

# 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

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## 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 warns<sup>1</sup> 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)<sup>2</sup> 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: 15–16<sup>2</sup>

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



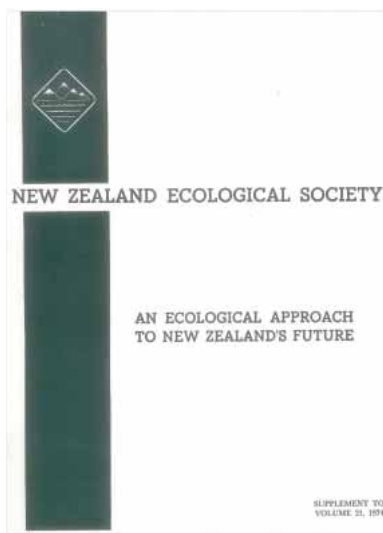


Figure 1 1974 Ecological Society article on New Zealand's Future

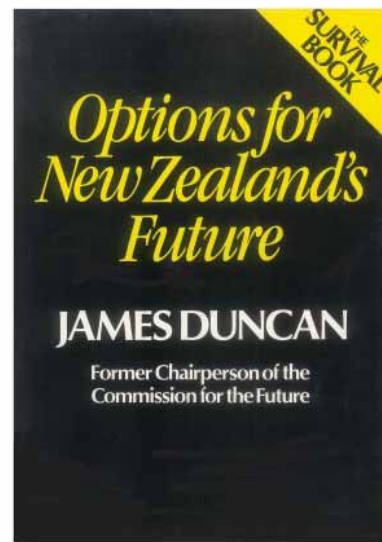


Figure 2 The Futures Commission book – Options for New Zealand's Future (1984)

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.<sup>3</sup> This history is documented<sup>4</sup> quite extensively at [www.sustainablefuture.info](http://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](http://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 commentators<sup>5</sup> 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),<sup>6</sup> 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,<sup>7</sup> the

## box 3: INDEPENDENT-FUTURES-ORIENTED ORGANISATIONS

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

**Aotearoa**, [www.futurestrust.org.nz](http://www.futurestrust.org.nz)) was established in 1982 and it continues to promote futures thinking through meetings and newsletters.

**Sustainable Future** ([www.sustainablefuture.info](http://www.sustainablefuture.info)) is developing a vision of a sustainable New Zealand in 2058.

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

**Sustainable Aotearoa New Zealand (SANZ)** ([www.phase2.org](http://www.phase2.org)), produce principles and scenarios for strong sustainability in New Zealand (2009)

**Anew New Zealand** ([www.anewnz.org.nz](http://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 Network<sup>8</sup> (see Box 4) in 2005 to provide 'early alert' advice about emerging science trends and innovations, particularly in biotechnology<sup>9</sup> 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/](http://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.

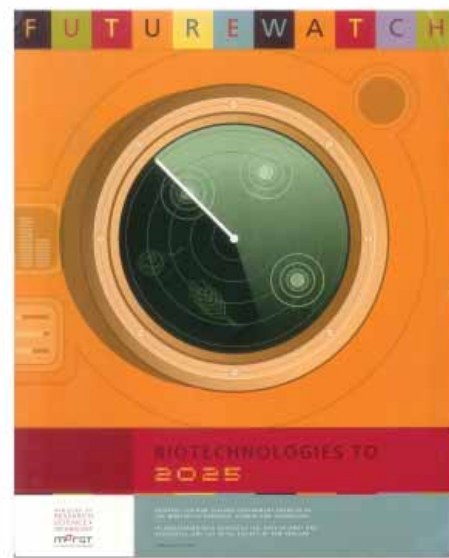


Figure 3 MoRST FUTUREWATCH report *Biotechnologies to 2025* (2005)

#### *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 technology<sup>10</sup> 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 screenplay<sup>11</sup> and as a book.<sup>12</sup> 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*<sup>1</sup> (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.<sup>1</sup>

The *Creating Futures Project* ([www.creatingfutures.org.nz](http://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.<sup>1</sup>

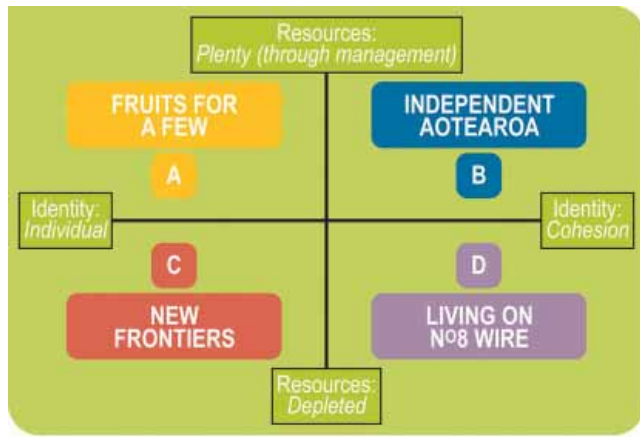


Figure 4 Landcare Research scenarios matrix as developed in 2007

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.<sup>13</sup> 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.<sup>13</sup> 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.<sup>14</sup>

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](http://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.

