, smoking is increasingly seen as an addictive and anti-social behaviour in New Zealand.

WHAT IS IDENTITY AND HOW IS IT CONSTRUCTED?

This section provides an overview of current literature that explores the relationship between identity and sustainable behaviour and consumption. We look first at the close interrelationships between individual and group identity and to a lesser extent national identity.

Self-identity

'Self-identity' can be defined as the characteristics individuals see as representing who they are, including traits, values and opinions.^{4,5} Self-identity also encompasses a person's psychological sense of continuity, that is, who I was, who I am now and who I will become.⁶

Each of us also develops a number of 'role identities'. A role identity comprises those characteristics we attach to ourselves within a specific social role we play (e.g. nurturing mother at home, analytical engineer at work). People will switch between these role identities as they move between home, work and social situations, while their self-identity is assumed to remain constant.⁷

We construct our identities through a continual process of social interactions, through which our identities change over time.² Mead (1934, 1956)⁸ describes this process of social interaction as 'social conversations' in which we enlist social symbols to negotiate our identities with others. These symbols include language but also incorporate the symbolic meanings associated with objects, people, rituals and, as explored in this paper, lifestyles and material goods.

Group identity

A person's self-identity not only encompasses unique characteristics that set them apart from others, but also includes characteristics that are derived from their membership of social groups⁹ (e.g. being an artist or a vegetarian). A person will often adopt the symbolic traits that define those social groups as part of their own self-identity. For example, a teenager might start smoking in order to align herself with a particular social group at her school, or start wearing bling and hoodies to associate herself with hip-hop culture.



Understanding and influencing group identity is critical in understanding and influencing individual behaviour. According to social identity theory,¹⁰ society organises itself into different groups who have defined their identity through identifiable distinctions from other groups. This theory argues that key aspects of our behaviour are motivated by a need for intra-group solidarity and inter-group competition. Interestingly this competition exists even when there is no goal or resource scarcity to trigger group¹¹ competition. For instance, researchers found that by merely dividing people into groups on the basis of whether they preferred a certain painter (Klee or Kandinsky), triggered intergroup competition.¹²

Dr Seuss's famous 'butter battle book' reflects this concept. It is a tale of two groups whose differences in identity were based on which side they buttered their bread; this difference escalated to the creation of a weapon that could destroy them both. The book was an allegory of the arms war between the US and Russia and it was banned in public school libraries in many states in the US;¹³ and this leads us on to national identity.

National identity

A sense of national identity differentiates us from other nations and may bind us together through the depiction of common traits and values. There are conflicting views on whether national identity is needed or indeed possible within today's pluralistic and fragmented society¹⁴ and there is little research in New Zealand on whether national identity influences environmental consumption and behaviour. Indeed many of the characteristics commonly attributed to New Zealand identity; e.g. 'clean and green' and 'giving everyone a fair go', have been described as 'myths to live by' versus New Zealanders day-to-day practice.¹⁵

HOW IDENTITY INFLUENCES BEHAVIOUR AND CONSUMPTION

Drawing on a range of literature we look now at how identity is understood to influence our consumption patterns and lifestyles.

1. What we buy reinforces our understanding of who we are.

We frequently buy goods and services which we, or our group/ society, have attached symbolic meaning to, in order to reinforce our understanding of who we are⁷ and to construct narratives by which to make sense of our lives. For example when I buy environmentally friendly products I reconfirm to myself that I am a person that cares about the environment. As I continue to do so, I strengthen this aspect of my identity.

2. Our consumption choices can help us bridge the gap between our real and ideal world; who we are now and who we want to be.¹⁶

For example, I buy the fast car to make me feel more powerful even if in reality I feel powerless in my life, or I buy the greener car to make me feel environmental even if my ecological footprint is huge. But as we usually never bridge the gap to our ideal by simply buying things, this may give rise to specific emotional responses, which in turn creates specific behaviours. Dittmar,¹⁷ for example, demonstrated how the discrepancy between actual and ideal self can be used to predict excessive buying behaviours – as one consumer good fails in our attempt to reach our ideal, we move onto the next.

3. Our consumption choices communicate who we are to others, affiliating us to certain social groups and ideals.

As mentioned previously, we often adopt the visible characteristics of the social groups we associate ourselves with. The teenager smoking at the back of the school bike sheds may be using the activity of smoking to align herself with the 'cool' social group at her school, the group made up of individuals prepared to take risks and buck the rules. This adoption of group behaviours can help embed each of us within our chosen social groups and it can communicate the ideals that represent who we are (and conversely who we are not) to others.

Some researchers also believe that having shared group symbols either embedded in consumer goods or through other



means such as rituals may help individuals and groups maintain social resilience in the face of cultural shifts and social shocks,¹⁸ that is, they enable people to hold onto a form of shared and constant identity when the world around them is rapidly changing.¹⁹ For example, new immigrants may continue to eat the same food and share the same festive celebrations in a new country. Asking them to change consumption patterns, for

Some scholars argue that the symbolic projection of material goods is pathological of Western modern culture.^{5,15} However, material goods have held symbolic meaning throughout human history. The State has also had a history of attempting to influence material consumption. For example, in the 16th century, the Elizabethan Sumptuary Laws dictated the style of clothing to be worn by individuals, creating an immediate way to identify social rank: only royalty were permitted to wear clothes trimmed with ermine, lesser nobles' trim was fox and so on. The penalties for violating the Sumptuary Laws included loss of property and even life. The laws, which could never be adequately enforced, aimed to control frivolous expenditure (so that horses and weapons were not neglected – goods considered important for a country often at war) and aimed to ensure that a specific class structure was maintained, particularly against the threat of the increasingly wealthy merchant class.

Today we still use clothing to symbolise social standing but the State no longer regulates against our aspirations and social mobility – instead it regulates the consumption of goods considered to be the social threats of today, such as drugs and tobacco

example to reduce gift-giving linked to traditional ceremonies, may therefore represent a form of risk to their own sense of self-identity and continuity.

4. Consumption choices can place us in a social order.

Some material goods, for instance the type of car we drive or the house we live in, help display our social status. If maintaining social status is important to us, we may be compelled to consume more and more, because as Hirsch²⁰ points out *'we must run faster and faster to stay in the same place, because our competitors are also engaged in the race.'* This has played out in intergenerational differences in what society considers to be affluence because *'one generation's luxury is the next generation's necessity.'*²¹

NATIONAL IDENTITY AND SUSTAINABLE BEHAVIOUR AND CONSUMPTION

How much does New Zealand's national identity influence our environmental behaviour and consumption? Morris²² comments on the following values that have been attributed to New Zealanders with what he terms 'amazing determination'. They are: punching above our weight, a profound sense of fairness, a pragmatic optimism that 'she'll be right mate', and a love for this 'pure' and 'green' land and for each other. Morris suggests these taken together can symbolise our collective spirit.

While a 'love for the pure and green land' forms part of our understanding as New Zealanders, it is unclear whether this influences our day-to-day reality and behaviour. Does it make us switch the lights off, drive less, or reduce the waste we throw away? Rather, the clean green identity may be safely tucked away in the hinterlands – places we cherish and visit on holiday; it may be a 'myth to live by' which has negative as well



"Most New Zealanders believe they like new and exciting challenges. They don't really. They like new and exciting packaged food. And new and exciting appliances. It's not the same thing."²³



as positive influences on the New Zealand environment. The clean green image survives in part because 'a superficial glance out the window affirms this is – even though the lush pasture has been drenched in chemicals, and the bush we see is just remnants of a far, far, larger forest'²³

The phrase 'clean and green New Zealand' did not enter circulation until after the 1960s¹⁹ but it is a phrase regularly used and commented on in academic literature, the media and by government. Certainly New Zealand advertising has capitalised on the New Zealand identity of 'love for the pure and green land'. Countless TV car ads show middle-aged men driving through vast and empty New Zealand landscapes – symbolising a sense of identity with freedom and power. However, the reality for the car buyer may be far removed, however, for example sitting still in rush-hour traffic on an Auckland motorway.

In fact, New Zealanders' identification with the environment appears to be more closely associated with the aesthetic and recreational values derived from the natural environment. In the many public environmental surveys, New Zealanders commonly claim that they value the environment. Analysis of those surveys show, however, that while New Zealanders value the aesthetics of the landscape – the recreational benefits of

open space and the coast, and the odd iconic species – they attach less value to the more mundane fauna and flora that make up New Zealand's biodiversity.²⁴ This may make it more difficult for agencies to gain support and action from New Zealanders to protect those seemingly mundane but vital native species and to protect whole ecosystems such as scrublands.

What about New Zealanders 'love for each other' and our altruistic values? In an address to the Local Government Managers Conference in New Zealand in 2007, John Ralston Saul, the Canadian writer and philosopher, responded to a local body politician's criticism of Wellington ratepayers, who, she complained, wanted more from government but wanted to pay less for it. Ralston Saul replied that as a poster child for neoliberal policies throughout the 1980s, New Zealand and its public service moved from treating the public as citizens belonging to a community to regarding them as customers within the marketplace, and as customers it is not surprising they have become focused on their own self-interest.

Arguably, if we want New Zealand society to consume more sustainably, we need individual New Zealanders to be prepared to act and consume for the common social, and environmental good rather than to make their choices based upon solely what benefits them individually in the short term. If Ralston Saul's insight is correct, and this would be worth testing through research, it raises the question of how we might reactivate the identity of citizenship and civil society as a means to increase the sustainable values and consumption of New Zealanders.

SELF AND GROUP IDENTITY AND SUSTAINABLE BEHAVIOUR AND CONSUMPTION

While the relationship between New Zealand's national identity and New Zealanders' environmental behaviour appears unsubstantiated, research has shown clear linkages between self and group identity and people's behaviour, as demonstrated in the following research case studies.

Case study 1: Meat consumption and self identity

Various studies have examined the relationships between food

consumption and people's identity. To illustrate, a UK study²⁵ found that people who more strongly identified with being a green consumer were more likely to buy organic produce than those with a weaker 'green' identity. Meat consumption may also be tied to people's self-identity. That is, individuals may choose to consume meat because certain meanings people attach to eating meat (e.g. meat is healthy) are consistent with aspects of their self-identity.²⁶ For example, another UK study²⁷ found that people who strongly identified with being a health-conscious person would also be more likely to say they would eat meat. The importance people attach to eating meat may therefore be an important factor to take into consideration in attempting to encourage consumers to adopt healthier and environmentally sustainable dietary choices.

This case study examined the role of identity in relation to the provision of information about meat consumption. Specifically, it examined how people respond to information about meat consumption in terms of either a match or mismatch to a certain aspect of their self-identity (i.e. importance of eating meat).

The participants in this study were first asked to indicate how important eating meat was to them personally (identity). They then either read a (fictional) newspaper article on the advantages of eating meat or an article on the advantages of being vegetarian. Both articles contained three arguments (based on health, animal welfare, and the environment), either in favour of eating meat or in favour of being vegetarian. The main message of the article (i.e. pro-meat or pro-vegetarian) either matched with their identity on how important eating meat was to them or the message did not match and therefore posed a 'threat' to their identity. Participants were asked to evaluate the information in terms of its persuasiveness (e.g. 'to what extent did you find the arguments convincing?'), and they were asked about their attitude towards eating meat (i.e. whether they had a favourable or unfavourable opinion about eating meat).

The newspaper article that advocated the advantages of eating a vegetarian diet was evaluated more negatively by respondents who strongly identified with being a meat eater. People who did not strongly identify with being a meat eater evaluated the pro-vegetarian newspaper article as more

persuasive than the pro-meat newspaper article. The results of this study therefore indicate that information that is matched to an individual's identity is judged to be more persuasive than information that is not matched.

Attitudes towards eating meat were not influenced by whether or not the information was matched to people's self-identity. In other words, attitudes towards eating meat did not shift as a result of an identity threat. A possible explanation for this is that attitudes towards eating meat may be relatively stable over time, and are not likely to be affected by a single message. Additionally, information alone may not be sufficient to encourage a change in attitudes in relation to food consumption.

The results of this study highlight the importance of examining the role of identity in relation to food consumption. The results suggest that people may respond differently to information campaigns depending on whether the information is matched to certain characteristics of their self-identity or not (e.g. the extent to which they identify with being a meat eater). This may also explain why many information campaigns do not shift behaviour, because they represent a threat to people's identity (for a more detailed account of this study see Abrahamse et al.).²⁸

Case study 2. Barriers to catching public transport in an Auckland community

In 2004 the Auckland Regional Council carried out qualitative and quantitative research exploring people's current behaviour around personal transport and why they might choose or not choose to use public transport.² The results reflected the multitude of factors which influence people's behaviour including;

- *Opportunity barriers* to using public transport – in this case the lack of a pedestrian crossing to safely reach the train station and a lack of integrated ticketing across bus companies travelling the same route.
- *Ability barriers* to using public transport – in this case the lack of timetable information at bus stops and, in the case of some of the new immigrants, not knowing how to flag a

bus down or stop the bus when reaching their destination.

- *Motivational barriers* to using public transport – in this case a key motivational barrier was the symbolic associations connected with driving one's own vehicle versus catching a bus. A large number of the households in the target community were low income and were new immigrants. Many were currently catching public transport but they saw this as an interim measure until they were able to afford their own cars. In the focus groups they described being able to travel by their own car versus travelling by public transport as a symbol of achieving success in their new country.

The results of the study demonstrated that a number of interventions would be required to get people to increase their public transport trips. And while some of these interventions were relatively straight forward (e.g. timetables at bus stops, personalised travel plans, new immigrant education and security at the bus depot), the Auckland Regional Council would also need to shift people's associations with public transport away from being a mode of transport used by unsuccessful people who have no other choice. This is a more complex task and is likely to involve changing attitudes at a wider societal level as well as at the local community level.

UNDERSTANDING THE INFLUENCE OF IDENTITY AND SYMBOLIC MEANINGS OF GOODS IN BEHAVIOURAL CHANGE INTERVENTIONS

Having identified that self and group identity can influence behaviour and consumption, what are some of the approaches that might be explored when designing interventions to shift behaviour?

Assessing how identity is associated with a specific behaviour

Some behaviours may be more closely associated with a person's or group's identity than others, for example, in-home heating may be less of a defining feature of a person or group than being a smoker or being a vegetarian. Therefore



interventions to encourage energy-saving options related to in-home heating (such as insulation) are less likely to need to consider the role of identity. Assessing the degree to which identity influences a certain behaviour (and at the same time assessing the other contributing factors, e.g. attitudes, skills) would be a preliminary first step in intervention design.

Renegotiating the symbolic meaning associated with certain behaviours

If behaviours are strongly associated with a specific social group, other people, who do not want to identify with that group, may be resistant to taking on that behaviour – for example, eating vegetarian food may be perceived by some as something that 'hippies' do; catching a bus is something kids and losers do.

This raises the issue that if we want to shift people from buying certain goods or living certain lifestyles we may need to change the symbolic meanings that New Zealand society associates with those goods and lifestyles. Being vegetarian would need to be reframed as being mainstream and healthy if the goal was to increase the number of people who were vegetarian. Equally, catching the bus needs to be reframed as something that smart and successful people do if the aim is to reduce single-occupancy car travel.

This would appear a daunting task, but there are examples of programmes and campaigns that have successfully achieved this end. The anti-fur campaigns used shock advertising to shift public attitudes towards women who wear fur – renegotiating fur garments from being luxurious items worn by beautiful

women, to dead wild animals worn (as literally described by many of the ads) by dumb animals and spoilt bitches.

In New Zealand, a combination of public information, school education programmes, support services and regulation have collectively shifted both the identity attached to smoking and smoking behaviour over a 20-year period. This suggests that a combination of individual, social and institutional changes are needed to shift behaviour and consumption patterns at the societal level...and that these changes do not happen overnight. Rather, programmes and policies need to be implemented progressively over a considerable time period.

Restricting forms of advertising

Research has indicated that advertising and marketing more generally shape people's perceived need to use goods to create and communicate identity.²⁹ For example, the role of advertising in youth identity was considered in a study commissioned by the National Youth Affairs Research Scheme in Australia. The study examined the links between youth consumption patterns, sustainability, and processes of social change. It singles out the media as requiring special scrutiny on the basis that youth do not recognise the extent to which the media influences their concept of desirable lifestyles and their personal identities.³⁰

New Zealand has regulated against the advertising of cigarettes in an attempt to reduce the health and associated economic impacts of smoking. It could explore the extent of public harm caused by advertising other goods to children and youth and choose to limit content and advertisement placement on that basis.

Education for sustainability

The assumption that environmental experiences will build environmental behaviour is embedded in the New Zealand Environmental Education Strategy³¹ and the successful Enviroschools programme.³² Both of these initiatives are based on the principle that if you get students out *into the environment* and doing something *for the environment*, they will develop positive environmental values and long-term behaviour patterns. In discussion with educators, none have been able to point to any longitudinal research on whether students moving out of the school system retain and act on those experiences.

Connecting people to their local place and community

'The Big Clean Up', a social marketing programme run by the Auckland Regional Council, attempted to shift household behaviour around water catchment protection. It was based on the assumption that if they connected residents of specific catchments to their neighborhood streams this would increase their sense of personal stewardship of those streams. Post-campaign evaluation showed a significant increase in residents taking walks by their streams and carrying out personal behaviours in the home to reduce stormwater pollution.

However, one challenge in developing a local sense of identity (either of place or of local community) is the high mobility of New Zealanders. Between the last two censuses about 50% of New Zealanders had changed address. Caldwell³³ comments that in cities like Auckland, which are highly urbanised with high levels of migration, many residents feel and act like 'squatters' rather than members committed to their communities. This may indicate that not only will it be hard to connect many New Zealanders to their local



neighbourhood, but that the make-up of community identity is also constantly changing, fragmented and tenuous.

Business

Businesses have a powerful role in influencing consumption and identity. They shape the symbolic nature of goods through marketing and advertising, and they can provide options through producing more sustainable products and services. Broader roles that business might take beyond this discussion on identity are explored in **Section Two; Sustainable Business** within this book.

CONCLUSIONS

How we see ourselves as individuals or as part of a social group can have a profound impact on our day-to-day behaviour. Similarly, our daily behaviour (re)asserts who we are as a person. Often, we will not be willing to change our behaviours and consumption choices even when presented with the knowledge, opportunity and incentives to do so, because those choices reinforce our self-identity and affiliate us to our preferred social groups. Information to promote specific pro-environmental behaviours may even be perceived as a 'threat' to the identity of a person or group and as such may actually reinforce current behaviour.

Organisations attempting to shift consumer behaviour will first need to assess whether those behaviours and goods are strongly associated with symbolic meanings that reinforce their target group's self and group identities. If they are, strategies will need to be developed to overcome the barriers that these will create for behaviour change. Research has suggested that tailoring messages to align with certain aspects of people's identity may increase the effectiveness of information campaigns.

However, the symbolic meanings associated with specific consumer behaviours – and, more broadly, with certain lifestyles and consumption patterns – may need to be renegotiated. Because the negotiation of symbolic meanings of goods is a social process, this renegotiation will need to be undertaken through strategies that aim to collectively change the behaviour of individuals, groups and society.

WANT TO FIND OUT MORE?

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Seeking pro-sustainability household behaviour change:

What works?

CHAPTER 16 : HATCHED



Rhys Taylor
and Will Allen

Summary

- Just over 30% of the New Zealand population are thought to be pioneers and early adopters of actions that support sustainability.¹ This segment includes people ready to engage with sustainability through courses and public education campaigns, and to lead the way forward.
- Effective courses will actively engage participants. They will use facilitators and group study situations to encourage actions to be trialled and evaluated. Key elements for success were seeing examples, enabling circumstances, engagement in an interesting process and encouragement to continue by having needs met.
- It is important to support participants, to start with small achievable goals such as changing bulbs and appliances, insulating windows, waste minimisation and improving garden practices. Building the confidence to act leads to ongoing changes.

RESPONDING TO CRISIS

Accelerating resource depletion, habitat degradation and climate change are real issues requiring serious attention at many levels, from international to household. At the local level, awareness from 'thinking globally' about stories raised in the media does not necessarily translate spontaneously into 'acting locally' to reduce the harmful impacts of habitual lifestyle practices and consumer choices. This chapter summarises findings of research into managing effective community education courses.

CHANGE REQUIRES A LEARNING PROCESS

Moving towards more sustainable living implies that we must change at least some of our everyday practices. Change, in turn, is a learning process. Learning in this sense has a social context set by media, workplaces, peer groups, cultural traditions, government policy, etc. It may involve us in breaking past patterns of action – which can be a real struggle in some cases, before new patterns are adopted. The easiest path tends to be continuing an established pattern, which is why we call them 'habits'.

Sometimes there is a conflict between beliefs, expectations and habitual actions, which for some could result in denial (as seen in addictive behaviour:² 'I could give up my car driving any time' – Yeah Right). Or it could result in cognitive dissonance (where two experiences conflict, such as: 'Driving is unhealthy. I drove to the shops today for just a few items when I could have taken a walk, but I don't have time to walk, as I'm busy earning, to pay for the car!')

Human behaviour change is not often a cause-and-effect linear process. Education aids reflection from experience and potential re-evaluation of habitual behaviours, using reasoning. Thus if an individual learns, say from reading a book, magazine article or web-page, they may deliberate or reflect, and plan some change. However, the social context that they operate in is also important, as it will either act to inhibit or support the change.³

STRENGTHENING SUSTAINABILITY ACTIONS?

The New Zealand population is increasingly aware of global sustainability issues. A quarter of New Zealanders surveyed by Research New Zealand for the Ministry for the Environment in 2007 indicated they understood environmental sustainability and those claiming such understanding found it an urgent issue for central and local government attention. By the 2008 survey, rephrased questions showed 83% of all respondents saw an urgent need for 'action to protect the environment' by everyone. Most of these would 'like to do more' themselves. Analysis of the sampled population in this 2008 survey,¹ using a segmentation developed by Defra in the UK, described the two types most willing to act spontaneously as 'positive greens' (these early adopters are 14% of population and often higher earners) and 'concerned consumers' (18% and a younger average age). So these pioneers and early adopters of pro-environmental sustainability change actions, as those with highest willingness and potential to act, will total not much more than 30% of the population.

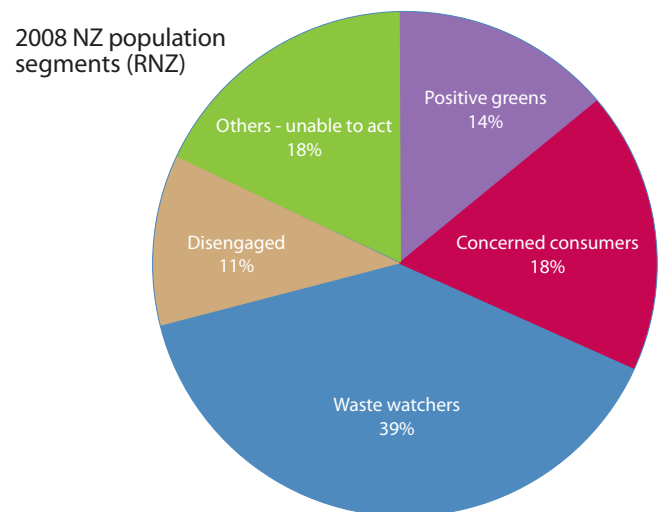


Chart 1: New Zealand population sample, segmented by willingness and potential to take action at home on environmental sustainability: presented clockwise, highest to lowest. (summarised from Research New Zealand 2008¹).

A lower willingness to act voluntarily, but still having potential to be able to make some household changes, was shown

by the substantial 'waste-watchers' segment at 39% of the population. The 'disengaged' were about 11% (often in older age groups) and the remaining 18% in other segments had less ability to act due to low incomes, no property ownership or limited confidence.

LEARNING OPPORTUNITIES

When opportunities are offered for the public to learn about such issues and potential actions to take at home, who responds voluntarily? A long-term case study was undertaken by Landcare Research (Taylor & Allen 2008)⁴ of participants in the Sustainable Households Programme (subsequently renamed Sustainable Living), a community education class series held at many locations. This is offered for a small course fee, or sometimes free, at venues such as high schools, environment centres, church and community halls. The classes are backed by local government, with 26 councils currently in membership of the Sustainable Living Education Trust www.sustainableliving.org.nz. One of the authors (Rhys Taylor) has long involvement in the Trust's work as a tutor and coordinator, providing insider participant-observer access.

This case study showed that 77% of course participants were women (not unusual for non-qualification evening classes), of varied ages, but only 11% were under 30. Mostly house-owners, they would fall into the 'concerned consumer' and 'waste watcher' segments of the 2008 surveyed New Zealand population – those who were both willing to learn and able

to take some actions. The tutors tended to be professionals from the smaller early-adopter 'positive greens' segment. Experimental promotion of course content to University of Canterbury students in 2008 and 2009⁵ showed interest and engagement was prompted among educated young flat-sharers, male and female.

Actions reported following course participation included, most frequently:

- Installation of thermal insulation and curtains
- Garden changes to grow more food, less lawn
- More effective composting, plus EM bokashi and worm farms
- Changes of appliances, light bulbs and vehicle for energy efficiency
- Avoidance of certain packaging and recycling a larger proportion of used materials
- Reduced water use in garden and bathroom
- Reduced exposure to potentially toxic chemicals
- Increased walking, less short-trip car use

The published paper⁴ carries much more detail on this case study, which showed that course participation prompted new actions in the short term, and strengthened confidence to develop longer term actions and maintain actions already commenced.

Interest in environmental issues attracted course participants. Potential money-saving and health benefits were a secondary

Sustainable Living course participants in Christchurch NZ



incentive to take part and both featured in end-of-course evaluations as tangible impacts.

Because participants' scientific or systems knowledge base was often limited at course outset, previous actions being taken by participants included contradictions and some rebound effects (where environmental damage is displaced rather than reduced). Examples included: cycle commuters who proudly cut carbon emissions compared to their previous driving, but then used the money savings to take an overseas holiday; and those who switched from open fireplaces to heat pumps in part for winter clean air benefits, but then ran these heat pumps for summer air conditioning, requiring coal burning at power stations when drought restricts the country's hydro-power capacity.

After the Sustainable Living courses, more rational and connected decision-making were exhibited, shown by insulation installation, changes of inefficient appliances and vehicles, and conversion of lawns into water-efficient and productive vegetable gardens. From exit surveys, both their confidence and competence to act had increased.

In the case study, Sustainable Living class groups were shown to have significant impact, both for role modelling by tutors and a minority of class members (positive greens) and for the opportunity to explore, discuss and try out new approaches in a supportive setting. Participants rated the group influence about equal with the impact of tutor and the reference materials. They reported a sense of their own competence and adequacy being increased and that the course removed a sense of helplessness or of guilt in the face of wicked problems, making a difference ('empowerment'). These key phrases highlight similar issues to the four concepts being used by organisations in the UK⁶ to characterise successful community education for sustainability approaches.

- **Exemplify** = *predispose* people to change (show a new 'norm' emerging via role models of tutor plus early adopters within social group; media coverage)
- **Enable** = *understand perceptions* and barriers, info and design to address these (excellent information,

independent of commercial bias, plus tackling financial or institutional barriers to new behaviours and by doing so 'editing' available consumer choices)

- **Engage** = finding *social triggers* to change, using group settings to learn in context, keeping it practical (fashionable, relevant, money-saving, healthy)
- **Encourage** = to *satisfy needs*, and reward people for doing the right thing (celebrations, participant contracts/pledges, social status, winter warmth, health gains, home produce, fitness from active travel)

Making use of these four concepts, (Taylor and Allen)⁴ compare a dozen case study projects across several countries, each apparently aiming to generate householder habit changes towards sustainability. The findings endorse the use of interactive processes and repeated, facilitated (e.g. tutored) social learning events, a combination of community education and social marketing, as demonstrated in Sustainable Living classes.

The most effective approaches were found to be those that engage participants to prompt action practice, to set specific goals, encourage reflection and monitor change. Study groups provide safe places to explore new information; to meet and question role models; to compare experiences, values and aspirations; and to test out practical ideas at home and report back. The exploration process was itself a motivator for continued involvement.

However, the most commonly offered approaches, reviewed across several countries, fail to grasp the importance of this engagement. Instead they provide one-way information, explain action-consequences, and some may offer exemplars/role models/champions. They use websites, emails, leaflets and broadcasting to target attitude-change and imply behaviour change, but cannot monitor unknown impacts. There were few examples where social marketing campaigns moved beyond this focus on media delivery of external messages, although these can do a good job on awareness building and political agenda-setting. The least effective approaches were to induce regret or arouse fear. Guilt fails as an action motivator.

FROM GROUP TO WIDER COMMUNITY

The comparative study and the case study showed that certain valid changes can be prompted at the household level, where individual choices are practical and affordable within that locus of control. Examples of these are saving energy through the use of energy-efficient appliances and lightbulbs, and improved use of gardens for growing food. However, other changes towards sustainability will require collective action by geographic communities (typically expressed through local government, such as public transport provision in areas which at present have no alternatives to car use; or by

central government, such as improving building codes, and developing international agreements on carbon trading and a 2009 Copenhagen successor to The Kyoto Protocol).

One new aspect of Sustainable Living Education Trust work is a study topic in preparation for 2010 on 'community resilience' that connects household actions with local government emergency preparedness and management concerns, with the transition towns community movement, and with international debate about the looming socio-economic impact of declining cheap oil production.

WANT TO FIND OUT MORE?

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Landcare Research
Manaaki Whenua

Supporting practice change through transformative communication

CHAPTER 17 : HATCHED

Chrys Horn
and Will Allen



Summary

- We have to do more than tell people about a problem if we want to support and foster constructive change.
- Communication needs to be tailored to the different stages of change that people work through. These different stages include becoming aware that a problem exists, needing ideas around different ways of addressing the problem, and then supporting people in trying different approaches in creating solutions.
- Communication programmes need to be responsive to local conditions, and incorporate local knowledge. Their design should acknowledge that the need for different groups of stakeholders to work collectively is usually a prerequisite for successful sustainable development. Links need to be made both horizontally (across different stakeholder sectors) and vertically (between agencies and their stakeholders).
- So communication media need to not only include traditional brochures, publications and websites, but also encompass new forums for dialogue and new social networking technologies.

A BIGGER CONTEXT FOR COMMUNICATION

Anyone working to encourage sustainable behaviour inevitably spends much of their time communicating, and trying to help others to better understand the need for change. Because of this, the bigger part of communication tends to be designed to increase people's awareness of sustainability issues and the need for changes in practice. This means that our communication budgets are often focused on campaigns that *transmit* the message 'out there' to people through the use of websites, television, newspapers and radio.

However, awareness campaigns by themselves do not necessarily result in behaviour change. To change what they do, people must understand their current behaviour patterns, and think through how to manage and maintain the change process in their individual situations. To help people do this in the light of their own context we need *transformative* forms of communication which help people with developing and using problem-solving skills such as information gathering, idea generation, experimentation and evaluation. This is not to suggest that transmissive forms of communication do not matter. Rather, we suggest that sustainability advocates can benefit from broadening their thinking around communication processes.

To achieve effective transformative communication, we need to understand the change process that people go through and the communication needed to motivate, encourage and support that process. We also need to understand how to build trust and how to use social networks. Most transformative communication is dialogic (in the form of a discussion rather than one-way communication) and is at a relatively small scale – although it also contains elements such as awareness raising campaigns, which can be done transmissively.

This chapter is focused mainly on transformative communication and some ways of thinking about communication in the change process. The following sections

provide a framework for thinking about the purposes of communication in fostering individual and social change around sustainability. We do this by presenting change as a series of stages and discussing the different purposes and appropriate styles of communication that might be used to facilitate change at these different stages.

THE CHANGE PROCESS

Communication to achieve change depends on the situation in hand, and how complex the required change is. So, for example, getting Christchurch people to recycle when kerbside recycling came in was relatively simple. Most people believed it was a good thing to do and the introduction of kerbside recycling made it easy for them to do it. In this example, much change was achieved with transmissive communication forms such as advertising, newsletters and flyers.

By comparison, minimising rubbish is more complex, requiring changes in many aspects of one's lifestyle. Someone doing this has to alter what they buy and how they buy it and learn new skills such as composting, cooking with new ingredients, or finding ways to shop for items that have less packaging (see Box 1, overleaf).

Behaviour change is rarely a discrete, single event and during the past decade it has come to be understood as a process of identifiable stages through which people pass. Behaviour



box 1: RUBBISH-FREE YEAR

Check out <http://www.rubbishfreeyear.co.nz/>. This blog tracks the change process for one family who aimed to be rubbish free for 2008. They have documented their learning and reflections as they changed their lifestyle to be rubbish free.

As part of this they discuss their preparations in the lead-up to the year – a process that required them to observe and learn about their situation to build their confidence and knowledge for the rubbish-free year.

They note that the blog, where people were able to follow their progress and comment on their learning (a process that was essentially dialogic), provided them with the motivation to keep going even when the going got tough. Having made a public commitment to the cause, and having built an online peer group who were interested in their progress, they felt that they should live up to it.

Of interest, also, is the work they had to do on their friends and family who were not aiming to be rubbish free. The family could not be rubbish free without their help, so, for example, visitors were asked to think about what they brought into the household as gifts or contributions.

change can be enhanced by taking specific action at these various stages. Understanding this process provides agencies with additional tools to assist a range of individuals.

The Stages of Change model¹ shows that, for most people, a change in behaviour occurs gradually, with an individual moving from being uninterested, unaware or unwilling to make a change (precontemplation), to considering a change (contemplation), and then deciding and preparing to make a change (see Fig. 1, page 169). Genuine, determined action is then taken and, over time, a person attempts to maintain the new behaviour. Relapses (and sometimes reversion) are almost inevitable and become part of the process of working toward lifelong change.

1. Precontemplation

At this stage, people are not thinking about change.

Moving people from precontemplation to contemplation can be difficult, particularly in the field of environmental sustainability. Here the benefits from a change tend to accrue to the environment and wider community rather than to the individual. In comparison, something like quitting smoking has clear personal benefits for the quitter.

Communication aimed at people in the precontemplation phase needs to build their awareness and persuade them to engage further. People need to be made aware of an issue, and believe it is an issue, before they will take measures to deal with it. This requires the use of a range of communication forms, from advertising, to public talks, to small-scale activities and events. The scale of this task should not be underestimated as people these days are exposed to a huge amount of advertising and information, which they have become expert at routinely filtering out. Thus it is often good practice to use a range of approaches simultaneously.

2. Contemplation

Contemplation occurs when the person becomes aware of an issue and begins to think about change. The classic example of this stage are all those smokers who think they would like to stop, but who haven't really got around to deciding how. Likewise there are people who feel they should walk or cycle more rather than using their cars but who haven't really engaged with the question of how they might do that. Another example is provided by Christchurch people who thought that recycling was a good idea but who did not do it until kerbside recycling was introduced, even though there had been recycling stations in the city for some time prior to that. These people were positively disposed towards changing their behaviour but had not actually engaged any further with it.

This indicates that a positive attitude is not enough. Behaviour depends on how important a person believes the change is, on what she thinks significant others think, and whether she believes she can change given her specific situation³.

It is well understood that change is unlikely if a person does not regard it as important. However, it is more difficult to say

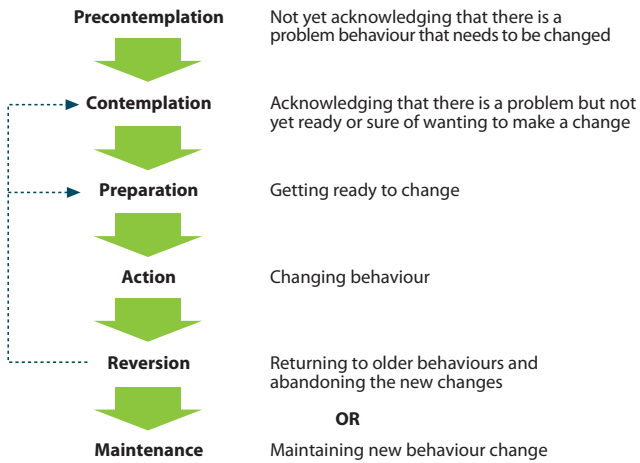


Figure 1 Stages of change that people go through²

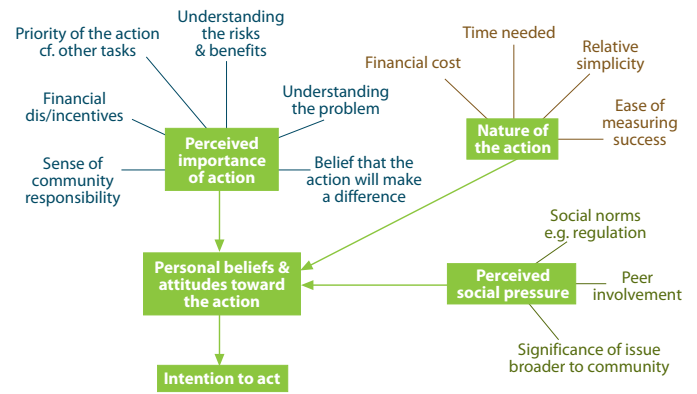


Figure 2 Factors influencing intention to act⁴

what will convince an individual that something is important. Different people have different values and understandings – the same message may really grab one person, but have no effect on another. Similarly, importance may also depend on how significant others view the behaviour. If family and friends bike whenever they can, then adopting that behaviour is likely to seem more important. Likewise if the peer group is not positively disposed towards the change, then it is less likely to be adopted.

If people are to move to the next stage, they must find the necessary motivation to engage more fully with the idea of the change.

3. Preparation – working it out

This is the point at which people engage more positively with the idea of behaviour change. At this stage, people must find the necessary encouragement to take action and must explore how they might overcome any barriers to achieve the change (see Fig. 2). In some cases, as in the Christchurch recycling example given above, a change in the environment (such as the introduction of kerbside recycling) can lower the barriers to people adopting the new behaviour.

At this and the following stages it is often useful to meet or know people who are trying to do the same thing. This provides access to ideas and strategies for making the change and, later, for maintaining or returning to it. The rubbish-free-year example indicates that having an interested peer group can really help people adopt and maintain behaviour.

