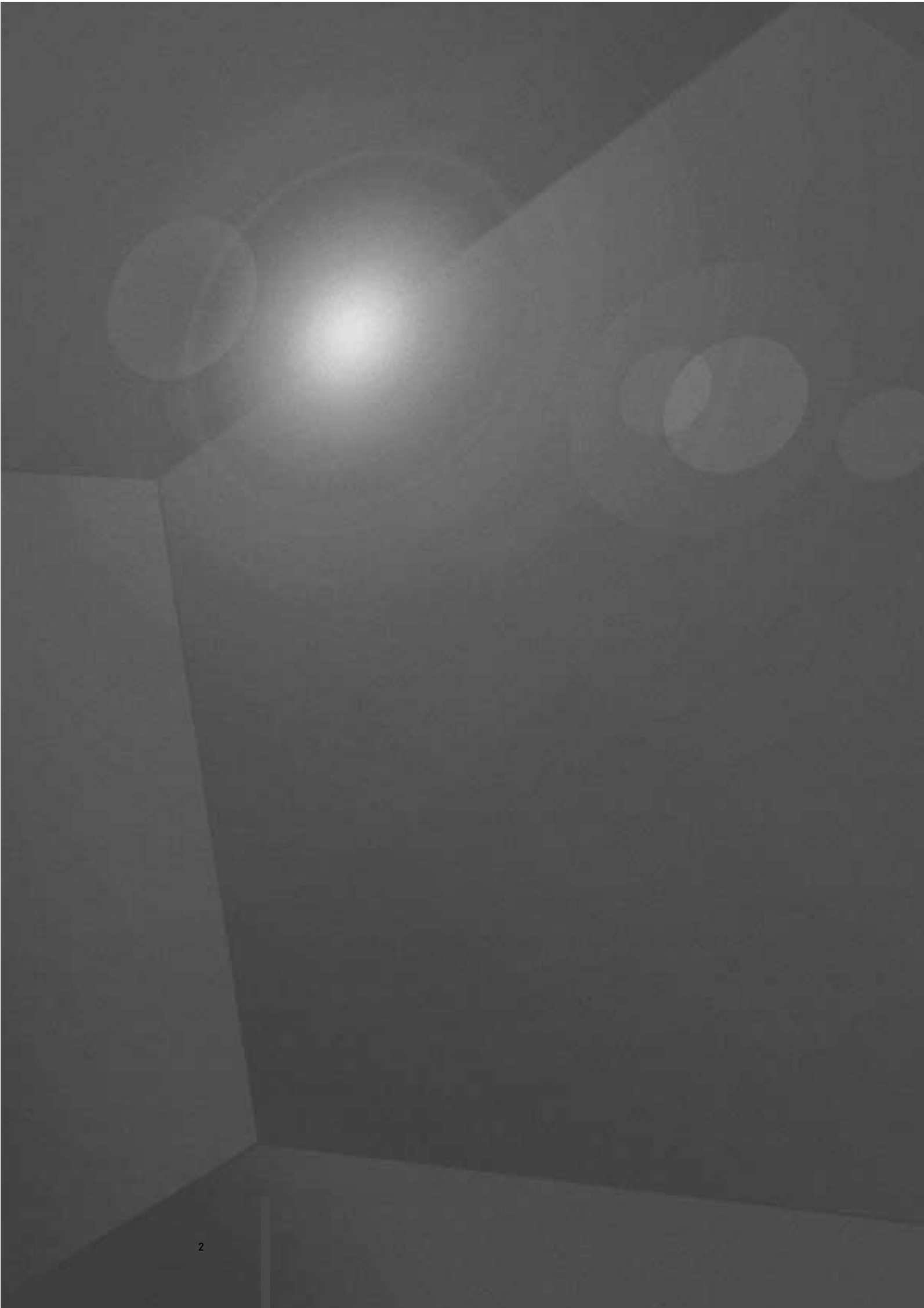




GROWING AN INNOVATIVE NEW ZEALAND





growing an innovative New Zealand

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foreword

In the December 1999 Speech from the Throne, the government acknowledged that economic and social advancement for New Zealand could not proceed satisfactorily without significant change.

At that time the economy continued to demonstrate significant volatility. There were major structural problems, the current account deficit was very large and we continued to be over dependent on the production and exporting of commodities.

New Zealand's skills, in areas relevant to the new knowledge-based industries were inadequate. A competitive model in tertiary education had led to unsatisfactory outcomes in terms of both the quality and the appropriateness of the skills produced, and our living standards were continuing to fall behind those of most other developed countries, including Australia.

The government was determined to address those structural failings in order to improve real incomes and provide the means to restore our social services to being amongst the best in the world.

We are now two years on, and we have made a solid beginning. Many policies are in place that will provide a base from which the economy can grow. New initiatives are beginning to bear fruit, but more needs to be done.

Over the past year, we have had the Knowledge Wave Conference, Business-Government forums, and various government departments, business leaders and private sector consultants engaged in work on strategies about how best to achieve our economic objectives.

All this work confirms the need to continue to transform the New Zealand economy. We need to become a more innovative, more confident, more flexible economy which is able to compete successfully on the international scene.

This document establishes a framework to do that. It draws on the recommendations of the various reports received by the government in the past year.