FutureMakers<sup>15</sup> 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:<sup>16</sup>

*'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.'*



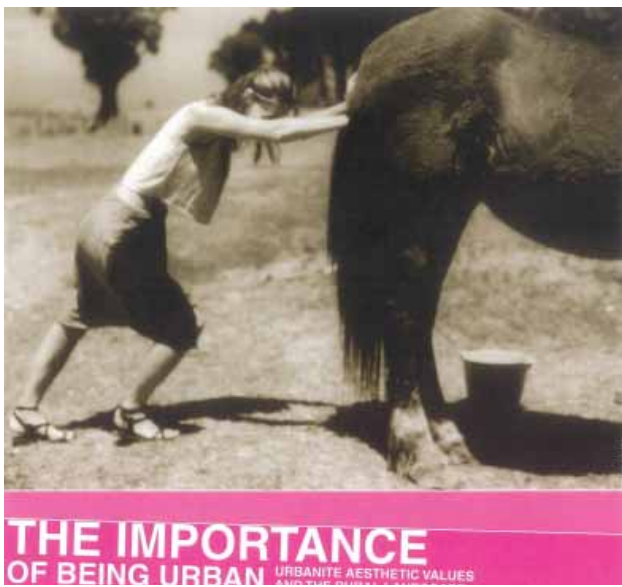


Figure 7 Two of the Thought Starter cards from the set of ten devised as part of the FutureMakers project (2008) available at <http://futuremakers.ning.com>

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 cards<sup>17</sup> 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.<sup>18</sup> 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.<sup>19</sup> 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.<sup>20</sup> 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](mailto:buildingcapacity@landcareresearch.co.nz)

For the Author's contact details see page ii

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Landcare Research  
Manaaki Whenua

# 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

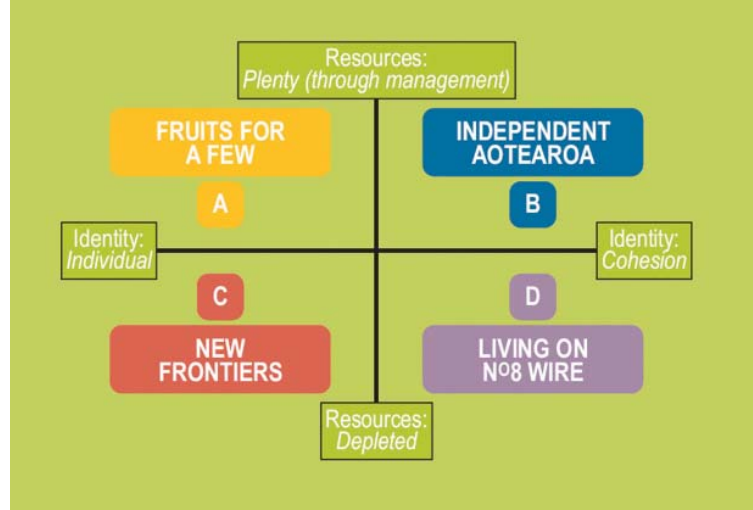
The game is based on detailed scenarios that Landcare Research developed with a team of participants from central government agencies.<sup>1</sup> These scenarios were initially developed in 2005, with a second edition in 2007 and an urban variation in 2008.<sup>2</sup>

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:

- A. 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.
- B. A more closed economy and equitable society, with national efforts to improve a GPI (Genuine Progress Index or Indicator<sup>3</sup>) taking the place of GDP (Gross Domestic Product).
- C. 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*

- D. 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)<sup>4</sup>
- 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.