The main goal of this stage is that the person can learn how to make the required change and feel that it is possible for them to do so. A busy or stressed person, for example, may not see how they can make a change because they don't feel they are up to the effort and time it would take (people who wanted to recycle may have felt they didn't have the resources to take their recycling to the recycling station, or may not have known they could do so. Likewise if the change appears unaffordable, unrewarding or time-consuming and is not balanced by any personally rewarding results, change is unlikely.

Ajzen's³ framework assumes that the individual in question already knows what changes she will have to make and how to make them. However, in most cases, neither of these is a safe assumption. Something as simple as using public transport, for example, may seem straightforward at first, but doing it requires a person to incorporate the new behaviour into their already full life. They must learn about bus timetables, accommodate any extra time public transport takes, and adjust their own timetables to fit those of the buses. Changing to public transport may also affect workmates and family members who may have to accommodate a person's new arrival and departure times.

Habit can pose a problem for changing behaviour. The problem of habit results largely from the ways in which people get 'locked in' to their behaviours through the expectations and needs of both themselves and significant others. Habits are the things that allow us to live alongside others in a range of settings without it all getting too complicated. So, changing

a habit requires change from other people too – something they may resist, like the example of the visitors to the rubbish-free family previously given. Again it often requires good communication, based on two-way dialogue, both to discuss with significant others how the problems that arise might be managed and to help people understand their habits deeply enough to want to change them.

In the area of health, for example, Weight Watchers® provides material to help people observe when, why and what they eat over a period, followed by small forums to discuss these observations and to develop ideas for how to change eating behaviour and to enlist family members in these changes. The Sustainable Households programme, run as night classes around New Zealand, offers a similar process of observation and small-group discussion for people interested in becoming more sustainable in their everyday lives.

It is because of these 'lock in' patterns that it is much easier for people to change at a time when there are other changes going on in their lives. People starting a new job or moving house, for example, may find it easier to accommodate new ways of travelling, interacting with their neighbours or managing their waste as they settle into a set of new habits. Tailored communication packages that pick up on these changes can work effectively. For example, Project Lyttelton (<http://www.lyttelton.net.nz/>) does this by welcoming new people into the area with an information pack that contains (among other things) the local bus timetables and a walking map.

4. Action

At this stage, people take the action they had planned and need to find ways to maintain their motivation. Feedback at the individual level is important and can be a major issue for people working on large-scale environmental problems where there is often a significant time lag between taking action and seeing the desired result. Residents and farmers around Lake Taupo, for example, who are taking action now to limit the nutrients entering the lake, are unlikely to see the lake condition improve for many years. In order to maintain motivation and monitor collective progress, indicators that provide short- and long-term feedback are important, especially if the results can be

attributed to individuals. Thus for the Lake Taupo example, progress might be measured in terms of the number of people in the area who are involved in lake water protection or it might be specific to the individual, e.g. keeping track of fertiliser application or over the longer term in reducing nutrient runoff from small creeks. These will provide more immediate feedback than measuring nutrients in the lake and will therefore help encourage people to maintain their efforts.

box 2: THE CLEAN HEAT PROJECT IN CHRISTCHURCH

For many years the Christchurch area has suffered from winter air pollution, 80% of which comes from wood and coal. Added to this are national requirements for air quality that Canterbury must meet by 2013. After considerable consultation and political debate, the regional council in Canterbury has brought in regulations aimed at limiting the number of wood burners and sealing up open fires in the areas affected. The Clean Heat Project therefore sits as one of a number of regulatory and public information initiatives that have been in place since the early 2000s.

The Clean Heat Project <http://www.cleanheat.org.nz/christchurch.html#> offers financial assistance to homeowners to encourage them to switch to cleaner forms of heating. Their service includes a home assessment that looks at insulation and heating needs. The assessor then works with the homeowner to decide on the best option and the project employs contractors to install the new heating system and insulation required.

In doing this the project takes a very personal communication approach and provides individually tailored information and assistance in the installation process so that the barriers faced by homeowners are minimised.



5. Reversion

Most efforts at behaviour change will involve people reverting – lapsing back into old habits. In fact reversion can be usefully seen as part of the learning process that goes on when one takes action. Reversion happens when barriers emerge from the situation they are in. Thus, someone who sets out to do more networking may find they have trouble doing it when they are under pressure to perform other tasks, or the person endeavouring to use a bicycle rather than a car will encounter difficulties such as the short cold days of winter, wet weather or the need to carry more than a bike can easily handle. While there may be ways around each potential problem, it is not until the problems are encountered that the person can work out what to do.

If a person can maintain her motivation and has the capacity to reflect on the problems that arise, then the reversion may only be temporary. A workable communication process that provides feedback and reinforcement can be as simple as having friends taking similar action, sharing information, and providing feedback. Health initiatives such as the Quit [smoking] Group sometimes use workbook-style exercises that help people observe their barriers along with groups or buddies.

There are also numerous examples of sustainability communication processes that use similar approaches. Farmer groups are used to help farmers learn how to manage possum numbers, people can swap stories in written form through the Internet and blogging, as mentioned above (Box 1).

Involving people in creating their own communication programme in this way helps them learn by observation and by swapping stories. Being part of a group can also help maintain commitment to a change process.

In general, communication that supports people taking action has to be focused on the individual in question. Mostly this will be small in scale and tailored to learning how to effect change in the situations in which individuals find themselves. Without this, reversion may become permanent.

6. Maintenance

In this final phase people now consistently behave in the new way and can see their way to reaping the rewards of their efforts. In the dynamic world of sustainability, the idea of attaining a settled state where no further change is necessary seems unlikely. Climate change or the effects of peak oil are likely to require extensive and ongoing adaptation processes that require us to do things very differently. Perhaps the greatest change in behaviour required from us is learning how to learn and change effectively in a complex world.

ROLE OF INSTITUTIONAL CHANGE

Change is most successful where institutions support the change and relevant infrastructure is in place. Hence it is not surprising that the examples such as kerbside recycling or those in Box 1 and Box 2 have involved institutional change alongside, or preceding, changes in individual behaviour. Thus, city councils had to set up new systems to manage kerbside recycling, and in the case of the Clean Heat project the relevant regional councils had to develop, consult on and bring in new regulations. These kinds of changes lower the barriers to individual behaviour change.

There is some merit in working with the people most willing to change even if there is also good reason to be working to

box 3: CAR-FREE LIFE

Check out <http://www.stuff.co.nz/national/blogs/eco-centric/2299733/Car-free-life>. This article outlines how one couple has managed to live without owning a car in Christchurch, New Zealand. The story shows how change can more easily happen when other aspects of life are changing – so this couple sold their car to go overseas and found that they did not need to buy one again when they returned. The article also highlights the ways that they manage without the car, the forms of transport they use and the many benefits they have experienced through being without a car. The discussion after it provides some interesting indications that they are now firmly entrenched in not having a car and prefer life without one.

change the opinions of those who are not converted. There are two reasons for this. First, working with willing people enables those fostering change to learn what barriers are likely to emerge during the change process. This enables a programme to include activities that help people move through those barriers. Second, working with early adopters can build a critical mass of people who can then provide models for others to follow.

BUILDING AND USING SOCIAL NETWORKS

To scale up the kinds of communication needed to foster widespread social change, it is important to become effective at working with and through social networks. A key requirement for the development of constructive dialogues is the formation of networking paths that are both horizontal (e.g. across agencies and across communities) and vertical (e.g. agencies to communities to individuals)⁵ Nothing can easily replace small-scale, face-to-face communication when understanding, creativity and complex change are required. Voluntary groups such as Choices (<http://www.choices.net.nz/>) provide an excellent example of how effective networking can be for those working on a voluntary basis and at a local level to effect change at a larger scale. The networks are supported by the website, brochures and email.

The 350 campaign (<http://www.350.org/mission>) also utilised the networking power of the Internet across networks to launch an international day of action on 24 October 2009. It did this by encouraging people to run their own events to highlight the need for governments to sign the next treaty around climate change. However, while the Internet provided the linkages between the many events and information about the campaign, much face-to-face work happened at local level to organise and advertise the events.

The Internet is also providing green organisations with opportunities to link up, foster and provide support for change through the phenomenon of blogging and the use of social networking sites such as Twitter and Facebook. So, for example, Green political parties worldwide have an international group site 'Greendrinks' on Facebook that is linked to locally based



A 350 event on Mt Eden| Maungawhau was one of over 5200 community led events around the world, where people gathered to call for strong action and bold leadership on the climate crisis on October 24th 2009.

'Greendrinks' groups. These groups are used for posting information and events to those who belong to the groups.

It is worthwhile for people conducting environmental behaviour change interventions to explore ways to support such communication networks to spread information and initiate discussion, as reflected in the examples above.

CONCLUSIONS

Communication for sustainability has to take a wide variety of forms and fill a range of different purposes. It will work best where the different forms and programmes are systematically linked. Any initiative will require careful thinking about its purpose and the appropriate means to fill that purpose. It is unlikely that significant change will occur without considerable dialogue. Advertising can raise awareness, but needs to be combined with more active forms of communication to provide a more well-rounded communication programme that supports co-ordinated and constructive change across a range of stakeholder groups.

Social change does not happen quickly. People in the developed world, at least, are bombarded with information and are very often constrained in the time and energy they have to give to the change we might want them to make. There are myriad good causes out there, and for many, simply managing job and family commitments is all they can do. People who are already stressed need support rather than browbeating. As change agents our job is to find ways to provide that support.

At any one time, when trying to build widespread public change, people will be in different stages of change. This means that at any one time there has to be a range of communications going on to support the different stages. Simply running an awareness campaign may motivate a few people into action. However, it will usually take more than this. Some of this can

happen on the various forms of the Internet but, small-scale transformative communication, often in face-to-face situations, is required for long-term change. This is particularly so where the change we are talking about is relatively complex and will have to be adapted to suit the varying situations of each of the individuals concerned.

WANT TO FIND OUT MORE?

Contact buildingcapacity@landcareresearch.co.nz

For the Author's contact details see page ii

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Manaaki Whenua

Education for sustainability in secondary schools

An education challenge for New Zealand

CHAPTER 18 : HATCHED

Melissa Brignall-Theyer,
Will Allen
and Rhys Taylor



Summary

- In schools, Education for Sustainability (EfS) develops survival skills for future generations by equipping young people with the skills, knowledge and systems-understanding to develop ways and norms that support sustainable living patterns.
- In general EfS is still ad hoc and driven by individual champions in New Zealand secondary schools rather than via a systematic commitment. To remove the ad hoc nature of sustainability initiatives, secondary schools need better whole-school strategies that are implemented in a participative and holistic manner, with a strong back-up available from government and non-government organisations.
- To achieve a more integrated approach that supports EfS, related organisational experiences suggest the need to develop an underpinning school philosophy and understanding of sustainability, to ensure a learning-by-doing approach is taken to support incremental change, and that attention is paid to the use of inclusive and collaborative social processes.
- The dominant focus on timetables and assessment in most secondary schools needs to change towards a focus on student-oriented learning, so that critical thinking can be learned in a holistic rather than piecemeal way.
- The learning experiences related to sustainability that students gain from school entry (e.g. kindergarten) to school leaving age (end of secondary) need to be strategically linked and continuous, so that their learning is reinforced throughout their education, minimising conflicting messages. It is accepted that wider society and commerce generates many of these conflicts, but schools need not make it worse.
- One of the intentions of the New Zealand Curriculum (Vision – p. 8) is to engage with the process of learning to create confident, connected, actively involved lifelong learners. This intention is perfectly aligned with EfS principles and therefore needs to be understood and highlighted.
- EfS is as much about the process of learning as it is about content. Therefore reorienting teacher training is, as UNESCO puts it, 'the priority of priorities' .!

Is our secondary education system, as it is now, providing our students with a solid foundation, so that as adults they are prepared for a complex decision making environment?

ISSUE

The 21st century will be dominated by complexity as we enter a globalised and knowledge-based era. States and corporations have competing, often conflicting demands for natural resources such as fresh water and minerals. Increasingly people are asked to make choices and trade-offs between the environment, societal issues and the economy and these decisions are complex by nature. There is a realisation that we cannot continue with a 'business as usual' approach (such as the 'take, make, waste' linear approach to use of resources) without compromising future generations.

Against this backdrop, we need to remember that tomorrow's solutions will likely be found through technical and social innovation led and supported by the children who are in our classrooms today. Individuals' world-views are often set and hard to change by the time they reach adulthood. Schools thus have a crucial and urgent part to play in adapting society, by equipping young people with the skills, knowledge and systems-understanding for them to develop ways and norms that support sustainable living patterns.

The importance of Education for Sustainability (Efs) is being promoted as the preferred educational approach to dealing with complex issues that surround sustainability. In 2009 we are in the middle of the United Nations Decade of Education for Sustainable Development (DESD) 2005–2014.² The basic vision underpinning the DESD is a world where everyone has the chance to benefit from education and learn the values, behaviour and lifestyles required for a sustainable future and positive societal transformation. Now is the time for schools, communities and Government to act together. The research findings below may contribute to an overdue policy discussion.

BACKGROUND

Efs (also known as Education for Sustainable Development) emerged in the late 1980s in response to concern about the environmental impacts of economic development and

population growth in a finite world. It became clear that an educational approach to these problems would need to include an understanding of the connections between, and interdependence of, social, financial, cultural and environmental systems. At its most sophisticated, this approach aims to enable transformative change that moves society towards sustainable development. To do this people need to be empowered to make decisions based in particular on the understanding that all things are connected in systems. Efs is as much about the process of learning as it is about the information content that has been learned.

Sterling (2001)³ summarises this:

"...a change of educational culture which both develops and embodies the theory and practice of sustainability in a way which is critically aware. This would be a transformative paradigm that values, sustains and realizes human potential in relation to the need to attain and sustain social, economic and ecological wellbeing, recognizing that they are deeply interdependent."

However, a recent study⁴ undertaken in 2007 by the authors revealed that in general Efs is still ad hoc and driven by individual champions in New Zealand secondary schools. The main barriers that participants of this study reported were: lack of support from all parts of the system; lack of funding, time, and resources; and the negative perception of Efs by many students. However, the changes to the National Curriculum, the new Efs achievement standards, enviroschools' growth into the secondary sector and continuation of the national coordinators for Efs were expected to help combat some of these barriers over the next few years. These findings are in line with several similar studies in recent years.

The results of studies looking at sustainability in education, including this one, paint a common picture where most schools focus on one-off ideas and actions such as curriculum content changes or recycling as a first step. However, it seems that

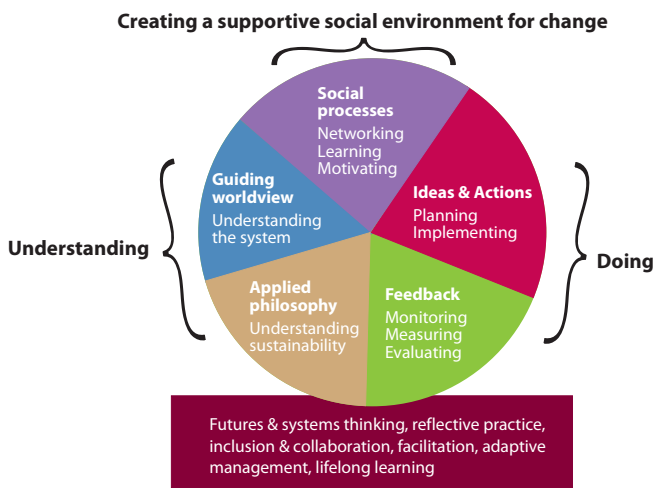


Figure 1 The circle shows the five key 'activities' required for supporting education for sustainability. These are underpinned by a number of important elements shown in the supporting box.

many of these initiatives are driven by one or two passionate individuals – be they teachers, students, parents or school staff. Most case studies writing up these initiatives point to the barriers that face the spread and uptake of these ideas. There are few cases where we can see how individual initiatives ramp up into a whole-school, integrated approach.

However, the literature^{5,6} on how organisations become more oriented towards sustainability suggests that there are guides to how a whole-school, integrated approach can be fostered. These organisational experiences suggest the need to see change as being made up of a number of interlinked activities and elements within an integrated framework. These activities include the need (1) to develop an underpinning school philosophy and understanding of sustainability, (2) to ensure that a learning-by-doing approach is taken to support incremental change that supports actions and subsequent monitoring and evaluation, and (3) that attention is paid to the use of inclusive and collaborative social processes. In turn, these activities need to be supported by a number of key elements, including: futures and systems thinking, reflective practice, inclusion and collaboration, facilitation, action and lifelong learning. The framework in Fig. 1 illustrates that these need to be implemented in a holistic manner, as any change in one alone will not create a 'sustainable secondary school'.

Each of the three main 'activity' headings in the framework are expanded on below under the headings: Understanding;

Doing; and Creating a supportive environment for change.

The text under these headings summarizes research findings⁷ from interviewing people associated with EfS throughout the secondary school system. The associated tables highlight barriers to organisational change, possible solutions and potential drivers of solutions.

UNDERSTANDING THE SYSTEM – A GUIDING WORLD VIEW

A systems view requires us to see schools as part of a wider network of players influenced by the social, financial and environmental systems in which they exist. For schools the point of this is to be able to apply this knowledge of the system institutionally to thinking about their everyday operation and activities in and beyond classrooms. Inherent in a systems view are the notions of continuity and connectedness – ideas that are critical to lifelong learning.

System change in progress

The secondary school system in New Zealand has gone through huge curriculum and assessment changes in the last 15–20 years. It has moved from providing traditional separate subjects with an end-of-year exam for each, to providing many subjects and a wider variety of assessment methods, including internal assessment and use of Unit and Achievement standards (National Certificate of Educational Achievement (NCEA)). The curriculum changes provide many potential opportunities for schools to use EfS elements. However, most schools that we

"We have a long way to go in New Zealand. The secondary system is probably in a bit of a crisis at the moment because we have had so many ad hoc changes, when what we really need is a change in the way we educate teachers."

(Teacher)

approached have reacted by retaining parts of the old system with the new and have continued to teach the same separated subject content in much the same way. Therefore, attempts at

incorporating EfS values and approaches have been mainly ad hoc with a few notable more systematic exceptions, such as Enviroschools⁸ and projects in special-character schools.

Lifelong learning

Lifelong learning is about providing repeated opportunities for and better continuity of learning throughout life, so that learning experiences are connected and reinforced, reducing the ad hoc nature of learning experiences. In schools this means better integration between primary, intermediate and

secondary schools, so that the learnings developed in the earlier stages of schooling are not undermined or lost when students enter the secondary system, and similarly onward to tertiary. For EfS this means having a strategic approach, where all levels work closely together.

The role of wider society beyond the school gates is inevitably part of lifelong learning. Students are influenced by many sources, and New Zealand needs to be a lot more strategic in recognising the information and influences that work against

box 1: THE MAIN 'UNDERSTANDING' BARRIERS TO A HOLISTIC ORGANISATIONAL CHANGE APPROACH, POSSIBLE SOLUTIONS AND POTENTIAL DRIVERS

Problems	Possible solutions	Potential drivers
The strongest drivers of secondary education content and process are timetables and assessment. This makes cross-curricular themes and integration in general difficult to implement. So initiatives are taken by individual teachers, with little whole-school strategic planning	Change the focus from timetables and assessment to student-oriented learning so that critical thinking can be learned in a holistic rather than piecemeal way. Whole-school strategic planning needs to be developed and implemented. Use case studies as models to follow.	<ul style="list-style-type: none"> • All school staff, students and community, Boards of Trustees • Enviroschools and other educational foundations • Government policy
Lack of national policy to drive an EfS-aligned education strategy. Disconnection from DESD	Creation of national policy on EfS that will provide schools with a mandate to utilise EfS (e.g. Finland and England have good examples of national EfS policy)	<ul style="list-style-type: none"> • EfS professional networks • All school staff, students and community, Boards of Trustees • Whole-of-government approach
Lack of continuity of learning experiences from school entry to school leaving and beyond (e.g. values fostered in primary school are abandoned at secondary level)	Better collaboration and communication between primary, intermediate and secondary schools, and beyond to tertiary	<ul style="list-style-type: none"> • Schools, within their catchments • Supportive national policy that includes lifelong learning
Students are often exposed to conflicting messages about sustainable behaviour from the wider community (e.g. media advertising promotes overpackaged products, but at school they are encouraged to buy products with less packaging)	Whole-of-government strategy for sustainability to help provide better continuity of messages relevant to sustainable development	<ul style="list-style-type: none"> • Whole of government • Industry (e.g. waste minimisation policy and regulations or standards to influence whole industry)
Lack of resources – human and financial. Implementing a programme like Enviroschools requires time and money for school staff and facilitators. There is also a lack of teacher capability to move to a transformative approach	Convince local government of the benefits of funding Enviroschools programme in their region/city. Schools that take on a whole-school approach need to allocate staff with time and resources to implement changes	<ul style="list-style-type: none"> • Enviroschools Foundation • Local government • School support services • Ministry of Education • Boards of Trustees

sustainability.⁹ One of the main barriers to behaviour change is conflicting and poorly presented information in media and commercial messages.

Applied sustainability framework

All schools have an inherent philosophy, although it may not be clearly articulated beyond marketing statements designed to attract parental placement of students. This philosophy may emphasise embracing (or resisting) change; learning and innovation; culture, religion, or social conscience; or many other possibilities. These are also spelt out to some extent through special-character-school charters, and appear in the 'values' central to the New National Curriculum.¹⁰

An applied philosophy is important to help bring sustainability principles and values into the everyday practice of a school. Examples of such philosophies or frameworks that support sustainable development in business and local government are triple- or quadruple-bottom-line reporting, and The Natural Step Framework for Sustainability.¹¹

The philosophy selected influences both the organisation's interest in taking up the challenge of being more sustainable and the fit that various change programmes may have with

the organisation or school. Efs-aligned philosophies require integration and collaboration throughout the school, from curriculum to administration, governance and operation. This is often referred to as a whole-school approach, of which EnviroSchools is the best known model in New Zealand.

Generally the operation and curricula of secondary schools in New Zealand are not well integrated for sustainability objectives, if at all. However, the operation and curriculum need to be linked in a strategic way, so that students' learning around sustainability is reinforced by what they experience throughout the whole school. Some schools have a sustainability policy that includes both operation and curricular areas, and others use triple-bottom-line reporting at the Board of Trustees level. But it is still a struggle, in practice, to have good integration.

The EnviroSchools programme is a move in the right direction towards an integrated approach, as it offers a step-by-step, ground-up approach, initially designed for the primary school system. However, according to our interviewees, this programme's success in primary schools is much more difficult to replicate in secondary schools, due to the secondary system's focus on single subjects and assessment (see box 1, previous page).

Lynfield College beach clean up.

Photo - Cate Jessep



box 2: BARRIERS TO 'DOING' AT A SCHOOL LEVEL, POSSIBLE SOLUTIONS AND POTENTIAL DRIVERS

Problems	Possible solutions	Potential drivers
Sustainability is seen as an add-on subject, which is difficult to fit into the assessment and timetable focus of secondary schools	Change the focus from timetables and assessment to student-oriented learning so that sustainability is not something to fit in the curriculum, rather it is 'just the way we do things'	<ul style="list-style-type: none"> • Teacher training courses • Principals and Boards of Trustees • Whole-school approach, e.g. EnviroSchools • National policy
External social drivers, such as consumerism, tend to swamp educational initiatives	Whole-of-government strategy for sustainable development (as in the UK?) seeks to provide better continuity of learning experiences, but has limited impact in a globalised culture	<ul style="list-style-type: none"> • Whole of government • Industry • The media
External organisations, like councils, are sometimes unhelpful when it comes to supporting school operational initiatives – like collecting recyclables	Build better relations with external organisations. Councils and other organisations need a mandate to help organisations in their area with sustainability initiatives	<ul style="list-style-type: none"> • Local government • Schools • Industry (as sponsor) • Ministry for the Environment (Waste minimisation responsibilities)
Some students don't value sustainability topic options, because there has previously been little assessment and they are not compulsory. This leads to a lack of numbers, so classes can't run	Whole-school promotion of sustainability courses, backed up by mainstream assessment, alongside other topics. Promote the level 3 Achievement Standards for EFS and profile successful students (new 2009 Level 2 Achievement Standards for EFS are a good example). Case studies and resources for schools to use (e.g. Sustainable Living community education topics: waste, shopping and travel, now adapted for secondary schools – see Box 1)	<ul style="list-style-type: none"> • All school staff • NZQA • School resource producers • EFS advisors • Ministry of Education
Sustainability is viewed as a separate environmental issue, missing the connections with financial, social, cultural systems	Teacher training that is not just about environmental education, but includes worldviews, and trains to understand and illustrate the connections between systems	<ul style="list-style-type: none"> • Teacher training institutions and universities
Lack of supportive staff, students and governance structures (e.g. weeding out pest plants has been cited as punishment for low performance in an unrelated school activity, not for its intrinsic value)	Reorient schools' values towards sustainability, so that staff are on board with EFS from the outset	<ul style="list-style-type: none"> • All school staff • Boards of Trustees
When the initial driver (a keen teacher) leaves – there is no one to continue that work	Implement a strategic approach, e.g. make sustainability initiatives part of employment contracts to ensure continuity	<ul style="list-style-type: none"> • Whole-school policy that clearly leads into strategy and action
Lack of communication between governance staff and students	Implement a strategic approach to integrate sustainability – this includes communication plans	<ul style="list-style-type: none"> • Inclusive communications plan
Administration costs of applying for funding are often greater than the funding available for sustainability initiatives	Implement a funding system that requires less administration	<ul style="list-style-type: none"> • Funding bodies • Ministry of Education
No time in school to do evaluation or reflect on successes and failures of initiatives	Provide school staff with the time, tools, and funding to evaluate progress in an effective manner	<ul style="list-style-type: none"> • Principal • Administration staff • Ministry of Education
Because initiatives are often ad hoc, they are not measured or monitored and so it is difficult to interpret if an initiative has been a success or a failure	When planning to implement sustainability initiatives, include measurable component. Agree on indicators that support task and monitor process – even in a modest way	<ul style="list-style-type: none"> • School governance • Initiative driver • Evaluators
ERO reports have not valued sustainability	If ERO reports prioritised sustainability, schools would need to show what they are doing under EFS and this would create a mandate for schools to do more in this area	<ul style="list-style-type: none"> • ERO • Ministry of Education

DOING

Curriculum ideas and operational actions

Actions are an important component as they are visible and provide a sense of achievement. 'Learning by doing' is a key to EfS. It teaches necessary skills for dealing with complex decisions, by providing skills around identifying problems, making decisions about possible solutions, and taking action. It also provides students with confidence to make future decisions and a sense of empowerment. Ideally though, these individual actions will be undertaken within a wider framing of sustainability being acknowledged at the whole-school level. This in turn means that there is more likelihood of the individual actions being held up as exemplars that further activities should seek to emulate.

Taking action at school (e.g. reducing waste, increasing biodiversity through tree planting and curriculum initiatives) is often the starting point. Early activities are based on objectives that are fairly self-evident or tangible and therefore most easily implemented. Because waste reduction and planting trees are associated with sustainability in popular media, some will assume that by doing them sustainability is being 'achieved', but in reality these activities are only a small part of the process of change to a more sustainable system.

Feedback, monitoring, evaluation

Schools need to learn how to measure and evaluate the effects of their actions on the environment and on the people they most influence (e.g. staff, students, families, suppliers). Generating and interpreting feedback is a fundamental ingredient in improving performance and is also a key process for learning to effect change. It is helpful to point to evidence of success in these actions as a way of maintaining the momentum put in by the most motivated individuals. Celebrating initial successes is invaluable for creating a wider culture of change in the school.

Little reflection is practiced in schools on the successes and failures of their sustainability initiatives. Councils evaluate their council-based environmental education programmes through small surveys and viewing the outputs of student projects.

On a wider scale the Education Review Office's (ERO) periodic school reviews/evaluations are a key driver behind policy that schools value, and could help in any reflection process. These reports have the potential to give EfS a profile and more valued role. However, our interviewees state that ERO reports have reinforced school undervaluing of EfS, by not giving it much exposure (see box 2, previous page). Broad reviews of EfS have been undertaken by National Council for Educational Research, but the more holistic idea of reflection that includes all stakeholders seems to happen very rarely.

CREATING A SUPPORTIVE SOCIAL ENVIRONMENT

What is learnt through undertaking activities and evaluating the results is usually that helping to change current practices and thinking means helping people (students and staff) to 'learn' and change their behaviour. Thus the basis of change rests on some fundamental understanding of the social processes of learning and change.

Some underpinning social processes for successful change include:

- Building capacity for students and staff within the school to learn about and reflect on the results of their own actions
- Engaging with others involved in similar processes through building and joining in appropriate networks beyond the school
- Developing fair and transparent change processes, with participation that builds the commitment

Building capacity in a learning environment is as much about the process of learning as what is being learned. Therefore, the way teaching is conducted is critical to any change process. Repeatedly our interviewees said that teaching needs to shift its balance further from a past *transmissive* approach (i.e. standing at the front of the class and telling students what to do and know), towards a *transformative* approach with teacher as facilitator or guide of learning, aimed at enabling students to think critically and become motivated, active

learners. When a transformative approach is used, school students report a heightened sense of empowerment and a deeper sense of understanding about their decisions and actions. This type of transformation is what is needed when confronted with the complex problems that the 21st century is already throwing at us.

"If we are actually going to fulfil the desired outcome of the New Curriculum, education for teachers needs to be about transformative learning, and it is not standing at the front of a class telling them what to write down.."

(Teacher)



Teacher training in New Zealand, as experienced by our interviewees, was not directed particularly towards enabling critical thinking and reflection. It had large components of classroom management and control. There is a need for increased pre-service and in-service teacher training around sustainability, including training in participatory methods and action learning (see box 3, below). There are only a few courses for EfS currently offered within New Zealand teacher training organisations and most represent small parts of related courses.

This problem is not restricted to New Zealand, and is highlighted as a key issue in international forums. In 1990 the United Nations Educational, Scientific and Cultural Organization (UNESCO) identified teacher training towards EfS as 'the priority of priorities'¹.

EfS networks have strengthened over the last decade with the development of a national EfS coordination team (<http://www.e4s.org.nz/efs/about>), the New Zealand Association for Environmental Education (<http://www.nzaee.org.nz/>), and the Enviroschools Foundation (<http://www.enviroschools.org.nz>).

box 3: BARRIERS TO CHANGING SOCIAL PROCESSES, POSSIBLE SOLUTIONS AND POTENTIAL DRIVERS

Problems	Possible solutions	Potential drivers
Teacher training does not train all teachers sufficiently in transformative methods	Reorient teacher training using guidelines set out by UNESCO ¹² so that all new teachers are exposed to EfS	<ul style="list-style-type: none"> • Ministry of Education • Teacher training institutions and universities
Lack of funding and time limit subsequent in-service EfS training opportunities for qualified teachers	Allow time and money for training in school timetables and budgets; encourage new providers	<ul style="list-style-type: none"> • Principals • School administration staff
When decisions are made at the governance level of a school they are often poorly communicated to staff and students, and do not seem transparent	Implement a strategic approach to integrate sustainability – this includes communication plans	<ul style="list-style-type: none"> • Inclusive communications plan

CONCLUDING REMARKS

We observe that the 'key messages' stated at the outset in the summary are not new. They have been debated and acknowledged in other fora, but to a large extent remain unresolved by 2009. In the context of seeking New Zealand secondary schools changes to an EfS approach there is

agreement that we need an integrated approach. This framework responds to that call and highlights the importance of implementing several key 'actions' simultaneously, in a connected and collaborative manner. No one is suggesting change will be easy, but without it, today's youth, and tomorrow's decision-makers, will be underequipped to tackle the complex problems that a fast-changing world will throw at them.

WANT TO FIND OUT MORE?

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For the author's contact details see page ii

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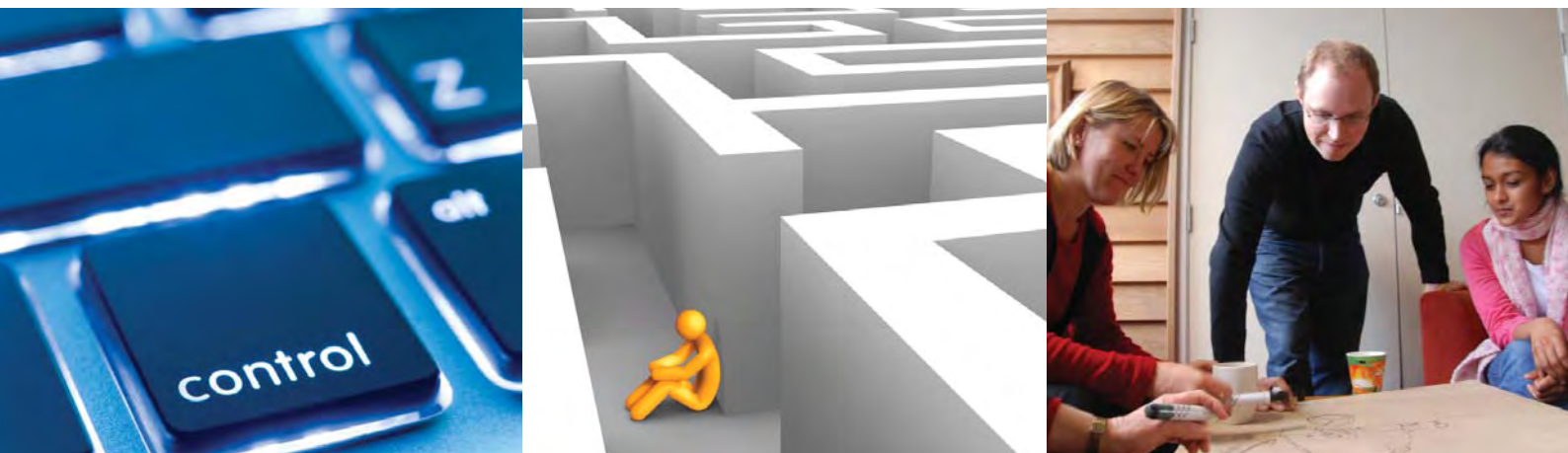
EFS-RELATED NETWORKS

- Resource materials and education forum on EfS at <http://efs.tki.org.nz>
- New Zealand Association for Environmental Education (NZAAEE) <http://www.nzaee.org.nz/> Membership body for practitioners in local government, NGOs and education
- EnviroSchools Foundation <http://www.enviroschools.org.nz/> Active from pre-school to secondary levels across New Zealand, local government backed. Hundreds of schools involved
- Local NGOs such as sustainability trusts and environment centres <http://www.mfe.govt.nz/withyou/funding/centres.html>
- Sustainable Living Education Trust <http://www.sustainableliving.org.nz> Community education for household sustainability, backed by local government, uses secondary schools as hosts for evening classes and has developed some material for in-school application (Level 2 Achievement Standards) <http://www.sustainableliving.org.nz/Case-Studies.aspx>
- Secondary futures – encourages discussion and debate about the role and purpose of secondary education in New Zealand <http://www.secondaryfutures.co.nz/>

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section four



Facing up to wicked problems

The complexity and value-laden nature of sustainable development as shown in the previous sections provide examples of wicked problems. Creating solutions to these require new modes of thinking and new ways of working. Here we reflect on some of the theoretical insights and how these play out in practice. Much of this is in its infancy and the pathways to maturity will take time and considerable effort.

We first look at academic insights, then provide an example in practice in Canterbury, before we examine a suite of technologies that are being developed to help us face up to wicked problems. We conclude with a review of how sustainable development strategies have been developed in New Zealand and Scotland.





Sustainability Technologies 101: 'Wicked problems' and other such technical terms

Good research builds on theoretical insights as well as experimental evidence. Here we reflect on our readings and writings

Looking through a Governmentality lens – a bit more theory

A specific framework to understand and assess society's progress to greater sustainability

Water allocation. Canterbury's wicked problem

The management of water allocation and quality is critical for New Zealand's long-term prosperity and well-being. The bulk of this is allocated in Canterbury where it represents a problem of a truly wicked nature

Social learning – a basis for practice in environmental management

Social learning as a framework for approaching complex problems

Sustainability appraisal techniques

A brief summary of techniques examined and some of the main points arising

Getting under the bonnet. How accounting can help embed sustainability thinking into organisational decision making

Accounting technologies can be a surprisingly successful vehicle to stimulate organisational change to greater sustainability, as these case studies demonstrate

Stakeholder analysis

An assessment tool for identifying and better understanding critical stakeholders

Supporting effective teamwork

A checklist for evaluating team performance

We are not alone: National Sustainable Development approaches in New Zealand and Scotland

We examine the Scottish National Sustainable Development Strategy and the NZ Sustainable Programme of Action to assess progress and identify future needs



Sustainability Technologies 101

Wicked Problems and other such technical terms

CHAPTER 19 : HATCHED

Bob Frame



Summary

- Here we define terminology used within research to build capacity for sustainable development. Researchers often coin new words to explain the phenomena they are investigating. Sometimes these words help clarify what is new, and sometimes, alas, they obscure the innovation and blanket it in impenetrable jargon. If society is serious about building capacity for sustainable development then consistent, transparent terminology is essential. However, in some situations, this does mean branding new concepts so that the difference from business as usual is made clear for policymakers and other interested parties.
- This chapter explains some of the concepts used elsewhere in this eBook, namely 'wicked problems', 'post-normal science', and 'sustainability technologies solutions', and puts them in the context of broader scientific literature. It then looks at one example, Futures Studies (discussed in detail in Chapters 1 & 4), as a useful example of a sustainability technology. It also points the reader towards some of the formal academic journal articles developed under the project.

INTRODUCTION

Many existing technologies (e.g. cost–benefit analysis or environmental impact assessment) at the science–policy interface were developed to support decision-making in a world of infinite resources where rational decisions could be developed from relatively simple models of processes. While still perfectly adequate for specific purposes, many are insufficient for the complexities of contemporary society and its drive towards greater sustainability. New technologies are required that, while building on knowledge and experiences to date, will need to be very different from those upon which they are built. It is only by examining the ways in which sustainable development will sharply differ from our current state of unsustainable development that we can develop new technologies to extract ourselves from our current predicament. We first examine the concept of wicked problems to describe elements of that predicament.