It is not a detailed set of goals and targets, but it sets out the clear direction which the government intends to follow. It sets out a vision we can all share. Together we can build the momentum for an economic success story delivering for all New Zealanders the standards of living to which we aspire.



Helen Clark

Prime Minister
February 2002

executive summary

This document sets out the framework government is following to create the innovative New Zealand we need to achieve our economic and social goals.

Government has listened to many ideas about how best to achieve our goals. In particular the Science and Innovation Advisory Council has reported, the Knowledge Wave Conference made recommendations and reports commissioned from the Boston Consulting Group and LEK consultants have been received. This framework is informed heavily by those recommendations.

There is a broad consensus that the key driver of higher growth rates is more innovative activity. We must build an effective innovation culture that permeates the whole economy. The countries that create and adopt new technologies and which generate innovation grow faster than those that do not.

To do that we must agree on our vision and our objectives and we must work together to achieve them.

A New Zealand Vision

A land where diversity is valued and reflected in our national identity

A great place to live, learn, work and do business

A birthplace of world-changing people and ideas

A place where people invest in the future

The Economic Objective

To return New Zealand's per capita income to the top half of the OECD rankings and maintain that standing.

Enhancing the role of government

Government will be proactive in supporting growth, will work co-operatively with other sectors to achieve that, and will emphasise the importance of sustainability.

Framework

There are two key aspects to building an economy capable of sustaining the higher growth rates needed.

- Strengthening the foundations.
- Building more effective innovation.

Strengthening the foundations

Over the past two years government has directed much of its effort in economic policy at strengthening the foundation of the economy. There are a number of elements that sustain that base. Each is important to the potential for growth of the economy and each will continue to be the focus of government attention.

Policies will be aimed at sustaining:

- A stable macroeconomic framework.
- An open and competitive microeconomy.
- A modern cohesive society.
- A healthy population.
- A highly skilled population.
- Sound environmental management.
- A globally connected economy.
- A solid research, development and innovation framework.

Building effective innovation

On its own a sound foundation will not guarantee the growth rates needed. To move New Zealand on to a higher growth plane we must build on the exciting things which are already happening in some niches of the economy. To do that government will be concentrating its policies and resources in four areas.

- Enhancing the existing innovation framework.
- Developing, attracting and retaining people with exceptional skills and talents who are able to innovate and so contribute to increasing our overall productivity.
- Increasing our global connectedness to overcome the tyranny of distance.
- Focusing innovation initiatives in areas which can have maximum impact.

Enhancing the existing innovation framework

There are a number of excellent examples of innovation happening in the New Zealand economy, but our innovation system has not always ensured New Zealand gets maximum benefit from our ideas. Also, people with ideas have not always been supported to achieve commercialisation.

Government has taken a number of initiatives already such as:

- Creating new Venture Investment Funds.
- Funding centres of excellence.
- Improving R&D provisions.

Government will continue to build on such initiatives, for example by:

- Developing better linkages between tertiary education providers, industry and communities.
- Assisting in developing mentoring frameworks.
- Supporting the partnership development of incubator processes.

Developing skills and talents

As well as continuing to develop better core skills we must grow, attract and retain people with the talent to be innovators.

Government will, for example:

- Make it easier and more attractive for overseas talent to live and work in New Zealand.
- Build networks with New Zealanders currently working overseas to encourage them to contribute knowledge and ideas.
- Support initiatives to celebrate New Zealand talent.
- Support the development of websites such as a Jobs New Zealand site.

Increasing global connectedness

We must be better in touch with the rest to keep up with technology, to sell our products and to access skills and capital.

Government will, for example:

- Increase resources devoted to the identification and attraction of appropriate foreign direct investment opportunities.
- Provide more support for trade related initiatives aimed at increasing our exports.
- Support initiatives to brand New Zealand as being technologically advanced, creative and successful and to present that consistently across sectors.

Focusing effort

Government financial and human resources are limited, so it is essential to focus them initially on areas which can maximise impact. To promote most effectively innovation, throughout the economy, government has identified three areas which have both the potential to grow in their own right and, because of their horizontal nature, positively improve productivity across the economy. These areas are:

- Biotechnology
- Information and Communication Technology
- Creative industries

Implementation

Implementing this framework will occur at a number of levels.

- **Ministers** will provide leadership through all relevant portfolios to ensure the whole of government is working together.
- **Specific strategies**, led by the private sector, will be developed with those involved in each of the target areas.
- **Budget prioritisation** – will ensure that the direction signalled here is reflected in new spending decisions.
- **Ongoing development**, particularly in relation to monitoring progress within the target areas and identifying new opportunities will be led by a predominantly private sector Advisory Board.

introduction

To build a more vibrant economy capable of producing high incomes within a sustainable framework, we need an economy capable of adapting quickly to the changing international environment. We need to be much more innovative in everything we do so that the disadvantages of our size and our distance from markets are more than compensated for by the difference we are able to bring to products and processes.

Over the past two years government has taken steps to achieve the transformation required. The first was to change the role of government in the economy. If we are to develop an economy capable of adapting quickly and being recognised internationally as innovators, government policy making and implementation must also reflect new attitudes.