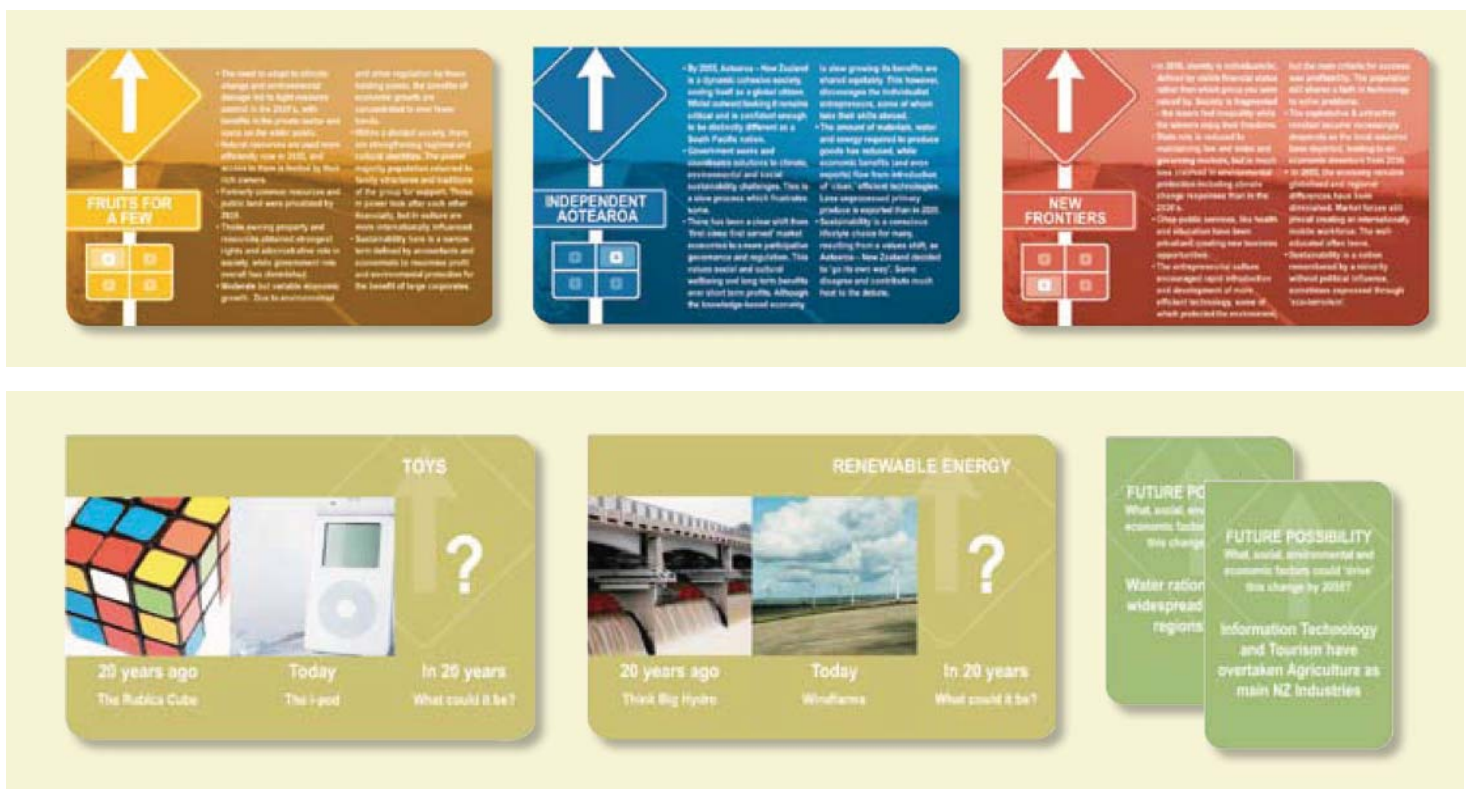
- A stimulus for personal reflection and, for *educational use* in groups. The relative appeal of these scenarios to readers differs between cultural groups and political perspectives. Playing the game prompts discussion about today’s society and its competing values, by focusing attention on some aspects 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.

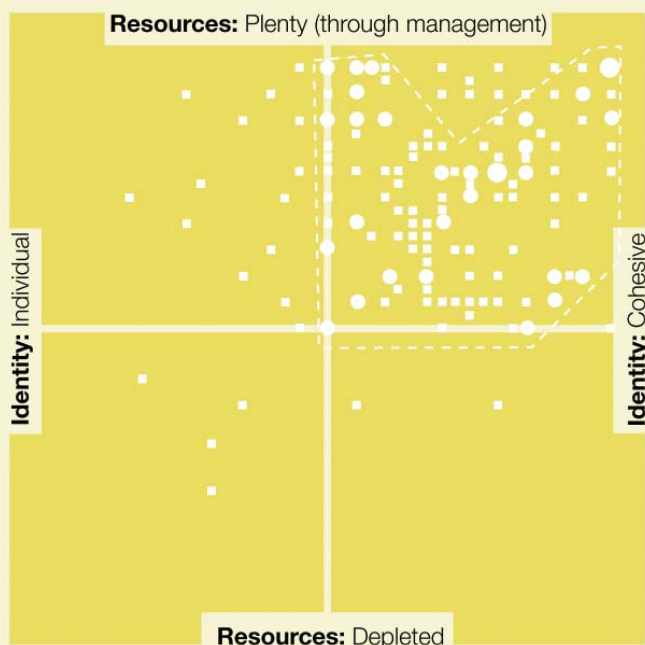
The full game kit is available on Landcare Research's website and includes notes for facilitators.