WICKED PROBLEMS

‘Wicked’ problems can’t be solved, but they can be tamed. Increasingly, these are the problems strategists face – and for which they are ill equipped. John Camillus, Harvard Business Review, 2008¹

The term was originally coined by two management scientists, Horst Rittel and Melvin Webber, formally in 1973² to explain social policy and planning. In recent years the term has become fashionable in relation to planning for infrastructure, developing company strategy and broader policymaking. In 2006, Steve Rayner³ reduced Rittel and Webber’s characterisation to unique aspects of wicked problems, that is, they are:

- Symptomatic of deeper problems
- Unique opportunities that cannot be easily reversed
- Unable to offer a clear set of alternative solutions
- Characterised by contradictory certitudes
- (Contain) redistributive implications for entrenched interests
- Persistent and insoluble

These characteristics have gone on to become part of the management literature, as noted in the quote from John Camillus at the start of this section and by others including Jeff Conklin.⁴

To complement his characterisation, Steve Rayner described three types of solutions strategies that are typical responses to wicked problems, and notes that each of them reflects a coherent organisational worldview that shapes the definition of the problem to be addressed:

- Hierarchical strategies which simplify issues and apply routine, such as new forms of legislation that exert authority
- Competitive strategies which rely upon expertise to control resources, such as market-based mechanisms or use of incentives
- Egalitarian strategies which open the problem to more stakeholders, through participatory processes such as citizen juries

The characterisations and types of solution strategies provide a useful means by which to examine and understand wicked problems in, for example, development of the Auckland Sustainability Framework⁵ (See Chapter 3) and Canterbury Region’s water allocation (See Chapter 21). They also help us understand the potential impact of strategies developed to address them. Global wicked problems include climate change, healthcare, AIDS, pandemic influenza, international drug trafficking, terrorism, and nuclear energy. Indeed so wicked is the problem of climate change that it has even been termed a ‘super-wicked problem’⁶ Why is that? Well much of the evidence from climate science arises from very highly structured experiments that inform our understanding of how the concentration of greenhouse gases in the atmosphere warms the planet. However the results will always be provisional and it may not be possible to provide a cast-iron definitive answer.⁷ Yet society cannot afford to await such results as the stakes are too high and the levels of uncertainty too serious.

For example, as Lazarus⁶ points out, for change legislation to be successful over the long term it needs to develop institutional

responses that insulate responses from ‘powerful political and economic interests propelled by short term concerns’. This brings up a deep-seated contradiction as traditional lawmaking implies that the present should not be allowed to bind future lawmakers. In other words strategies are needed that do NOT ‘protect the present at the expense of the future but the precise opposite: to protect the future at the expense of the present.’

To the established criteria for wicked problems, Levin et al.⁷ add three more for climate change:

- Time is running out
- No central authority
- Those seeking to end the problem are also causing it

In some ways this uncovers a tension about the role of science, and its authority with wider society. In other words, how does scientific ‘knowledge’ interact with other realms of understanding such as politics and ethics? To understand this a little more clearly we need to study what we mean by science and how that plays out in practice – especially around some of the wicked problems. And to be open to the possibility that a ‘new’ way of doing science may need to emerge where values are embedded in the way science is done.

NORMAL SCIENCE AND, WELL...NOT SO NORMAL SCIENCE

Science has traditionally sought to be universal, objective and context-free. It was characterised by a lack of reflection by researchers and social actors on their worldviews and their socio-political contexts. Much of the philosophical discussion about this was marshalled in the 1950s and 1960s by Thomas Kuhn resulting in his classic text *The Structure of Scientific Revolutions* in 1962. He argued that science doesn’t progress by a linear accumulation of new knowledge, but undergoes periodic *paradigm shifts* in which scientific inquiry in a particular field is abruptly revolutionised. In particular he argued that science is broken up into three distinct stages. *Pre-science*, which lacks a central paradigm, comes first. This is followed by *normal science*, when scientists attempt to

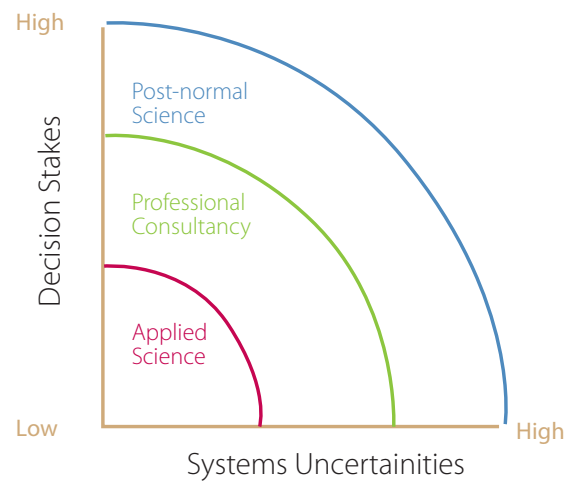


Figure 1 How science responds to increasingly complex decision stakes and uncertainties (Funtowicz and Ravetz’s classic 1993 diagram). The key is that as science moves away from laboratory type experiments where conditions can be tightly controlled to ‘real-world’ complexity – additional skills such as facilitation and systems analysis are needed that build on traditional core scientific disciplines.

develop and enlarge a central paradigm by puzzle-solving. As anomalous results build up, science reaches a *crisis*, at which point a new paradigm, which subsumes the old, is created into one framework that incorporates the anomalous results. This is termed *revolutionary science* (in the sense of a scientific not a political revolution) with examples such as Einstein’s theory of relativity, which challenged Newton’s concepts of physics, or Darwin’s theory of natural selection, which was an affront to theories of a world governed by design.

Kuhn also argued that rival paradigms are incommensurable – that is, it is not possible to understand one paradigm through the conceptual framework and terminology of another rival paradigm. In our Building Capacity project, we have repeatedly come to the same conclusion – namely, that the complexity of addressing sustainability cannot be addressed through the kinds of technologies that have delivered the crisis that we are now struggling to address. Fortunately other researchers globally have already wrestled with this and proposed a solution which has been gathering momentum in recent years.

Post-Normal Science (PNS) was developed by Silvio Funtowicz and Jerome Ravetz and first published in 1993⁸ as an attempt to characterise a methodology of inquiry that is appropriate for cases where ‘facts are uncertain, values in dispute, stakes high and decisions urgent’. In this context post-normal science is the natural partner to wicked problems. It is primarily seen in the context of long-term, complex issues such as climate change

where we possess less information than we need. Its current relevance was revisited by Jerry Ravetz in 2006.⁹ It is most well known through the diagram in Fig. 1, which reinforces the notion that post-normal science builds out of existing applied science and is informed by real-time experiences gained through professional consultancy. It should not be interpreted as a school of thought that is in opposition to contemporary practices. Rather it seeks only to extend the horizon and overall usefulness.

As a result PNS often struggles to deal with the uncertainties in real-world organisational and public policy contexts. A new form of research has been developing over the last 20 years or so, mostly in theoretical discussions, which implies a qualitative change in the way science and policymaking are approached.

PNS draws attention to aspects of uncertainty (e.g. through a lack of hard scientific data) and values that are often downplayed (or ignored) in traditional research (e.g. cultural attitudes to issues such as AIDS). Taking this a stage deeper we can see connections, for example, between family planning and climate change emerging. In a 2009 report from LSE¹⁰ it is argued that public spending on family planning over the next four decades would reduce global CO₂ emissions by almost five times more than the same spend on low-carbon technologies. By meeting basic family planning needs, 34 gigatons (billion tonnes) of CO₂ could be saved – equivalent to nearly six times the USA's annual emissions. UN data suggest that meeting unmet needs for family planning would reduce unintended births by 72%, reducing projected world population in 2050 by half a billion to 8.64 million. This example shows that each of these elements (i.e. family planning and climate change) on their own is but one part of the overall complexity. Elsewhere Satterthwaite¹¹ points out that 'it is not the growth in (urban or rural) populations that drives the growth in greenhouse gas emissions but rather the growth in consumers and in their levels of consumption' (p. 545). Thus climate change becomes interwoven with consumerism and the perpetuated myth around economic growth – which remains sacrosanct above many other belief systems. However, research to reveal and evaluate practical solutions is very much in its infancy and it offers great opportunities to those successful in seeing beyond the current paradigm.



PNS more involves managing complexities to do with questions of survival than addressing uncertainties to do with technological risks. For example, regarding climate change it may question underlying assumptions of economic growth and success rather than suggesting palliative measures such as carbon offsets through tree plantings. This requires institutions to adopt new knowledge-making processes within risk-laden, uncertain environments.

In addition to recognising uncertainty, PNS also takes concepts of stakeholder input and democratic participation beyond notions of an integrated, single and internally consistent framework to one which allows for the coexistence of a diversity of perspectives and ways of understanding. It opens up possibilities for more inclusive, open and ongoing engagement processes.

However, one of the main difficulties of PNS is that it usually runs counter to the tide of existing normal science. That is, the bulk of contemporary scientists are working within an existing paradigm and they find it hard (or indeed possibly frightening) to step outside that paradigm to contemplate alternative stratagems. To do so requires courage and conviction to argue against one's peers in disciplines that are often deeply conservative in their belief systems. As a result, PNS is not widely accepted in established traditional institutions. PNS, however, may well offer the biggest opportunity for true innovation and competitive advantage around issues such as climate change. Yet this is not going to win the hearts and minds of risk-averse funding agencies looking for safe bets.

SUSTAINABILITY TECHNOLOGIES

Building on the theoretical notion of post-normal science, to be effective for sustainability, technologies¹² would be significantly different from existing normal forms. Such sustainability technologies (STs) would require very different structures than hitherto. It is important to understand that we are describing not just 'hard' technologies ('widgets' or machines) but also processes (such as accounting and decision-making) and that both have their place as enablers for society to control and adapt to its environment. In particular it seems likely that STs will comprise a mix of the following elements:

Technology is a broad concept that deals with our usage and knowledge of tools and crafts, and our ability to control and adapt to our environment.

Its origins are in the Greek *'technologia'*, *'τεχνολογία'* — *'technē'*, *'τέχνη'* ('craft') and *'logia'*, *'λογία'* ('saying').

It can be defined as:

1: Practical application of knowledge in a particular area (e.g. medical *technology*)

2: Capability given by the practical application of knowledge (a car's fuel-saving *technology*)

- **Extended peer communities** – initiatives that involve multiple groups of people in decision making and policy implementation around sustainability issues and may include people without formal institutional accreditation who have a desire to participate in attempts to resolve an issue (e.g. citizens' juries). In this context extended peer communities are the only mechanism that enables the full range of relevant types of knowledge to emerge and develop into a meaningful solution. Increasingly, extended peer communities operate in the virtual space, through new social movements or in science shops such as set up in Europe to make innovation readily available to potential clients, and the Internet will provide extensive opportunities for experimentation.

- **Agonistic processes** – ways to deal with 'irreducible difference' through potentially positive aspects of certain (but not all) forms of conflict. This is not to say that agonistic processes will yield harmonious and peaceful patterns of cooperation. It is not about driving towards a middle ground of bland consensus. In other words one can compete, and one can win, but never once-and-for-all. Examples include term limits for political leaders, laws to guard against corporate monopolies, or appeals processes through environment courts. Conversely the lack of agonistic processes can result in a lack of challenge, for example, to the underlying issues of the dominant economic order, which is likely to inhibit the current trend towards unsustainability. Agonistic processes provide an approach that steers a course between token environmentalism ('plant a tree to prevent climate change') and utopian fantasies ('Save the Planet', 100% Pure, etc.). Agonistic processes are intended to provide a central role for diversity; they respect ideological conflict, and are sensitive to the complexity of power dynamics.
- **Citizenship and civic responsibility** – the concept of what is variously called active, sustainable, corporate, consumer and green citizenship, to name but a few. It is emerging as a way of bridging gaps between science, politics and practice, and empowering people to be responsive and responsible vis-à-vis sustainability. For example, it may lead to a shift away from public debate about reducing local rates and towards greater responsibility towards local environmental and social resources. In so doing it brings citizenship into the realm of post-normal science and enables people to be credited with multiple capacities and expertise that can support the co-production of knowledge about sustainability alongside professional public and private experts. It assumes citizens have some expertise regarding sustainability issues in their own daily life and socio-political contexts

Collectively these three strands should take concepts of stakeholder input beyond simply broadening democratic participation to new processes of open dialogue. Or as Marco Verweij and others put it:¹³



'...we have at one extreme an unresponsive monologue and at the other a shouting match amongst the deaf. Between these extremes we occasionally find a vibrant multivocality in which each voice formulates its view as persuasively as possible, sensitive to the knowledge that others are likely to disagree, and acknowledging a responsibility to listen to what others are saying.'

Only through creating the capacity and capability for participatory decision-making and social learning, improved knowledge management and new institutional mechanisms can innovation and sustainability be delivered. And the important point here is that it is more than just social learning (discussed in detail in Chapter 22), although it builds extensively on those processes, but that it also works at a macro societal scale and not only at the level of the individual.

One of the other issues that STs may require to challenge is existing structures of power and authority in society. Managing complex and shifting social, economic and environmental issues requires thinking in post-normal terms and utilising STs. It also requires focusing on improving understanding of future governance and governing processes and governments and institutions to become much more critically reflexive, learning organisations.

FUTURES STUDIES AS A SUSTAINABILITY TECHNOLOGY

One example of a sustainability technology that has been developed in some detail in the FRST Building Capacity project has been Futures Studies (FS) (see Chapters 1 and 2).

The premise of FS is that through a better understanding of the medium to long-term future society (not to mention a historical

perspective or two) should be able to make better decisions in the present. Future scenarios are not intended to predict the future; rather they are tools for thinking about the future based on several assumptions. Firstly, the future is shaped by human choice and action. Secondly, the future cannot be foreseen, but exploring the future through plausible scenarios can inform present decisions. For example, we can create low carbon economies through redesign of the taxation regimes from income-based to resource-usage-based, especially around greenhouse gas emissions but also water and energy. Thirdly, there are many possible futures; scenarios therefore map 'possibility spaces'. Finally, scenario development involves both rational analysis and subjective judgement.

Futuring is the study of the present reality from the point of view of a special interest and knowledge about the future. Such techniques permit open discussion on contested topics and are ideally suited to the long-term issues relating to sustainability. To engage with these rich and inconclusive subtleties requires an analysis that identifies connections and general patterns that are context-specific. This means creating possibilities for technologies that involve the extended peer communities, agonistic processes and emerging forms of citizenship described above. Our experimentation with this in the Futuremakers project is described in (Chapter 1)

In other words, to achieve a futuring exercise that is meaningful and that will achieve shifts in understanding requires careful management that is as much about the process as it is the content. It requires qualitative as well as quantitative data, which means that complexity may be represented in ways other than analytical modelling. For example, managing quantitative data often requires simplifying assumptions that remove the very essence of complexity itself. An example of



this is accounting models that assume that the value of natural resources and other capital stocks will be as meaningful for future generations as they are today based on a model of indefinite growth.

The futuring approach specifically acknowledges that it is not intended to displace existing decision-making and planning processes but is intended to complement and inform them so as to increase their overall effectiveness. It should also be noted that this is an emerging area that FS researchers are grappling with globally and there is currently no easy off-the-shelf solution available. As such there is an opportunity for New Zealand to add some shine to its 100% Pure, Clean and Green image by developing these technologies as a potential export earner.

FINALLY, A WORD OF CAUTION

By introducing these three concepts and one example we have tiptoed between clarity around new ideas and an urge to flood an emerging area with a grandiose terminology only accessible to the initiated or the vain. However, the temptation to let loose with a quiver of inverted commas is considerable. As Frame and Brown noted:

As with many new knowledge forms, notably particle physics (with its charm, flavour and strangeness), post-normal science is...developing its own somewhat angular lexicon. Post Normal



Sustainability Technologies look set to be developed by researchers bristling with inverted commas in a world in which 'wicked' problems, such as 'strange' weather, are addressed through 'messy' governance to reveal 'clumsy' solutions for their 'thickly' 'cosmopolitan' citizens. These will be developed, no doubt, by 'post-disciplinary' researchers (including, perhaps, 'post-autistic' economists; see www.paecon.net) working in 'boundary' organizations and with 'polyvocal' communities.

Time will tell how pertinent such terms are and the extent to which they are fit for purpose. It is likely that they will only be temporary signposts on a long and complex path to build capacity for sustainable development. Yet, if so, they will still have served their function.

It is tempting to categorise interventions to address wicked problems in two ways. Small-scale solutions that raise awareness about issues – but not necessarily providing much more than a palliative. These are important and subtle events but they can only ever be part of the solution. Or, as David Mackay¹⁴ puts it:

...don't be distracted by the myth that 'every little helps'. If everyone does a little, we'll achieve only a little.

However, it is going to be a brave step to take PNS from its current largely theoretical position to one where true innovation will be encouraged accompanied by successes in tackling some of the gnarliest and intractable issues of our times. Leadership is eagerly sought, with the prize of providing solutions (albeit partial) to the complexities of issues such as climate change a just reward for the courage and vision required. Large-scale solutions are needed that require institutional shifts on a scale not yet fully imagined. Practical examples of PNS are only just emerging and there is considerable opportunity for early adopters to 'make a real difference'.



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Landcare Research
Manaaki Whenua

Governmentality 101

CHAPTER 20 : HATCHED

Bob Frame and
Shona Russell

control

A close-up photograph of a computer keyboard with a blue color scheme. The 'control' key is prominently displayed in the foreground, with the word 'control' written in white. The background shows other keys, including one with the word 'ctrl'.

Summary

- Governmentality is a process to analyse the nature of institutions. It examines how dominant values and worldviews influence policy development and implementation.
- This analysis attempts to uncover and examine rationalities that underpin particular forms of governance or sit behind specific activities at any point in time.
- In turn this can reveal important influences on the development of government policies.
- We believe governmentality is of considerable benefit in understanding wicked problems (See Chapter 19) and supporting attempts to find acceptable and effective solutions.

WHAT DOES GOVERNMENTALITY MEAN? IT SOUNDS LIKE A MADE-UP WORD....

Governmentality, governance, government – they all stem from the verb ‘to govern’, which means to conduct the policy and affairs of a state, organisation, or people.

Governmentality takes a broad meaning – encompassing not just the governance and institutions of a sovereign state but institutions found within and between organisations and within groups of people and society at large.

From this we can access *Wikipedia* to give us the definitions in Box 1.

With this in mind let’s now distinguish the term *governance* from *government*. Consider that ‘governance’ is what a ‘government’ does. It might be a ‘geo-political’ government (nation-state), a ‘corporate’ government (business entity), a

‘socio-political’ government (tribe, family, etc.), or any number of different kinds of government. But governance is the exercise of management power and policy, while government is the instrument (usually collective) that does it.

We can now move on to see that **governmentality** can be understood as:

- The way governments try to construct policies to fulfil their goals and those goals that they attribute to be best for subjects being governed (e.g. citizens, individuals, groups)
- The organised practices (mentalities, rationalities, and techniques) through which subjects (e.g. citizens, individuals, groups) are governed

Governmentality has also been described as ‘how we govern and are governed within different regimes and the conditions under which regimes emerge, continue to operate and are

box 1:DEFINITIONS

Governance	<p>Governance relates to decisions that define <i>expectations</i>, grant power, or verify performance. It consists either of a separate process or of a specific part of management or leadership processes. Sometimes people set up a government to administer these processes and systems.</p> <p>In the case of a business or of a non-profit organization, governance relates to consistent management, cohesive policies, processes and decision-rights for a given area of responsibility. For example, managing at a corporate level might involve evolving policies on privacy, on internal investment, and on the use of data.</p>
Government	<p>A government is the body within an organization that has the authority to make and enforce rules, laws and regulations.</p> <p>Typically, the government refers to a civil government which can be local, national, or international. However, commercial, academic, religious, or other formal organizations are also governed by internal bodies. Such bodies may be called boards of directors, managers, or governors or they may be known as the administration (as in schools) or councils of elders (as in churches). The size of governments can vary by region or purpose.</p> <p>Growth of an organization advances the complexity of its government, therefore small towns or small-to-medium privately-operated enterprises will have few officials compared to larger organizations such as multinational corporations which will have multiple interlocking, hierarchical layers of administration and governance. As complexity increases and the nature of governance become more complicated, so does the need for formal policies and procedures.</p>

Source www.wikipedia.org

transformed.^{1,2} In other words, governmentality describes the inherent structures, processes and values that underpin activities of governing by a specific government entity during a particular period of history.

WHERE DID GOVERNMENTALITY COME FROM?

Governmentality as a concept was developed by the French philosopher Michel Foucault in the later years of his life between 1977 and 1984, particularly in his lectures at the Collège de France during this time. The concept has been elaborated in the social sciences by such distinguished authors as Peter Miller, Nikolas Rose and Mitchell Dean. It is only recently being used outside the academic arena to research the underlying politics of complex issues.

WHERE IS IT RELEVANT? HOW IS THE TERM/IDEA USED?

Governmentality studies involve analyse of the following mutually dependent aspects of governing:

- How governing authority is established
- How the issues to be governed are conceived
- The forms of knowledge used and produced in governing

- The techniques and other means employed to achieve specific ends, the ends sought, and the outcomes and consequences of pursuing those ends

These analytical questions have informed studies to understand and examine climate change³ and sustainable development.⁴ The studies do not only focus on the governing activities by state government but also examine governing activities at individual, community, regional, national and international scales.

The contribution of governmentality as a concept, and associated studies, is to uncover and examine the rationalities of government that sit further behind the specific activities at any point in time. Rationalities are relatively systematic ways of thinking about governing and can incorporate theoretical knowledge, forms of practical know-how, and experience. For example, careful research will identify how institutions will govern sustainable development through adopting certain types of rationalities to inform governance practices.

To illustrate this contribution we present a framework that has informed various projects that analyse governance in the context of sustainable development (Chapter 27), climate change, and water. We draw upon the work of Mitchell Dean¹ on the Analytics of Government as a way to analyse how rationalities (including dominant values and worldviews) influence governing activities (such as policy development and implementation).

Table 1 Dimensions of an Analytics of Government framework

Problematisation	Identification of an issue to be governed
Regimes of practice	<p>Visibilities: created by governance processes and by the use of particular techniques</p> <p>Knowledge: which is generated by and used within governance processes</p> <p>Techniques: used to achieve the governance (and which may create visibilities, identities and knowledge)</p> <p>Identities: which emerge from and support governance processes</p>
Utopian ideal	The goal towards which governing activities aim to pursue or achieve as well as the belief that governance is made possible by a regime of governing

Source: Gouldson & Bebbington (2007)⁵, based on Dean (1999).¹

The Analytics of Government framework unpicks governing activities to consider three elements: the problem, the regimes by which governing activity is achieved, and the utopian ideal or goals. Regimes of practice can be disaggregated into four elements of *visibilities, knowledges, techniques* and *identities*. While Table 1 outlines the elements as discrete and bounded, and suggest linear progression, this is often not the case in practice. These are organic elements that are constantly in flux even if only slowly shifting and in practice weaving in on themselves and each other. The Analytics of Government framework is a convenient method to examine how governing activities are influenced by rationalities with reference to a range of dimensions.

CAN YOU GIVE SOME EXAMPLES?

To illustrate the contribution of the Analytics of Government framework and broader governmentality studies, we consider how sustainability is governed in New Zealand as it relates to the specific problem of climate change. This complements our examination of other forms of governing activities as exemplified in policies and strategies made by state

governments (see Chapter 27 for a discussion of how national governments govern sustainable development, through an examination and comparison of New Zealand’s Sustainable Development Programme of Action (SDPoA) and how it compares to Scotland’s Sustainable Development Strategy).

In the realm of addressing climate change through governing activities, examples of *problematism* are the increase in waste and in carbon emissions; and the *utopian ideals* are linked to ideas of being a ‘tidy kiwi’ and attaining ‘carbon zero’ status (see Table 2a). Here, these problematisations refer to the activities of the individual or business rather than the population of a country. In the context of problematisation and utopian ideals, we then ask what regimes of practice are undertaken to pursue, and ultimately achieve, those utopian ideals (see Table 2b, overleaf).

OK! YOU’VE CONVINCED ME. WHERE COULD I USE IT? WHY?

Governmentality, as a concept, and associated studies lead to an examination of governing activities that can relate to individuals and to communities, for example. This is reflected

Table 2a An example of the governmentality framework for sustainability in New Zealand

Element	Explanation	Examples
Problematism	Some form of human behaviour has to be identified as a problem as this gives rise to the need for a governance response	Anthropocentric contribution through use of fossil fuels has been identified as a problem prompting global conferences (UNSD, WSSD), international agreements (IPCC), and national and international reports (GEO2, OECD, IEA, etc.)
The utopian ideal	The ideal complements the ways in which current governing practices are deemed problematic and in need of reform through strategy. Utopian ideals can be created and pursued in accordance with the view that governance activity creates a better way of doing things. Utopian ideals are also the place at which the translation of the abstract into the real takes place	Sustainability. This is an idealised end state in contrast to the ‘problem’

Table 2b Dimensions

Regimes by which governing activity is achieved:		
Visibilities	These are the ways in which certain things are made visible from governing activities while others are not, such as shifts in climate change policies when different political authority changes	<ul style="list-style-type: none"> Local responses as declared by local government policies or as seen through general public concern Interest in Triple Bottom Line reporting by businesses; educational programmes (Enviroschools)
Knowledge	This concerns what forms of thought, knowledge, expertise, strategies, means of calculation, or rationality are employed in practices of governing. Different types of knowledge may determine specific forms of truth concerning what actions are sustainable and what are not? It is possible that the legitimacy of the particular individual or group that is producing the knowledge may impact on which knowledge is deemed acceptable and used in the process of governing	<ul style="list-style-type: none"> A whole new set of expertise areas and strategies emerge such as ecological economics Measure-to-manage techniques for personal travel and energy use Accounting for externalities Ecological footprinting; life cycle analysis
Techniques	These require consideration of the technical aspects of government, asking by what means, mechanisms, and technologies is authority achieved	<ul style="list-style-type: none"> Collaborative processes amongst stakeholder groups are increasingly used as a technique of water governance alongside the more established processes of applying for consents New platform of technologies including carbon neutrality, environmental management systems such as EnviroMark Corporate social responsibility, and sustainability assessment methods
Identities	These are the forms of individual and collective identity through which governing operates, such as the construction of responsible/irresponsible individuals, organisations or institutions. Hence, the governance of sustainability led to new groups emerging that, for example, were responsible for developing and implementing strategies to pursue the declared goal of New Zealand being the first sustainable country	<ul style="list-style-type: none"> CarboNZero becomes an acknowledged brand leader with spin-offs such as carbon neutral airports and travel options such as conferences Establishment of expert groups and cross-agency programmes

in many governmentality studies being undertaken in public health and education sectors.

Sustainable development, natural resource management and climate change are all examples of 'wicked problems' (see Chapter 19). As individuals, communities and state governments, for example, tackle these problems, we think governmentality and the Analytics of Government framework provide research pathways to understand better how a range of technologies (again taking a wide meaning to include both 'soft' processes and 'hard' tools) such as strategy formulation are being developed and implemented. Analysis could be used to understand how technologies can and are assembled

into relatively stable forms of organisation and institutional practice. It might identify the ways in which they create and depend upon particular forms of knowledge leading to pursuit of sustainability.

Health Warning: Using governmentality is not a quick-fix analysis to confirm existing assumptions. It is a complex and time-consuming analytical tool to unpick rationalities at play in complex issues. Like all research, if it is used in a poorly planned experiment it will produce false results that will lead to unsubstantiated claims and erroneous conclusions. And as it says in the irritating small print on adverts for shares: 'previous performance is no guarantee of future success.'

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Landcare Research
Manaaki Whenua

Water Allocation: Canterbury's Wicked Problem

CHAPTER 21 : HATCHED

Bob Frame and
Shona Russell



Summary

- Water allocation in Canterbury is a deeply complex issue which we consider to fulfil all the defined qualities of a wicked problem.
- This was examined in detail through a series of interviews across many stakeholder groups.
- Our analysis supported the concept that it was indeed a wicked problem – solutions cannot, it is proposed, solely take hierarchical, egalitarian or competitive strategies to effectively manage resources but will need hybrid solutions that are complex and messy.
- To be successful this will need a far better understanding of the underlying governmentality.

ISSUE

Water is critical for the economic, social, cultural and environmental well-being of Canterbury and of New Zealand (see Box 1).¹ Complex and numerous water issues are bubbling to the surface as the region grapples with tensions around the drive for economic development, development of land and water resources, recognition of social and cultural values of water resources, and for protection of the natural environment. A broader concern was expressed about the viability of the Resource Management Act (RMA) (which has established a particular legislative process) to promote the sustainable management of natural resources when the resources are becoming increasingly scarce.

Here, we discuss the issue of water allocation as part of a wider 'wicked problem' (see Chapter 19) of water governance facing Canterbury and other regions in New Zealand. Initial debates about water allocation are highlighting broader concerns about the capacity of the current governance regime to manage water resources sustainably. Canterbury's economy, society, environment and culture, now and in the future, are intertwined with governance of water.

box 1: CONTEXT

Water is essential to New Zealand's social, cultural and economic well-being. It is also a focal point for recreational activities and our outdoor-focused way of life...However, demand for water is increasing. At the same time, some aspects of water quality are getting worse in areas that are dominated by intensive land use.

(Source: Ministry for the Environment 2007: 261)

HAS CANTERBURY REACHED SUSTAINABLE LIMITS?

The region has 70% of the country's irrigated land; generates 24% of the nation's power through hydroelectricity; has 65% of the country's hydro storage; and provides untreated high quality water supply to Christchurch. The regional council,

box 2: EVIDENCE

- Land use in Canterbury has changed substantially in part to increased dairying, which has increased its share of the Canterbury irrigated land from 34% in 1999 to 42% in 2004.
- The use of water for irrigation has increased substantially (at a rate of about 55% each decade since 1965).
- The volume of water allocated increased by 50% between 1999 and 2006 driven mainly by an increase in land under irrigation.

(Source: Ministry for the Environment 2007: 262)

Environment Canterbury (ECan), is responsible for allocating 58% of the region's water (see Box 2).¹

Competition for Canterbury's water (ground and surface) resources is growing amidst intensification of land use, growth in dairying and viticulture, and increased use of water for irrigation. Demand for water and concerns about availability and reliability of supply have led to proposals for water storage and irrigation schemes (e.g. Central Plains Water).

Juxtaposed to competition are lively debates about diminishing river flows, threats to groundwater quality, over-abstraction of groundwater, and degradation of water quality associated with the use of nitrogen fertilisers and stock effluent; concerns about loss of recreational opportunities and conservation values; and other impacts of water abstraction on Canterbury's iconic braided rivers.

Other factors identified span lack of information about the volume of water abstracted; the suspicions about the political motivations of regional councils and councillors; (non)-participation by different stakeholders in allocation processes; and confusion about the responsibilities of a range of organisations (local, regional and national) in the allocation and management of water.

The complex economic, environmental, social and cultural tensions linked to water allocation indicate a broader concern

about water governance for sustainability. Thus, reforming water allocation processes are a small part of an ongoing process of change in water governance to offer solutions for Canterbury, and other regions, now and in the future. Given the problems outlined above, how do we understand water allocation problems and broader questions of water governance? What can be done and how?

EXAMINING CANTERBURY'S WICKED WATER PROBLEM

Between August 2005 and June 2006 we interviewed a wide range of stakeholders in the water sector in Canterbury to understand the complexity of water governance, initially linked to water allocation. These interview transcripts were rigorously analysed and the results are presented here using a characterisation of 'wicked problems' as outlined by Rayner² in Chapter 19 offering an understanding of the complexity of the problem, and to map some of the processes and solutions underway alongside comments emerging from interviews.

Symptomatic of deeper problems

In the process of asking about water allocation, broader questions emerged about the adequacy of the water governance regime: when resources are reaching sustainability limits; the need to plan for future land and water use in the region; the role of scientific knowledge about water resources (including the relationship between ground and surface water resources); and the participation by interested and affected groups in the governance regime.

We have identified these deeper problems asking the following questions:

- Should water allocation decisions, and associated consents, be decided through legal processes?
- Should long-term consents³ be issued?
- What resources and capacity is required to ensure participation is possible for interests and affected groups?
- What information is required on ground and water resources to make water allocation decisions in line with

sustainable management of resources?

- Who should pay for research associated with water governance?
- How does changing and/or intensification of land use affect water resources?
- What is the relationship between land rights and water rights?
- Can market mechanisms be used to determine values for water resources?
- How can social, environmental and cultural values of water resources be identified, measured and monitored? What types of regional planning is required around water and land use?

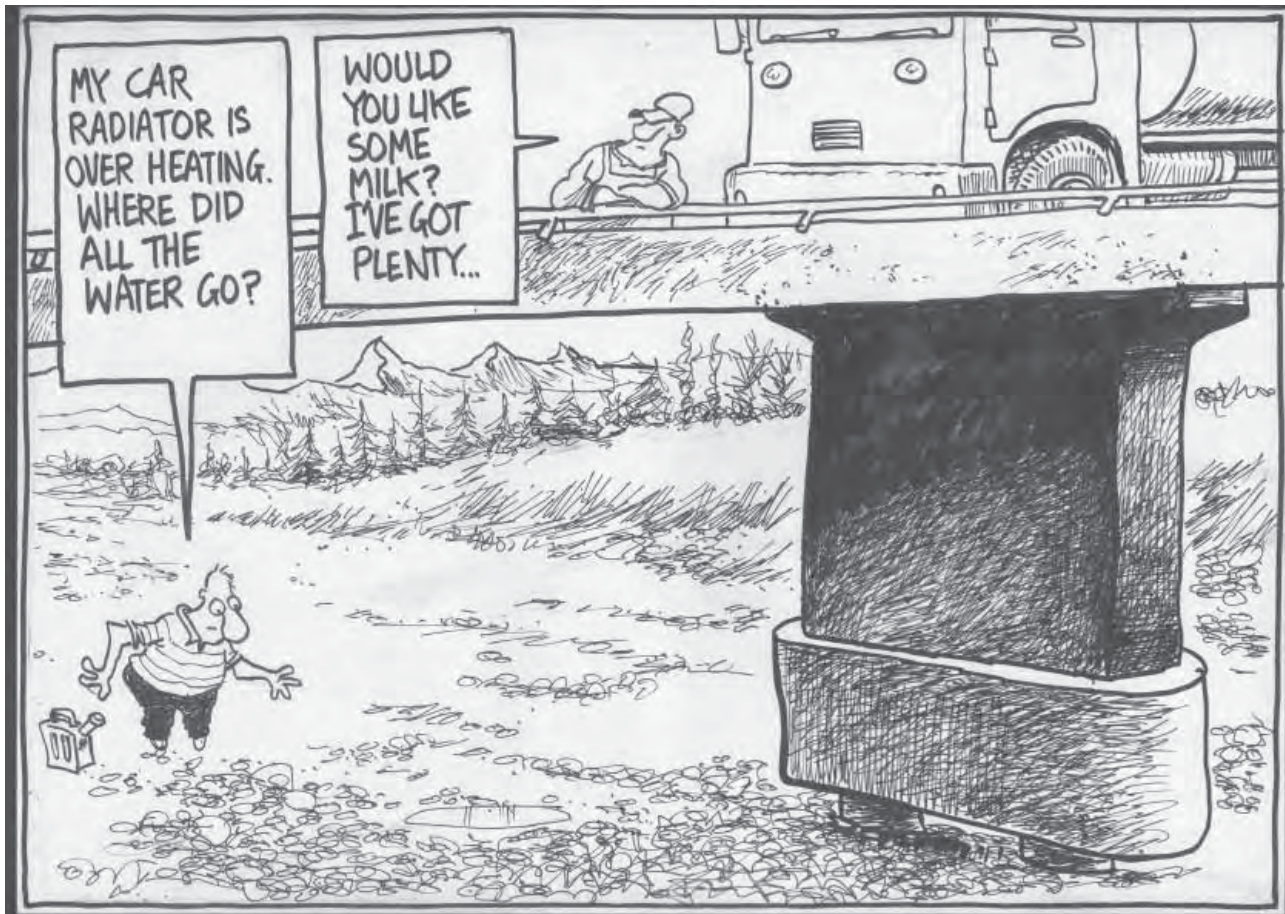
Many interviewees expressed the need for plans to frame development in Canterbury at regional, district and catchment scales illustrating the emergence of a vision of water governance of which water allocation decisions would be part. The need to measure and monitor water resources was identified to complement the development plans. Often plans and strategies were aligned to the current and future economic development of the region. Moreover, water management and more recently water storage are viewed by many as essential for Canterbury's economic development in the context of changing land use. For some, such a view is associated with a particular group of interests and the concern is that this view will be more powerful and persuasive in the governance regime. This discussion prompts consideration of how regions and countries use their natural resources along the path of development, and the longer term implications for the environment; alongside how to enable (equal?) opportunities for participation by various interests groups

Unique opportunities that cannot be easily reversed

Can we reverse decisions linked to current practices?

Interviewees expressed concerns about the implications of water allocation decisions that were made without reference to how the water is used; the time frame and political implications of addressing water resource governance in the electoral cycle²; and the different ways emerging to manage water resources.

Tom Scott cartoon from the Dominion Post 2006



Cartoon by Tom Scott published in the Dominion Post, 20 April 2006, expressing concern about water issues in Canterbury"

The 3-year political and electoral cycle is a factor to contend with even though governance of water resources spans a much longer time frame. Thus, there are questions about the risks and opportunities of political leadership to enact change but that these changes may not be most suitable in the longer term. Other questions about the current governance process include: Are political leaders (at national and regional levels) capable of leading discussions about how best to allocate water resources? and Who is best to show leadership on these decisions and address concerns about the implications of continuing to allocate water resources under the current regime?

Unable to offer a clear set of alternative solutions

Under the RMA, the regulatory authority has the responsibility to issue resource consents. Moreover it must commence processing applications on receipt and meet demanding criteria set out in legislation. In a science-deficient and plan-free environment this has led to over-allocation. Within this 'unsympathetic' regulatory framework Environment Canterbury has undertaken additional initiatives to address over-allocation issues but these solutions are emerging, complex, overlapping and are often associated with periods of learning. Furthermore, solutions often prompt a range of comments, which are

presented here to illustrate the multifaceted nature of attempts to address wicked problems that extend beyond the activities of the regulatory authority alone.