The government is therefore committed to following an economic policy direction which is:

- **Active**
- **Co-operative**
- **Sustainable and**
- **Focused**

We have a vision for the economy which is both exciting and challenging, but we appreciate that all wisdom on economic policy does not rest with the government. Over the past year, as part of its policy development process, the government has commissioned various pieces of work, both within the public service and in conjunction with the private sector, to look at aspects of what needs to be done next.

This work includes projects by the Science and Innovation Advisory Council (SIAC), Industry New Zealand, Treasury, Boston Consulting Group (BCG) and LEK Consultant. It covers issues such as how best to develop the talent base for the economy, how best to attract appropriate foreign direct investment, how to develop our innovation system, how to build a more inclusive economy, how to ensure social development is appropriately incorporated and measured, along with wider work on how to ensure all our policy development and implementation takes place within a sustainable framework.

The government also co-sponsored the Knowledge Wave Conference with Auckland University, which brought together a wide range of New Zealanders along with international experts to look at how best to achieve New Zealand's potential.

While there are some significant differences in the recommendations arising from these different exercises, there is a developing consensus around the direction New Zealand needs to take.

This document is informed by the above work. It spells out the framework the government will follow to ensure our policies contribute most effectively to creating the Innovative New Zealand we need to achieve our economic and social goals.

A Vision for Growing New Zealand.

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A great place to live, learn, work, and do business.

A birthplace of world-changing people and ideas.

A place where people invest in the future.

1. vision and objective

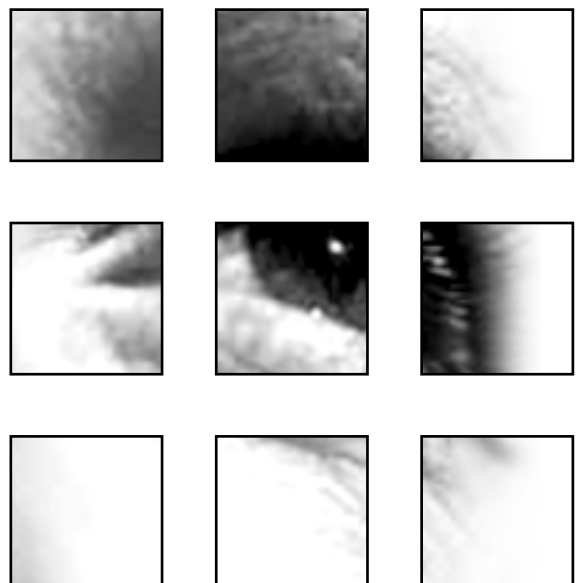
one.1. » the vision

There is a growing consensus in the country that the New Zealand of the twenty-first century needs to adapt from that which provided a secure quality lifestyle earlier in the twentieth century.

The government has articulated its new vision for the future in many forums and recently the Science and Innovation Advisory Council has done further work to refine and expand on it.

Out of this work the government has formulated the following vision for the development of the New Zealand economy.

economic



one.2. » the economic objective

We look forward to a future in which New Zealanders:

- Celebrate those who succeed in all walks of life and encourage those who fail to try again.
- Are full of optimism and confidence about ourselves, our country, our culture, and our place in the world, and our ability to succeed.
- Are a nation that gains strength from its foundation in the Treaty of Waitangi and in which we work in harmony to achieve our separate and collective goals.
- Are excellent at responding to global opportunities and creating competitive advantage.
- Are rich in well-founded and well-run companies and enterprises characterised by a common sense of purpose and achievement. They are global in outlook, competitive and growing in value.
- Derive considerable value from our natural advantages in terms of resources, climate, human capital, infrastructure and sense of community.
- Cherish our natural environment, are committed to protecting it for future generations and eager to share our achievements in that respect with others.
- Know our individual success contributes to stronger families and communities and that all of us have fair access to education, housing, health care, and fulfilling employment.

Our economic objective is to return New Zealand's per capita income to the top half of the OECD and to maintain that standing. This will require New Zealand's growth rate to be consistently above the OECD average growth rate for a number of years. That will require sustained growth rates in excess of our historical economic performance.

This objective is important not only because it will enable New Zealanders to enjoy standards of living comparable to the best in the world, but also because, without higher growth rates, New Zealand's ability to finance the provision of public goods in the way that other first world countries do will be compromised.

Relative income decline has consequences in terms of the exit of capital and labour as they seek better returns and opportunities elsewhere. No matter how much people value the "New Zealand way of life", capital and labour are mobile. Unless we improve our relativity in world rankings, they will increasingly concentrate elsewhere.

But this government does not believe we can put on hold social and environmental progress, and concentrate solely on economic growth. Implicit in the quality of the growth we are seeking will be integration of the economic, environmental and social pillars of sustainable development. Sustaining a high quality environment, managing the risks to it and implementing efficient resource use policies underpin our competitive advantages as a nation. Managing the environmental pressures from economic growth, while continuing to satisfy human needs will require an integrated effort.