## TAKING THE FUTURE BACK TO THE PRESENT

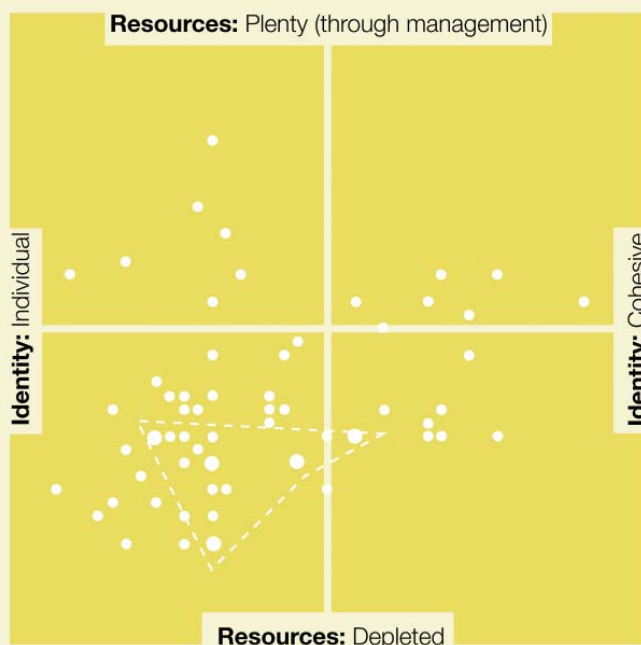
Researchers have used the game to examine New Zealanders views on the current direction of their society and their preferences for the future. Participants in the game were asked to identify the direction that they think New Zealand is currently taking and how this compares with the four scenarios. The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

## ACKNOWLEDGEMENTS

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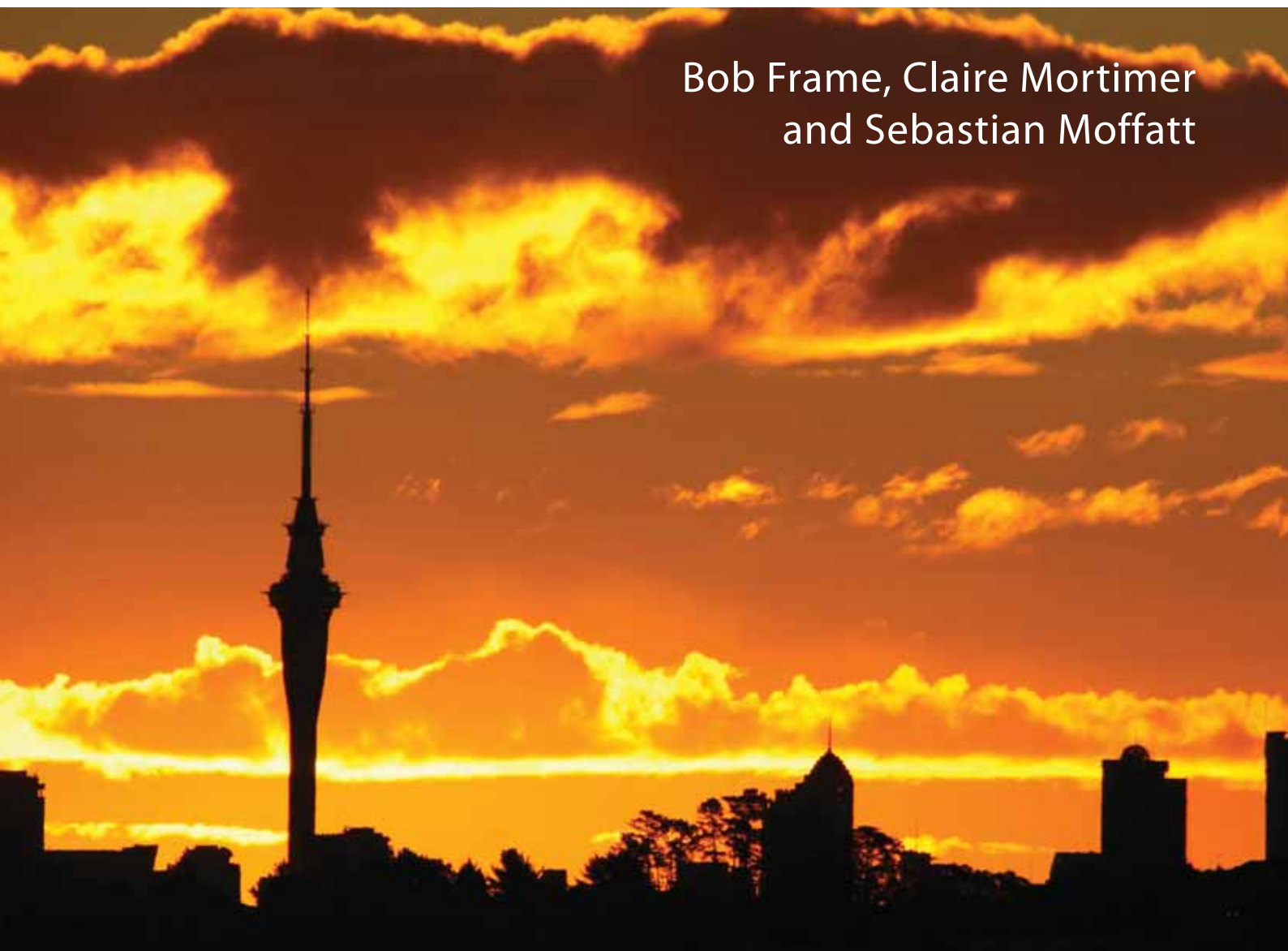