First, possible solutions to the problems of water allocation include the designation of allocation zones, which prompted calls for Central Government coordination from some, while others suggested zones were crude and unable to tackle the problem of over-allocation as it was 'too late'. Alongside the use of zones, other mechanisms were suggested in the form of 'resource rentals' or using a 'cap and trade' mechanism, or 'grandfathering'. Grandfathering was held to support the interests of existing consent holders rather than evaluating allocation of which use of water may generate the most economic value, for example. Although ownership rights and water trading were objected to by many, – citing concerns about private individuals benefiting from a public resource - these are underway in some parts of the region. Trading using market mechanisms parallels observations that market signals may be a strong driver to change land use that relies on a greater availability and reliability of water (e.g. from sheep and beef to dairying). Market signals were often perceived to be the strongest driver for land use change despite an



acknowledgement that different land uses were possible given the water resources available. One may ask how viable these solutions are while research and science is not developing at the same pace as intensification and issuing of further consents for allocation of water. This has led to the suggestion of a moratorium of issuing consents until questions about scientific knowledge are addressed; the latter we discuss below.

Second, respondents stipulated that the need for efficient water use was linked to the issues of how change behaviour and farming practices to encourage such behaviour and how to increase the amount of water available for use by others. Metering of water use was suggested as a way to measure water use and thus address issues about the value of water. Others went further and suggested introducing water metering and charging in both rural and urban areas to encourage water efficiency. Notably, some observed that a volumetric charge for water is *highly likely* in the future and that *all* users, not solely farmers, must pay for the right to use. While those who are not applying much water would be happy, it was expected that certain farming interest groups would object. (At present water meters record water use in Christchurch City but users do not pay water charges according to use.) Objections to metering were countered by the observation: *"If it is too costly to meter, then it can't be valuable enough to use"*. Some interviewees saw efficient water use as being encouraged through rising energy costs and sufficient for charging not to be required. Others thought it was unlikely that increased efficiency would be sufficient to allow the pursuit of other activities reliant on available

water resources. As such, water storage is proposed to further development, thus benefiting the region's economy and society. Water storage could also address shortages during drought periods, which are becoming more frequent in some parts of the region.

Third, respondents thought there was a need for Central Government leadership beyond just creating allocation zones. It was noted by some that Central Government has remained hands-off and that there is a reluctance to create/enforce an environmental bottom line as part of a top-down approach to water governance. Alternatively, some suggested the creation of new agencies, such as an Environmental Ombudsman, to oversee water issues rather than the current responsibilities being held with the regulatory authority. In contrast, others thought decisions about water use and associated trade-offs should be made by the Canterbury community to seek levels of consensus. This would give all parties an opportunity to participate, with awareness that individual interests may not be satisfied. These suggestions about who should make decisions indicate that scale is a factor in water governance and that a nested approach may be required incorporating various local, regional and national interests.

So far the solutions listed above are overlapping but throughout all interviews there was general recognition of the need for a common information base related to more efficient monitoring and the use of catchment-wide and strategic planning, based on a clear determination of what are the sustainable limits. Sustainable water management must draw upon knowledge from science and local people, involve many groups in partnership with the regulatory authority, and recognise that water governance is an iterative and evolving process. Some further questions subsequently emerge: can different clusters of solutions be intertwined or are they mutually exclusive and associated with a particular way of perceiving and dealing with wicked problems?

Characterised by contradictory certitudes

The clusters of solutions presented may be aligned to the different attitudes and certitudes of groups. Here we present views about the values of groups and the levels of equity in

relation to representation of views in water allocation debates. A prominent theme from the interviews was a concern about the disproportionate representation of views, which may in turn affect how the wicked problem is addressed. This was acknowledged in the context that water resources were clearly seen to be the economic driver in Canterbury especially for the primary sector and that limited access to or unreliable supply of water resources would threaten the governance regime's economic effectiveness. Concerns about representation centred a domination of the governance regime by high water users in the primary sector, such as dairy farmers, who also were attributed as having a negative impact on the environment. Furthermore, this dominance was perceived to be supported by Environment Canterbury.

box 3: INTERVIEWEE

"You'll see them come out of the woodwork if anyone talks about a dam on the Hurunui – kayakers and all those people. There are a whole range of those groups, and then there are the users – the ordinary farmers, Federated Farmers, irrigation companies, dairy cooperatives, other commercial users... We've got groups like Fish & Game and that, and Forest & Bird, and they all put a spanner in the works but they haven't actually got a financial interest in the well-being of what's going on and they just think everyone should have equal rights to everything."

In contrast, the interests of alternative water users and moreover Māori, as indigenous people and treaty partners, were and continue to not be consistently taken into account. These are specific examples of disproportionate representation while other people often noted the disconnections and frictions between different groups of interest. For example, some interviewees held that the following tensions were visible: community vs developer; farmer vs. environmental; rural vs. urban; and local vs. regional. These tensions span the both relationships between different interest groups within Canterbury and with Central Government. These observations and concerns were often noted with comments about how

stakeholder representation and engagement in governance regime needs to change to address the unbalanced representation of certain interests over others.

In contrast to economic interests dominating general debates about water allocation, other interest groups are often identified with regard to particular projects such as the development of water infrastructure. The quote in box 3 identifies some of these groups while also indicating the perceived risks posed to farmers and developers by their involvement.

Many are sceptical about the quality of scientific information available and used by the regulatory authority during its decision-making process. For some, the allocation of water and water governance were perceived as poorly managed due to a lack of available data, and for some, decisions to refuse resource consents were too late. Before farmers are likely to change their farming practices they require scientific knowledge to prove problems with water resources exist and, furthermore, that their conduct may be linked to these problems.

In addition, more abstract concerns were noted about what water is and who should be responsible for it. For some, water remains a public resource and its ownership and management should remain in the public sector rather than by business interests for private economic benefits. This issue led to comments that people in Canterbury are unlikely to let water be privatised. There is recognition that if water is a



valuable resource approaching its sustainability limits, then there needs to be a re-valuation and adaptation of the current system. As this recognition becomes more widespread, it is clear that water issues are gaining a much higher profile in the public consciousness. With this heightened awareness, attitudes are changing and the multiple values of water are being acknowledged in a variety of ways, politically, socially, and culturally. There is also a broadening of perceptions about water amongst stakeholders, with interest developing in urban as well as rural issues. With this some voices are stating their perception that water management is dominated by certain privileged groups and that others are not widely heard.

Redistributive implications for entrenched interests

In the examination of water allocation, entrenched interests emerged. Two dominant groups of interests that relate to the current system are presented here before I consider the implications of changes to the system. On the one hand, the current governance system where water is allocated on a 'first in, first served' basis is perceived to favour the interests of agriculture and development. There was concern that changes in the allocation of water would pose a risk to investment by and for farmers, which could in turn impact upon the broader economic development of the wider Canterbury Region.

On the other hand, certain groups believe their interests are jeopardised under the current regime. For example, fishermen see that farmers are making money out of the fishermen's resources (rivers) all the while diminishing the water quantity and quality. Broader non-economic interests, including environmental non-governmental organisations, more widely express concern that their interests are not given equal weight in part due to a lack of financial resources to engage in contestation of resource consents to take water. Indeed, it was suggested that the Canterbury community should resolve water governance issues rather than this being solely the role of the regulatory authority, Environment Canterbury.

The positions presented above outline highlight a variety of implications for stakeholders and the broader Canterbury community. Economic and environmental interests appear to dominate discussions about allocation of water. In light of the

RMA's assertion for the sustainable management of natural resources, it appears there is an absence of consideration of social and cultural aspects of governance of natural resources.

Persistent and insoluble

The problem of water allocation was regularly acknowledged to be persistent, with interviewees noting that water governance is a long-term issue that is likely to take longer than an electoral term to address. Many noted that water is tied to land and that therefore consideration of water management should also include how the land could be used in the future. If water allocation, and water governance, are persistent and insoluble, what are the implications for economic, environmental, social and cultural interests if the current regime changes and potentially incorporates some of the solutions outlined above?

DISCUSSION

We have examined Canterbury's wicked water problem using Rayner's characterisation to illustrate the complexity of water allocation and the broader questions around water governance. The examination of the problem's wicked characteristics using qualitative interviews has led to the identification of various opportunities and pathways to move forward.

Drawing upon Rayner, these opportunities and pathways can be characterised as being associated with the following types:

- Hierarchical strategies that simplify issues and apply routine
- Competitive strategies that rely upon expertise to control resources
- Egalitarian strategies that open the problem to more stakeholders



Following the research, we have observed a range of emerging responses to the wicked problem that align with the types described by Rayner. These responses can also be aligned to models of governance outlined by Gunningham:⁵ namely, hierarchies, markets and collaboration. For example, first, new national environmental standards are being established around the measurement of water takes. Second, the NZ Business Council for Sustainable Development has proposed the development of trading mechanisms for water allocation. Third, collaborative processes are having variable degrees of success at regional and national levels with the development of the non-statutory Canterbury Water Management Strategy, which is led by the Canterbury Mayoral Forum and supported by

Environment Canterbury and a Steering Group with members from a range of interest groups.

In conclusion, our results indicate that new mechanisms are emerging to deal with Canterbury's wicked water problem. There is a growing awareness that current water allocation mechanisms used in Canterbury are inadequate for the sustainable management of scarce water resources and are part of a broader concern about water governance – but there is yet to be a clear winner in the race to find a suitable replacement. It is unclear if a clear solution will emerge; rather we expect messy processes to lead to clumsy solutions as we learn about our relationship with water and how to manage it sustainably.

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Social Learning

A basis for practice in environmental management

CHAPTER 22 : HATCHED

Margaret Kilvington
and Will Allen



Summary

Environmental agencies are increasingly being asked to formulate local, regional and national responses to environmental problems that are highly complex, made up of multiple factors, contested or unknown science, and conflicting demands. Social learning is emerging as a useful framework for understanding the human relationship, knowledge generation, and decision-making challenges posed by complex environmental problems.

A social learning approach draws attention to five areas for focusing awareness and developing practice in complex problem solving: These are:

1. How to improve the **learning** of individuals, groups and organisations
2. How to enable systems **thinking** and the integration of different information
3. How to work with and improve the **social/institutional** conditions for complex problem solving and
4. How to work-manage group participation and interaction
5. The fifth factor is **monitoring and evaluation**, which is the engine that drives continuous improvement in practice.

The social learning framework offered here can be used to understand and improve the capacity of any problem solving and management situation. It can be used in its entirety or people may select elements of the framework for specific phases of their projects.

PICKING A WAY THROUGH PROBLEMS: THE CHALLENGE FOR ENVIRONMENTAL MANAGEMENT AGENCIES

Much has been said about complex problems in the environmental arena and it is easy to see that the challenges posed by (for instance) climate change, shifting land-use demands, energy shortages and competing demands for restricted water resources test the problem-solving capacity of local and national government organisations. These problems are viewed differently by the multiple organisations, sectors and communities that are interested and affected by the situation. In fact there may be such a diversity of ways of seeing one problem that it might be more honest to regard 'the problem' as a web of interrelated problems – each defined by the responsibilities, mandates and particular interests of the various agencies and groups involved. Furthermore the solutions on offer may, when applied, fix one part of the problem only to reveal another. In fact what we are looking at trying to manage is not a problem but a problem system – subject to a high number of influencing factors and key players and with flexible boundaries that can be difficult to define.

What further characterises these complex problems is high levels of uncertainty (see, for example, Chapter 19). Information about the problem will most likely be incomplete (perhaps even some crucial factors may be undeterminable), and when available it can be disputed by different stakeholders on the basis of its relevance or meaning.

What is clear about these problem situations is that linear approaches to planning and management are inadequate. It is simply not possible to plan any great distance ahead with confidence that the predictions and premise on which the plan is based will stay valid in the future. Equally such complex situations do not lend themselves to resolution in discrete periods of time. Instead they require ongoing attention. Moreover the idea that a single agency, whether national, regional or local, might be responsible or even capable of fully resolving these issues no longer fits. These issues require multi-scale, polycentric governance that

recognises that multiple stakeholders in different institutional settings contribute to the overall management of a resource¹ In the face of such complexity, management approaches are more usefully seen as processes of ongoing learning and negotiation rather than the search for the optimal solution. The heart of a learning-oriented management approach is good communication and ways of sharing different perspectives, and the development of adaptive group strategies for problem solving. In recent times, the shorthand for this approach to problem solving has become known as social learning.²

In this paper we discuss social learning (see Box 1) as a practical framework for exploring the critical elements of complex environmental problem solving.

box 1: SOCIAL LEARNING

Social learning has been used to refer to: learning about social issues; learning by groups of people; and learning that results in recognisable social entities such as collective decision making procedures.³ However, in recent times the concept has received wide attention in the field of environmental management where it is emerging as an overarching concept reflecting growing understanding about the ways in which different agencies (e.g. planners, policymakers, NGOs), and different knowledge sources (e.g. science research, landowner, indigenous peoples) can be brought together to learn about and make decisions about complex problems.

The 'learning' part of social learning is based on a well-known theory and practice known as experiential based learning. The primary writer in this field, Kolb,⁴ describes a cycle of events that enables people to work together to learn and create knowledge. This starts with (1) revealing some concrete experience; (2) reflecting on that experience; (3) forming abstract concepts and generalisations about what to do next; and (4) testing the implications of these concepts in new situations, which in turn leads to new experiences and a new cycle of learning.

MANAGEMENT APPROACHES FOR ADDRESSING COMPLEX PROBLEMS

Planning and environmental agencies are no strangers to dealing with multiple interests and have long experience in responding to competing views about how a resource should be managed. They often have a highly developed repertoire of approaches designed to identify the concerns, values and interests of different stakeholders, determining a path forward in the midst of competing demands, and developing a set of decisions that, if not ubiquitously, are at least widely accepted as reasonable. In short, what many agencies have become very good at is making judgments in situations where public views are divergent or even polarised.

Trends in public planning approaches in the last decade have moved beyond making judgments in polarised situations, to fostering consensus-based decision making between the different stakeholder groups involved. Numerous examples of this exist in New Zealand such as the Christchurch City Council public deliberation over wastewater treatment.⁵ However, more complex problems call for not just agreement between people but also collaborative and coordinated responses across multiple communities and agencies. What are also needed are institutional arrangements that not only are open to the input of multiple stakeholders but are designed to contribute to their collective learning, capacity and empowerment to respond to the problem at hand. The purpose of these institutional arrangements is to foster amongst the many players and the entire problem system the capacity for adaptation and action that leads to a more resilient solution.

This is significant because it implies a shift in role for environmental management agencies from that described in the previous two paragraphs (accumulating all the information required, reconciling views and determining a course of action) to the orchestration of social learning. In this context, agencies might judge the success of their efforts to respond to a problem situation not only by reaching a *decision* but also through the process – *how the parties involved improved their collective capacity to act and respond*.

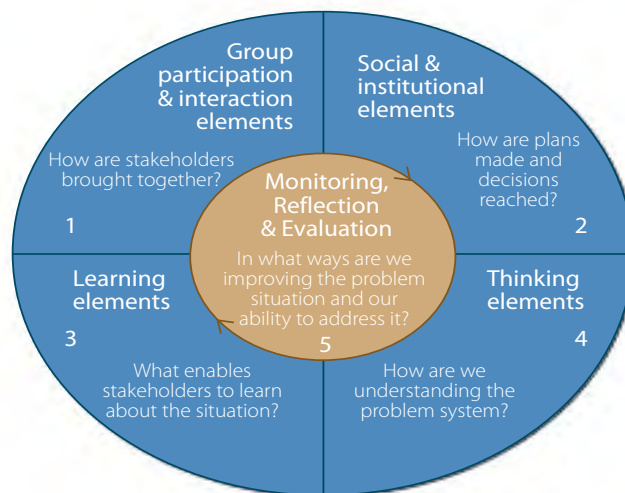


Figure 1 Social learning – five areas important to addressing complex situations.

A SOCIAL LEARNING FRAMEWORK

In addition to the implications for institutional arrangements discussed above, the framework of key elements that support social learning (see Fig. 1) indicate that a number of factors require attention when designing ways to respond to complex environmental problems. These include:

- How platforms (opportunities) for interaction between stakeholders will be conceived and handled
- How the diverse forms of data and information will be collated, interpreted, shared and accessed
- How critical assumptions about the problem will be revealed and scrutinised so that understanding of the problem moves beyond superficial observations and reaches to the heart of the challenge

The social learning framework we propose provides elements to address these three factors, and is made up of five categories of elements:

1. **Group participation and interaction elements** – ways of bringing stakeholders together
2. **Social and institutional elements** – ways of making decisions and planning actions
3. **Thinking elements** – ways of understanding the problem system
4. **Learning elements** – ways of supporting learning
5. **Reflection, evaluation and monitoring** – ways of tracking progress and developing social learning practice



The use of photography to support dialogue and learning in Watershed Talk worked on many levels, enabling participants to capture their ideas visually, and present them in ways that stimulated conversation, and opened topics up to multiple viewpoints. These two images were taken by participants as an expression of concerns and values they had for the catchment. Photo A (left) showing a newly posted warning about Didymo algae prompted debate on threats to waterways and what were effective ways to change people's practices; photo B (right), of a local church raised questions about how the social networks of the catchment were changing."

The last element is the engine that drives continuous improvement in practice. Another way of viewing these elements is as 'ingredients' in the design of successful approaches to complex problem solving. We now explore each category in detail.

Group participation and interaction

Forums for managing complex situations go beyond arranging meetings of stakeholder representatives to express their views. Their purpose is twofold:

- To foster diversity of input from the different communities, groups and agencies that have an understanding of the problem situation and a role to play in addressing it
- To develop the partnerships and collaboration (dependent on both willingness and ability) to work together

Creating collaborative learning platforms (shorthand for 'opportunities for working and learning together' – see examples in Box 2) includes consideration of both physical components, such as the location and timing of events, and process components, such as the way in which participants are engaged and conversation is facilitated. The relationship between the formula of an event, those who participate and the quality of the dialogue is now widely appreciated⁶ and there are many examples of platforms for dialogue and learning that have made use of relatively simple low-cost strategies that shift unproductive group dynamics and foster creative input by participants. For example the Watershed Talk project in the Motueka Catchment (2007–2009)⁷ made deliberate use

of photos taken by project participants because it provided a common visual language to share different types of knowledge and experiences. This acted to shift the focus of discussion from the person speaking to what it was they were saying. Also, in contrast to the different status participants in Watershed Talk might have been given in a more traditional meeting forum (as for example professional planners, expert scientists or farmers),

box 2: EXAMPLES OF NEW APPROACHES TO DEVELOPING PLATFORMS FOR COLLABORATIVE LEARNING

Christchurch City Council – communities of practice <http://www.landcareresearch.co.nz/research/sustainablesoc/social/cops.asp>: This was designed as an organisational-level platform to support conversations on cross-organisational issues such as sustainability or planning for the needs of the elderly⁹

Ministry of Research, Science and Technology Dialogue projects <http://www.morst.govt.nz/current-work/science-in-society/dialogue/>: These are four case studies exploring new ways to manage dialogue around contested science and technology issues at national and regional/catchment scale.¹⁰

Watershed Talk: This platform worked with groups of stakeholders to cultivate ideas and action around environmental challenges facing catchment communities¹¹ http://icm.landcareresearch.co.nz/research/research.asp?research_id=68&theme_id=4

communicating through photographic images gave equal authority to all participants in the conversation.

Collaborative platforms are not the same as meetings, although they may include them. Particularly for complex problem-solving strategies designed to work at regional scale, collaborative platforms may be virtual, or based on networks, or based on cross-institutional or sector-based communities of practice.⁸ Different scales require different forms of collaborative platforms.

Social and institutional elements

As discussed above, managing the political/decision-making context in order to support collective learning by all players requires some changes to the current way to doing business. Essentially complex environmental problem solving poses two challenges to the existing social and institutional arrangements around how plans and decisions are made. The first is the ability to integrate knowledge and foster the united efforts of the many stakeholders (see Box 3). Engagement with multiple stakeholders will often take different forms, and occur at multiple points along the decision-making timeline, and is sometimes referred to as 'structural openness'. The second is the ability to deal with the uncertainty that surrounds the situation and the need to learn through by trial and error (however unpalatable the latter might be). Building in flexibility and responsiveness to the decision-making process to deal with uncertainty can be termed 'structured unpredictability'.

Institutional arrangements can often seem immutable and there may not be easy options for doing things differently. Nevertheless if the existing approaches to addressing complex environmental situations are not providing for structural openness and structured unpredictability, then assessing of what it is possible to do differently is required. Questions to explore include:

- How open are institutional arrangements to input from different stakeholders? Are they able to not just incorporate different stakeholder's preferences but also use the different forms of knowledge they hold in order to build a better understanding of the situation?
- How do current institutional arrangements respond to new knowledge that changes the understanding of the problem

or changes the proposed solutions to the problem? For example, to what extent are administrative devices like plans, policies and projects able to respond to changes in understanding that consequently make existing plans or policies redundant and new actions necessary?

- If the current approaches to decision making cannot allow for the dynamism and multiple input required, is it possible to work outside standard arrangements? If so what would

box 3: SUPPORTING ADAPTIVE AND INCLUSIVE MANAGEMENT¹²

There is no simple recipe for changing institutional arrangements to become more adaptive and inclusive as this evolves in different ways suitable to the context of the problem situation, and the experience, resources and abilities of those involved. One successful example has been the long-term work developing an adaptive approach in the high country (1994–2000). The most significant of the programme's high country successes revolve around capacity building and information sharing, and represent a mix of first- and second-order outcomes. For example the programme clearly supported improvements in relationships between conservation managers and farming interests resulting from conflict management exercises.¹³ In the same exercise new ground was broken, by the community inviting a scientist to play a mediating role in supporting better communication and relationships. The Tussock Grasslands Management Information System represents one of the first Internet-based systems to link local and science knowledge.¹⁴ Beyond the high country, the programme can also point to other areas where the Integrated System for Knowledge Management (ISKM) approach has been used to support community-based learning initiatives. These areas include pest management in New Zealand,¹⁵ learning about issues related to oil and gas in British Columbia, Canada,¹⁶ and understanding the links between land use practices and livelihoods around Lake Victoria in Africa.¹⁷ The ISKM approach has also been used as an evaluation framework to look at an environmental health surveillance system in California.¹⁸

be needed to ensure these alternative efforts are able to make a genuine contribution?

Successful examples of doing things using social learning include community-based catchment management programmes (<http://icm.landcareresearch.co.nz/>) However, while these programmes have often included good processes for tapping into knowledge, ideas and energy that were not reached through normal planning processes, they have not been compatible with statutory decision-making arrangements – which has led to frustration for those involved who have seen their efforts undermined.

Lastly consideration has to be given to whether there are power imbalances between stakeholders and where these need to be addressed in order to create an effective process and effective solutions. Stakeholder analysis (see Chapter 25) provides an approach for analysing needs, barriers and opportunities for real participation by critical stakeholders.

Thinking elements

No structured response to complex problem solving can be developed without a facilitated approach to understanding the problem system (systems thinking) and from this determining the core components open to intervention or leverage.¹⁹ Without this, complex problem solving can be hampered by incorrect or incomplete assumptions about the problem definition, or may miss critical knowledge about the problem (e.g. transport planning is connecting people with jobs, goods and services rather than roads).

In recent years there are many structured approaches to systems thinking developed by theorists and practitioners (e.g. Checkland's soft systems methodology.²⁰) These approaches first include a means for capturing information from different sources. This information may be interpreted by different stakeholders in varying ways, in terms of what they think is important or what conclusions they draw from it, so a second core ingredient of systems thinking is a process to enable people to collectively make sense of the information that will build a picture of the important components of the problem system.

Techniques for using a systems approach to problem solving do not have to be highly technical.. Frameworks, pictures

and representations are powerful aids to help people unlock the knowledge they have and discuss this with others. Using such techniques can be described as a form of participatory modelling.²¹ In systems thinking approaches, collective model building is regarded as important (if not more important) as attaining precision in the data and outcomes. Managing dialogue and debate and enabling the participants in the process to incorporate new information into their own context are critical. Proponents argue that following a participatory modelling approach will in itself affect change, as the participants alter their views and become aware of the assumptions and values that are influencing their and their organisation's actions.

Learning elements

Building knowledge about complex problems amongst a collective of different stakeholders is an incremental process.

box 4: MANAGING CONFLICT IS IMPORTANT

A good example of how important it is to understand the underlying causes of conflict was provided by Department of Conservation (DOC) staff as part of their ongoing efforts to protect the black stilt (kaki), a rare New Zealand wading bird. The agency was concerned to gain better access to bird habitat on private land, and to increase private landholder involvement in recovery efforts. However, when landholders were canvassed to ascertain their support for a meeting to resolve these issues, it became apparent that they saw issues over the black stilt as symptoms of a wider problem of 'lack of trust' between farming families and DOC. In response, addressing the issue of access to the black stilt was postponed, and a series of workshops were held to improve relationships between local DOC staff and landholders.²² Common ground was reached during these workshops and a number of positive steps to improve working relationships were identified and implemented. Building trust in this way is one of the main reasons why successful participation processes take time. Importantly, in this case, both parties regarded this exercise as being a first step in a much longer process.²³

It is less a situation of passing on information (common in tech-transfer schemes) than of creating the right environment for participants to actively interpret new ideas to make them relevant to their own situation. In this active meaning-making process, dialogue and even conflict are likely to occur and should be planned for in the process design (see Box 4). This can be addressed by something as simple as changing the venue of a meeting to one less familiar to people and therefore less likely to result in people falling into old habits of interaction, but in some cases it may mean first spending time addressing the root causes of existing conflict.

Researchers who have looked at the different kinds of learning required for addressing complex problems observe a number of critical aspects that can be grouped into three key points:

- First, the learning that takes place must go beyond just revealing the basic social, environmental or physical facts of the problem system. Rather it needs to explore the attitudes, values and relationships that have a critical influence on the situation. This has been termed the 'soft relational and hard factual aspects of analyzing and managing a human-environment system'.²⁴ Another way of putting this is that social learning is about both content (views, ideas, values, information, and data) and process (group interactions, relationships, networks, and ways of problem solving).²⁵
- Second, processes must include learning that challenges fundamental assumptions about the system and consequently contributes to building knowledge about the system as a whole. This is referred to as 'double loop' learning and draws on the organisational psychology work of Argyris and Schön.²⁶
- Lastly, the approach taken should allow for building knowledge through practice and experience. This means treating problem solving as an active experiment – trial and error – 'suck it and see!' This does mean some steps have to be built into the problem-solving process: (1) clarifying what it is that people are trying to learn; (2) identifying markers – i.e. things that will be observed or monitored that will indicate what changes are happening; and (3) establishing a regular process for assessing these markers,

interpreting their meaning and deciding what to do about this. Again this does not have to be a highly sophisticated research approach. Action research methodologies have

box 5: DOUBLE-LOOP LEARNING

Argyris and Schön²⁷ made a distinction between what they termed 'double and single loop' learning which has been widely recognised as making a substantive contribution to understanding how organisations learn and change. In summary; single-loop learning is a simple 'error detection' level of learning that has no implications for the wider overall policies or structures of an organisation. Double-loop learning occurs when the new information results in modification of an organisation's underlying norms, policies and objectives.

For example if a land manager views her enterprise solely in terms of sheep production and notes that the vegetation condition of the land is deteriorating, the action strategy will likely be to try a different grazing regime. In such a case when new strategies are used to support the same governing variable (i.e. the land as a sheep production system) this is called single-loop learning. Another example of single-loop learning might be when funders of research notice that stakeholders are not taking up the research generated from a science research programme. The response might be for the scientists to find a 'friendly' group of people to work with, i.e. those who are happy to acknowledge the scientist as the unquestioned expert.

An alternative response to detection of error is to question the governing variables themselves (double-loop learning). For example rather than try a new grazing strategy, the land manager may choose to take a wider look and question whether the land can continued to be grazed and whether her enterprise could better function as a tourism or forestry system. Equally the scientist may choose to involve appropriate stakeholder groups in a more collaborative approach, changing their role to one of a co-researcher and recognising that the role of 'expert' is more a matter of perspective. These cases are called double-loop learning, and involve more fundamental shifts in people's belief systems and values.²⁸

evolved specifically to enable those who are engaged in some form of work or practice to learn from their experience.

A resource site on Action Research is provided by Bob Dick, Southern Cross University, Australia
<http://www.scu.edu.au/schools/gcm/ar/arhome.html>

Reflection, monitoring and evaluation

In this chapter we have focused on understanding social learning as a composite of elements to support complex environmental problem solving, each with a theoretical basis and experience in practice. However, central to the engine of social learning is 'reflection, monitoring and evaluation'. This means more than simply 'tracking progress'. Addressing complex environmental problems is reliant on in-depth reflection on what is known about the problem system and the implications for action that stem from this, monitoring to uncover what is happening, and evaluation to compare this to desired objectives and outcomes. All three are fundamental to an experimental and adaptive approach to environmental management.

Keen and colleagues²⁹ observe:

Reflectivity in environmental management is an important lever for social change because it can reveal how theoretical, cultural, institutional and political contexts affect our learning processes, actions and values.

They go on to describe the process of reflection as a series of learning cycles – diagnosing what matters, designing what could be, doing what can be done, and developing a deeper understanding of what has worked, what has not, and the significance of this, through evaluation. This process of reflection needs to occur at a range of levels, for instance at a personal and interpersonal level (e.g. between people and groups); at a community level (e.g. in the process of identifying shared visions with a geographic community); and at a social level (e.g. through evaluation of the impacts of laws and regulations by central government).

Building reflection, monitoring and evaluation opportunities into the four design aspects of responding to complex problem

solving outlined in the framework is critical, and there are many options for how to achieve this. For instance in designing and implementing collaborative platforms, stakeholder analysis techniques are useful to both plan for and assess the participation of different stakeholders (see Chapter 25). Also evaluation based on a checklist approach can support group learning about their processes of working together (see Chapter 26).

Further, the framework of key elements in social learning (see Figs 1 and 2) can itself be used to prompt appropriate questioning about how well the process has been designed and implemented. Using evaluation processes that build knowledge about how to improve a programme or situation (rather than evaluation based on accountability and delivery) will advance environmental management/problem solving process as a whole.

SOCIAL LEARNING – ORIGINS AND VALUE TO PRACTITIONERS

Every social theory facilitates the pursuit of some, but not all, courses of action and thus, encourages us to change or accept the world as it is, to say yea or nay to it.³⁰

In this chapter we have deliberately left comments on social learning – its origins and underlying theory – to last. 'Social learning' is a concept with a long history, with divergent theoretical roots, and which appears in widely different contexts. For instance behavioural psychology uses the term social learning to refer to the kind of learning by individuals that happens through observation or interaction with others around them – a form of mimicry.³¹ In contrast, in the fields of planning, policy making and development, social learning has often been used to refer to 'learning about social issues' or 'learning by groups'. In recent times social learning has become a popular term in the literature on natural resource management where it has been used essentially to describe processes of learning and change that involve multiple stakeholders.

As a comprehensive concept, social learning can be a useful framework for maintaining critical observation not

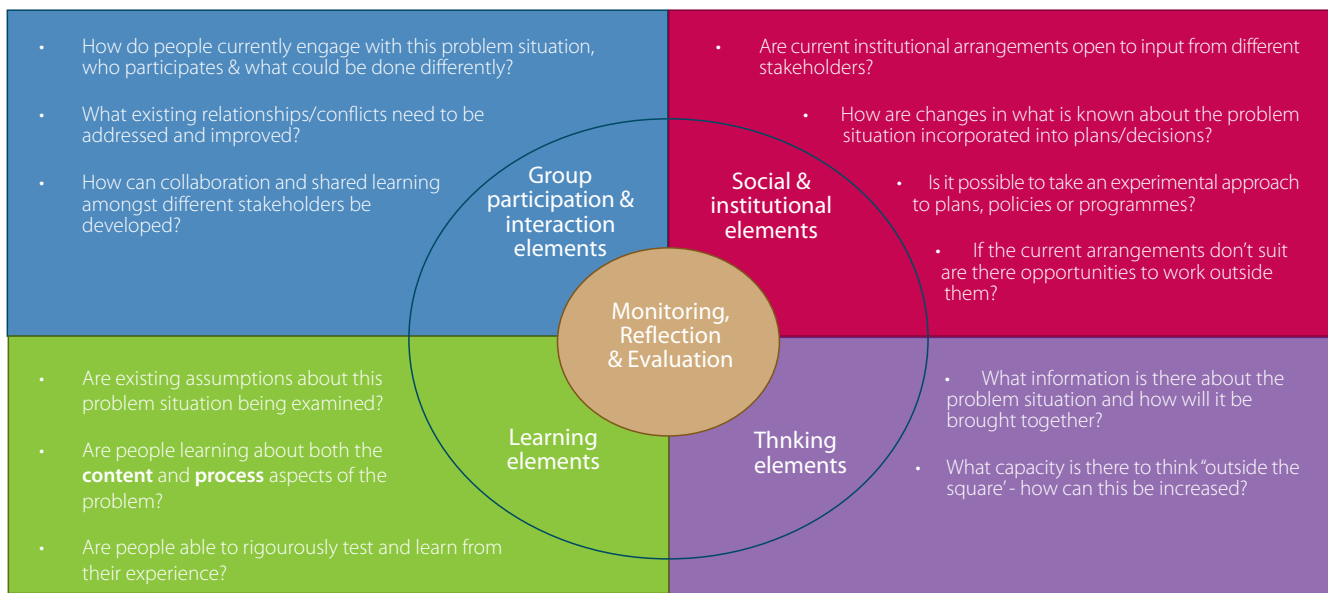


Figure 2 Question prompts to support development of an improved social learning capacity in a problem system.

only on the immediate problem-solving task, but also on the learning and social interchange processes that enable problem situations to be continuously addressed. However, the social learning framework presented here is not a recipe, but rather, as suggested before, a set of ingredients that can be put together in many different ways. Having a better understanding of the critical elements and their relationship to one another is helpful, but the way programmes, or activities, are designed to improve the social learning capacity to address a complex situation is largely a creative one. Moreover, since no problem situation is likely to be the same, this relies on maintaining a watchful eye for what is working and what is not. This watchfulness is the central monitoring, reflection and evaluation element in the diagram, and Fig. 32 outlines some

Presenting ideas from the Watershed Talk project to a group of Tasman District Council staff, ICM scientists, and people from the Motueka catchment community. Photographs were also used in this session to open up discussion.



basic prompt questions that might be used to support an active process of developing and improving the social learning capacity in any given situation.

It is also important to keep in mind the practical limitations that most people actively involved in addressing complex problem situations might face. While it is helpful to think across all the elements of social learning, it may not be possible to work on all at once. In practice, practitioners, planners, policy analysts and environmental managers may choose to use resources at their disposal to improve the social learning potential of any given situation by focusing efforts on one or more of the core elements. For example, they may examine how to improve the structural openness of the decision-making situation or to foster collective learning skills of the key stakeholders in the problem.

Picking the areas that are most amenable to influence and change is a valid strategy in a resource-constrained reality – particularly if the selection of areas is based upon where there are skills that could be used and developed, where there are resources to enable a successful project or change in practice, and where any changes initiated are deemed important to improving the problem situation. Moreover there is still much that can be learnt about each of the component areas individually; the last word has certainly not been written on building collaborative opportunities for new and unfamiliar stakeholders to work together, or how to improve and deepen learning about complex problem systems.

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Sustainability Appraisal

Evaluating proposals for sustainability assurance

CHAPTER 23 : HATCHED

Martin Ward and
Barry Sadler



Summary

- While the principles of sustainable development are established in international and New Zealand law and policy, their implementation remains a major challenge.
- Determining progress regarding sustainability is a critical issue for government agencies when evaluating proposed options. This area – sustainability appraisal – has a large and disparate body of research with many proposed methodologies.
- Here we introduce a framework approach for sustainability appraisal and describe its New Zealand policy application, which brings together information and individuals from the four pillars of sustainability aligned with the four well-beings of the Local Government Act 2002 – social, economic, environmental and cultural.
- The paper briefly outlines some key principles and elements of process before describing a recent application in Canterbury to illustrate stages in that adaptation of the framework. The process is sufficiently robust to merit further use and has potential for wider institutional take-up.

CONTEXT

Landcare Research has been examining various ways of undertaking sustainability assessment since 2001. A wide range of techniques have been explored with varying degrees of success, drawing on accounting frameworks (see Chapter 24), ecological economics and other decision-making processes and as discussed in papers referenced at the end of this chapter. This chapter describes a Sustainability Appraisal Framework developed by Barry Sadler and Martin Ward supported by Landcare Research as applied to a case study in Canterbury.

INTRODUCTION

Sustainable development is difficult to implement in practice (see Chapter 27). A major challenge is how to evaluate progress toward or away from sustainability. This has been the focus of much theoretical and empirical inquiry with a large and disparate body of research and experimentation. Put simply, this work centres on three issues encapsulated as sustainability: of what, for whom, and why?

Policy-makers and advisors must confront questions such as how does the policymaker determine whether or not a proposed set of activities will take the target sector towards a more sustainable state? What approaches and tools can be used to demonstrate a contribution to sustainable development?

These questions lie at the heart of delivering on legal and policy obligations. The Local Government Act 2002 (LGA) requires taking a sustainable development approach to promote the social, economic and cultural well-being of communities. Furthermore, land transport planning and funding decisions must contribute to 'assisting economic development and safety and personal security, improving access and mobility, protecting and promoting public health, and ensuring environmental sustainability' (Land Transport Management Amendment Act 2008).

Central to the challenge is how to develop:

- Practical approaches to integrated analysis that bridge the

policy silos (the art of sustainability appraisal), and

- Conceptual frameworks that bridge the underlying disciplinary paradigms (the science of sustainability appraisal)

In central government, there have been few attempts to formally evaluate policies or programmes to gain a measure of sustainability assurance regarding their outcome, though this is less the case in local government.

Sustainability evaluation, particularly without a legal mandate, is constrained by factors embedded in the structured process of policymaking. Policy advisers have limited experience with sustainability assessment procedures and methods at the policy and programme level (see Chapter 24). Although there are many tools available there are few proven practical frameworks for applying them.

We present a framework for sustainability appraisal and assurance and provide guidance on its use to address policy options.

SUSTAINABILITY APPRAISAL FRAMEWORK

A Sustainability Appraisal Framework approach has been developed for generic application and adaptation to different policy regimes and contexts. It is relevant to New Zealand and enables different entry points and implementation paths for sustainability appraisal. The approach recognises that sustainability appraisal must be adapted to purpose, reflecting the prevailing realities of decision-making including available time. The New Zealand adaptation is the introduction of the cultural pillar recognising the Treaty of Waitangi as a fourth pillar of sustainability (in addition to social, environmental, economic), which corresponds to the four well-beings of the Local Government Act.