Not only will social and environmental policy continue to be given high priority in their own right, but the choice of economic policy instruments will be influenced by their interaction with social and environmental factors. Sustainability will be paramount.

one.3. » New Zealand economy now

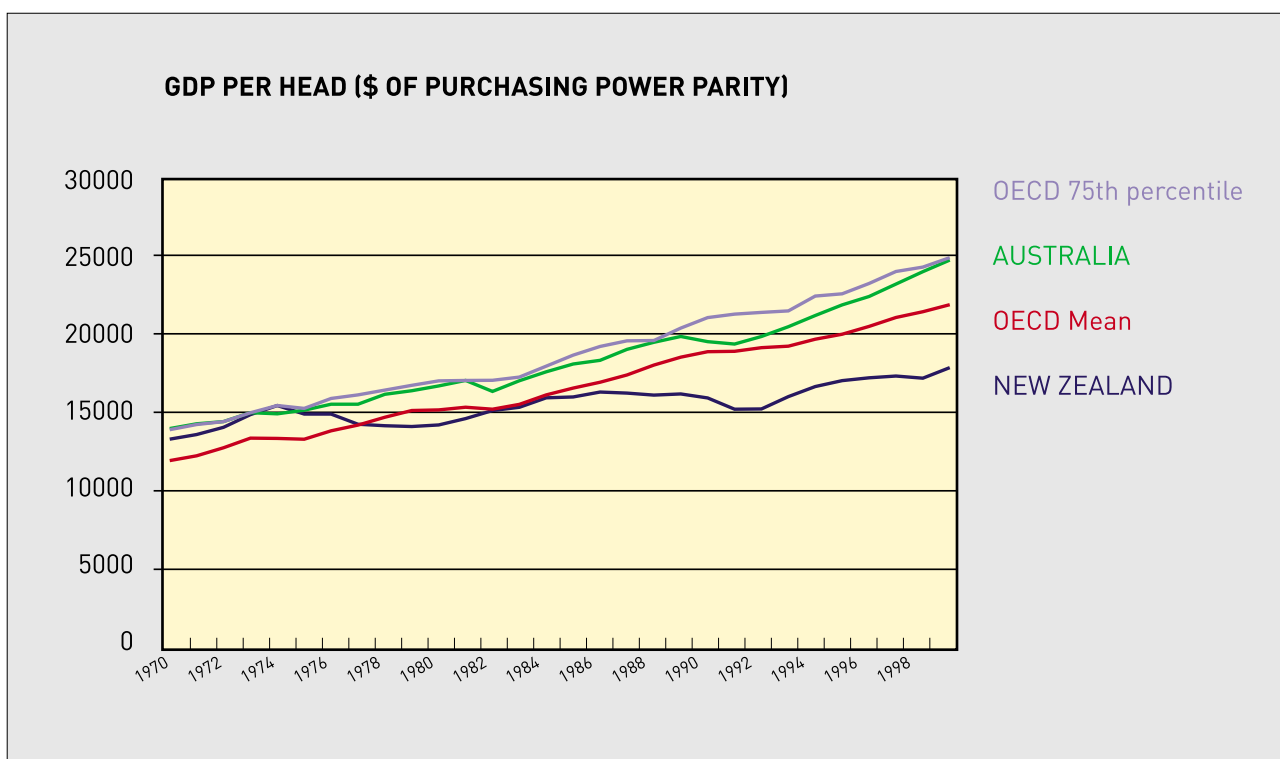
New Zealand's relative income declined over much of the post-war period. New Zealand's real per capita income fell from among the highest in the world in the 1950s, to just under the OECD average in 1970, to 20th in the OECD by 1999. Although the New Zealand economy grew, other developed countries grew more rapidly.

While the 1990s saw improved growth performance relative to the previous two decades this was only enough to halt the relative decline, so that New Zealand's per capita income stabilised in the 1990s at just under 70 per cent of the OECD average. On current projections, however, our growth rate is forecast to exceed the OECD average between 2001 and 2003.

The current macroeconomic policy framework delivers prudent fiscal policy and low, stable inflation. There is evidence of improvement in productivity growth rates and the current account deficit is forecast to improve to approximately 3 per cent of GDP in 2002 after being above 7 per cent in 2000. The New Zealand economy is also becoming less volatile, providing a better environment for business decision-making.

New Zealand has a competitive and open microeconomic environment that is reasonably free of distortion.

We have a strong and transparent body of laws that regulate commercial and personal behaviour, and institutions and processes that are free of corruption. Our public accounts are prepared and published with a detail and openness that is the envy of the developed as well as the developing world. There is a presumption that most official information is free and accessible, not secret. Public policy is open to intense public scrutiny. These policy and institutional foundations allow for efficient resource allocation and for more flexible adjustment to shocks.