Landcare Research  
Manaaki Whenua

# 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



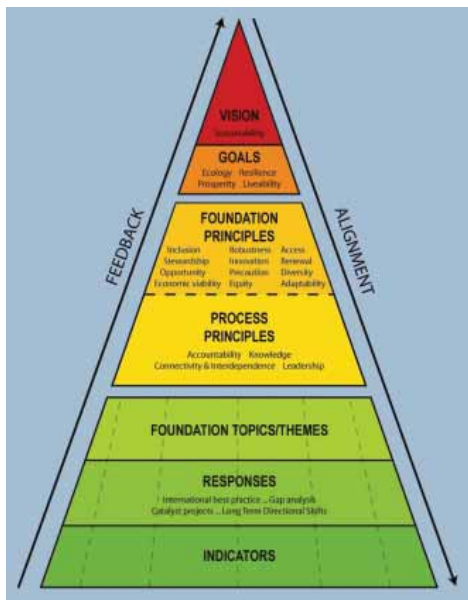


Figure 1 Prototype framework

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.<sup>1</sup> Critical to shaping of the framework was consideration of the ‘forces’ that could shape Auckland’s future over the next 100 years, namely:<sup>2</sup>

- *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.<sup>3</sup> 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.<sup>4</sup> 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.<sup>5</sup>*

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) issues<sup>6</sup>

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.<sup>5</sup>

## 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 Problems<sup>6</sup> (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.*

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## ACKNOWLEDGEMENTS

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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,  
and Beat Huser



# 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) project<sup>2</sup> is centred on the Waikato Region of the North Island, New Zealand. The region has a total land area of 25,000 km<sup>2</sup>, 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) processes<sup>3</sup> as required by the

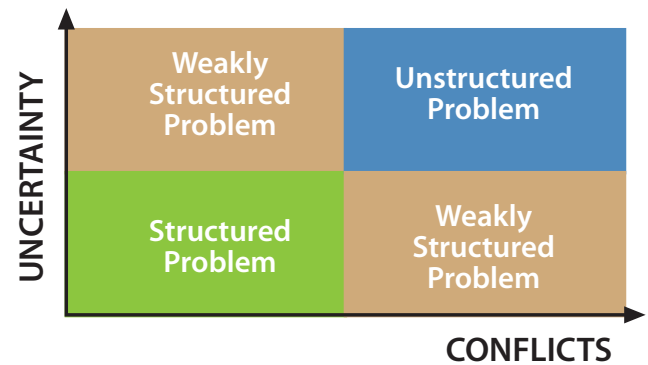


Figure 1 Conceptual categorisation of problems.<sup>1</sup>

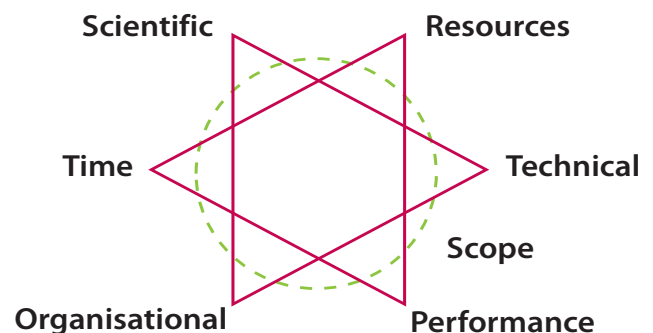


Figure 2 Key considerations and constraints in SDSS development

Local Government Act as well as other regional and sub-regional strategies and plans. The project ([www.creatingfutures.org.nz](http://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.<sup>4</sup> 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
- Workshops<sup>5</sup> 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.<sup>6</sup> The two key driving forces to influence the future of the Waikato Region were identified as (Fig. 3):

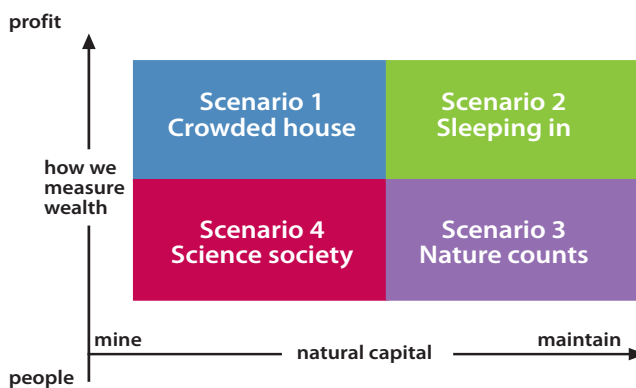


Figure 3 The four Waikato qualitative scenarios.