It has two characteristics that distinguish it from other forms of impact assessment such as social impact assessment and environmental impact assessment that are commonly restricted to a single pillar and involve a baseline test relating to the current situation. The first is *integrated* decision-making in which social, economic, environmental, and cultural factors

box 1: SUSTAINABILITY AND THE TESTS OF INTERGENERATIONAL AND INTRAGENERATIONAL EQUITY

Intergenerational equity or maintaining development options and opportunities for those who follow requires that the next generation receive a stock of assets (resource potentials, created wealth, human capabilities) that is at least equivalent to our own or preferably greater, taking into account population growth. This is the overall test of whether or not development is sustainable.

Intragenerational equity or improving the well-being of all people, particularly the poor and disadvantaged, requires that they receive an increasingly larger share of available capital assets. Strictly interpreted, this is a contingent principle and a subsidiary distributive test that must be met within the overall test of sustainability.

are addressed simultaneously, and the second is evaluation against a *sustainability framework* derived from international or national policy or strategies.

The application of a sustainability test is undertaken against both or either a *top line* of social, economic, environmental and cultural objectives and targets or norms to aim for, or a *bottom line* of key thresholds or warning signs of things to avoid.

The approach is based on three cornerstones:

- A **'compass' of sustainability aims and principles** for guiding policy options and against which progress can be evaluated
- A **systematic procedure for assessing** the economic, environmental, social and cultural impacts of proposed actions
- A **set of 'rules of the game'** for integrating and weighing different objectives in appraisal and decision making in support of sustainable development

'Compass' of sustainability aims and principles

Building on the 'Brundtland Commission' definition of sustainable development, the sustainability compass uses the concept of capital stocks as a proxy representation of

the *opportunities* that are available to meet present and future human needs in accordance with the principles of intragenerational and intergenerational equity (see Box 1). In this concept, development at the macro or aggregate level is considered to be non-sustainable if net per capita capital wealth is being depleted or eroded, but sustainable if it is being maintained or is increasing (while also reducing intragenerational inequity).

Additionally, the notion of sustainability as a non-declining stock of capital also requires consideration of the mix of different forms of capital or asset categories to be passed on to the next generation. The crux of this issue depends on the extent to which economic, environmental (natural) and social (including cultural) capital are considered to be substitutes or complements to each other in determining future opportunities. This interpretation yields reference levels of sustainability against which development trends or actions may be evaluated (Box 2).

box 2: REFERENCE LEVELS FOR SUSTAINABILITY APPRAISAL

Levels of sustainability that offer a choice of frameworks for evaluating development trends or actions are:

Weak sustainability involves maintaining total capital without regard to its composition and allows natural capital to be freely converted into economic capital and output (governed only by existing environmental policies, regulations and guidelines)

Moderate sustainability requires that attention is also given to the mix of capital stocks with natural capital considered substitutable only up to certain critical limits or thresholds (which if not yet known can be formulated using the precautionary principle)

Strong sustainability means maintaining natural capital more or less at current levels (no net loss) so that losses and damages from development must be replaced or offset in kind (which represents a stringent interpretation of the precautionary and polluter-pays principles)

Moderate sustainability corresponds to the defining principles adopted by Statistics New Zealand for its 2009 report 'Measuring New Zealand's progress using a sustainable development approach'.

To apply these ideas in New Zealand we use capital stock inventories for the policy or activity subject to the sustainability assessment, and identify aspects with intergenerational and intragenerational equity dimensions. To these we assign top and bottom lines. Capital stocks, or assets, are identified under each of the four pillars by drawing on the knowledge and information arising from the analysis of stakeholders' involvement. This process supports collaboration and integration and provides a foundation for practical assessment.

A systematic procedure for assessing proposed actions

A formal procedure is necessary to facilitate systematic analysis of the economic, environmental and social effects of proposed

actions and options. Internationally and nationally, there are well-established arrangements and practices for assessing all three forms of impact separately at all levels from projects to policies. So far, however, there is no widely accepted approach to integrated assessment. Instead there are a number of entry points available for undertaking such a process, including:

- Use an established process such as Environmental Impact Assessment (EIA) or Strategic Environmental Assessment (SEA) and integrate specialised tools for economic, cultural and social analysis
- Conduct parallel streams of economic, cultural, environmental and social assessment, binding together findings at key stages (preliminary integration in scoping, and full integration in final decision-making)
- Rely on an integrative and interdisciplinary methodology such as multi-criteria analysis

Table 1 Illustrative steps in sustainability assessment – what, why, how to evaluate

Assessment step	Procedural focus	Indicative questions
Screening	<ul style="list-style-type: none"> • Establish/confirm need for and level of assessment • Preliminary scan of orientation to and implications for sustainability 	<ul style="list-style-type: none"> • What is the prima facie relationship to Environment Social and Environmental (ESE) goal maxima or safe minima? • Does the proposal include opportunities for contributing to sustainability goals or threats to bottom lines?
Scoping	<ul style="list-style-type: none"> • Scope of issues and alternatives to be considered • Identification of effects on and distance to/ from sustainability targets 	<ul style="list-style-type: none"> • How does the proposal measure up against key objectives and bottom lines? • What major effects and ESE linkages require further analysis?
Impact analysis	<ul style="list-style-type: none"> • Significance of impact • Statement of findings on whether or not the proposal passes the sustainability test and subject to what trade-offs 	<ul style="list-style-type: none"> • What are the likely positive and adverse residual impacts of each alternative? • How significant are these when measured against sustainability criteria? • What trade-offs are still to be resolved?
Decision making	<ul style="list-style-type: none"> • Approval of proposal and terms and conditions • Undertaking ESE trade-offs and weighing gains and losses 	<ul style="list-style-type: none"> • What is the configuration and net balance of gains and losses? • How acceptable are any losses that exceed bottom lines?
Monitoring and evaluation	<ul style="list-style-type: none"> • Monitoring impacts of concern • Evaluating outcomes against sustainability balance sheet 	<ul style="list-style-type: none"> • Are positive and adverse impacts as expected? • Have there been significant unanticipated effects or outcomes?

These approaches are not mutually exclusive and can be combined or modified to the circumstances. Initially to get started on integrative assessment, much can be drawn from EIA or SEA² experience and good-practice guidance for these approaches. The main steps and activities that characterise impact assessment (screening, scoping, impact analysis, decision making and monitoring) can be followed to identify potentially significant adverse social, economic, environmental and cultural impacts using a checklist of questions to gain preliminary insight on their sustainability implications (Table 1).

RULES FOR EVALUATION, TRADE-OFF AND DECISION MAKING

Objectives-led and effects-based criteria are necessary to assist with the determination of significance as the basis for sustainability assurance, i.e. making a policy judgement that the effects of proposals, at a minimum, 'do no harm' or, better still, 'achieve improvements'. Both objectives-led or quadruple top line (QTL) and effects-based or quadruple bottom line (QBL; see Box 3) significance criteria are critical to any assessment consistent with integrated decision-making. These represent the 'high' and 'low' roads to sustainability. For strong sustainability, a stringent version of the precautionary

box 3: THE QUADRUPLE BOTTOM LINE

In New Zealand the term quadruple bottom (top) line has been developed to accommodate cultural issues and the notion of cultural capital especially as it pertains to the Treaty of Waitangi. In particular it includes the principles of Kotahitanga (Partnership), Kaitiakitanga (Protection) and Urunga-Tu (Participation), which provide guidance, not only for government but also for business, about the potential for a profitable partnership with the indigenous culture.

In Australia the fourth capital is taken to be corporate governance; while elsewhere it has been interpreted as a spiritual dimension.

In the present case, we are taking the New Zealand definition.

approach should be applied to assess major proposals with potentially significant impacts.

In any operational form, applying the sustainability test and determining the eligibility of a proposal will be a subjective, qualified exercise. It will depend, in part, on the level of sustainability that is elected as a reference standard (i.e. weak, moderate or strong as in Box 2). Guidance for both top and bottom lines for environmental capital at national level may be found in National Policy Statements and National Environmental Standards prepared under the Resource Management Act 1991. At regional and district level, policy statements and plans offer guidance, and iwi management plans where they exist may assist with aspects of cultural capital. For social and economic top and bottom lines, Community Outcomes documents and long term council community plans give guidance.

For sustainability appraisal to work in this way a number of basic criteria and rules should be followed:

1. At all stages of decision making, **priority should be given to options and actions that do the most 'good'** than to those that do no harm, and finally to those that have some adverse effects (but which still fall within acceptable levels). This protocol is implicit in the work of the World Bank and UNEP, amongst others, and describes how goal optimisation (top lines) and safe-minima standards (bottom lines) can be applied. In order of choice, first seek 'quadruple win' packages that will have lasting benefit, second look for options that maximise net gains without any major adverse effects, and third accept options that have modest net gains but that avoid potentially serious adverse effects.
2. In principle, **all other configurations of choice would be unacceptable** within a sustainability framework. In reality, to adhere strictly to this principle is not possible, politically and analytically. The process of identifying and tallying gains and losses, and undertaking the necessary trade-offs, is much messier and far more indeterminate than implied here. A 'best practicable sustainability option' is therefore sought to satisfy important objectives in all categories while avoiding critical thresholds or bottom lines.

3. On some level, **hard choices and trade-offs are an inevitable part of decision making**. This task must be confronted rather than assumed away. A key to do so is to place the burden of proof on the proponent for all trade-offs that assume potentially major or significant adverse effects can be mitigated. This presumes that such effects are unacceptable unless their remedy can be substantiated.

CASE STUDY

During 2008 and 2009 the Sustainability Appraisal Framework approach was tested in relation to policy and planning issues under a series of ad hoc arrangements and opportunities. The initial test was with a policymaking and planning group drawn largely from central government (Wellington) and planners and stakeholders at local government level (Nelson). It took the form of a 'retrospective' sustainability appraisal of alternative transport corridor routes. With some modifications, it was applied to the Canterbury Water Management Strategy to support its development and to assist in the choice of a preferred option from four selected strategies (see also Chapter 21). These tests identified four aspects of the approach to take account of when designing an application:

1. Importance of identifying the regional asset base for the proposed development as an anchor point for the process and participants
2. Need for participants to understand capital theory and relate it to levels of sustainability
3. Availability of principles for sustainability direction in policies and plans across all pillars, and
4. Necessity of strong participation and information from sectors representing all pillars of sustainability

The Canterbury case study

The objective was to identify the option or combination of options that was the best fit with a sustainable development objective. Participants included the Mayor of Ashburton representing the Canterbury Mayoral Forum, councillors and senior technical staff from district and regional councils, and senior representatives from Ngāi Tahu, the Chair of the District

Health Board, the farming community and recreation and conservation NGOs. Social planners were included. This group, numbering 22 in total, included rural and urban perspectives and a range of views on water use, most firmly held.

The sustainability appraisal was undertaken over two days in workshop format comprising a series of linked activities involving all the participants, set out below (Box 4). Participants were presented with provisional lists of capital assets organised under economic, environmental, social and cultural pillars of sustainability (Table 2). This was prepared in advance with assistance from key informants including resource management professionals from the local iwi, Ngāi Tahu. While the LGA recognises Māori values as part of cultural well-being, the Ngāi Tahu resource professional advised that Māori assets should be recognised across all four pillars of sustainability

box 4: SUMMARY OF CANTERBURY WATER MANAGEMENT STRATEGY SUSTAINABILITY APPRAISAL PROCESS

1. Selecting a level of sustainability to reference trade-off decisions between stocks of capital assets
2. Compiling, annotating and prioritising the capital assets involved in the management of water resources in Canterbury
3. Preparing time–space analyses to record sub-regional and short- and long-term (intergenerational) impacts
4. Reviewing and revising a set of evaluation criteria in four sustainability pillar groupings previously developed by a group of experts and officials
5. Agreeing and recording safe minima and desirable objectives (quadruple top and bottom lines)
6. Scoring each option using evaluation criteria
7. Considering options on a sub-regional basis for the best overall outcome

The majority of the work was done in four small groups established to ensure a good representation of technical, regional and subject knowledge in each group

and that an opportunity for non-Māori cultural assets to be included in the culture pillar list should be provided.

Where the approach is applied in less time constrained

circumstances the asset list would be compiled by participants from scratch. An effective approach to this phase of the work is to divide the participants into four groups each allocated the list of capital associated with one pillar and charged with

*Table 2 Provisional 'asset' list for water management in Canterbury
(in strict terms this list includes some processes and outcomes in addition to assets)*

Social (human and social)	Economic (produced and financial)
Trust in institutions/processes	Schools, community halls, etc.
Sense of community/place	Roads, bridges
Whanaungatanga	Dams and impoundments
Informal communication networks	Electricity generation plant & lines
Local knowledge	Irrigation infrastructure
Physical health of people	Water treatment & distribution infrastructure
Mental health of people	Farms (+ stock & machinery)
Skills in communities	Irrigated
Manaakitanga	Irrigatable
Arable farming knowledge/skill	Public finance
Dry stock farming knowledge/skill	Private finance
Dairy farming knowledge/skill	Ngāi Tahu finance
Communal decision-making	River-based tourism business
Environmental (natural)	Cultural
Air	Regional identity
Groundwater free from contaminants	Tastes (music, art, food, dress)
Surface water (at ecosystem sustaining flows)	Whakapapa
Mauri	Sense of belonging
Reserve land (DOC estate)	Attitudes and dispositions
Native bush in sustainable state	Customary rights
Native birds in sustainable populations	Sense of time
Native bird habitat	Culture and traditions
Native fish in sustainable habitat	Ahi kaa
Introduced fish	Language and linguistics/te reo
Coastal sediment budget	Tikanga and kawa
Whenua	Mana and rangatiratanga
Soils	Monuments and significant historical sites

amending the list as necessary. They then identify any assets that are particularly important for intergenerational and/or intragenerational equity. The groups rotate to review and amend the capital asset lists prepared by the others. Finally, individual participants choose the most important assets under each pillar for sustainability evaluation.

For a rapid examination of intergenerational dimensions a simple time and space matrix can be used such as the Netherlands sustainable development strategy model in Table 3. Participants record the anticipated impacts of the proposal on the assets in each of the four pillars in the short and long term and for future generations. While quite subjective in parts these questions challenge assumptions and knowledge to at least identify uncertainties in a way that other assessment approaches seldom do.

The next step is to assemble a set of sustainability evaluation

criteria. In the time-constrained CWMS workshop this step was accelerated by producing a comprehensive draft in advance and using the workshop time to amend it based on the preceding stages of the workshop. A five-point scale was adopted: -2, -1, 0, +1, +2, with detailed scale descriptors.

The next and most critical stage is to identify the safe base-minima (quadruple bottom line/QBL) and objective maxima (quadruple top-line/QTL) for each criterion. These are the sustainable scale limits for each criterion for this sustainability appraisal. Capital substitutability is a critical concern at this stage and the irreversibility of environmental capital needs to be at the forefront of the participants' thinking for this work. Where information is lacking, a more precautionary position is selected.

Table 4 illustrates the scale descriptors for this particular work and the position selected for the base minima (oval) and top line (oblong).

Table 3 Space and time matrix

SCENARIO	Economic	Environmental	Social	Cultural
Sub-regionally & short-term				
Regionally & long-term				
Later, to safeguard future generations				

Table 4 Example of quadruple bottom and top lines

Criteria	Brief description	Scale descriptors for impacts (vis-à-vis current state)				
		Strong negative impact	Moderate negative impact	Neutral impact	Moderate positive impact	Strong positive impact
		-2	-1	0	1	2
Aquatic and Riparian Biodiversity	Aquatic and riparian indigenous biodiversity, including key species	Rapid or extensive reduction of biodiversity including loss of key species	Reduction of biodiversity in some areas and/or loss of key species	Biodiversity and key species maintained at current levels	Recovery of biodiversity in key areas and for key species	Extensive and sustained recovery of biodiversity and survival of all key species ensured

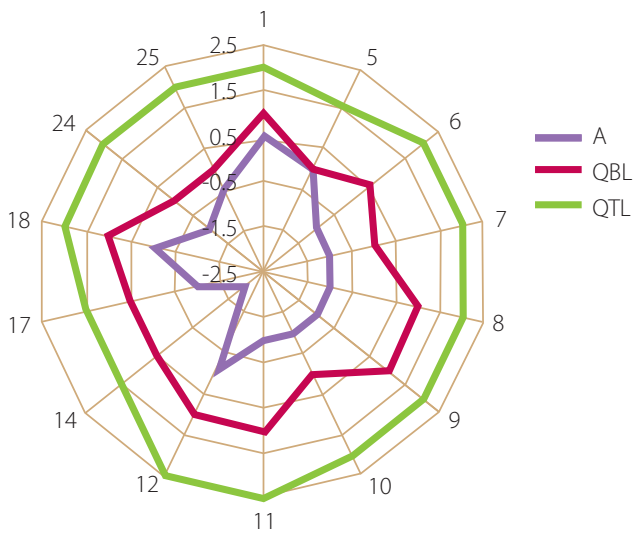


Figure 1 Option A – scored criteria

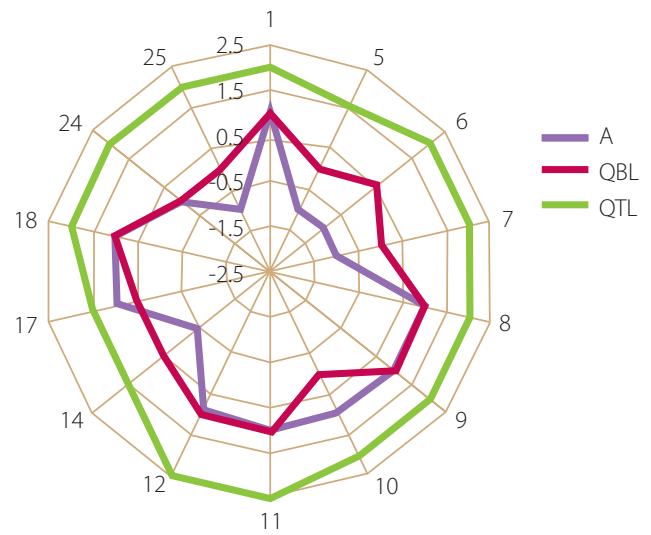


Figure 2 Option B – scored criteria

The final step in the CWMS sustainability appraisal workshop was the scoring of scenario options. Based on the evaluation criteria scale, each completed criterion had a top line position number, a bottom line position number and a score. Spider diagrams illustrate the scoring of options with reference to the bottom and top lines. Figures 1–2 illustrate results for two scenarios. Score positions are shown as a black line in relation to the bottom (red) and top (green) lines.

The Sustainability Appraisal of the Canterbury Regional Water Strategy delivered a clear result in as much as one option (A) did not meet the sustainability criteria adopted for the work and one option (C) scored much better than the other two. This was a considerable achievement for a very compressed process, and was judged a success by the participants whose independent evaluations commented positively about the process.

NEXT STEPS

The formative use in New Zealand of the Sustainability Appraisal Framework approach suggests it could be adaptable and effective for regional-level application on complex public policy proposals with sharply contrasting dimensions. The use of multidisciplinary teams to identify and agree sustainability safe minima for maintaining capital stocks anchors the work and is particularly effective for achieving consensus around sustainability objectives.

The successful application in a two-day workshop setting demonstrates the opportunity to involve time-constrained senior officials and decision-makers in practical sustainability appraisal. The effective application of the Sustainability Appraisal Framework approach in less time constrained circumstances is anticipated. Furthermore testing and possible further development of trade-off tools remains to be done, while application to corporate decision-making and/or strategy development remains an untested opportunity for which modification of the approach would be anticipated.

WANT TO FIND OUT MORE?

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For the Author's contact details see page ii

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Getting under the bonnet

How accounting can help embed sustainability thinking into organisational decision making

CHAPTER 24 : HATCHED

Michael Fraser



Summary

Sustainability Accounting can:

- Assist organisations 'to get under the bonnet' and explore the wider impact of their decision making on the different dimensions of sustainability
- Facilitate the inclusion of a broader group of people in the decision-making process by including numerical, textual and pictorial material
- Facilitate debate as to what 'sustainability' means and generate ideas and discussion that might otherwise have been left out of the decision-making process
- Operationalise what sustainability means to the organisation. This can be rewarding in terms of new ideas generated, but challenging because sustainability may be in tension with existing organisational practices

INTRODUCTION

There is widespread recognition that change is needed to address unsustainable organisational practices that cause social and environmental harm. For many people the idea of accounting is not synonymous with facilitating change because it elicits images of a technical, value-free, and at times dry business activity. However, closer exploration of accounting yields a field of study and practice that performs an unseen but powerful role in the way people think and act. For example, the way an organisation uses its resources has social, environmental and economic consequences that exist far beyond the immediate business.¹

Understanding the relationship between the use of organisational resources and social, environmental and economic consequences is crucial.¹ Sustainability accounting is the use of accounting tools to provide the linkage between organisational activities and the pursuit of sustainability by using accounting tools. The effective use of accounting tools would ideally help people to better understand the wider impacts of their decisions and to have more accountability for the way resources are used.

Examples of new accounting tools developed over the last 15 years include full cost accounting, sustainable cost calculations, ecological footprint calculations, corporate social responsibility, sustainable development, and triple bottom line reporting. One of the most recent sustainability accounting tools trialled within a UK and New Zealand context is the sustainability assessment model (SAM).

The SAM was developed by Professor Jan Bebbington, in conjunction with British Petroleum (BP) and Genesis as a tool to incorporate sustainability considerations into organisational decision-making (within a UK setting).² In the BP and Genesis project, it was suggested that the SAM made the sustainability impacts of various projects' decision-making visible.³

This bridgepiece follows the application of the SAM within a New Zealand context and reports on the findings. These findings are particularly relevant for other organisations who are considering sustainability initiatives.

WHAT IS THE SUSTAINABILITY ASSESSMENT MODEL (SAM)?

The SAM was derived from a body of work known as full cost accounting. The idea of full cost accounting is to consider a broader range of impacts that are a result of a particular action being taken (or in some cases, not taken). Broader accounting aims to make previously external costs (i.e. costs imposed on people, society and the environment) more visible to decision-making and thereby change organisations' decision making approach. Full cost accounting calculations may, for example, include employee stress and environmentally harmful emissions in the production of a product.

The following example of a SAM was developed by BP, Genesis Oil and Gas and the University of Aberdeen as a way of including costs not previously considered in decision making and highlighting the interrelationships between them. The example is an oil field development where the SAM was applied by following four generic steps.

FOUR GENERIC STEPS IN CONSTRUCTING A SAM:

- Identify the directly controllable activities for the scope of the project (in this case oil field development)
- Identify the full life-cycle of the activities recognised in the project defined above (this might include exploration drilling, installation, production and decommissioning)
- Collect activity data and categorising into economic, resource use, environmental and social
- Monetise the activities and externalities in each of the categories

The results can be graphed to produce a 'SAM profile' indicating the positive and negative impacts resulting from carrying out a project (Figure 1, overleaf). Anything graphed above the line is considered to have a positive impact and anything below the line is considered to have a negative impact. A SAM profile requires those constructing it to think about what a sustainable project might look like when profiled. Some teams constructing

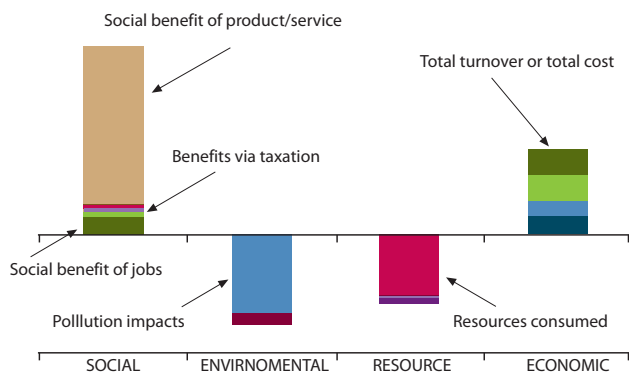


Figure 1 A SAM profile.

SAMs for their projects suggest that if the net difference of all the categories (i.e. economic, social, environmental and resource) is positive then the project is sustainable. However, some project teams may define a project as unsustainable if any of the categories fall below the line. For a full discussion of SAM terminology see Bebbington.¹

The SAM has been applied in a number of organisations across a wide variety of projects.⁴ The projects in New Zealand include new social housing developments, Māori welfare initiatives, waste assessment and several applications in a city council. The SAM has been applied both internationally and nationally and within private and public organisations. This study focuses on the application within a New Zealand city council⁵ to demonstrate the practical operation of the SAM.

SAM: A NEW ZEALAND CITY COUNCIL

The SAM was applied to the New Zealand city council as part of the 'Building Capacity for Sustainable Development' Foundation for Research, Science and Technology (FRST) project. The objective of the collaborative research project was to explore the issues faced by society in transitioning to a more sustainable way of living. More specifically, the SAM was applied to satisfy the sub-objective of developing new sustainability assessment tools within organisational settings.

A city council was the first site of six within the FRST project where the SAM was applied largely to infrastructure projects. The council consumes significant resources, employs in excess of 2000 people and undertakes large infrastructure and social services projects. A key motivation in applying the SAM within

the council was the amendment of the Local Government Act (LGA 2002⁶). Under this legislation councils must promote (and report) the social, economic, environmental and cultural well-being of their communities. Such a legal undertaking meant that the term 'sustainability' had to be operationalised rather than keeping it as a high-level policy objective. The SAM was identified as a mechanism capable of assisting with the new legal requirements and embedding sustainability in organisational activities.

One of the early applications of the SAM was a community gardens project in which the council was deciding whether or not to sell a piece of land. The council property unit had performed a cost-benefit analysis and recommended selling the piece of land based on revenue that would be acquired from selling the land. A SAM was applied (see Figure 2), which took into account benefits derived from the garden that had remained unquantified under the cost-benefit evaluation. These benefits were primarily 'social benefit' and employment. The social benefit category included items such as a reduction in health costs (cost of obesity, mental health, etc.), educational benefit, (e.g. after-school holiday programmes), culture and identity, and crime prevention. The jobs category included the council's staff to maintain the grounds.

After presenting the SAM to the elected representatives, a decision was made to retain the community garden. The SAM, as an account that provided a more holistic picture of the community garden, was credited by a number of staff as being crucial in retaining the site. A view typical of many of the staff involved was voiced by a council operations manager:

"What you have done with the SAM is said 'no it does have a value and this is the value of it' and you really did turn around the decision. It really would have been developed if it had not been put through a SAM because there is no other way of defending it."

The process of constructing and representing the SAM to the elected representatives had impacted the decision-making

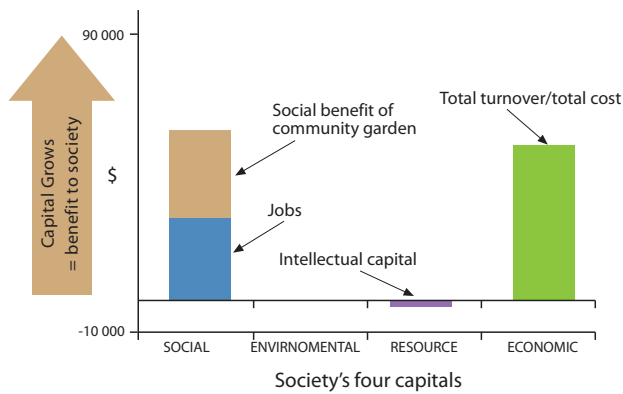


Figure 2 Community gardens' SAM profile.

process within the council community gardens project. To understand how this occurred it is necessary to explore the SAM beyond a merely technical description of its components.”

HOW DID SAM MAKE A DIFFERENCE?

The application of the SAM to a community gardens project changed the decision-making process by bringing sustainability onto the balance sheet or bring[ing] it in a way that can be assessed, discussed and looked at (Project Manager). The first step in applying the SAM involved the project team discussing what elements should be included. Employment was one of the first elements raised for inclusion in the community gardens SAM and discussion turned to the type of jobs created. As a site for community composting the type of jobs that might arise involved unsociable hours, hazardous activities and low pay. This in-depth discussion was not considered likely to arise under previous evaluative models and provided a greater understanding in the decision-making process. The act of thinking about what should be included in an account was viewed favourably by those involved because it gave greater insight into the decision being made.

The process of raising the various elements that were to be included was assisted by the SAM acting as a frame of reference. Many of the elements included in the SAM were proposed over several meetings where the SAM was drafted and represented. This ongoing presentation meant that the discussions from the previous meeting were not lost and could be further developed in the following meeting. The time between meetings gave people a space to reflect on the issues raised and think about how they interrelated.

Using the SAM as a point of reference also facilitated the involvement of a broader group of people. Instead of restricting conversation to accountants and members of the council project team, additional people were included (e.g. people who worked in the garden, waste managers and the sustainability co-ordinator) because they were needed to assist in understanding elements typically outside the accounting area of expertise. Using the SAM as a framework facilitated this broader group of people to have a conversation where everyone could engage in a common language.

The multiple presentation of data enabled a broader group of people to participate in the decision-making process. The community gardens SAM was presented in pictorial, numerical and general language forms. The pictorial presentation was viewed most favourably because participants felt this provided the best way to understand the interrelationship between the various elements. For example, the inclusion of composting waste activities meant that employment was considered a positive benefit. However, the low-quality jobs and hazardous nature meant that negative aspects such as injury must also be included.

The pictorial nature of the SAM profile enabled the two options (keep the garden or sell the land) in the community gardens project to be visually compared. In other applications of SAM where project decisions could have taken several directions, it was possible to model each scenario simultaneously. Applying the SAM over two or more scenarios provided the opportunity to ask 'what if' questions.

During the course of the discussions, viewpoints of what the term 'sustainability' meant were frequently referred to. It was discovered that council operational staff typically held different views on what sustainability was and how it should be operationalised within the council in comparison to senior managers. Operational staff thought that sustainability initiatives should focus on social and environmental impact whereas senior staff exhibited more of an economic view. As a result, senior staff believed that sustainability initiatives were good things to do, but social and environmental aspects should not detract from the financial position of the council.

The discussions that arose during the application of the SAM within the council led to questions about the angle SAM was approached from. The SAM differed from previous accounting tools in two key ways. First, it was a forward-looking account of interrelated negative and positive impacts a project decision might have.⁷ Secondly, these impacts were not limited to the organisation but considered as to how they might affect wider society. For example, employee salaries were viewed favourably because this was a contribution to society. Most people had only been involved in producing an account that viewed all aspects of a project from an organisational point of view.

The SAM made assumptions about sustainability more visible and as a result highlighted the different opinions (e.g. what sustainability was and how it should be operationalised) among staff. While the SAM acted as a catalyst for surfacing what sustainability meant to the council, it also opened up a source of tension and challenged the high-level rhetoric about the council's position on sustainability. The increased ability to question aspects of performance meant that staff within the council could no longer make valid claims about

THE SAM 'BROUGHT SUSTAINABILITY ONTO THE BALANCE SHEET' BY:

- Facilitating discussion about elements that might not have otherwise been included such as education and health benefits
- Facilitating the discussion of interrelationships between the various elements, for example increased crime and decreased access to community facilities
- Providing a frame of reference for ongoing discussion
- Presenting the elements of an account in different ways so that people could reconceptualise the project
- Providing a space for people to think about and debate what sustainability was and how it related to the specific project decision

being sustainable without reference to a more detailed understanding of its meaning.

IMPLICATIONS

The implications arising from this experiment with a SAM can be considered within three broad categories:

- Implications for policymakers
- Implications for legislators
- Implications for educators

IMPLICATIONS FOR POLICYMAKERS

A successful policy will be multifaceted with the SAM (or similar assessment tool) being an important tool; however, it will be insufficient on its own to embed sustainability practices within an organisation. Other tools and processes such as the inclusion of specific performance indicators within job descriptions and integration of sustainability initiatives into organisational strategy and planning activities will also be needed.

The SAM had the greatest influence in situations where there was financial support from the highest levels in the organisation. Applications of a SAM with limited resources from senior management were often viewed more as a compliance exercise and the SAM profile (as depicted in Figs 1 and 2) as an add-on. However, applications that received higher levels of financial support from senior management viewed the construction of the SAM as being the most valuable part of the process. Viewed in this light the SAM can be considered a 'conversation starter' rather than an unquestionable accounting output. People who led SAM implementations required skills to initiate and broaden these conversations. For example, effective facilitation began with ensuring team members understood both the technical requirements of the SAM (i.e. what data were required) and the overarching purpose (to broaden thinking on sustainability issues with respect to project decision making).

The most challenging aspect for organisations applying the SAM model was the emergence of unexpected results. This

occurred in several applications and the responses were mixed. Unexpected results sometimes prompted further discussion and a reconceptualisation of the project. Other unexpected results abruptly closed conversations down.

Policymakers need to be clear from the outset as to why sustainability is an important feature and be prepared for results that highlight just how unsustainable current organisational activities might be. These can provide important insights as to where limited funding can make the biggest difference.

Policymakers must seek adequate resources to accompany any policy that makes use of sustainability assessment tools. Traditional organisational accounting is highly standardised and has been streamlined over many years of use. By contrast, tools such as the SAM are experimental and consume significant resources. Any process that involves more people will take longer and cost more.

IMPLICATIONS FOR LEGISLATORS

Despite the influence of legislation from central government serving as an important starting point in embedding sustainability into organisations, a word of caution must be raised on two grounds. First legislation is only one facet, and to rely on one mechanism is to almost guarantee failure. Secondly, legislation, despite being a widely recognised lever in inducing desired behaviour(s), does not have a direct one-to-one relationship with the intended outcome. How legislation is monitored and enforced is of significant importance because it provides a sense of legitimacy for the pursuit of sustainability initiatives.

In the case of the council, the LGA (2002) was implemented in a phased manner. Councils were given a chance to implement activities and reporting mechanisms prior to the full legislation taking effect. This phasing in of how councils would be audited occurred after this research took place. The risk is that requirements embodied in the legislation (including a high-level use of the word sustainability) may allow councils more room to evade the accountability relationships intended by the legislation.

Meeting the needs of legislation provides an essential platform from which individuals within the organisation can initiate organisational change to embed sustainability or, at the very minimum, legitimately question unsustainable practices. The capacity to do so is likely to require some external motivation, individuals who are capable of understanding the role their organisation performs within a broader context, and the mechanism(s) to bring about organisational change. Who these individuals are, the capabilities they possess and where they might be educated can be considered challenges educators are now faced with both within formally recognised education programmes and informal organisational development programmes.

IMPLICATIONS FOR EDUCATORS

A cursory glance at any number of tertiary education providers will highlight an increasing number of sustainability programmes. Accounting educators that recognise the need to provide a broader account to a wider group are no exception. Traditionally, accounting students were good technical experts who could follow a myriad of rules and produce a quantitative statement. To a large degree, this line of focus on frameworks and rules takes up a large part of an accountant's study, but it is no longer considered sufficient.

Accountants now and in the future have to recognise their role as one of providing information to help people understand the consequences of organisational activity in alignment with various societal values and concerns. Accounting programmes will need to place a greater emphasis on dealing with a higher level of uncertainty and increasingly sophisticated measures, and to reflect on how this might be communicated to a broader group of people.

Research conducted to date in the application of SAMs in New Zealand suggests that accountants do not fare well with respect to the above required attributes. Reasons cited include not being trained to deal with social and environmental concerns and not having enough resources even if they wanted to support such applications. Whilst a number of accountants were supportive and found the applications an interesting

IMPLICATIONS FOR POLICYMAKERS CONSIDERING THE USE OF SAM:

- Sustainability assessment tools are a necessary but an insufficient tool on their own to successfully implement sustainability policy
- Successful SAMs were viewed for what they added to the decision-making *process*, not the final output of 'an answer'
- Unexpected results provide a good opportunity for organisational change
- Sustainability assessment tools can be resource intensive
- SAM applications motivated by legislative requirements must have adequate monitoring/audit
- Selecting adequately skilled individuals to lead SAM applications is a significant contributor to favourable results

intellectual exercise, some did not believe the results were objective. Such an argument might be 'true', but could also be launched against accounting methods already in use, for example, measures of goodwill and depreciation might also be considered subjective.

Many of the people who led the application of the SAMs had little or no formal accounting education. With the launch of the Sustainability Special Interest Group by the New Zealand Institute of Chartered Accountants and an increase in exposure during tertiary education it is hoped that accountants might be able to provide more guidance on assessing the sustainability impacts of an organisation.

SAM AND THE FUTURE

Sustainability is inherently concerned with exploring the way people think as individuals, organisations and as communities. Future research will focus on how accounting tools may affect behaviour at different levels in the organisation. For example, in some applications the process of applying the SAM has a significant influence over the project decision (such as the

community garden application detailed above). In other applications the SAM produced a result that was unanticipated and the researchers were requested to abandon the application due to time and budget pressures exerted on the project.

Further applications of the SAM might consider different organisations and sectors (e.g. private) in order to explore the interrelationships with accounting tools and organisational change. Reflecting upon why SAMs had little or no influence in some project decisions might also be equally as worthwhile as focusing on SAMs that did appear to influence outcomes. Such a reflection might provide insight as to why some managers treat SAM as a box-ticking exercise, whereas others viewed it as an enabler to think more deeply about organisational activities as a whole.

CONCLUSIONS

Overall, the experimentation of sustainability assessment tools made possible with the *Building Capacity* FRST project suggests that sustainability assessment is a useful but challenging initiative. In the case of the council, the application of the SAM provides an example of how an accounting tool may assist in the moving towards a more sustainable (or less unsustainable⁸) way of operating. In the community gardens example the SAM highlighted factors not previously considered to enable people to be more informed about the full impact of a decision. The pictorial nature of the SAM, and the process followed, enabled this deeper understanding of the decision being made by allowing people to ask 'what if' type questions. In summary, accounting tools such as the SAM allow people to 'get under the bonnet' and explore various scenarios before the impact is irreversible. It is an accounting tool that looks forward not backward.



However, not all aspects of the SAM application went unchallenged. The resource-intensive nature, the emergence of unexpected results and the challenging of high-level rhetoric surrounding sustainability were at times met with resistance. It could be argued that discussing what sustainability is, and how it should be operationalised, is exactly what is needed. Further discussion on unexpected results produced as a consequence of applying the SAM might also provide equally useful organisational insight.