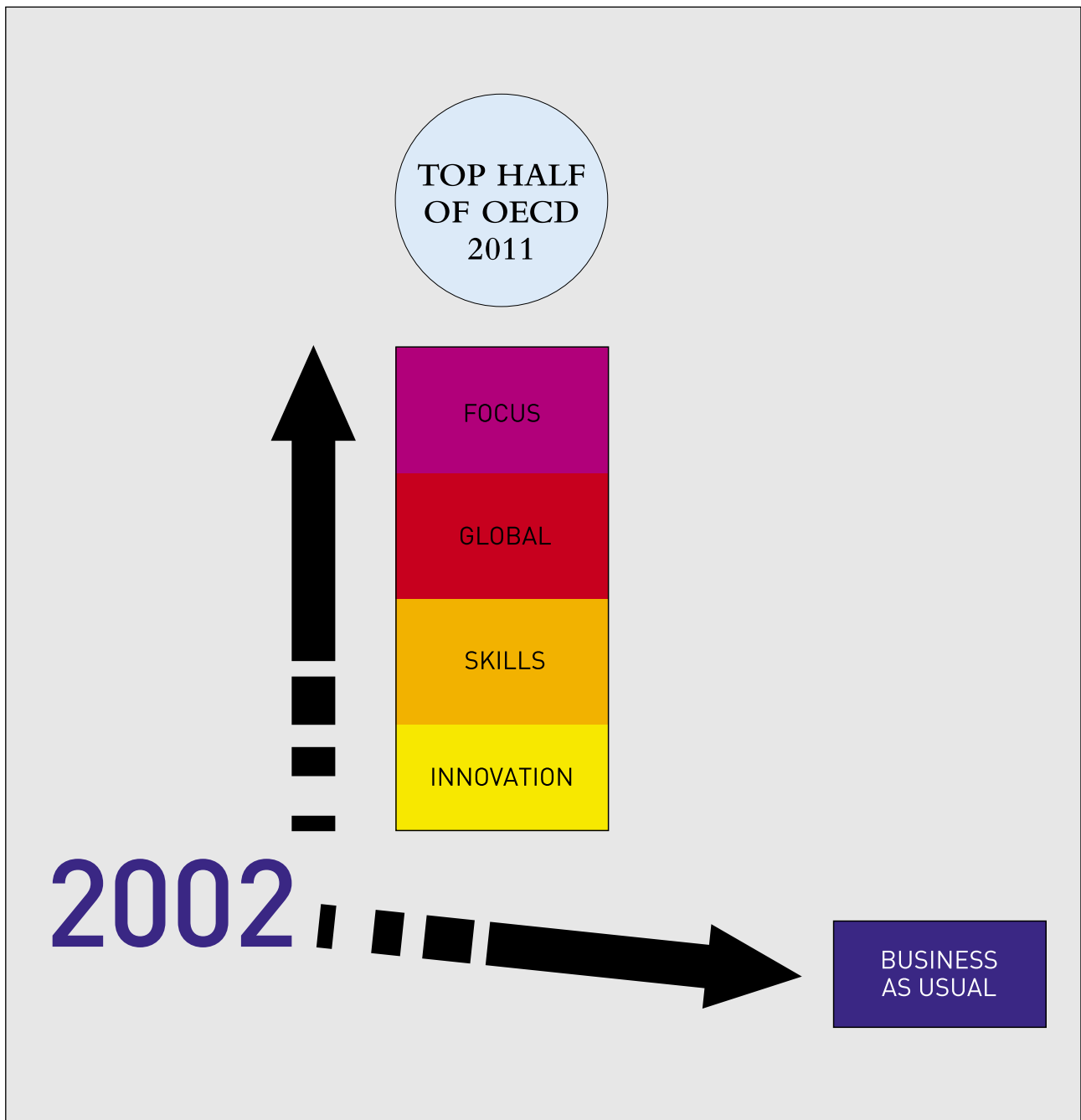


TRANSFORMATION IS NEEDED

But much more needs to be done in order to return New Zealand's real per capita income to the top half of the OECD and allow us to continue to finance the provision of first world public health and education services, provide competitive opportunities for all New Zealanders, and provide returns which attract further capital to New Zealand.

Innovative activity is becoming the key driver of growth. Countries that create and adopt new technologies and which generate innovation grow faster than those that do not. Knowledge has become a key factor of production, rather than capital and labour. Although the specifics of economic development will vary across countries, the basic principle of the importance of knowledge and innovation are consistently important.

The transformation of the New Zealand economy will require the application of knowledge and innovation across the economy. Our primary sectors have always been innovators and given the importance of the sector to the New Zealand economy, it is imperative that its performance continues to be enhanced by the application of knowledge. Over the past three decades, however, the New Zealand economy has diversified significantly into other sectors. It is necessary to ensure that innovation occurs in these parts of the economy as well. It is not possible to achieve the growth target by relying on the 9 per cent of the economy that relates to primary production to support the other 91 per cent.



NEW ZEALAND IN THE WORLD

Transformation requires New Zealand seeing itself as part of the global economy in terms of goods and services, people and ideas. To earn first world incomes, the New Zealand economy needs to have global reach and not be constrained to being simply a small country at the bottom of the South Pacific.

Although New Zealand's geographical location makes this a challenging task, global connectivity is critically important to economic growth. There is evidence of increased divergence in real per capita income across countries. Countries that are rich, and are becoming richer, are those that are well integrated into the global economy in terms of the flow of goods and services, people, ideas, knowledge and technology. Poorer countries on the other hand are generally not well integrated into the global economy.

Until 30 years ago, New Zealand relied on its relationship with Britain to overcome the tyranny of distance. When this support was removed in the 1970s, New Zealand was forced to diversify both in terms of export markets and the types of goods and services exported.

This has proved difficult. Many New Zealand firms have not found it easy to move into export markets from a small domestic market. There are big costs associated with moving into these markets, particularly as most New Zealand firms have to do so while still being relatively small. For a small country, New Zealand's exports as a share of GDP are lower than most other small OECD countries at around 33 per cent of GDP in 2001.