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



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.<sup>7</sup> 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 choices<sup>8</sup> 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,<sup>9</sup> 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.<sup>10</sup> 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 progress<sup>11</sup>
- 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.

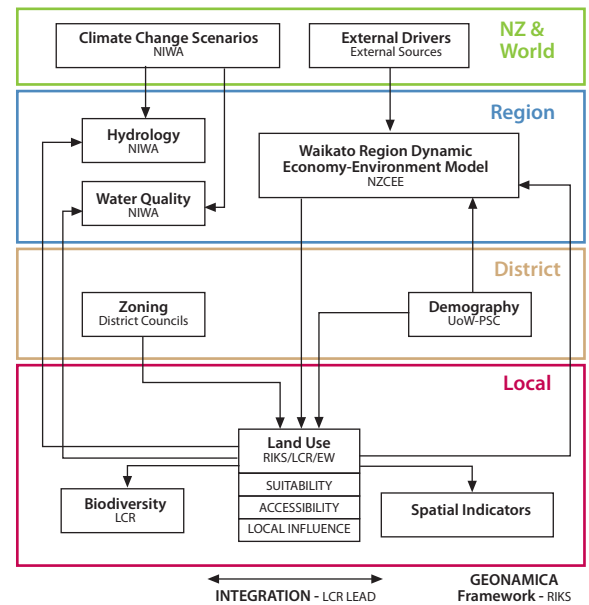


Figure 4 WISE system design

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.<sup>12</sup> This will be amended as necessary.

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

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 experience<sup>14</sup> 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.





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Landcare Research  
Manaaki Whenua

# Successful cities in the 21st Century

CHAPTER 5 : HATCHED



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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.<sup>1</sup> 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).<sup>2</sup> 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:

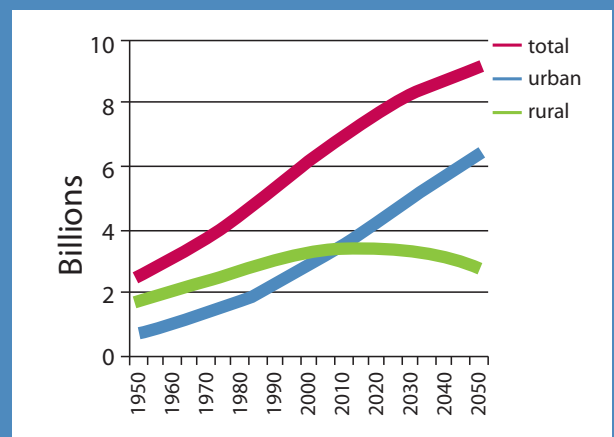
1. Citizens are able to meet their needs (and the needs of the nation) because the city contains economic, social, symbolic and environmental functions that make it distinctly urban – in brief, that it contains:
  - economically diverse, innovative and productive activities;
  - the critical mass of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

### 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.

<sup>1</sup> 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).

<sup>2</sup> 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).