Accounting may be only one tool amongst many that can promote sustainability thinking within organisations. However, the experience of the community gardens SAM (along with others) indicates that accounting can make a powerful difference during the analysis and decision-making processes. Policymakers should also consider further how accounting tools such as the SAM might facilitate a change in the way that members of an organisation think and behave in the pursuit of more sustainable alternatives.

WANT TO FIND OUT MORE?

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- 8 These two terms do not have the same meaning. The term 'less unsustainable' is more apt for this situation because it infers we are currently operating in an unsustainable manner whereas 'more sustainable' may infer we already possess a level of sustainable activity

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Stakeholder analysis

CHAPTER 25 : HATCHED

Will Allen and
Margaret Kilvington



Summary

- The increasing scope and ambition of many environmental and resource initiatives — e.g. integrated coastal and catchment management – requires a commitment from management agencies to collaborate with a diverse range of stakeholders. These stakeholders will have different interests and varying expectations from any collaborative initiative.
- Stakeholder analysis is a way to identify a project's key stakeholders, assess their interests and needs, and clarify how these may affect the project's viability. From this analysis, programme managers can make plans for how these aspects will be addressed.
- Stakeholder analysis also contributes to project design by identifying the goals and roles of different stakeholder groups, and by helping to formulate appropriate forms of engagement with these groups.
- While stakeholder analysis is essential at the beginning of any multi-stakeholder initiative, it can also be used for ongoing assessment of the effectiveness of key relationships and communication strategies.
- It is therefore a simple but critical tool in managing the relationships within a long-term resource management programme.

This chapter outlines a stakeholder analysis tool to support resource management projects. The stakeholder analysis tool helps resource managers identify key stakeholders, determine their interests and establish strategies for their involvement within a project.

INTRODUCTION

Stakeholders are persons, groups or institutions with interests in a policy, programme or project. Their involvement may be critical in fully understanding the problem and implementing solutions, they may represent a possible barrier or threat, or they may simply have a democratic right to be involved because project decisions will affect them.

Stakeholders can be divided into two groups:

- Primary stakeholders who are the immediate communities of interest, for example the landowners in a water catchment.
- Secondary stakeholders (intermediaries) who are the intermediaries in the process, and may include the local authorities and other institutional bodies. Often these groups do not think of themselves as stakeholders because they feel they are in control of the problem-solving process.

A rule of thumb for ensuring that key stakeholders have been included in the process is to question whose support or lack of it might significantly influence the success of the project. This is a particularly good test for expert and activist groups, both of whom commonly claim to speak for a wider representation than may be the case, and whose capacity to articulate their concerns might easily cause other groups to be overlooked.

Stakeholder analysis looks at both the stakeholders and the relationship between them and the project. Different types of relationship need different kinds of processes; some need more input to maintain them. For example a stakeholder that most projects will have is the group (or groups) responsible for funding the work. The funding stakeholder/s may have well-articulated ways of relating to the project (e.g. through reporting procedures, or financial statements) but also may require ongoing feedback on the progress that is being made in order to ensure their continued confidence, particularly if the project is long term and aimed at broad outcomes. Stakeholders similarly can be quite specific, such as individuals or geographically identifiable groups of people (e.g. local

landowners in a catchment). Others are more 'amorphous' (e.g. 'the community') and we have to think more laterally about how we are going to establish and maintain a relationship with them. Still others may seem easy to identify in the first instance, such as the tangata whenua of an area, but may present new challenges when thinking through how to develop a relationship between them and the project. Managing all these relationships take time and skills and project managers need to determine whether the project has the capacity to build the relationships required to carry out the work, and if not how they will be built.

WHY A STAKEHOLDER ANALYSIS?

A stakeholder analysis is just one (albeit usually the first) step in building the relationships needed for the success of a participatory project or policy. The analysis provides a starting point, by establishing which individuals and groups to work with and setting out an approach so this can be achieved. In this way a stakeholder analysis also helps project-initiators to assess the social environment in which they will operate. In particular a stakeholder analysis can be used to:

- Identify and define the characteristics of key stakeholders
- Draw out the interests of stakeholders in relation to the purpose of the project or the problems that the project is seeking to address (at the project identification stage)
- Identify conflicts of interests between stakeholders, to help manage such relationships during the course of the project
- Help identify relationships between stakeholders that may enable 'coalitions' of project sponsorship, ownership and cooperation
- Assess the capacity of different stakeholders and stakeholder groups to participate
- Help assess the appropriate type of participation by different stakeholders, at successive stages of the project cycle, e.g. inform, consult, partnership – all of these have different possible models of communication.

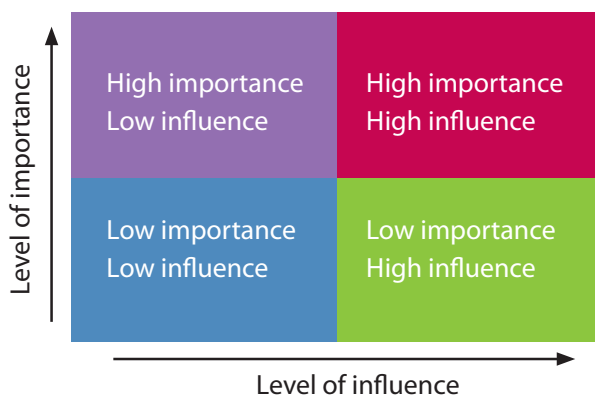


Figure 1 A stakeholder mapping matrix.

- What benefits or risks are there likely to be for stakeholders?
- What resources are the stakeholders likely to commit to the project?
- What other interests does the stakeholder have that may conflict with the project?
- How does the stakeholder regard others on the list?

CONDUCTING A STAKEHOLDER ANALYSIS

Before conducting a stakeholder analysis, the project objectives need to be clearly identified. With this done, more clarity can be developed around who the key stakeholders are, and how they can best be involved. This can be seen as a three-step process.

Step One: Identifying major stakeholder groups

Identify and list stakeholders. Often it is better to do this with the help of a small group of people. Stakeholders can be individuals, groups, communities, organisations, etc. Breaking stakeholder groups into smaller units (e.g. men and women, ethnic groups, locality, organisational departments) will often assist in identifying important sub-groups who may otherwise be overlooked.

Stakeholder analysis is aimed at enhancing stakeholder involvement in participatory processes prior to their actual involvement in decision-making activities. Thus stakeholders do not usually participate in this process. However, since stakeholder identification has consequences, analyses are likely to be bounded by the interests, current knowledge and agenda of the agency directing the exercise. It is important, therefore, to allow for the inclusion of more stakeholders later in the process as their interest comes to light.

Step Two: Determining interests, importance and influence

Draw out key interests for each stakeholder group on the initial list. Questions that can help uncover these include:

- What is the stakeholder likely to expect from the project?

Next, assess the influence and importance of each stakeholder in the project. 'Influence' refers to the extent to which that a stakeholder can impact the success of the project positively or negatively; 'importance' refers to those stakeholders whose problems, needs and interests most closely coincide with the aims of the project. If the 'influential/important' stakeholders are not involved or assisted, then the project cannot be called a success.

This assessment can often best be done by getting together 4–5 people, each with a unique viewpoint on the project or issue. Stakeholders can include organisations, departments, agencies, NGOs, networks or individuals. The list does need to be comprehensive enough to ensure that groups are not being left out. Diagrams such as shown in Figure. 1 can be used as a prompt, or mapping tool, to categorise stakeholders.

Step Three: Establishing strategies for involvement

Plan some strategies for approaching and involving each person or group. How to do this will usually depend on the results of the previous analysis. Where the stakeholder is a group rather than an individual, you may need to decide whether all in the group participate or only representatives of the group. Initially, it may be that not all stakeholders will be enthusiastic to take part, but stakeholder involvement is a continuous process and stakeholders may increase or decrease their level of involvement as the project continues. Preparing for this will be part of the ongoing engagement strategy for the project. Some form of stakeholder assessment will need to be repeated at various times throughout the project, particularly when new and substantive interests emerge. Thus, partnerships should be flexible and designed to grow.

LESSONS IN STAKEHOLDER COLLABORATION

The strength of collaborative processes lies in the creative approach that multiple stakeholders can bring to problem solving. Face-to-face negotiations allow the different parties to more fully explore the issues and collectively come up with solutions that work. By being involved in the development of a solution, stakeholders are more likely to champion the management solutions and actively take part in them. This is critical for issues such as land management where support and action from many parties – and often a whole community – is required.

Over time, resource managers have learnt a number of lessons about involving stakeholders:

- Constructive discussion and planning takes time, so there is a need to build enough time into the process for people to learn about each other, overcome their differences, and begin to 'speak the same language'. Then, more time is

needed to resolve problems and disagreements. Conflict can be constructive, where there is a well-facilitated process to ensure all views are heard, and to turn the diversity of ideas and the energy to 'make a difference' to good effect.

- Key points when discussing a problem situation are that ecological objectives should not be considered in isolation from community social and economic needs, and that these social and economic needs will not be identified without local involvement. Similarly, there is a need to take note of all the issues raised in these discussions, no matter how simplistic or controversial they may at first appear.
- Monitoring and evaluating the nature of the collaboration is as important as measuring specific policy or project outcomes.

There is a growing body of research and quality standards on stakeholder assessment and management. Stakeholder management and the collaborative problem solving approaches that it facilitates are increasingly recognised as primary building blocks for sustainable development.

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Supporting effective teamwork

A checklist for evaluating team performance

CHAPTER 26 : HATCHED

Margaret Kilvington
and Will Allen



Summary

- Teams can be instruments for achieving changes in culture and practice in organisations.
- Teams need both technical know-how and other abilities such as the skills to communicate to different audiences, and good networks and relationships.
- Teams make better progress if they are aware of their goals, skills, capabilities and resources and are able to address any deficiency.
- Presented here is a checklist approach to evaluation, designed to help teams clarify and monitor their goals, assess their strengths and limitations, and respond to the needs of their own unique circumstances.

How best to manage and foster change is a much considered topic in today's organisations. While a group approach is not always necessary, many tasks facing organisations cannot be implemented by individuals working alone. Where problems and decisions involve a degree of complexity and uncertainty, where there is potential for misunderstanding and conflict, and where widespread acceptance and commitment are critical, such situations will call for group collaboration.¹

This is particularly true of any initiative designed to change the way an organisation works, such as when introducing waste minimisation and resource use efficiency measures across a workplace. In situations of shifting culture and practice, teams of individuals are often regarded as critical vehicles not only for successful completion of specific projects but also dissemination of the vision behind the new practices (e.g. sustainability). Teams can be expected to champion work within an organisation, communicate upwards and across the organisation, and be able to initiate changes at many levels. To achieve this, teams often require new technical knowledge – but they also need other skills such as the ability to communicate to different audiences, and good networks and relationships.

Harnessing the potential power of a group can have a dramatic effect on an organisation's ability to simultaneously meet goals and improve job satisfaction. When a group is functioning well (whether it be a work team, sports team, friendship group, orchestra, religious group, or voluntary group), the group dynamics and sense of belonging and acceptance can bring out the best in people. Groups can enhance problem solving and creativity and generate understanding, acceptance, support, and commitment. In addition groups can increase morale, improve self-esteem, and help create consensus. Most people have had at least a few experiences where participation in an effective group or team has helped us to achieve at levels we never thought possible.

However, while teams may be a necessary part of successful organisational change, their presence certainly doesn't guarantee success. As most people can testify, groups can also be inefficient, confused, and frustrated.

SUPPORTING SUCCESSFUL TEAMS

One way to influence how effective a team will be is to ensure certain factors are built into their set-up, such as ensuring the team membership comes from all parts of the organisation that have an influence on the project. However, beyond ensuring the team has a good basis for achieving its project goals, what is needed is a way to assess 'actuality against intention'. That is, are the teams operating the way they were intended, and, if not, what can be done to improve the actuality? For instance, if a management representative has been included in the team to provide links to key decision-makers, is this working? Is the team maintaining enthusiasm for their tasks? Is the team membership sufficient to manage the workload?

To do this requires a shift of focus from 'getting the right team structure' to maximising the effectiveness of the team at doing its job. What can be useful is for teams to have some way of self-monitoring their performance, not just in terms of the outcomes they are achieving but also in terms of the key ingredients that are enabling them to make progress.

This requires some knowledge of groups as dynamic entities – going through phases of development with different needs at different times; and some way of enabling the team to assess how well they are going and what their changing needs might be.

EVALUATING TEAM PERFORMANCE

The following checklist has been developed to guide teams in thinking about the key elements that make teams work.

This evaluation is not designed to score or rate a team's value; rather, it is to help a team critically reflect on what has been successful for them and what they would like to do differently in the future.

Rather than study a list of 'how-to's' that might seem self-evident, this approach uses a checklist of aspects critical to successful teams that participants discuss in terms of their own situation. The process begins with the range of goals that a specific team wishes to accomplish. Through a facilitated, self-reflection exercise teams decide whether an aspect of team functioning is important in their context. If they agree



it is, they then discuss how well this is going and whether any changes are needed. The strength of this process is that generic issues of team activity are covered in a way that is unique and specifically relevant to any individual team.

The checklist has been developed through a literature review of factors important to the effective management and growth of teams.² These factors help a team reflect on their performance in five main areas:

1. Goals
2. Results and productivity
3. Team structure
4. Team operation
5. Team skills

PROCESS

1. Begin with the team goals

Because teams are purposeful, i.e. they are there because people have come together to achieve certain tasks, each evaluation begins by asking teams to define their goals. This

review of goals includes both formal goals (the ones the team has most likely been set up to achieve) and informal goals (those that the individuals bring to the team or that the team itself has developed for its members).

2–5. Team productivity, structure, operation and skills are addressed through a series of questions detailed in the checklist (see table). These questions are opened up for facilitated discussion by the team. As a way of getting closure on each question, the team is asked to come to a consensus on their performance in this area using colour dots according to a ‘traffic light’ system:

- Green** *This aspect is well covered* ●
- Yellow** *We need to think about this as it maybe a limiting factor* ●
- Red** *This factor needs to be addressed as it is limiting team performance* ●

A record is kept of the comments associated with each area of team activities and at the close of the evaluation the team agrees a time and place to discuss their response to their ‘red dot’ and ‘yellow dot’ factors. Responses may arise immediately during the evaluation and team members may agree to take action.

Points to note when undertaking the evaluation

- While the checklist is designed to be used by an external evaluator, a team that has facilitation skills within its own

membership can undertake its own evaluation.

- Where teams feel they were doing well, it is useful to prompt them to think about the reasons why this was so. Where teams identify that they have a weakness, they could be offered a short opportunity to work through the barriers and develop steps that could be taken to improve their performance.
- The fifth section of the checklist asks about essential skills that are required for team operation. However, because these skills underpin team performance in the above areas, they are often covered in preceding sections.

OUR EXPERIENCE WITH THE CHECKLIST APPROACH

We have used the checklist-based evaluation approach to help develop the capacity of teams involved in changing company practices around waste minimisation.³ These teams were already receiving technical training in how to assess and address wasteful resource use in their companies. What was needed was some support that enabled them to be effective in delivering on their projects and influencing events across the company. What we found was that:

- Using the checklist in a reflection-based evaluation helped teams identify a number of factors that were holding them back. For some these were matters of leadership, or key contacts they were lacking, or limitations in their project planning.
- Facilitation was critical to the usefulness of the checklist approach. An evaluation can seem ‘negative’ – i.e. pointing out failures. Teams need to feel confident that this evaluation is ‘by them and for them’, but also teams can need to be pushed to think beyond the immediate response that ‘everything is alright’.
- The more open a team’s work environment was to learning and development, the more ready the team was to look for ways to improve what they are doing. Further, the more experience teams get with the core factors of effective teams, the more natural and frequent the monitoring of progress becomes.



box 1: SUMMARY TABLE: TEAM PERFORMANCE

No.	Task	Rate
1. Results and productivity		
1.1	Does the team have clearly identified actionable steps to achieve its goals?	
1.2	Does the team monitor its progress against concrete milestones?	
1.3	Does the team regularly and frequently assess how well they are working together?	
1.4	Are the team's successes, big and small, acknowledged?	
1.5	Does the team learn from its failures?	
2. Team structure		
2.1	Is the team the right size, with the right mix of players for your purpose?	
2.2	Does the team have the flexibility to bring in people and change membership to suit the current project?	
2.3	Does the team have the right resources? <ul style="list-style-type: none"> • Money • Time • Resources 	
2.4	Does the team meet regularly?	
3. Team operation		
3.1	Does the team have effective leadership?	
3.2	Do the team members understand their roles and are they able to carry them out effectively?	
3.3	Does the team have good networks? <ul style="list-style-type: none"> • Internally • Externally • With management 	
3.4	Does the team have useful meetings with clear identification of tasks?	
3.5	Does the team have effective ways of managing conflict?	
3.6	Is the team functioning in a way that people freely express ideas and share opinions?	
3.7	Does the team stay motivated?	
4. Team skills: Does your team have these?		
	<ul style="list-style-type: none"> - Managing meetings: setting agendas, managing time etc. - Documenting progress: keeping minutes, records etc. - Data and information gathering - Facilitation: dealing with conflict, managing constructive debates etc. - Innovation: introducing creative ideas - Presentation: summarising finds to relevant audiences - Networking: bring comment, feedback etc. to the team - Motivation: reminding team of success - Task performing: reliably doing relevant tasks 	

WANT TO FIND OUT MORE?

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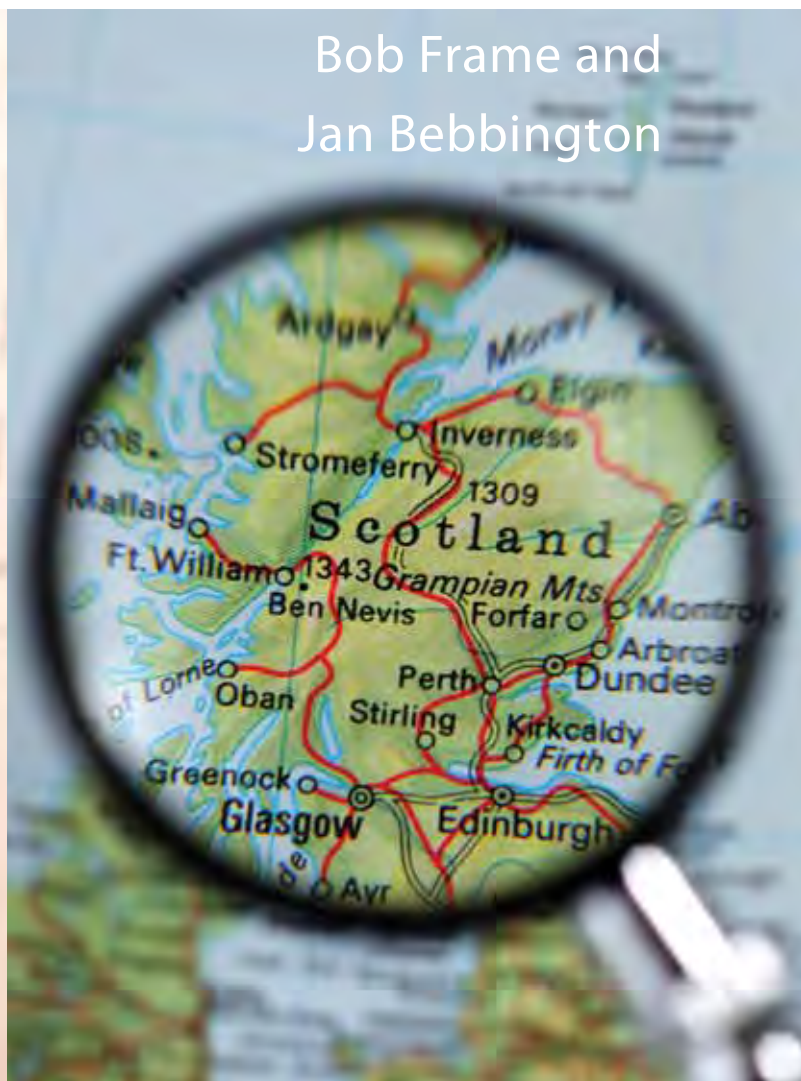
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National Sustainable Development Strategies

A comparison of National Sustainable Development Strategies in New Zealand and Scotland

CHAPTER 27 : HATCHED



Bob Frame and
Jan Bebbington

Summary

- National Sustainable Development Strategies (NSDS) for Scotland and New Zealand provided an opportunity to examine the underlying assumptions regarding how governments address sustainability issues, what end points are sought and how the gap between these is bridged.
- We sought not to compare performance in the two jurisdictions but to present them side by side to identify differences.
- Adoption of sustainability principles in both countries appeared dominated by advanced liberal processes with few examples of sustainability-led governance.
- However, the two countries' strategic approaches to the task of governing differed greatly.

SCOPE

Governments have a critical role to play in setting national direction and aspirations with regard to sustainable development (SD) through National Sustainable Development Strategies (NSDS) as required by the United Nations.¹ Here we explore how two governments, in New Zealand and Scotland, addressed this role from mid-2002 to mid-2007 (see Fig. 1 for the process timelines). Despite points of difference, New Zealand and Scotland faced similar pressures with respect to achieving progress towards SD (in terms of demographics,² reliance on key sectors, levels of emissions) and operated within broadly the same model of government where both used forms of proportional representation, had unicameral legislators and share a common history by virtue of New Zealand's European settlement. We believe that presenting findings from each country together allows for a broader reflection on each individual country and its approach to formulating sustainable development scenarios. To do this, we unpacked the development of sustainability policy and constructively critiqued around issues of power and authority using a governmentality lens as described elsewhere (Chapter 20).

NATIONAL SUSTAINABLE DEVELOPMENT STRATEGIES

In 1992, 105 countries endorsed the United Nations Rio Declaration on Environment and Development and committed themselves to integrating SD principles in concrete policies and actions. This was to take place through NSDS which would harmonise various sectoral, economic, social and environmental policies to ensure socially responsible economic development for the benefit of future generations as part of *Agenda 21*. In 1997, the Special Session of the UN General Assembly set a target date of 2002 for the introduction of NSDSs. Subsequently, the WSSD Summit's Johannesburg Plan of Implementation stated that all countries should take immediate steps to make progress on NSDSs and begin their implementation by 2005. It is within this context that both New Zealand and Scotland (nested under the UK framework for SD)



Parliament buildings in Scotland and New Zealand

prepared their strategy documents. These documents, however, did not emerge in a vacuum. Rather, they were the outcome of and shaped by the political landscape in each country. We sought not to compare performance in the two jurisdictions but to present them side by side to identify differences.

The two countries are obviously very different. New Zealand is an independent unitary state while Scotland has a devolved authority functioning not only within a UK decentralised unitary state system, but also a multi-level system of EU governance – itself possessing a sustainable development strategy; Scotland appeared more constrained while New Zealand had potentially far greater agency. As our analysis showed, Scotland focuses on the machinery of government to deliver sustainable development, perhaps because its strategy is embedded in the UK's overarching framework, and as the UK has historically tended to deal with the environmental/sustainability issues through institutional restructuring.

Specifically, the key strategy document in each country (the *Sustainable Development Programme of Action*³ in New Zealand and *Choosing our Future: Scotland's Sustainable Development Strategy*⁴ in Scotland) and other key documents (see Key Publications and Websites below) were carefully read and re-read several times using the governmentality lens as a guiding framework. Text in each document was categorised according to whether it was seeking to problematise the situation, provide a utopian ideal, or was related to some regime of practice (Table 1, overleaf). In addition, the language used, the visual prompts and iconography in each document were explored by both researchers in order to create a richer description of each approach. This process enabled an understanding of each strategy, and the context in which they were developed.

Table 1 Priority areas of the NSDSs

New Zealand	Scotland
Quality and allocation of freshwater	Sustainable production and consumption
Energy	Climate change and energy
Sustainable cities	Natural resource protection
Child and youth development	Sustainable communities

NEW ZEALAND CASE STUDY: SUSTAINABLE DEVELOPMENT PROGRAMME OF ACTION (SDPOA)

In May 2000, the NZ government endorsed the Brundtland Report⁵ definition of SD and agreed that it involves thinking broadly about objectives, considering long-term as well as short-term effects. In August 2002, the government outlined its approach to SD⁶ in preparation for the World Summit in Johannesburg that year. Statistics New Zealand⁷ provided a selection of economic, social and environmental information and criteria as a first cut at the task of collecting relevant information to assess whether development processes were sustainable.

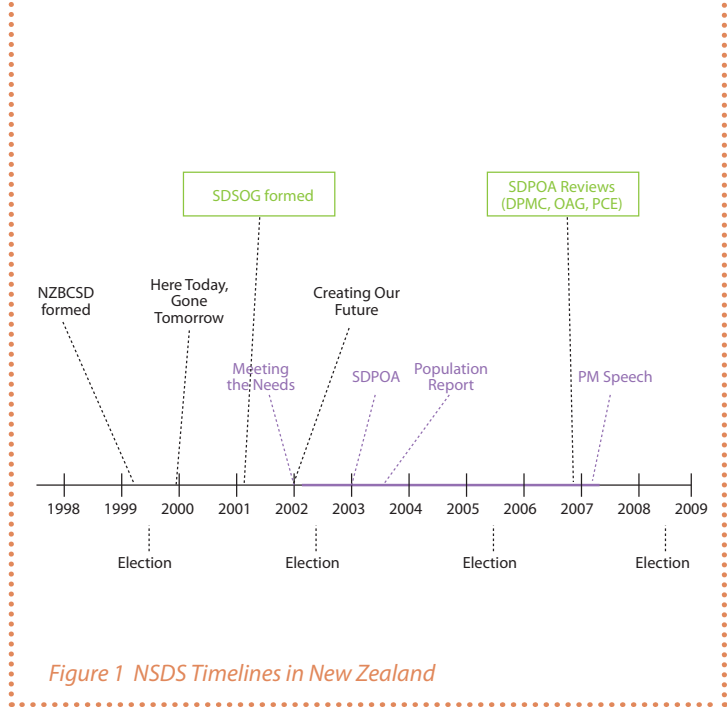


Figure 1 NSDS Timelines in New Zealand

SUSTAINABLE DEVELOPMENT PROGRAMME OF ACTION TIMELINE IN NEW ZEALAND

In January 2003, the Sustainable Development Programme of Action (SDPOA) was issued by the Department of Prime Minister and Cabinet as New Zealand's NSDS. It set out principles, four selected action areas (workstreams), and monitoring and evaluation intentions, with its overall thrust being to strengthen the way government operated by applying a set of guiding objectives and principles across the government sector. This was to be achieved through an 'action learning' approach – namely, to take action, reflecting the agreed SD principles, on areas standing out as needing urgent attention and by identifying the learning from this action for future application. Along with the principles there were a number of process expectations from the SDPOA, including leadership by chief executives; investment in capability building to ensure integrated policy development within and across departments; co-operative partnerships to encourage dialogue across government, and an integrated rather than single-purpose approach to decision making. The main purpose was 'to set directions and outline actions the government will be taking' acknowledging that government has a key leadership role of articulating outcomes and directions. Such principles reflected not only the influence of international thinking about matters, such as decoupling and precaution, but also built on the 1995 policy principle E2010,⁸ which was to guide environmental priorities to find a course of development in which sharp trade-offs might be minimised and synergies and complementarities explored.

Workstreams were selected (Table 1) because they were complex; had intergenerational and potentially persistent effects; needed to be progressed urgently; required innovative solutions; cut across social, environmental, economic and cultural dimensions; and could only be progressed collaboratively. They were chosen because of their potential to offer qualitatively better solutions than other ways of developing policy. It was also anticipated that they would offer processes by which to resolve other issues across the government sector. To ensure that the practices developed were not confined to these areas, a 'quality practice' focus was developed as a cross-cutting programme to trap and disseminate lessons from the work (comprising two projects: Quality Practice, and Measuring Progress and Developing Indicators). The outcome was an ambitious set of goals that was unlikely to be fully achieved, especially in the three-year time frame for the programme.

In a review of the SDPOA⁹ it was noted that an OECD expert group commended New Zealand's good practice in policy integration in the SDPOA, which 'gives equal weight to social sustainable development (in relation to the economy and environment) with special attention to demographic trends, new roles of women in society, improvements in health and housing, and better integration of Māori communities'. They also commended adoption of a broad indicator system based on 40 indicators on the themes of population changes,

environmental and ecosystem resilience, economic growth and innovation, skills and knowledge, living standards and health, consumption and resource use, and social cohesion. The SDPOA has not been replaced, since its conclusion in June 2006. A suite of SD policy initiatives¹⁰ was announced in February 2007, but these were overhauled after the 2008 General Election.

DATA ANALYSIS

We turn now to a critical reading of the SDPOA and its content – this is separate from an evaluation of the impact of the SDPOA itself.¹¹ This was undertaken using a specific framework known as Governmentality as explained in Chapter 20. The discussion here does not detail the specific analysis but rather summarises its key findings. A more formal report of the analysis and its linkages with the theoretical framework and the international literature is given elsewhere.¹²

Population issues played a central role in the structure and purpose of the SDPOA and it was explicitly noted that 'the sustainable development approach [has] given us a way of thinking about these [population] issues and finding solutions that give us the best outcomes' (p. 8). It is in this area of 'best outcomes' that the SDPOA made a clear utopian vision for SD, which involved 'a land where diversity is valued and reflected in our national identity'; 'a great place to live, learn, work and do business'; 'a birthplace of world-changing people and ideas... where people invest in the future' (p. 9). This was supplemented by more specific aspirations with a strong element of entrepreneurial language that linked closely to notions of success more frequently associated with commercial goals. It could also be inferred that being more innovative is a way to compensate for a small population. Having said that, there were environmental and social aspirations within the strategy, namely cherishing the natural environment and 'know[ing] that individual success contributes to stronger families and communities and that all of us have fair access to education, housing, health care and fulfilling employment' (p. 9).

In terms of what we saw as absent, it is suggested that a sense of environmental limits and the problems posed by human populations on resource use and pollution production was not

Example of analysis - Foreword of the Sustainable Development Programme of Action





prominent. For example, in the first four pages (comprising the foreword and introduction) there were just ten mentions of environmental aspects. The most complete of these reiterated what the New Zealand Government saw the United Nations as focusing upon (namely 'makes commitments to cleaner production, the development of renewable energy sources and reductions in waste. And it highlights the reduction of biodiversity loss and the restoration of depleted fish stocks as issues for action', p. 7). The New Zealand link to this agenda was made, noting 'the progress New Zealand is already making in areas such as fisheries management, waste management, energy and biodiversity' (p. 7).

These items lacked some of the bite and urgency infused in the SD agenda from late 2006 through a new suite of policies. This could be explained by the timing of the SDPOA (published early in 2003 soon after the World Summit) and the way in which the climate change agenda developed later. Having said that, one could have expected more disclosure on climate change (there was mention of the issue but it was not given any prominence) in such a pivotal statement on SD given that the timing was coincidental with the increase in climate change rhetoric. At the same time, there was little evidence of a concern about developing world issues (except for general UN commitments, p. 7) and New Zealand's role in these debates. This was perhaps surprising given the closeness of Pacific island states and their development issues, as well as climate-change-induced issues for those countries (most pertinently sea level rise).

In summary, the apparent New Zealand conceptualisation of SD in the foreword of the SDPOA was one where the

government wanted to 'build an innovative and productive New Zealand. The sustainable development approach will help us find solutions that provide the best outcomes for the environment, the economy and our increasingly diverse society. New Zealand's success in the modern world depends on this—so too does the wellbeing of future generations' (p. 5). In this conceptualisation the object to be sustained was not the earth¹³ but New Zealand, with its own (commercial) interests. These motifs continued in the regimes of practice envisaged within the SDPOA.

While regimes of practice were implicit, chapter two of the SDPOA contained an explicit explanation of how the New Zealand government was going to pursue the vision it had created. Here a moulding of techniques, identities, forms of knowledge and visibilities was apparent. The SDPOA principles accounted for 'economic, social, economic [sic], environmental, and cultural consequences of its decisions' (p. 10) including those often associated with SD work such as long-term perspectives, precautionary principle, participatory processes, and global as well as local perspectives. In addition, desires to avoid trade-offs and create mutually reinforcing outcomes – decoupling economic growth from pressures on the environment; respecting environmental limits; and promoting integrated management of land, water and living resources – were evident.

Intertwined around these principles, and infusing the SDPOA, was a sense of national identity that contained traditional Māori elements and multicultural aspects. New Zealand was seen as a society that sees itself as world class in terms of

innovation and having a larger impact upon the world than it could expect given its small population (as was implicit in the aspiration to be 'a birthplace of world-changing people and ideas'; p. 9). The SDPOA did, however, contain visual (but low key) clues to identity in the layout of the document. Ferns, kids playing rugby and the paua shell were used to locate this document as being New Zealand in origin as were statements such as 'it is important that New Zealand develops solutions and approaches that reflect our unique geography, culture and way of doing things' (p. 6). The main identity projected from the document, however, was that of innovative people striving for economic success.

This economic hook was also evident in the linking of the SDPOA with two other guiding documents, the *Growing an Innovative New Zealand*¹⁴ framework and *Key Government Goals to Guide the Public Sector in Achieving Sustainable Development*.¹⁵ The SDPOA reiterated that the 'government has identified its most important task as building the conditions for long-term and sustainable economic growth' (p. 10) with the SD approach being highlighted as ensuring that 'connections between the various pieces of work and feedback loops are encouraged and understood' (p. 10). It was, however, not evident from the SDPOA how the government would create conditions in which business can achieve these outcomes.

With regard to the public sector, the techniques of governing that encourage action for SD were not clear either, but the aspirations for action were clear. Chief executives of public

sector organisations were urged to give a 'concerted effort' (p. 10) to using the ten principles in 'policy development' (p. 10) with 'issuing a Cabinet Circular to guide the public sector' (p. 10) being specifically identified as a mechanism for this change. This seemed a little formal and not as engaging as could be anticipated for what would signal a significant cultural change for the public sector.

The other significant area of techniques and practices that was stressed was that of working in partnership to achieve common ends (with a page being devoted to partnerships, p. 11). The nature of these partnerships was not apparent from the document with the statement that 'the government expects that others will recognise the partnership approach as our normal way of doing business' (p. 11, and noting again recourse to the language of commerce inherent in the quote). In addition, this was an example of the underspecification that pervaded the document.

Overall the field of visibility created by the SDPOA was one where government will create a vibrant, economically successful future that is also focused on SD, and achieved via partnerships of some significance. The mechanisms by which the significantly underspecified vision of the future was to be achieved were equally not clear. Indeed the SDPOA was opaque on a number of key issues including the scale of the challenge inherent in the agenda; the complexity of equitable distribution, especially for future generations, and the pressing nature of environmental limits was only touched on from time to time.



SCOTLAND CASE STUDY: CHOOSING OUR FUTURE

Scotland is a devolved administration of the UK along with the Welsh and Northern Ireland assemblies and is constituted as a Parliament (re-established in July 1999 after having been dissolved in 1707). Under the devolution settlement some powers have been retained by Westminster (e.g. foreign affairs, defence, national security and abortion) with other powers being devolved, including SD policy and implementation. Until the election of a new government in May of 2007 the Government of Scotland had been referred to as the Scottish Executive and it was this body that produced Scotland’s SD strategy. This strategy was developed under the umbrella of a shared UK framework *One Future – Different Paths* (<http://www.defra.gov.uk/sustainable/government/publications/uk-strategy/framework-for-sd.htm>) which identified two outcomes from pursuing SD: living within environmental limits and ensuring a strong, healthy and just society. In addition, three aspects that enabled these outcomes (achieving a sustainable economy, promoting good governance and using sound science responsibly) were part of the framework. It is notable that the economy was not seen as an end in itself, rather it was an enabler. This was a departure from previous articulations of SD in the UK and elsewhere including NZ as noted above).

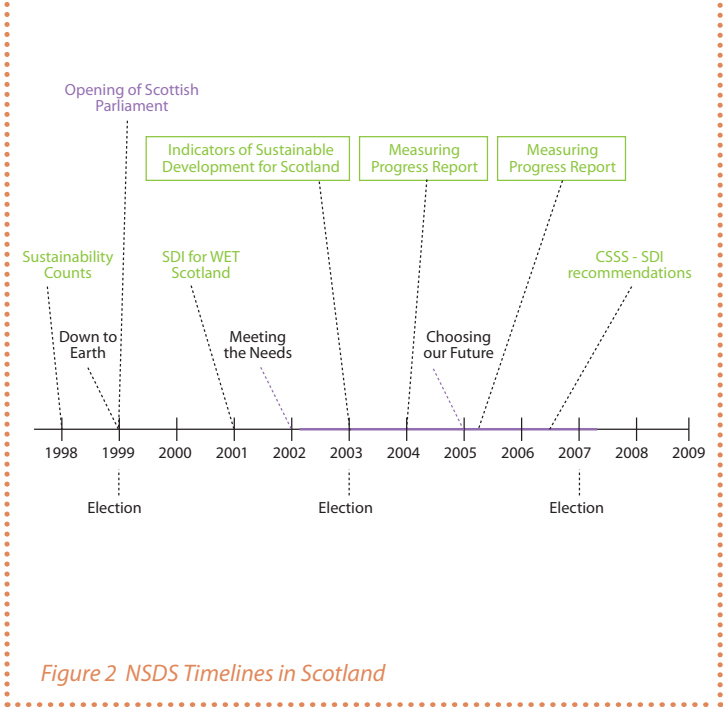


Figure 2 NSDS Timelines in Scotland

CHOOSING OUR FUTURE TIMELINE IN SCOTLAND

A number of other mechanisms substantially affected the policy context for SD in Scotland including the existence from 2000 until 2007 of the Cabinet Sub-Committee on Sustainable Scotland. This committee was chaired from 2002 by the First Minister and other ministerial membership included the portfolios of Finance, Transport, Environment, Communities and Enterprise. Moreover, within the UK the Sustainable Development Commission provides a strong external champion for SD, focusing as it does on capacity building within government, advocacy in Government and more broadly within society as well as a formal scrutiny function with respect to whether or not government action is in accordance with SD principles. These two aspects (the Cabinet Sub-Committee and the Sustainable Development Commission), along with an active NGO sector, meant that the Scottish Executive faced a possibility of being held to account for their performance.