New Zealand needs to aggressively find ways to overcome its geographic location and connect with global

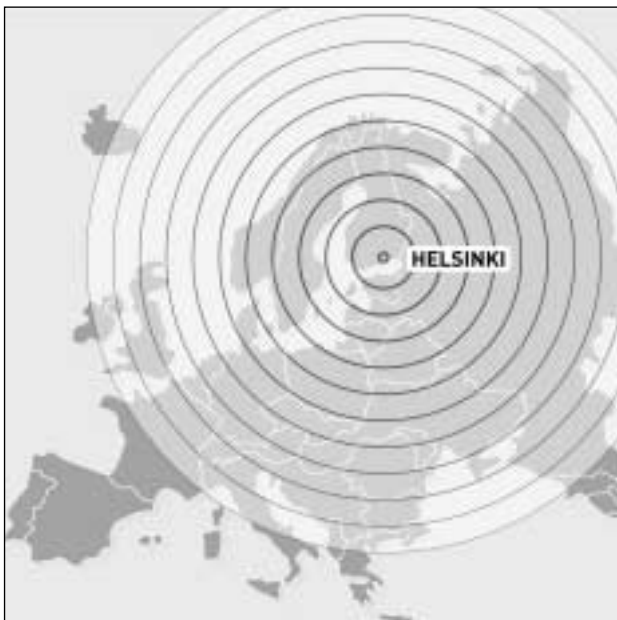
markets – for goods and services, but also to access ideas, technology and people. Becoming a genuinely global, innovative economy is one of the key goals of the government's economic policy.

THE SIGNS ARE THERE

There are many signs that the transformation of the New Zealand economy into a more innovative, knowledge-based and globally connected economy is well under way.

There has been a rapid increase in exports from our high and medium-high tech industries and exports of 'elaborately transformed manufactures' have doubled over the past ten years. Further, many new industries have emerged over the past decade and have grown strongly; software, biotechnology, electronics, marine, education exports, media/film, and wine are examples of this. New Zealand firms and researchers have emerged as world leaders in parts of these sectors. The recent Global Entrepreneurship Monitor study ranked New Zealanders as one of the most entrepreneurial people in the world, noting particularly high rates of Maori entrepreneurship. There have also been ongoing improvements in traditional areas, like the primary sector.

Over the past decade substantial investments have been made in the inputs that are necessary for economic transformation to occur. There have been large increases in tertiary education participation, with rates now well above the OECD average. Further, New Zealand has one of the highest ICT investment rates in the world (at about 9 per cent of GDP). The challenge is to ensure that these investments lead to a more productive New Zealand economy in the future.



"Draw two circles of radius 2200 km. The one centred on Wellington captures 3.8m New Zealanders, the one centred on Helsinki captures 300 million people from 39 countries".

EXPORT EDUCATION - A GROWTH INDUSTRY

New Zealand's export education industry is little more than a decade old. Its growth has been spectacular - from a few thousand students a year in the early 1990s to the situation in 2001, when 40-50,000 international students spent part or all of the year studying in New Zealand. The number of institutions catering to these students now numbers 7-800, and continues to grow. Further high growth is forecast for 2002.

Although less well quantified, the provision of education services offshore, and the sale of educational products and consultancy services overseas are also important aspects of our export education industry.

Onshore education of international students in New Zealand now contributes between \$800 million and \$1 billion pa to our GDP through expenditure on fees, accommodation and other goods and services. Export education's direct contribution to GDP is not the only benefit accruing from this industry. It also benefits New Zealand's social and economic development and our future international relationships.

With good planning and management the industry could double or treble this contribution within the next decade.



SIGNIFICANT ISSUES TO BE ADDRESSED

The changes that are occurring have not yet generated material changes in economic growth; rapid growth in very small sectors does not have a significant effect on the overall growth rate. Further, the New Zealand economy still looks quite different from other developed economies, including Australia's, in a number of ways.