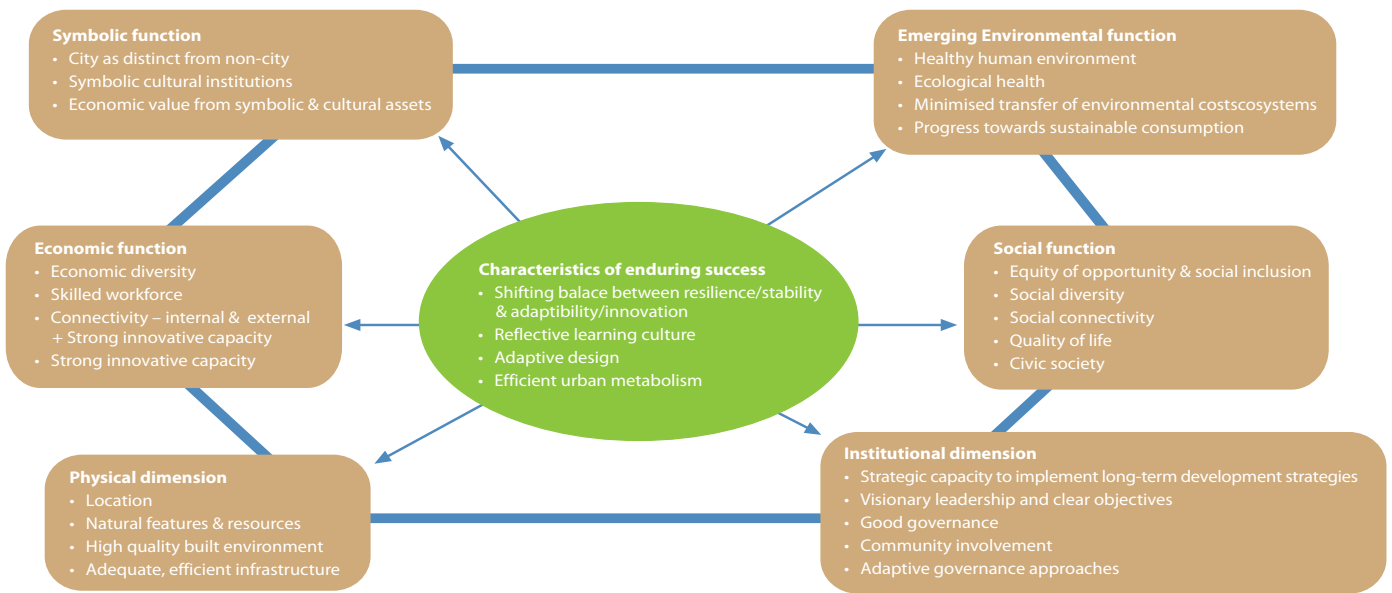


Figure 1 Synthesis of the characteristics of a successful city

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 <sup>3</sup>	• 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 free<sup>4</sup>), 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 <sup>5</sup>	<ul style="list-style-type: none"> <li>Critical mass to support urban levels of community facilities and services (Alexander 1965)</li> </ul>
Equity and inclusion	<ul style="list-style-type: none"> <li>Affordable, appropriate housing, and access to education and employment (City of Vancouver 2005)</li> </ul>
Social diversity and inclusion	<ul style="list-style-type: none"> <li>Ethnic and socioeconomic mix</li> <li>Respect between social groups</li> <li>Socially inclusive communities (City of Vancouver 2005)</li> </ul>
Connectivity	<ul style="list-style-type: none"> <li>'Thick' community networks, both formal and informal</li> <li>Opportunities and places for social interaction throughout the community</li> </ul>
Quality of life	<ul style="list-style-type: none"> <li>Personal and community health</li> <li>Personal financial security</li> <li>Safety (City of Vancouver 2005)</li> </ul>

### 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"> <li>Physical boundaries, e.g., greenbelts, urban limits</li> <li>Conceptual boundaries, e.g., city culture vs rural</li> <li>The sense of place and of belonging to the identity of a particular city held by citizens</li> </ul>
Symbolic cultural institutions (Bryson 2008)	<ul style="list-style-type: none"> <li>Museums, orchestras, visual and performing arts</li> <li>City-specific festivals, traditions and events</li> <li>Indigenous culture represented</li> <li>Iconic buildings, places, monuments and landscapes (potentially different for locals and international audience)</li> </ul>
Economic value from symbolic and cultural assets (Bell & Jayne 2004)	<ul style="list-style-type: none"> <li>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)</li> </ul>

Table 4

Environmental Success Characteristics	Selected Examples
Healthy human environment	<ul style="list-style-type: none"> <li>Control of infectious and parasitic diseases via provision for basic needs: drinking water, sanitation, waste disposal<sup>6</sup></li> <li>Reduced chemical and physical hazards incl. water pollution, air quality, and natural hazards</li> </ul>
Ecological health (Rees 1992)	<ul style="list-style-type: none"> <li>Biodiversity</li> <li>Programmes to restore and enhance environment</li> </ul>

<sup>5</sup> Social list adapted from Kostof (1991), Adelaide City Council (2005), and Parkinson et al. (2004).  
<sup>6</sup> 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"> <li>• Resource efficiency</li> <li>• Strong local supply chains – ‘Cities that are intimately engaged with their countryside’ (Kostof 1991; Wackernagel &amp; Rees 1996).</li> </ul>
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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"> <li>• Location on major trade route</li> <li>• Position within the region</li> </ul>
Natural features and resources <sup>7</sup>	<ul style="list-style-type: none"> <li>• Local access to natural resources (e.g., water, fuel)</li> <li>• Climate</li> <li>• Scenic/amenity value</li> <li>• Intrinsic value of natural places</li> </ul>
High quality built environment	<ul style="list-style-type: none"> <li>• Public spaces as places for accidental encounter (Gehl 1987)</li> <li>• Attention to design at multiple scales – buildings incl. housing, streets, neighbourhoods, town centres, Central Business District.</li> <li>• Buildings and places designed in context to local climate, geography, biodiversity, vernacular style etc (City of Vancouver 2005)</li> <li>• Urban ecology – parks and recreation spaces</li> </ul>
Adequate, efficient infrastructure	<ul style="list-style-type: none"> <li>• Transport, communications, energy</li> <li>• Health and sanitation</li> <li>• Social infrastructure (e.g., schools, libraries, community centres)</li> </ul>