Choosing our Future (COF) built on earlier SD priorities¹⁶ and a reasonably well developed indicator framework. COF, however, constituted a stepwise change in terms of formality of strategy. It was supplemented by a follow-up and monitoring website indicating the extent to which action points in the strategy had been achieved. The strategy put a framework round key aspects of SD (strong economy, well-being, thriving communities, natural heritage and resources and Scotland’s global contribution) with chapters that ‘make the link’ to particular issues (travel, food, environmental justice, waste and the built



environment). This arrangement made COF a more complex document than the SDPOA, as reflected in their relative lengths, and provided a more detailed outline of overall SD thinking. Like the SDPOA, four priorities for action were identified, as shown in Table 1.

DATA ANALYSIS

As before, we turn to a specific reading of COF and its content using the governmentality framework (Chapter 20). Again we don't detail specific analyses but summarise key findings with a complete report given elsewhere.¹⁷

The COF conveyed a sense of urgency about the need for action. For example, it stated that 'the planet cannot sustain human life...[and]...it is happening now' (p. 11). Likewise, there was a need 'to build, fast, on that progress and momentum if Scotland is to make the radical changes that are now urgently required' (p. 7). There was also explicit discussion of 'the kind of world we want to live in and the legacy we want to leave behind' with this vision being reiterated throughout the various chapters (e.g. 'end goal of living within environmental limits' p. 49). There was also the assertion that 'this future is within reach. We can all play a part in making it happen (p.13)'

The COF had an action-oriented approach with, for example, the following words appearing on page 7 alone: committed, action (three times), seize, drive, transform, capitalise, deal, fast, progress, momentum, radical, urgently, priority, signed up, powerful, underpin. The problem addressed also had a clear visibility through, for example, overexploitation of resources (p. 11) noting that the ensuing damage was accelerating (pp. 12–13). The visibility of SD was largely based on environmental

rather than social impacts though the latter were identified as knock-on effects from environmental harm (pp. 12–13). This was also placed in the global context through use of photos (e.g. deforestation in Brazil, p. 10, and Bering Glacier in retreat, p. 54). A large variety of techniques and practices were highlighted as being available to government as it pursued SD. For example, the Executive committed to: 'embed sustainable development objectives into spending decisions and set out how its spending plans contribute to sustainable development objectives' (p. 73); 'require each significant capital investment to illustrate in a business case that it has considered sustainable design, incorporating green procurement strategies, resource efficiency and waste minimisation' (p. 74); ensure that 'pre-expenditure assessments...will support a more joined-up approach to policy and expenditure decisions including sustainable development outcomes' (p. 74); require 'sustainable development assessments accompanying Executive bills... [to] be published' (p. 74); create a 'revised policy makers toolkit [that] will explain how to consider sustainable development as part of the better policy making approach' (p. 75); and through the duty of Best Value in the Local Government in Scotland Act 2003 introduce 'guidance...to improve local authorities' understand[ing] of the sustainable development element of the duty' (p. 82). All of these mechanisms had the potential to bring SD thinking to the underlying machinery of decision making in government. While these were not headline-grabbing actions, they had the potential to substantially affect decision making which might accelerate SD performance. In addition, there

Example of analysis - Foreword of Choosing our Future





was a strong emphasis on partnership approaches (pp. 84–91 and chapter 16). Finally, potential for enforcing accountability on the Scottish Executive was created via the scrutiny role of the Sustainable Development Commission, the Cabinet Sub-Committee on Sustainable Scotland and through a partnership approach with the Parliament (p. 77).

In COF, the Scottish Executive demonstrated a clear position of authority through the personal statements by the First Minister and the Deputy First Minister (one from each of the coalition parties). It was not a statement of coercive power but one of a government that had been given a mandate to address these issues and was setting out a clear agenda, though this fell short of any statements of time-bound delivery against targets. There were clear links to UK government strategies and so to the wider international context, and an extensive page of references with links to websites provided access to much wider technical resources, predominantly found in Scotland but with some from the UK (p. 92). The definition of SD was articulated as enabling ‘all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations’ (p. 7). This definition and COF as a whole blended economic, environmental and social domains. The social aspects of SD were explicitly noted, for example by asserting that SD also meant ‘securing environmental justice for those who suffer the worst local environments’ (p. 40) and stating that SD ‘cannot be seen as ‘just’ an environmental problem’ (p. 11). Likewise, the conception of SD that was articulated was strongly embedded in environmental limits globally (noting that an ‘unprecedented heat wave led to over 20,000 additional deaths in 2003’ p. 11)

and nationally (noting that if ‘everyone on Earth lived the same way [as the average Scot]...three planets...[would be] needed to sustain us’ p. 12). In contrast to the 2003 New Zealand document this grounded COF in a global dataset.

COMPARING THE TWO STRATEGIES

The ways New Zealand and Scotland sought to govern for SD differed and the two NSDSs could be discussed side by side once their contents were translated through the lens of governmentality into a story of how and by what means each country intended to address SD challenges. In this form it was possible to understand more about the development of NSDS in general although the two countries were not directly compared.

Each NSDS expressed its overall purpose quite differently

- The SDPOA was based, at least in part, on population dynamics while COF focused on global ecosystem threats and their manifestations and how these acted to stimulate moral demands for action.



- Both were aspirational in tone and commitment yet neither stated how to progress over decades into a sustainable society. The Scottish example provided the most concrete vision, in terms of the indicators it expected to see movement in if SD was to be addressed.
- The utopian ideal in each strategy was intimately linked to the differing purposes. In New Zealand a small population, remoteness to markets and the issues these present created a vision of a place brimming with innovative ideas. In a similar vein global environmental change as the motivation for Scotland's strategy was reflected in its conception of a Scotland that lives within its ecological means articulated via an ecological footprint.

Contrasts could be seen in the practical ways in which these visions were to be translated into practice

- New Zealand motivated its strategy from a strong reiteration of national identity (clean green New Zealand, innovative, a great place to work and play) and linked that to taking a 'business-like' approach to tackling SD. Having a market focus and fostering the 'right sorts' of partnerships were presented as techniques/practices that would lead to SD, albeit that how this would happen was not well articulated. Likewise, the forms of knowledge needed for governing were underspecified, and while 'kiwi' identity was invoked within the strategy it did not seem to play a large role in the implementation of the SDPOA.
- Scotland built its COF quite firmly on techniques and practices (whether by committees, indicators, assessments, reporting or audit functions). The form of knowledge that emerged drew heavily on scientific modes of rational analysis and assessment to make the 'correct' decisions. Having said that, there was a very strong social and moral dimension demonstrated in a Scottish identity that values hard work and moral soundness in the pursuit of goals and hints (though it stopped short of such an assertion) that SD might be an opportunity for a new enlightenment for a troubled age. Likewise, Scotland as a responsible citizen of the world came through with visibility of this idea reinforced by the pictures used in the document (e.g.

Scotland from space, landfills and developed world impacts being depicted).

- In summary, two points bear reiteration. First, both New Zealand and Scotland, as would be expected, responded to SD in different ways. Second, while there were clear indications that governing activities in New Zealand and Scotland at the time of the development of these NSDSs were being (re)directed towards the aims of SD that was embedded within an advanced liberal governmentality, it was impossible to be certain from within the strategies if the proposed actions would be sufficient to create a sustainable future.

AND MOVING ON...

The case studies provide a possible process to understand SD strategies and determine how goals are being sought. While the case studies contained internal consistencies and obvious differences, a more detailed and longitudinal analysis of achievements would provide valuable evidence to support development of future policy. Through long-term international comparative studies, the finer nuances of country approaches to SD could be made clearer and enable new forms of governance to develop. If sustainability is to be 'the defining question of this century' then it needs concrete plans to achieve it. While there is no single path to SD, or a single pathway for delivery, all strategies and paths require appropriate and effective governance. At present transitions towards new forms of governance and their associated studies are in their infancy.



WANT TO FIND OUT MORE?

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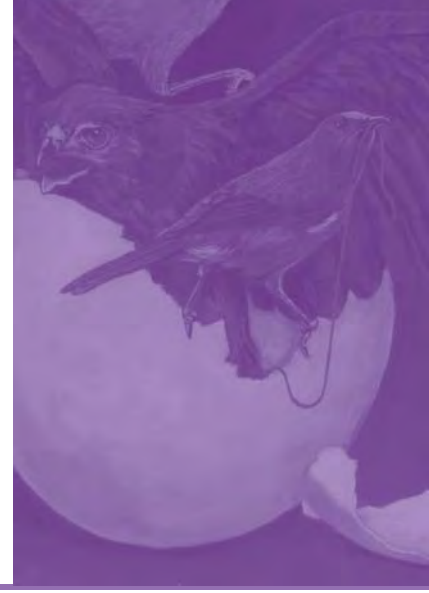
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section five



The future as a set of choices

It is easier in the face of great challenges to believe in inevitability, safer to shuffle deckchairs, more human to deny change is happening. It is a mark of leadership, however, to believe that we can make choices – especially when those choices are hard and require a fundamental review of our assumptions. New Zealand has enormous potential to determine its own future but only if it acts decisively and proactively. In this last section we consider the next steps for sustainable development both in New Zealand's research and practice and beyond.



Sustainability: a conversation between business and science

Discussions about sustainability point to very different perspectives in the worlds of business and science, yet collaboration between the two will be an important ingredient in delivering sustainable development.

Sustainable Development: responding to the research challenge in Aotearoa New Zealand

With its limited resources how can New Zealand best contribute to sustainable development research? The response includes our approach to research funding and aspects of governance in business and society.

Unending

Concluding remarks



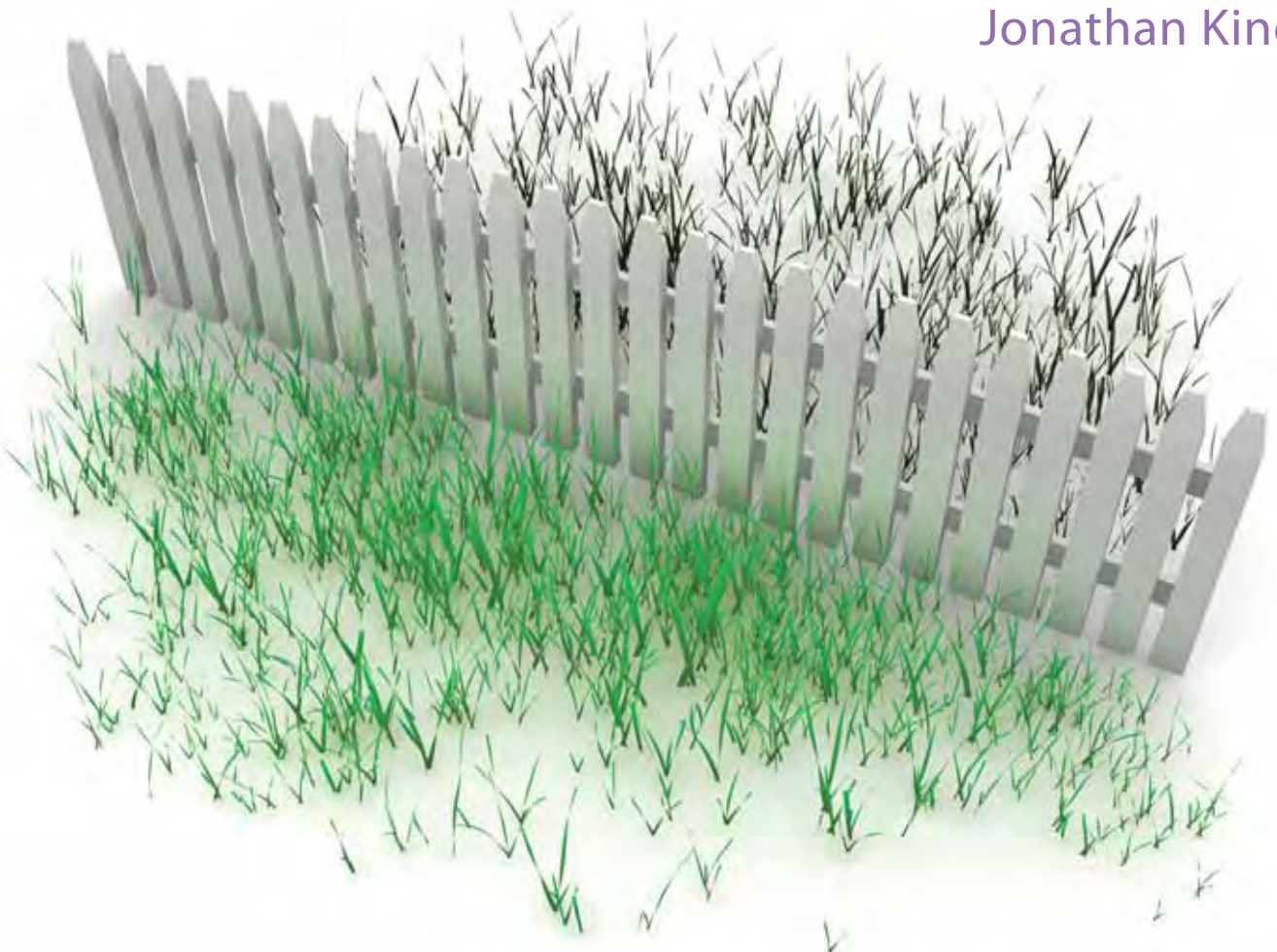
Landcare Research
Manaaki Whenua

Sustainability conversations

Business and science perspectives on sustainability

CHAPTER 28 : HATCHED

Helen Fitt and
Jonathan King



Summary

- Most interviewees discuss sustainability primarily in terms of environmental issues. Social, economic and cultural sustainability are less prevalent topics.
- Business and science interviewees approach sustainability differently; business interviewees focus on concrete sustainability actions, while science interviewees more commonly discuss broader and more nebulous concepts around sustainability.
- Business interviewees perceive there to be some problems with science in New Zealand, particularly in the way in which science agendas are set and the impact of this on science credibility.
- Science interviewees are more positive about science in New Zealand, but also present concerns about the prioritisation of different areas of science, including those relating to sustainability.
- Business and science interviewees identified that there is pressure on their organisations, primarily from customers (including research funders, users, and students), to appear sustainable.
- Interviewees from both sectors also noted that their organisations pursue sustainability actions to attract and retain staff, to take advantage of new business opportunities and to maintain alignment with key organisational values.
- There is some evidence that both business and science interviewees see corporate culture moving to a greater acceptance of the need to be sustainable.
- Despite emerging economic pressures, interviewees see sustainability as likely to increase in importance in future.
- Interviewees indicate that they would value better connections between the business and science sectors.

INTRODUCTION

Between December 2008 and February 2009 Landcare Research interviewed five leaders from the business sector (see Box 1) and five from the Research, Science & Technology (RS&T) sector (see Box 2).

The interviews were undertaken through Landcare Research's Building Capacity for Sustainable Development programme, which is public good research funded by the Foundation for Research, Science and Technology. This is part of Landcare Research's ongoing research into attitudes and understandings of the concept and practice of sustainability in New Zealand. The interviews were designed to provide input into future 'conversations' between business, science, and other stakeholder groups (such as government).

Here we present an analysis of business and science leader perceptions of sustainability issues in a way which, it is hoped, will facilitate more effective intersectoral collaborations in future.

The 2009 Budget indicated Government's intention to realign strategic priorities for science. While it is unclear as yet how this realignment will develop, we hope that this investigation, which touches on issues around science prioritisation, may serve as useful background for that process.

METHODOLOGY

The interviews with sector leaders focused on a set of topics related to sustainability:

- The issue – how interviewees conceptualise sustainability
- Knowledge – ways of thinking and questioning around sustainability
- Visibilities – ways of representing sustainability to the outside world
- Techniques/responses – ways of acting, intervening and directing based on particular 'expertise' and 'know-how'
- Identities – ways of embodying sustainability
- Vision – the end goal or ideal that is being sought

box 1: A BRIEF OVERVIEW OF BUSINESS ENGAGEMENT IN RS&T IN NEW ZEALAND

"Business R&D has been increasing rapidly; it grew at an annual rate of 7% from 1995 to 2004, much faster than Australia, the UK, the US and the OECD average ... and 52% of firms report some form of innovation, comparable to other OECD countries.

However, despite recent growth, business R&D is still very low by international standards at 0.49% of GDP compared to the OECD average of 1.49%...and the number of patents per million inhabitants is low...suggesting that commercialisation of the research base is a challenge."

Source: Innovation and productivity: Using bright ideas to work smarter. New Zealand Treasury, Productivity Paper 08/05(2008)

"In 2006 7% of business R&D was conducted by firms in the primary sector, 52% by manufacturing firms, and 41% by firms from the service sector.

Many commentators and leaders from the business and research sectors argue that an increase in business R&D is necessary if New Zealand companies are to remain competitive worldwide.

[The Tech NZ] programme supports R&D projects that result in new products, processes or services."

Source: Ministry of Research, Science & Technology. Available at: <http://www.morst.govt.nz/business/rd/>

For more information see: <http://www.frst.govt.nz/funding/business>

No definition of sustainability was offered to interviewees, rather a picture of what they considered to be included in the concept emerged through a semi-structured interview format.

Interviewees were individual leaders in the business sector or the 'research, science and technology' sector. These are referred to as 'business interviewees' and 'science interviewees'. Business interviewees were selected from suggestions by Business NZ and drawn from some of New Zealand's largest companies.

box 2: A BRIEF OVERVIEW OF THE NEW ZEALAND RESEARCH, SCIENCE & TECHNOLOGY (RS&T) SECTOR

New Zealand has an RS&T sector made up of the following main research providers:

- Crown Research Institutes (CRIs) (e.g. Landcare Research, Industrial Research Limited) – owned by Government, run by independent boards.
- Universities and polytechnics – independent.
- Research Associations and others (e.g. BRANZ, Dairy NZ, Cawthron Institute) – largely privately owned.

Some providers (notably those that are privately owned) have their own funding streams. Most also compete for other private monies and for state funding.

State funding (\$734 million in 2009/10) is directed through the Foundation for Research, Science and Technology (FRST), the Health Research Council (HRC) and the Royal Society. Specific programmes provide direct access to funding for business research (e.g. TechNZ). Policy direction and investment of state funding is overseen by the Ministry of Research, Science and Technology (MoRST).

MoRST and FRST interact with stakeholders, including business, to develop plans and priorities for the development, and funding, of science that reflects Government priorities and meets New Zealand's future needs.

For more information see New Zealand /New Ideas (<http://www.morst.govt.nz/publications/a-z/n/nz-new-ideas/>)

Science interviewees were drawn from nominations by Science NZ and the New Zealand Vice Chancellors' Committee.

The limited number of interviews conducted (10) and the limited range and size of organisations from which the interviewees were selected mean that the opinions expressed cannot be considered to be representative of business and

science more generally in New Zealand. This exercise has, however, provided useful insights into areas for further discussion, elaboration, and investigation.

Interviewees often explained both their own view and the official position of their organisation. In general business interviewees spoke more on behalf of their companies, while science interviewees more commonly represented their own opinions. Quotations from the interviews are noted as being from **business [B]** or **science [S]**; individuals are not identified.

CONCEPTUALISATION OF SUSTAINABILITY

Most interviewees discuss sustainability in primarily environmental terms, but most also acknowledge social and economic elements; cultural elements of sustainability are less commonly mentioned. It may be the case that interviewees see sustainability as a primarily environmental issue; alternatively environmental issues may be most commonly cited, despite broader conceptualisations of sustainability, due to the current dominance of environmental issues, and particularly climate change, in political, social and media debates. One of the broadest views of sustainability was expressed by a science interviewee:

We do have that interest in the interaction between the economy and the environment and also between society and the environment...and of course we have got a significant interest in culture, in Māori culture in particular and its own approach to sustainable development through concepts like kaitiakitanga but also in the opportunities for Māori organisations to develop themselves and create a sustainable future for their people with their own concepts of sustainable development at the heart of that. [S]

Most interviewees describe sustainability in terms of external resources or attributes – the sustainability of the natural environment, or the sustainability of the local community for example. However, most of the interviewees also describe their organisation's sustainability, raising issues such as the need to remain economically viable (whether through sales

or state funding), to find appropriate staff, and to facilitate organisational continuity by contributing to the preservation of a stable and functional society and natural environment. A number of interviewees also commented on the long-term nature of sustainability, both in terms of external sustainability issues (like climate change) and of organisational continuity.

There is one striking difference in conceptualisation between the different interviewees. The business interviewees, when asked what sustainability meant to them, usually began with well-defined and bounded explanations of how they or their organisations view sustainability:

We have a range of products which we believe have some sustainability attributes in terms of how they are sourced and manufactured, particularly because a number of our products utilise recycled materials or utilise recycled materials as fuel. [B]

The science interviewees, on the other hand, generally began with a comment that sustainability is a very broad and contested concept and difficult to define:

... when we talk about sustainability it's very easy to put totally different interpretations on that and if we have a conversation about sustainability you could have people... almost taking opposing views but both saying... this is sustainability for New Zealand [S]

The science interviewees did go on to more narrowly describe their own work in the sustainability area, and the business interviewees did acknowledge the broadness of the sustainability concept. However, the emphases of their initial responses may be indicative of a broad spectrum of approaches to sustainability. For example, responses suggest that ambiguous concepts of sustainability may be viewed differently in different sectors and environments.

... sometimes that ambiguity around sustainability and what it means can be quite useful because it keeps everybody talking to each other [S]

... if you go to do a seminar at one of the ministries, the first thing they will ask you is... 'so what should we tell our Minister to do?'... And that is such a difficult question. Business people think they

have got it honed, an academic or a scientist would probably say 'well it depends'. [S]

I think in New Zealand a lot of... businesses are struggling with this notion of sustainability. I think they are kind of struggling with 'what does that actually mean?' [B]

While science interviewees appear comfortable with inherent uncertainties and cast a broad frame around the discussion, business interviewees, in general, preferred well-defined, bounded explanations and were less likely to embrace ambiguity. Given the small number of interviewees it is not possible to extrapolate these findings to wider business and science populations; indeed cultural development of science and business disciplines highlights complex links, crossovers and hybrids and, while important, is well beyond the scope of the current study.¹ Sustainability's complex and dynamic nature may require new forms of science and business cooperation in which both the objective and perceived strengths of different disciplines may be used to greater effect; the present study is but one step on that journey.

RESEARCH AND LEARNING ABOUT SUSTAINABILITY

In the context of business and science collaboration on sustainability issues a somewhat concerning picture is revealed through the interviews. The following are the first points made by each business in response to a question about the contribution that New Zealand science has made to sustainability in their organisation, sector, or the country as a whole:

Well generally I think New Zealand does science, research and technology very badly. [B]

I think that I would like to see the CRIs [Crown Research Institutes] more science oriented, rather than drifting into policy or tools or advocacy. [B]

Well [it has made] a tremendous contribution. I mean when you look at how have we as a planet become aware of the issue around climate change, well it's been born from scientists being

brought together by the IPCC [Intergovernmental Panel on Climate Change]. [B]

I think it's not a good story, not a hell of a lot to be honest. [B]

There is a problem with RS&T generally...it's not apparent what the right science is, and there isn't an incredibly authoritative source of science. [B]

The immediate reactions of four out of five business interviewees are broadly negative; the fifth notably refers to an international, rather than New Zealand, body. While this view of science is largely negative, business leaders continue to make decisions relating to sustainability and further comments reveal the factors influencing these decisions. Sustainability decisions are commonly informed by company values around 'the right thing to do', and by demand from customers (both domestic and international, as well as retail and wholesale).

I couldn't care less if somebody thinks that the science of climate change is unproven...What I do care about, though, is that our customers are increasingly concerned about those issues... whatever your private view on climate change science might be, the marketplace is making a judgment about that...and we need to be responding to that judgment. [B]

Decisions are also sometimes informed by overseas RS&T material and there is a strong suggestion from the business interviewees that science from other countries is perceived as being more reliable and of a higher quality than is New Zealand science.

...in the UK there is a thing called the Carbon Trust. I find that is the most interesting source of activity. I am now tapping in to members of the Carbon Trust to actually get resource materials and things because it's authoritative. It's non-politicised. It's good and the people are there for the right reasons. In New Zealand we don't have anything that is vaguely the equivalent. [B]

It is also acknowledged by one respondent that New Zealand science is sometimes only noticed when it has received acclaim from overseas:

I think from time to time we will read media releases of a particular research programme [that] has been world recognised...but it's almost because of that international recognition that we actually get any kind of coverage of it in the New Zealand market. [B]

This issue may relate to a lack of communication about domestic science, or it may suggest that while New Zealand science is generally not regarded highly, when a particular piece of science receives international acclaim perceptions of its quality are enhanced such that it receives recognition in New Zealand.

While the perception that New Zealand science is inferior to science from overseas may be troubling, it is tempered somewhat by anecdotal evidence suggesting that this view may not be unique to New Zealand. At a 2008 networking event for young scientists from Britain and New Zealand participants from both countries expressed that one of their motivations for taking part was to learn from the perceived superior science expertise of the participants from the other country. The potential linkage between this view expressed by young scientists and the one expressed by New Zealand business interviewees may indicate that New Zealand science is not inferior, rather that a 'grass is greener overseas' view of national science is widespread. This possibility, and the reasons for it, would be worthy of further exploration.

Science interviewees were understandably more positive about the general contribution of New Zealand science. Often, however, they spoke in the context of wider international impacts rather than of the impacts in New Zealand. One explanation for this may be that scientists commonly work within international communities of disciplinary expertise rather than regional impact. One science interviewee explains:

...most scientists...I don't think they look to benefiting New Zealand specifically, they look to benefiting the environment internationally and globally and they look to their international discipline area and impacting on that. [S]

Also issues like climate change may be considered to be most appropriately addressed at an international level, for example through collaborative processes such as the Intergovernmental Panel on Climate Change.

Interviewees did explain some of the problems that they felt to be hindering the contribution of New Zealand science. Many of these explanations (made by interviewees from both sectors) focused largely on the way in which the RS&T agenda in New Zealand is set. Prioritising one area of science over another can be difficult, as one of the science interviewees explains:

I think [it] has been a challenge for the funding agencies for science to say 'well, what are the priorities here? How much should we be investing in biodiversity versus governance structures for instance?' [S]

While some interviewees acknowledge that setting priorities for science is difficult, many are critical of the way in which priorities are perceived to be set. There is a sense that priorities are set in a manner that can be arbitrary and lack rigour, and that thereby reduces the credibility of the science voice and its strategic alignment with national interest.

...it's a fragmented area so you get advocacy. You could pretty much shop a view either way and have compelling scientific support for it. [B]

We never had the debate in New Zealand around the emission trading scheme versus a carbon tax / mitigation efforts. There wasn't good economics, there wasn't good science, there was just a headlong rush to somehow be the first in the world to do something and what we ended up with, it is still sitting in limbo I guess, a bit dumb. [B]

If we start to see what motivates people sitting in universities...I can get a bigger research grant because this really is flavour of the month. Its awful how science is controlled like that but...lets put a whole lot of money in it because I read it in the New Zealand Herald and saw it on Campbell Live last night'...and so we respond because you follow the money most of the time. [S]

We don't have a decent energy strategy in New Zealand, we don't have an R&D strategy coming off that strategy. So there is a lack of coherency in terms of energy and therefore sustainability from top to bottom in my view. [S]

Several interviewees suggested that it would be appropriate to set science priorities in support of national strategies, but the messages around this were mixed, with others advocating for a non-political science prioritisation process.

Despite the perceived limited relevance of New Zealand science, both business and science interviewees placed value on networking and better relationships between the business and science communities.

...something we are missing is a bunch of like-minded businesses and NGOs and science organisations that are working together with a reasonably non-politicised agenda. [B]

I think of the importance of enabling a conversation that can lead to real creativity and research and those sorts of things which I think are all covered in the sustainability agenda. They seem to me to be pivots for the success of our business. [B]

[It's important for science to do] more than just doing some research and publishing it in Nature or a local journal or something; its actually going that extra step of...interacting with the people that need the information as the research progresses and in fact as the research questions are formed up, right through to talking with them about the results and what they mean. [S]

REPRESENTING SUSTAINABILITY OUTSIDE AN ORGANISATION

Most of the interviewees commented that customer perceptions of sustainability influence their work in the sustainability area. Businesses are influenced both by retail and wholesale customers, and science organisations are influenced by demand from research users and funders, as well as, in the case of universities, by demand from students and the potential future employers of those students. The business interviewees in particular referred to a need to be perceived by those outside their businesses as taking action on sustainability in order to maintain market position.

...obviously with climate change being such a massive global issue...it's important that we are seen as doing our bit for climate change to keep us competitive on the global scale. [B]

...we have to be competitive in all regards including hav[ing] good sustainability credentials...in more recent times we are starting to see more and more demand from our customers for sustainability. [B]

Despite this demand there was also a clear recognition that actively using sustainability credentials as a marketing tool can expose an organisation to risk.

We have got a rival company...who has a very high profile around sustainability...There is no area where they are outperforming us but their profile is much higher now. I'm not accusing [them] of greenwashing but what I am saying is you have got to be careful about poking your head above a parapet unless you are absolutely sure your house is in order...I don't think we are ever going to come out and advertise ourselves as...the most sustainable company in the world or whatever. [B]

There is therefore a perceived balance between appearing sustainable to satisfy demand and attracting scrutiny through claiming leadership in the sustainability arena.

ACTING ON SUSTAINABILITY

While a considerable motivation for organisations to behave sustainably is the need to manage demand and reputational risk, both business and science interviewees also explained other drivers for acting sustainably. These include taking advantage of new business opportunities, meeting staff expectations, and alignment with the fundamental values of an organisation. Most of the interviewees commented that one of the principal motivators to take action on sustainability is a belief that it is simply 'the right thing to do'.

We want to...be a company that can always be counted on to do the right thing; in whatever theatre you are acting in, whatever the right thing might be. [B]

...sustainability is an ethic within our business, it's part of our moral fibre if you want to use that term. [S]

...we believe fundamentally it's the right thing to do for New Zealand. [B]



Around half of the interviewees (predominantly from business) also reported that the values of their staff are important to them, both because the staff hold them to account for their actions and because good sustainability performances facilitate staff recruitment.

...employees...like to see the company they are working for is doing the right thing. [B]

We have got 17,000 people...involved in various business and non-business activities. I would say a fair proportion of them have real interests in some sub-set of the sustainability space and are constantly communicating with me about things that we need to be doing and how we can take things forward. [B]

People come to work for us because they do a little bit of research on organisations and go 'wow, these guys have got a community consultative council, they have got an environmental policy, they are actively involved in the community and all these fantastic things – I would like to work for you because that's a plus'. [B]

Comments from some business and science interviewees also show that where business opportunities and the values of either staff or the company as a whole coincide, action on sustainability is easy; in contrast where values and financial business concerns are in conflict and are weighed against each other, there is less certainty that sustainability will prevail.

You can have whatever environment you are prepared to pay for. [S]

...it seems to me it will depend to the extent that the dollar, or the costs of being more sustainable, and the moral will coincide. [S]

The thing about it, and I don't want to preach to you here but why I say values and principles are so important here, principle is worth nothing until it costs you something. [B]

Perhaps it is in areas where actions on sustainability are supported by values, but are limited by conflict with financial concerns, that greater potential exists for work between business and science organisations to resolve conceptual issues and develop technologies that reduce this dissonance.

EMBODYING SUSTAINABILITY

The majority of the interviewees felt that sustainability of some kind was well embedded within their organisations; they raised some caveats relating to further progress that could be made, but, on the whole, viewed sustainability as a durable issue that is being entrenched into workplace processes, cultures and reputations.

Several drew an intriguing allusion between the way in which health and safety procedures have become embedded in their workplaces, and the process that appears to be currently underway with embedding sustainability procedures.

...when I was a young student doing jobs he would say 'you climb along that beam there,' 'well can I have a harness or something?' '...just get up there and do it'. But there has been this whole cultural shift now where...the roughest, toughest guy, he wants to have his...rights to health and safety protected. So that is a...a quantum shift or a paradigm shift...and it just seems...it's the same thing with...sustainability. [S]

Interviewees saw that health and safety began as a regulatory issue for organisations but is increasingly moving to a value position where protecting the well-being of employees is considered the normal course of action. That several interviewees drew this parallel may suggest that there are workplace cultural changes in progress in terms of both health and safety and sustainability.

...if I compared [sustainability] to health and safety within our company, [the] level of divergence around priority and urgency is probably still a bit greater than what it would be around health and safety. Health and safety, pretty much everyone is on the same message...There is a very deep commitment to saying that we have got to stop hurting our people and we have just got to keep on doing more and more about it until we have achieved our goal. The sustainability thing is not as deep rooted yet and [there is] not the same commonality of purpose. [B]

It should be remembered that the interviewees are all from relatively large organisations and their ability to speak on sustainability issues played a role in their selection for interview. The respondents may have an experience of corporate responsibility that is not shared throughout all organisations in New Zealand. Health and safety may not be embedded in other organisations in the way that these interviewees describe. This in itself reveals interesting potential to investigate the way in which different kinds of responsibility, including health and safety, sustainability, and others, become embedded in organisational procedures and values.

One respondent draws a parallel between sustainability and the awareness of kaupapa Māori that is being developed through schools' cultural programmes:

It becomes part of [young people's] life, which it wasn't for us. [S]

This respondent goes on to explain that as sustainability becomes normalised for younger generations, the culture of workplaces will continue to change. Together with the comments around health and safety this indicates that interviewees see workplace cultural change as being important to the treatment of sustainability.

SUSTAINABILITY GOING FORWARDS

Despite a perceived culture change around sustainability, interviewees commonly drew attention to the shortcomings in their organisations' sustainability actions or to the work that remains to be done. Statements like the following were particularly common:

We are not there yet. [B]

We are capable of delivering the solutions and we don't always do that as well or as quickly as we need to. [B]

I think getting the sustainability performance measures in place will sort of highlight our, I was going to say failings, not failings, but our inadequacies. [S]

These and the other somewhat self-deprecating comments recorded may be representative of a number of attitudes. Firstly, they may be (conscious or unconscious) deflectors of negative criticism from external stakeholders – a kind of helmet to wear when raising one's head above a parapet. Secondly, they may represent a mild sense of collective guilt that New Zealand organisations are not further forward in sustainability terms – a parallel perhaps to the perception that research overseas is of a higher quality than research in New Zealand. Thirdly, these comments may simply reflect that interviewees believe that considerable work remains to be done by their organisations in the sustainability arena.

Interviewees were asked where they saw their organisation going with sustainability in the future. While some commented that the agenda is likely to continue to shift and change, none reported expecting to see sustainability disappearing from New Zealand priorities; rather they saw a greater engagement with sustainability in coming years.

Referring to the immediate future a number of interviewees linked progress on sustainability to the poor global economic situation. Most considered that, while the economic situation is making marketplaces tougher (and in some cases prompting uptake of new strategies with regard to investment,

experimentation and product development), the situation will not lead to a significant reduction in the attention paid to sustainability. In fact, interviewees, from both business and science, were more likely to see the recession as an opportunity to review possible efficiency gains, investigate new economic and business models, and to invest in infrastructure for future sustainability gains.

Some interviewees acknowledged that not all business leaders will share their enthusiasm and optimism through tough economic times. It may be beneficial to ensure that those organisations that retain a strong focus on sustainability maintain networks which reinforce their continuing aspiration towards greater sustainability; indeed the recession may provide an incentive to move towards the kind of creative relationship between business and science that was advocated by a number of interviewees. The business–science relationship could be one of those to benefit from the consideration of new models and ways of working.

Leadership is a topic that was commonly raised in interviews, but there was limited consistency in the comments about *who* should be leading *what* and *how*. Most business interviewees felt that their business should be a leader in the sustainability arena rather than a follower. Beyond this, however, different interviewees commented on potential opportunities and responsibilities for leadership by science, business, media, government and key individuals. The lack of clarity and consistency in this area is perhaps a reflection that roles and responsibilities in the contested and rapidly changing sustainability arena remain unclear. Further dialogue between sectors may be required to investigate and communicate around roles, responsibilities and possible leaders and to create an environment for collaborative action on sustainability.



SUMMARY AND CONCLUSIONS

The interviews summarised here were designed to provide input into future conversations and collaborations between business and science. The analysis has shown that the business and science sectors have much in common, they prioritise many of the same issues, identify similar challenges, and both foresee value in better collaborations between the two sectors.

Sustainability is discussed primarily as an environmental issue by most interviewees, although social and economic sustainability are also commonly mentioned and cultural sustainability was discussed by some interviewees. Beyond this commonality there is a broad range of conceptions of sustainability with ambiguity around definitions and actions being, in this small sample, embraced more by science interviewees than by business interviewees.

One considerable area of opportunity would appear to be in facilitating collaborations between business and science in which new ways for the two sectors to work together may emerge. However, encouraging collaborations has been repeatedly shown to be extremely problematic and this may be why collaborations between business and science are not currently more common than they are. Acknowledging that differing conceptions of sustainability and differing cultures may exist in the two sectors and reference to the large volume of existing work on interdisciplinary and transdisciplinary collaboration could improve the chances of success in this area (see Key Publications and Websites for relevant links).

The current perception among business interviewees that New Zealand science has not made an effective contribution in their organisation, sector, or the country as a whole may present an obstacle to effective collaboration. In contrast though, that interviewees report that they would value such a conversation is

cause for optimism and may be an indication that interviewees are keen to focus on the potential for working together. Similarly, the extensive common ground between the business and science interviewees may be helpful; in particular, the existence of a shared concern around science prioritisation processes may provide an opportunity for future dialogue. Indications that New Zealand science is not being picked up and used by business may provide scope for initial discussions around mechanisms for better engagement between the sectors.

Business and science interviewees identified similar pressures on their organisations to engage with sustainability. Pressure from customers (including research users, funders, and students) and from staff is a strong driver of sustainability actions. Equally, however, organisations seek to take advantage of emerging business opportunities and to minimise internal dissonance through aligning sustainability actions with key organisational values.

There is some evidence that interviewees see corporate culture moving to a greater acceptance of the need to be sustainable; and interviewees see sustainability as likely to increase in importance in future. The commonality of issues faced by the two sectors and the shared perception that sustainability will continue to increase in importance lend support to the proposal that greater collaboration between the two sectors would be mutually beneficial.