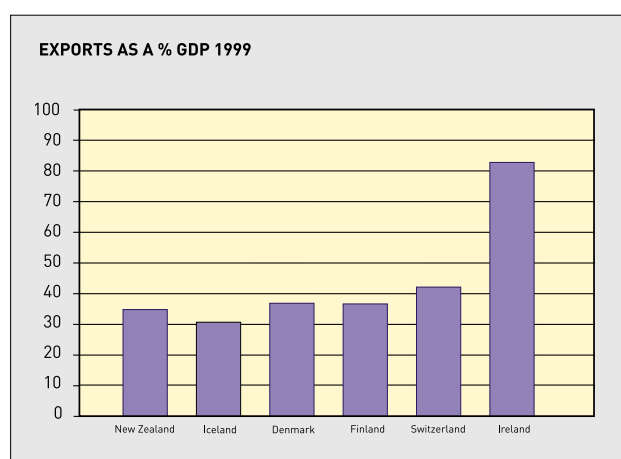
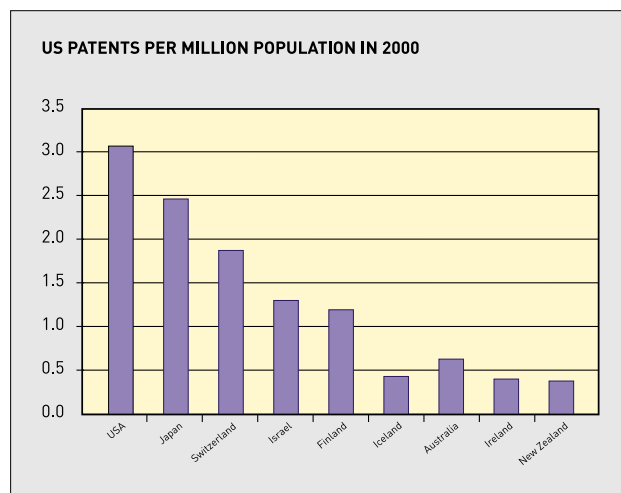
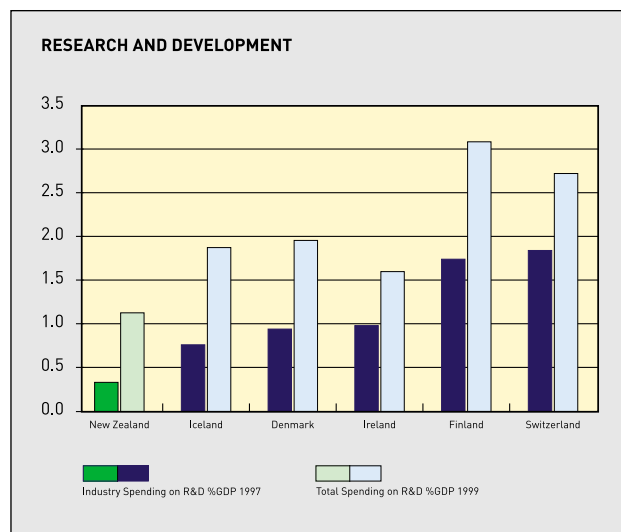
For example, New Zealand reports relatively small expenditure on R&D and is also an outlier in terms of the composition of R&D spending. R&D spending is dominated by the government and by other public institutions, such as universities, with private R&D spending as a proportion of GDP rating as one of the lowest in the OECD (only 28 per cent of R&D spending is private, compared to an OECD average of 71 per cent). Even after adjusting for underreporting of private sector R&D expenditure, these figures present a challenge.

Perhaps more important than the low level of R&D are the problems with commercialising ideas. Notwithstanding the generally high quality of New Zealand science and technology and our general capacity for innovation as a people, the New Zealand innovation system has struggled to commercialise the considerable flow of ideas that emerge from our institutions or from individuals. On the positive side however, the rate of increase of patent applications in New Zealand is the second highest in the world, albeit off a low base.

New Zealand does not export much for a small country. The lack of proximity to large markets is a key reason for this poor exporting performance. Yet exporting is absolutely critical to our economic performance. It is not realistic to expect to earn first world incomes by concentrating on a domestic market with fewer than 4 million people.

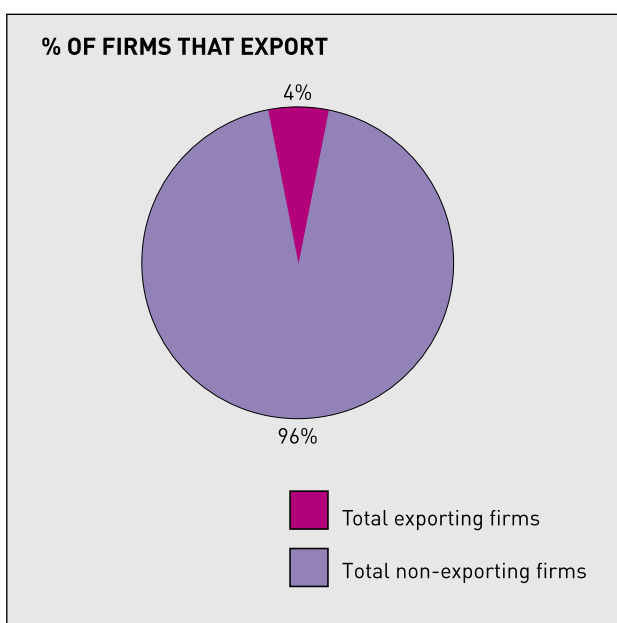
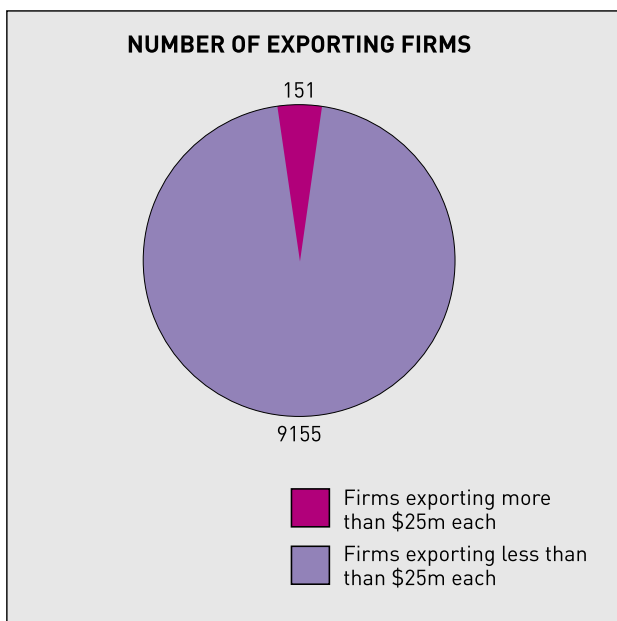
The absence of strong exporting performance helps to explain the poor growth performance of firms. Less than four per cent of New Zealand firms export, and of those that do, only a very small number have become genuine global firms; in 2001, only 151 firms exported more than \$25m and 51 more than \$75m. This means that many New Zealand firms remain small, constrained by the size of the New Zealand market.