### 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

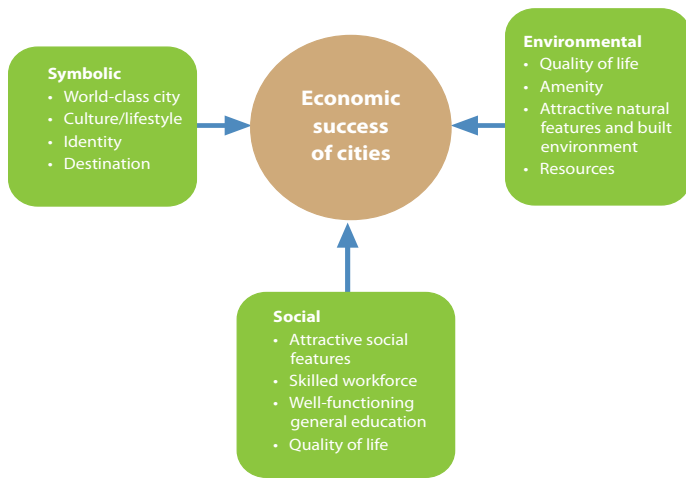


Figure 2 The filtering effect of emphasising one function

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

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



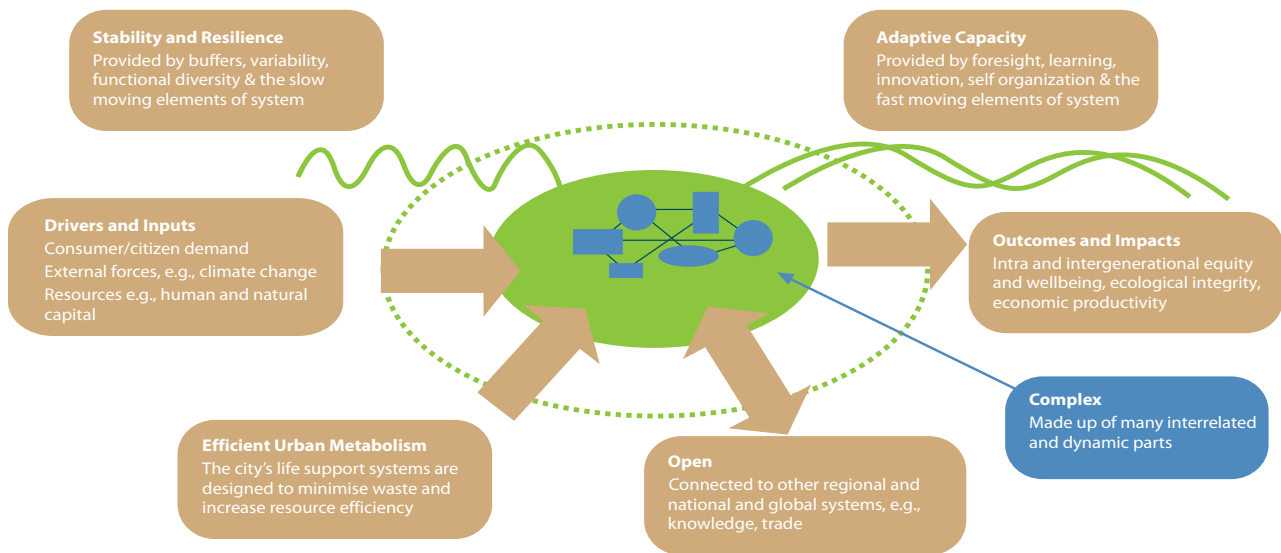


Figure 3 Cities as perceived as resilient and adaptive systems. Diagram adapted from Ravetz J, 2000.

## 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<sup>PLUS</sup>; 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"> <li>• Maintaining the overall function of the city system (Gunderson &amp; Holling 2002)</li> <li>• A city and its institutions accumulates knowledge &amp; resources</li> <li>• There is a reflective learning culture within society embeded by institutions</li> <li>• 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</li> <li>• A city has increased self-reliance for critical needs (e.g., water, energy) (Moffatt et al. 2008)</li> </ul>
Adaptive governance approaches	<ul style="list-style-type: none"> <li>• Planning for the future of the city is a visionary ‘debate and decide’ process, not a ‘predict and provide’ process (Kenworthy 2006)</li> <li>• Adaptive management is used to ensure constant feedback loops and flexibility to unpredicted circumstances (Gunderson &amp; Holling 2002; Moffatt et al. 2008)</li> </ul>

Adaptive design	<ul style="list-style-type: none"> <li>• Flexibility, durability, and adaptability is designed into the built environments (Moffatt et al. 2008) using techniques including cellular design and compartmentalization</li> <li>• City systems are designed on the principle of subsidiarity (Moffatt et al. 2008)</li> </ul>
Efficient urban metabolism	<ul style="list-style-type: none"> <li>• 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)</li> <li>• 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)</li> </ul>

## 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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