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Landcare Research
Manaaki Whenua

Sustainable development

Responding to the research challenge in NZ

CHAPTER 29 : HATCHED

Richard F. S. Gordon



Summary

In New Zealand, three questions facing us relate to the theme of 'Sustainable development: a challenge for research':

1. What is the relevance of a sustainable development research agenda to an island nation of 4 million people in the grip of a global economic crisis?
2. How may we guide our precious investment in research, science and technology so as to maximise the return to the nation?
3. What are priorities for investment in sustainable development research?

The answers to the three questions are interlinked and they reflect several realities:

- That research in New Zealand is a tiny proportion of the global whole, but New Zealand can be a laboratory for the world
- That our research resources are limited, so what we do must have impact
- That achieving impact in complex systems comes from influencing paradigms and mechanisms of governance;¹ and that different peoples have different world views and approaches to governance

This chapter explores answers to those three questions, finding direction in the way New Zealand science is funded and the opportunities for New Zealand to act as a laboratory for global solutions. Four research themes are discussed under the priority of governance for sustainable development. These are futuring for agile organisations, resilient and adaptive communities, post-regulatory governance, and governance models from indigenous communities.

This chapter is based on a paper given at a conference organised under the Czech Presidency of the European Union entitled: *Sustainable Development – a Challenge for European Research*, 26–28 May 2009, in Brussels. The scientific committee conferred a Best Paper award on that paper. The judges commented that 'every research funding agency is faced by the three questions that this paper answers, but rarely does one see such a clear, concise, and coherent argument linking the answers given to them...Altogether, this research and research management agenda is...a model that other research funding agencies would do good to look at very closely.'
www.ec.europa.eu/research/sd/conference/

QUESTION 1: RELEVANCE OF A SUSTAINABLE DEVELOPMENT RESEARCH AGENDA

What is the relevance of a sustainable development research agenda to an island nation of 4 million people in the face of a global economic crisis?

In 2003 the New Zealand Government issued its Programme of Action for Sustainable Development.² This broke new ground in our country by identifying the changes in the way we do things – and specifically in the way government acts – that will be needed to make a success of sustainable development. It described a new way of thinking and working: looking after people; taking the long-term view; taking account of the social, economic, environmental and cultural effects of our decisions; and encouraging participation and partnerships.

In 2007 the then Prime Minister, Helen Clark, announced an intention to make New Zealand truly sustainable. She defined the sustainability challenge as ‘one of the defining global issues of the twenty-first century’, and ‘a challenge that New Zealand must meet to protect our nation’s unique way of life and our future prosperity’. She talked of the need to share responsibility in this challenge.³

In 2009 New Zealand faces a similar challenge to other countries. The result of unsustainable financial practices at home and in the global community leaves us facing an economic hardship that is difficult to predict. We face a harsh reality that unsustainable behaviour is just that: *unsustainable*. The economic turmoil is a taster for the turmoil predicted as a result of unsustainable management of our environmental resources and global climate. Whether the defining issue will be climate or water, soil nutrients, or loss of biodiversity, we face an uncertain but almost certainly punishing future.

The economic crisis may support the old adage, ‘*it is hard to be green when you are in the red*’. Some think we may literally be unable to afford environmental measures in the short term that are necessary for long-term welfare. Therefore it is encouraging that many national economic stimulus packages appear to include environmental initiatives, for instance in



Photo: Shane Hana

clean technology.⁴ But we will miss a significant lesson if we do not recognise that addressing the economic crisis may give us some of the tools we need to address a potentially greater environmental and social crisis looming in the next few decades as a result of climate change and the depletion of natural capital. It may help us to shift paradigms and improve governance systems for lasting benefit to society.

Returning to our initial question: What is the relevance of a sustainable development research agenda in the face of an economic crisis? Scientists might say the crisis is an experiment in how society makes the transition from an unsustainable to a sustainable system. What is the special relevance to an island nation of 4 million people? Scientists might also say we have in Aotearoa New Zealand a useful laboratory, with clearly defined boundaries, reasonably well regulated internal conditions, fairly clear external influences, and a national characteristic attitude of ‘give it a fair go’, meaning that we are pragmatic and willing to try new ideas. In this laboratory we may evaluate solutions of relevance both to New Zealand and to other countries.

QUESTION 2: GUIDING INVESTMENT TO MAXIMISE RETURN

How may we guide our precious investment in research, science and technology so as to maximise the return to the nation?

One aspect of New Zealand pragmatism is evident in its approach to science funding. We conduct a tiny proportion of the world’s science and we cannot afford to be expansive.

Delivering National Outcomes

Multiple Science Inputs

Biophysical
Biochemical
Ecological
Socioeconomic
Informatics
Matauranga Māori
Policy

Multiple Agency Inputs

Central & Local Government
Businesses
Communities
Māori
Landowners

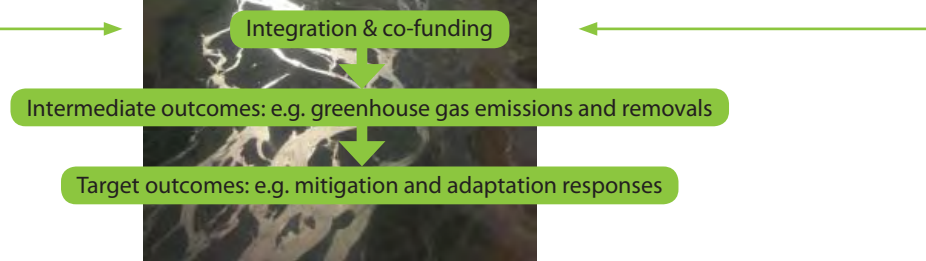


Figure 1 The braided river metaphor for integrating scientific disciplines and research user organisations in a fluid project structure to deliver intermediate and target outcomes of national benefit.

We must be focused, and we must achieve returns on research investment. We face similar challenges to other countries, demonstrated by a recent EU report on science and policy-making.⁵ The report highlighted the need to ensure that EU-funded research results inform policy-making in a meaningful way. EU policymakers expressed a desire that stronger linkage should enhance the contribution of research to areas of major economic, social and scientific relevance for the EU.

For a decade or more the New Zealand government's principal funding agency, the Foundation for Research, Science and Technology (FRST), has had as a core principle that the public good research it funds must make a demonstrable contribution to outcomes of national value. Therefore research funding is targeted at projects that can show the pathway from research to such outcomes. This requires transparency around two areas in particular: *the valuation of the outcomes*, and *the pathway to uptake of research*.

Research users are usually government agencies and businesses, but also include non-governmental organisations, community groups, and other researchers. FRST's assessment criteria for research proposals that range from NZ\$500,000 to upwards of NZ\$20million demand such transparency.⁶

The valuation of outcomes takes a pragmatic approach by pointing to established national strategies (e.g. biodiversity) or those of sector groups (e.g. dairy sector) who are willing to co-fund research. Valuation also includes estimation

of the economic value of outcomes (e.g. greenhouse gas research reducing economic liability under the Kyoto Protocol). Demonstrating the achievement of value may be problematic when, as is common, benefits are obtained after the project funding has finished. But it is possible to show that research has supported evidence-based policy-making and implementation in line with the intentions of the research proposal.

The pathway to uptake of research starts at the conception of the research programme. Evidence is expected by the funding agency of engagement between researchers and research users through the gestation of the project proposal, and this engagement may be audited by the agency when assessing the proposal. Researchers are bound by contract to deliver workshops, training programmes, publications, secondments, etc., to achieve research uptake. Research users may be bound by the same contract or a derivative, to fulfil their role in the pathway to uptake. Research programmes therefore bring together not only different disciplines in formal or informal partnerships, but also different research users, who may co-fund research components, to achieve intermediate and target outcomes of benefit to New Zealand (Fig. 1).

Research is a partnership that is best fulfilled when the team includes both researchers and research users, supported by people with a range of additional skills. Figure 2 shows the stages in a conceptual research cycle together with the skills needed to enhance the value of the research

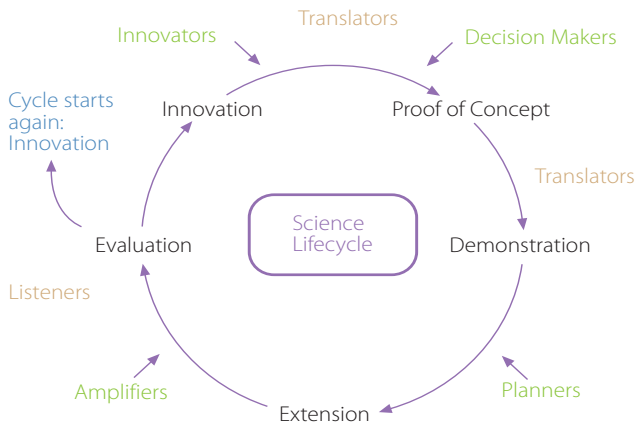


Figure 2 Schematic representation of the science lifecycle showing the phases (black), the specific skills (green) and the newly recognised interaction skills (red) that are needed in addition to the science skills.

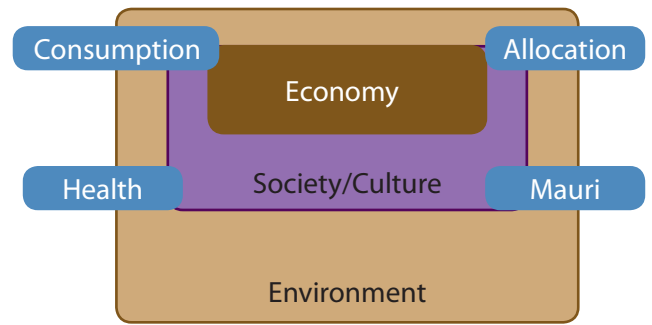


Figure 3 A nested model of the dimensions of sustainable development showing some of the cross-cutting issues associated with water. Note: maori is the Māori term for spirit or life-force.

at each stage. Beyond the essential skills in science and in research management, skills are needed in *translation* (both ways between the languages of science and users, e.g. policymakers, and funders); in *decision-making* (when to increase or decrease research funding, or take a different approach); in *planning* for the longer term implementation of research findings and tools beyond the funding lifecycle; in *extension* or *amplification* of research from case studies to the mainstream; and in *listening*, *evaluation* and *collaborative learning* about the impacts of the research in its social context, from which may spring the new ideas that start the cycle again.

QUESTION 3: PRIORITIES IN SUSTAINABLE DEVELOPMENT RESEARCH

What are priorities for investment in sustainable development research?

The breadth of the subject defies simple analysis. Priorities for New Zealand, like other countries seeking sustainable development, extend across a wide spectrum from those deeply socio-economic to those deeply cultural and environmental, with all four dimensions represented in most priorities. Figure 3 depicts a view of how water issues overlap nested economic, social, cultural and environmental dimensions. For example, issues of water consumption and allocation touch on all four dimensions; and *mauri* (the Māori term signifying health and life-force) connects the

environmental, social and cultural dimensions. This approach helps to break down the silos in our thinking. Economic development, Māori affairs, climate change, and water are prominent in the present New Zealand Government's agenda, and all relate to the complex challenge of achieving economic development that sustains and grows the social, environmental and cultural resources on which it depends.

In a time of great uncertainty about the future *governance for sustainable development* is a particularly relevant theme. Governance, rather like sustainability, is a term with multiple meanings. In the context of this paper the hallmarks of governance are those of effective boards of directors: attention to vision and longer term strategy, risk and opportunity, relationships with stakeholders, goal-setting, and overseeing prudence in management. Governance here relates to both business and government.

Let us explore a research agenda on governance for sustainable development, with four examples providing a New Zealand perspective. This agenda reflects consultation by Landcare Research with stakeholders about research needs in 2008 and includes both current and prospective research programmes:

- Futuring for agile organisations
- Resilience and adaptive capacity in communities
- Post-regulatory governance of constrained natural resources
- Governance models from indigenous communities

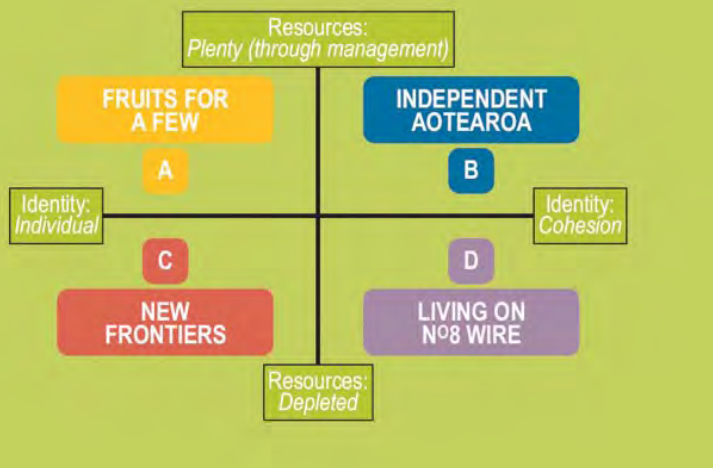


Figure 4 Four Scenarios for New Zealand.

Research theme 1: Futuring for agile organisations

Change is speeding up, increasing the pressures on central and local government to provide ‘agile’ responses to increasingly ‘wicked’ problems.⁷ These are multidimensional, with messy solutions, in which uncertainty and risks are typically high, and often there is no ‘right’ answer.⁸ Yet agile responses are required when investing strategically in infrastructure, business, and human capital against a global backdrop of significant and uncertain political, economic, social and environmental change.

The initial research question is how to adapt and combine three common futuring approaches – of global scenarios (e.g. IPCC), community visioning, and New Zealand scenarios – for a wide user-community in New Zealand and so improve the effectiveness of strategic planning for agile responses. How should organisations take a ‘long view’ of opportunities and challenges?

IPCC and other global climate scenarios have been adapted to provide broad-brush information about likely climate changes within New Zealand’s major regions.⁹ But businesses and government still lack the capacity to identify risks and opportunities to specific organisations or communities. Local government legislation has produced Long-term Council Community Plans,¹⁰ but tools are only now in development to give territorial authorities and communities the capacity to model the implications of alternative policies for integrated environmental, social and economic outcomes. One example in New Zealand is the Creating Futures programme.¹¹

An example of national futuring is Four Scenarios for New Zealand.¹² The four scenarios (named *New Frontiers*, *Fruits for*

the Few, *Independent Aotearoa*, and *Living on Number 8 Wire*) occupy a matrix with axes of identity (individuality – cohesion), and resources (plentiful – highly constrained) (Fig. 4). They give a rich sense of how life could differ in the future: at work, at home, in politics, and in business. With whom will we trade? What sports will we play? How will we educate people? And what will all this mean in terms of sustainable development? Since these scenarios and a futures ‘game’ derived from them were developed, 34 organisations in central and local government and the private sector have been enabled to take the long view and explore futures thinking in parallel with strategy exercises.

In spite of those initiatives, contemporary ‘futuring’ risks being a separate exercise, not mainstreamed in strategic planning or community debate. In a series of workshops and interviews on research priorities in 2007/08, a consistent message from research users was the need to address New Zealand’s lack of capacity in translating futures into strategy. We identified three opportunities: (1) to improve alignment between future scenarios and government policies such as regional development form, transport, infrastructure provision, and natural resource governance; (2) to align global economic and social trends with policies for labour and human development and the strategies of major sectors e.g. agriculture; and (3) the use of futures by businesses in re-modelling to capture environmental and social opportunities, especially as organisations orient themselves into a new world order post-recession.

An initiative that has the potential to support such alignments between futures and strategy is to create a shared understanding and resource base of future scenarios relevant to New Zealand. This has the potential to improve the quality of strategic planning, reduce the inevitable duplication of effort between agencies needing such knowledge, and support those with inadequate resources or capacity for doing effective futuring. A deliverable in the pathway to uptake is to put leading international resources on future pressures and opportunities ‘on every desk’ in government (and other sectors), including new methods of engaging citizens in ongoing debate about future scenarios using Web2.0 and 3.0 technologies, as has been started by the European Commission.¹³



Photo - Cissy Pan



Photo - John Hunt

Research theme 2: Resilience and adaptive capacity in communities

Historically, the long-term success of cities and communities has been founded on ability to prevent or withstand shocks, such as resource scarcity and natural disasters, and adapt and capitalise on large-scale change, such as technological advances and significant demographic shifts. Today, New Zealand cities and communities face the challenge of major change, with increasing uncertainty of how forces such as economic recession, climate change, global energy shortages, and an ageing, more ethnically diverse population will interact and impact our lives.¹⁴ Compounding this is the modern world's connectedness; a disruption in one part of the world, to financial markets or oil supplies for instance, can rapidly impact cities and communities globally.

Resilience and adaptive capacity refer to the ability to withstand disruptions and/or adapt to large-scale change with minimal loss of function. The concept can include structural adjustment or, in the event of substantive system breakdown, structural change. Resilience and adaptive capacity are determined by a combination of factors including natural and physical resources, character of infrastructure, human and social capital, collective learning ability, and governance frameworks.

Lack of resilience and adaptive capacity to disruptions and rapid change can include major job losses; deterioration of natural resources; capital losses from obsolescence in buildings, roads, and plant; the breakdown of critical infrastructural systems; social dislocation; and losses in personal and cultural identity. The aim of research is to show how such costs can be replaced with net benefits from, for example, designing adaptable infrastructure and flexible building

systems, positioning communities to gain from emerging economic sectors, and strengthening community and business competitiveness with a culture of preparedness and environmental leadership.

In order to build resilience and adaptive capacity, we need to understand what factors and processes make some settlements vulnerable to disruptions and rapid change while others can adapt.^{15,16} The desired national outcome is to enable local and central government to build this capacity, moving beyond the current focus on crisis events and disaster management. A framework, indicators and place-based planning tools are needed to enable New Zealand city managers and central government agencies to work with communities and gain their mandate in implementing proactive management responses to uncertain futures. Spillover benefits are anticipated in settlements adopting new economic activities and creating new jobs – with greater diversity being an adaptive response to uncertain futures.

Research theme 3: Post-regulatory governance of constrained natural resources

Sustainable use of natural resources is the foundation for primary industries that play a major role in New Zealand's national and regional economies. Dairy and meat products alone account for 33% (NZ\$10.3 billion) of export income. Hydroelectricity provides over 60% of New Zealand's electricity, while other renewable energy resources are increasingly important. Equally, New Zealand's unique and spectacular environment is a primary drawcard for international tourism, which accounts for 18.5% (NZ\$7.4 billion) of national income. The success of these and other industries depends in large part on their access to and use of high quality natural resources that are becoming increasingly scarce.

Apart from the economic value of natural resources, integrity of natural systems is of increasing concern to New Zealanders. Economic and other resource uses and values are increasingly coming into conflict, creating difficult problems of natural resource governance. Conflicts over water allocation are increasing, as are problems of water pollution. Development of alternative energy resources is often contentious, as are many coastal developments.

In these and many other cases, there are important and contested issues around what is physically, legally, economically, and socially feasible, and then what is desirable, in the management of common resources. Furthermore, under resource management and local government legislation, local authorities have a responsibility to recognise the incorporation of Māori perspectives in planning and decision-making, but often struggle with how to implement this effectively.

Successful natural resource governance can only be achieved through integration of social, environmental, economic and cultural dimensions. Decision-making has typically moved from an imperfect regulatory environment to a combative legal environment in the courts. Attention is becoming focused on the opportunity for post-regulatory approaches that incorporate stakeholder collaboration, consensus building, and more integrative, interdisciplinary research.¹⁷

A research agenda we are following is the development of an integrative framework for analysis of natural resource governance problems in terms of *efficiency, effectiveness, equity, legitimacy and scale*.¹⁸ The research has taken an initial focus on water, but the framework and methods could be applicable to natural resource governance in many sectors and regions of New Zealand. The research draws on a wide range of scientific disciplines, using both quantitative and qualitative methods.

Quantitative models are being developed at both regional and local scales to create better understanding of the role of water in economic production. An 'integrated computable general equilibrium' model has been developed, capable of simulating the broad effects of alternative policies and alternative scenarios for economic development at the regional scale.¹⁹ An

'agent based model' will also be developed to explore specific issues in more detail at the scale of multiple catchments.

Qualitative approaches are being used to develop a better understanding of decision-making processes around sustainable allocation and use of water resources. We are producing an institutional landscape map by examining the legal and institutional frameworks; exploring informal, or 'silent', accounts of experiences of interagency decision-making processes, including aspects of authority and institutional barriers to creating new mechanisms of regional planning; examining media representation of water issues; and analysing relevant policies from within and beyond New Zealand's shores.

Collaborative learning techniques build capability in stakeholder engagement and constructive use of scientific knowledge. Where these techniques focus on Māori issues and perspectives, Māori researchers establish and articulate Māori perspectives and knowledge on resource issues and identify appropriate governance models. This often involves finding out how stakeholders understand and interpret the 'Māori voice' with respect to natural resource governance and recommending equitable New Zealand solutions.

Research theme 4: Governance models from indigenous communities

The first humans arrived in Aotearoa New Zealand from Polynesia about 1000 years ago, populated the country, and evolved a distinct Māori culture inextricably linked with the natural and spiritual environment. Europeans first settled in New Zealand in the early 1800s, and the Treaty of Waitangi was signed with Māori chiefs in 1840 to provide Māori rights over their lands, resources, and taonga. However, under European colonisation, an intense period of Māori land alienation and confiscation of strategic resources followed until about 1940 when Māori land represented only 6% of Aotearoa New Zealand. A new era commenced in 1975 in which the Crown (New Zealand Government) recognised the resource alienation as a significant historical grievance, and entered a phase of dialogue, dispute resolution, and settlement.

The resulting compensation to Māori tribes for land and economic losses has provided many with the opportunity

to once again govern significant assets and resources (e.g. land, fisheries, property) and to build an economic, social, and cultural base on which to develop a sustainable future for their people. Indigenous Māori make up about 15% of New Zealand's population of 4 million, with about 80% of all Māori now living in urban areas. The Māori commercial asset base in 2005/06 was estimated to be worth NZ\$16.5 billion representing 1.5% of the total economy (an increase of NZ\$7.5 billion or 83% since 2001). Fifty-two percent of Māori commercial assets are concentrated in primary industry such as farming, forestry, fisheries, and agriculture, while 40% is in the tertiary sector, representing growing numbers of Māori who are self-employed and entrepreneurs.²⁰

A significant question for many Māori organisations and businesses has been how to balance aspirations for cultural enrichment (e.g. retaining strong elements of traditional culture such as values, language and knowledge) with more modern elements of advancement, growth, commerce and economic development.²¹ Our research with a number of Māori businesses^{21,22} has shown that effective corporate governance is a necessary precursor to integrating cultural heritage and values into an organisation. It is also essential to have a robust organisational planning and reporting framework in which to articulate goals and outcomes, and implement, measure and report performance. Our future research seeks to support that development of governance as a New Zealand model with relevance also in a world seeking new approaches to corporate governance.

Durie^{23,24} posed the broad question 'how is a Māori business distinguished from any other business?' He identified the following six key outcomes that could be used to evaluate a Māori business's contribution to Māori development and advancement:

1. *Tūhono* (aligns a Māori business to Māori aspirations through comprehensive consultation)
2. *Pūrotu* (transparency and responsibility to the wider community)
3. *Whakaritenga* (balanced motives, not just profit-making)
4. *Paiheretia* (integrated goals, using effective management)

5. *Puāwaitanga* (best outcomes within wider social, cultural, environmental and economic, perspectives and goals), and
6. *Kotahitanga* (unity and alliance that encourages cooperation).

These elements distinguish emergent Māori business. They also define a governance framework that has relevance in a world seeking a new social contract between business and society. They look to the long-term sustainable future: '*Mō tātou, ā, mō kā uri ā muri ake nei*' (for us and our children after us),²⁵ and they express the spirit of sustainable development: '*Manaaki whenua, Manaaki tangata, Haere whakamua*' (Care for the land, Care for the people, Go forward) – We are the guardian of our assets and community.²⁶

CONCLUSION

Aotearoa New Zealand may not yet have the answers to the sustainable development challenge, despite our 100% pure, clean, green image, but:

- We have a pragmatic approach to developing research agendas and conducting research in *partnership* with research users
- Our country has the potential to be a *national laboratory* for solutions of relevance to other countries
- A *long view* and *futures* have the potential to inform our policy and strategy across sectors
- We can learn from the economic crisis to create *agility, resilience and adaptive capacity* in our organisations and communities, and
- *Māori values and practices* are helping fashion distinctive approaches towards equitable societal goals for sustainable development in this generation and beyond

If there is a personal message in this overview, it is that research helps to inform conversations, and that conversations are fundamental to governing for sustainable development. But effective conversations need people who are willing to speak and to listen; to inform and to seek to learn; to lead and to be led.

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unending



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Sustainability is unending. As a term, however, it has been problematic. We consider why that has been so and point to new forms of leadership emerging to guide society through the increasingly wicked problems that it faces.

In the course of the last six years a researcher in the programme around which this ebook is centered asked a memorable question about the value of research on recycling office waste when the real problems of the world were deprivation and insecurity. Images of children dying of starvation in war-torn Darfur and of people picking the remnants of their belongings from storm-torn towns in the Caribbean and Pacific do remind us of the scale and impact on people of the issues that comprise sustainable development. The human needs of shelter, food, security, dignity, and achievement are fundamental. Yet these needs are denied to so many because of geography, history, race, conflict, global change, or resource consumption. This is the hard edge of sustainable development. It is seemingly far removed from the reduction of office waste. Yet in both cases it is care for the land and care for the people that underlie actions to create a better world.

Human needs, now and for future generations, are central to the concept of sustainable development as defined by

the Brundtland Commission in its 1987 report for the United Nations. Its report, *Our Common Future*, addressed the challenge of achieving development without unsustainable impacts on society and the environment. According to the Commission, 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' Activities that are not sustainable deny those needs to one sector of human society or another – in the present or the future.

Why is it that people still struggle with the notion of sustainable development or its common simplified form, sustainability, 20 years and more after the Brundtland Commission? Why is the term sustainability problematic? Literally it means the ability to sustain, but those two parts – *sustain* and *ability* – beg questions. What do we want to sustain – our current quality of life, consumption, business, environment, or natural resources – for whom, and why? Does one person's view of what should be sustained carry greater weight than another's? And do we mean the ability of the environment to sustain us, or our ability to sustain our communities or the natural environment?

There is also an ambiguity about the term. For instance, can our Western economies be described as 'sustainable to

date' because they continue to develop 200 years on from the industrial revolution? Will new technologies that lessen environmental problems be truly sustainable if we cannot foresee the perverse impacts, as in switching crops from food use to fuel use in the case of biofuel production? Such questions do not have simple answers.

We have to recognise that sustainability is also a dynamic concept, varying across time and cultures. We live with the consequences of what previous generations thought was sustainable and valuable. While this has meant our generation has inherited treasures of heritage and culture, we have also had passed on significant costs. For example, when the possum was introduced in New Zealand to establish a fur trade in 1858 people could not anticipate the future cost to native biodiversity (loss of rare birds and damage to forests) and livestock (through the spread of bovine tuberculosis) or the cost of control, which is now around a hundred million dollars each year. In another example, today most of us buy imported products made by adults and children whose work conditions and pay rates will maintain intergenerational poverty in their communities. Although we have the knowledge, we shut our minds to it. So, in some cases we do not have the knowledge that future generations will have, while in others we have the knowledge but are unwilling to make a trade-off.

Part of the challenge in using the term is that we think of sustainability as a desired state without defining what it would look like and how we would know if we had arrived there. By definition, aspiring to sustainability means our current state is unsustainable. Should we therefore focus more upon unsustainability, and ask ourselves: 'what activities can we not sustain, what trade-offs are involved, and what could we achieve if we did not accept a win-lose trade-off as a default?' Starting with a goal of win-win (e.g. economic and social/environmental gain) puts our thinking onto a different, innovative and productive pathway.

A further dilemma is that the term sustainability is usually discussed as something separate from the mainstream activities of an organisation or policies of a government. While this trend has helped to give it an identity and profile, such use has also permitted the sense of sustainability being an option or an add-on – an approach motivated by short-term gain that may be dispensed with when circumstances change.

In spite of those challenges to sustainability as a concept, the last decade has seen the remarkable entry of sustainability thinking into mainstream business media. A Harvard Business Review article in September 2009 is significant: In *Why sustainability is now the key driver of innovation*, authors Nidomolu, Prahalad and Rangaswami comment that 'sustainability isn't the burden on bottom lines that many executives believe it to be' and 'sustainability should be a touchstone for all innovation'.

A growing number of people in our experience now make the connection between what is good for the organisation and what is good for the community and the natural environment in which it operates. For example, without integrity (i.e. health) in the ecosystems that provide the resources (e.g. clean water) and services (e.g. the cleansing of water through soil or wetland), an agricultural business dependent upon abundant clean water for irrigation will be unsustainable. Similarly, without the maintenance of human capital (i.e. knowledge and skills) in a community and the social capital that supports community development and resilience, a business working in that community will be unsustainable.

Therefore it is relatively straightforward for people in businesses to see that sustainability of the natural environment and society are critical to sustainability of their businesses. The impacts of their activities on environmental and social sustainability have direct and indirect impacts back on their business. The direct impact is likely to be through a social 'licence to operate' in the





community. This is won by being seen as a good corporate citizen and by being transparent about those aspects of the business's performance that matter to the community (Chapter 9). In this way organisations are responsible to society. That does not mean they are necessarily responsible *for* society, which is a common misrepresentation of the transparency argument.

The indirect impact of an organisation's activities occurs where, for example, the effects of the business are in another country where products are sourced or used, or where the customers make purchasing decisions based upon what they know about the business's performance. Every month the media have another example of a business that has acted in a way (and often in another country) that has adversely affected the support it enjoys from its customers.

That sustainability makes business sense is indisputable. A business cannot itself be sustainable if the communities and environments in which it operates are unsustainable. Businesses are increasingly being rewarded for addressing sustainability issues proactively. Business may contribute to unsustainability; but through innovation, investment, competition, and collaboration, business, as well as government, has a crucial role to play in achieving sustainable development of communities and improving the health of the natural environment on which it depends. In this way society's wealth is enhanced in not only economic but also social, environmental and cultural measures.

These examples highlight the strong link between business prosperity, economic growth, and issues of sustainability. They also highlight the increasingly important alignment of values between organisations and their stakeholders. In working with organisations on the theme of sustainability, often the first questions we ask are about such alignment. 'What are your organisation's values? How do those values align with those of your stakeholders? And how do they appear in your performance?'

If the fundamental purpose of business is to provide a service to society, then the sustainability agenda addresses how that service is provided (Chapter 9). How does it make its profit? If sustainability (however it is worded) is one of the organisation's values, there is an expectation that it underpins every aspect of performance. If it is an underlying value, then there is hope that it will also have the resilience to guide the organisation's leaders through some of the difficult decisions they will have to make in the near future as the issues become more complex and more urgent.

People talk about sustainability as a wicked problem (Chapter 19). The uncertainties and risks surrounding global warming, for example, are high; the strongly held and plausible alternative viewpoints of different groups are not readily (if at all) reconciled; there may be no 'right' answer; and the costs of action or inaction are likely to be high and to occur in expected as well as unexpected places. These are the hallmarks of wicked problems and they confront organisations more frequently as the potential trade-offs between economic, natural and social capital become more acute.

For many people the global situation and its wicked problems appear desperate. But the audacity of hope for sustainable business and societies also appears increasingly plausible. President Obama's election cry 'Yes we can' called people (not only in the United States) from feelings of despair and helplessness in the face of social, economic and environmental woes, to a belief that they have choices and the collective ability to sustain what they value.

A feature of wicked problems is that different types of leadership and different ways of thinking about the problems are needed for progress to be made. Where a question resolutely defies answering, a better quality question is needed. Where the tough questions have been avoided, then (in our experience) it is time to confront the 'elephant in the room'. This is the issue



– all organisations have one – that no one wants to address directly. Where all the available positions have been found wanting, a new position is needed in the uncharted space of opportunity. Where leadership by a single leader is unworkable because there are conflicting multiple interests or an absence of hierarchy, then collaborative leadership needs to be tried.

We are seeing collaborative or collective leadership emerge in which people's efforts are aligned to achieve significant goals, often beyond their own expectations. Our first example of this has been called post-regulatory governance. In many cases of environmental resource management, regulatory approaches become bogged down in costly and time-consuming legal processes that are resolved in the courts. The costs of achieving and monitoring of compliance with regulations may also become unbearable (see Chapter 21).

Post-regulatory forms of environmental governance involve a collaborative pathway for groups that have an interest in the contested resources. That pathway may include a coupling of legal systems with other approaches – stakeholder education, stakeholder-based management plans, self-governing communities, and audited self-management. Such post-regulatory governance is a form of collaborative leadership, reframing questions of ownership and rights, building trust between the participants, and sharing fundamental values including equity within and between generations.

A second example of collective or collaborative leadership is emerging within indigenous people's businesses (e.g. Māori business in Aotearoa New Zealand – Chapter 10). In this example the traditional values of the tribe are reflected in the governance and strategy of the business. Those values include a long-term interest in the well-being of grandchildren

and great-grandchildren who are future beneficiaries of the business. In many cases natural assets (e.g. land, water) are held in perpetuity by the tribe and therefore must be stewarded for their long-term ability to provide for ecosystem services, cultural resilience and tribal self-determination.

The indigenous perspective recognises the connections between the people and all aspects of their surroundings, past, present and future, natural and spiritual. Although the combination of the two may lead to tensions, 'Western' business practices and indigenous values are combining in new business models in which collective leadership is conducted by the tribe and business managers. The goal is leadership in the best interests of present and future generations and the natural environment to which the people are inextricably linked. Such integrated thinking is central to sustainable development.

A third example of collaborative leadership is the Open Source Initiative that has developed software such as Linux and Ubuntu, which are made freely available as alternatives to commercial leaders' products. Enhancements to the suite of open source products are developed for the public good by members of the community and evaluated by their peers before being incorporated into the open source offering. Leadership towards the goal of an effective and continuously improving suite of software tools has been collaborative.

The Open Source model may become a template for communities building sustainability solutions through a process of open development, implementation, evaluation and continuous improvement. Open Source software development, however, is based in the academic world, while sustainability solutions will need to be based in the wider community. This is where the opportunity may lie in the fourth example of collective leadership: the online social networking community.

Within online social networking, ideas, opinions and collective action originate and are shaped through the interaction of millions of participants rather than a narrow leadership base. What was in recent years called the CNN world of rapid news dissemination, exposing organisations to widespread scrutiny, is now the Facebook world. Online social networks have the potential to become the visible hand of the market by quickly sharing knowledge of poor corporate practice, rewarding businesses, and quickly creating and spreading new

consumer demands. Social networks can also become a force in democratic decision-making – in building values, identity and knowledge – and in turn creating a public mandate for government policy and direction.

In conclusion, we reflect on a milestone in the development of sustainability thinking in New Zealand. In the years 2000 to 2004 a New Zealand group called Redesigning Resources comprised six organisations – five businesses from different sectors and one city council. The group was dedicated to exploring, understanding and implementing the principles of sustainable development and sharing their learning with others. The inaugural public conference of the group, attended by 200 people from business and government, was addressed by Ray Anderson, CEO of Interface Inc., and Paul Hawken, author of the *Ecology of Commerce* and books on natural capitalism.

These two inspirational speakers and leaders encouraged a sense of collective purpose in the Redesigning Resources group and the chief executives of the six organisations, who worked together in the following years to understand, embrace and implement the principles of sustainable development. Other chief executives at that time in New Zealand also had the benefit of hearing inspirational speakers, such as Dr Karl-Henrik Robert, founder of The Natural Step.

Leadership in New Zealand at that time could be said to come from individuals, often chief executives and business owners who might not initially have understood the word sustainability, but knew that the concept aligned with the values and aspirations they held for their organisations. By 2004, when Redesigning Resources concluded, leadership could be said to have transferred to groups including businesses who led their sectors and organisations who led their peers in government. In 2009 we are seeing the emergence of collaborative leadership across organisations, communities and national boundaries. Different groups may find different reasons to engage, but there is a collective sense that this is ‘the right thing to do’.

This collective sense has the potential to overcome barriers to the uptake of sustainable practices, to change cultures within organisations, and ultimately to find solutions to deprivation and insecurity. While the recycling of office paper is trivial in comparison with global poverty, it is symbolic of a fundamental shift in thinking – to a recognition that our world has limits and

that the same care for the land and the people, expressed in our simple recycling actions, can guide people along the tortuous pathway to finding solutions to those greater, wicked problems.

At the close of Ray Anderson’s speech to the Redesigning Resources conference in Christchurch, New Zealand, in 2000, he set out the choices for the audience to create their future. He finished with an appeal to our country’s identity and values: ‘New Zealand, it’s your call.’ This ebook is our team’s response to that appeal.

New Zealand’s capability for sustainable development has most certainly hatched. What will now be the wind on which it takes flight? Will it be the values of a South Pacific nation? Will it be a greater profit margin and market share for those that develop new products, services and business models? Or will it be new forms of collaboration across society that transcend national and business boundaries?

The world is a small place and New Zealand will not be immune from the impacts that climate change, poverty or resource depletion have on other nations. When our indicators of social, environmental, economic and cultural capital are all increasing, we will say we are making progress. When we see less deprivation and greater security nationally and globally, we will say we are making a difference.



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The research programme *Building Capacity for Sustainable Development: the Enabling Research*, on which this ebook is based, was designed in 2002 to address four of the needs in this area identified by the government of the day. For sustainable development to be adopted, changes were needed in the way people think and act. We needed to:

- Take a longer term view – hence our research and development of futures and the publication of *Four Futures for New Zealand* (Section 1) and our later development of Regional Futures programmes (Chapter 4)
- Integrate across silos, specifically economic, social, environmental and cultural thinking and policy-making – hence our work on integrated sustainability assessment (Chapters 23 & 24), integrated spatial decision support systems for regional planning (Chapter 4), and emergent models of sustainability based on traditional values in Māori businesses (Chapter 10)
- Collaborate in new partnerships – hence our research on programmes in the community (Chapter 16), across business and government (Chapter 13) and between science and business (Chapters 12 & 28), governance (Chapters 3, 22 & 27), and stakeholder engagement (Chapter 25)
- Take account of people – hence our research on the emergence of consumerism (Chapters 14 & 15), on team building (Chapter 26), and communication (Chapter 17).