Many New Zealand firms that have invested offshore have done poorly, and have lost substantial amounts on their investments. This may be partly due to a lack of management skills in New Zealand corporates. It may also reflect problems associated with accessing risk capital and expertise to help with overseas expansion. This may in turn be affected by New Zealand's low savings rate, which leads to a reliance on foreign savings to finance investment. A common result of this is for New Zealand firms to be bought out by larger foreign companies which then expand the companies' ideas, goods etc into global markets.



one.4. » enhancing the role of government

There is so far insufficient evidence of clustering in the New Zealand economy; and outside parts of the primary sector, we do not generally observe world-class levels of scale and specialisation in the economy. This gives New Zealand a different economic profile from other developed countries, and that profile is likely to be having a negative effect on economic performance.



New Zealand also has a skewed distribution of human capital. Although the performance of the top and average students at many levels of schooling compares very favourably with other developed countries, New Zealand has a significant proportion of under performing students in terms of literacy and numeracy, and has too many students leaving school without a qualification. Without these basic skills, workers are less productive which has a negative effect on economic performance.

These issues need to be addressed before the full potential of the New Zealand economy can be realised.

Government has a role in making economic transformation happen. New Zealand faces some unique challenges – such as its size and location – and must fashion policy responses directly addressed at these challenges. Appropriate policy settings in a small, distant country are different from those suited to larger, more proximate countries. We cannot expect simply to import policy solutions. Private sector action on its own will not suffice.

HISTORY OF THE GOVERNMENT'S ROLE IN THE ECONOMY

The government has had an important role in the New Zealand economy since the 19th century, when it was very involved in the early development of the economy. However, more substantial government attempts to stimulate domestic industry and develop a 'modern economy' date from about World War 2. This occurred largely from behind import protection. It was progressively supplemented by sector specific incentives, tax breaks, subsidies and various regulations over the next few decades. This policy direction was stepped up in the 1970s, particularly after the UK entered the EEC. Many prices were fixed, for example the value of the New Zealand dollar, and markets controlled, in an attempt to support various parts of the economy and to promote full employment.

This culminated in the Think Big programme in the early 1980s, an attempt by the then government to achieve greater energy self-sufficiency in response to the oil shocks. Government spending and fiscal deficits increased rapidly from the mid 1970s.

This policy direction was sharply reversed by successive governments between 1984 and 1999. The basic goal of this process was to enhance macroeconomic stability and remove distortions from the economy, so that resources were free to move in response to price signals. To that end, the government deregulated, removed distortions,

corporatised, privatised, and cut public spending. The creation of a 'level playing field' – was thought to be sufficient to lead to higher growth.

However, the growth improvement was less than predicted. It is now clear that additional policy settings are required to generate transformational change in the economy, and return New Zealand to the top half of the OECD.

In sum, neither policy settings that had the extremes of very heavy government involvement in the economy, or of very little government involvement in the economy, generated sustained high rates of growth. A key reason for the failure of these policy regimes to deliver was that they were imposed with little consideration of their relevance to the actual structure of the New Zealand economy. Economic policy since 1999 assumes a new and relevant role for government in the economy.

ENHANCING THE ROLE OF GOVERNMENT IN THE ECONOMY

The government sees three key elements to its role in the economy. Government itself will be proactive in supporting growth, it will work co-operatively with other sectors to achieve it, and it will emphasise the importance of sustainable growth and development.

PROACTIVE POLICY

Between 1984 and 1999 government economic policy was largely 'passive', aiming to provide an environment in which the private sector could make investment decisions. This approach did not generate sustained growth.

This government has therefore taken a more pro-active role in all areas of the economy. For example in relation to facilitating business growth, government has taken many initiatives aimed at:

- Creating a Supportive Business and Regulatory Environment, by promoting workable competition through competition policy and international trade policy, minimising business and regulatory compliance costs, specifying and protecting property rights (including intellectual property rights), harmonising local laws and regulations with international best practice and norms, and ensuring sound mechanisms for winding up failing businesses.

Examples include the measures introduced for tax simplification, the government's response to the business compliance cost panel, Commerce Act Amendments, the Takeovers Code, changes to the Insolvency Law Regime, and the E government strategy.

- Encouraging Enterprising Values and Attitudes, by building and supporting confidence and positive attitudes towards entrepreneurship, pride in business success and encouraging new ideas.

Examples include the recently announced Supporting a Culture of Success initiative and Industry New Zealand's Enterprise Awards Scheme.

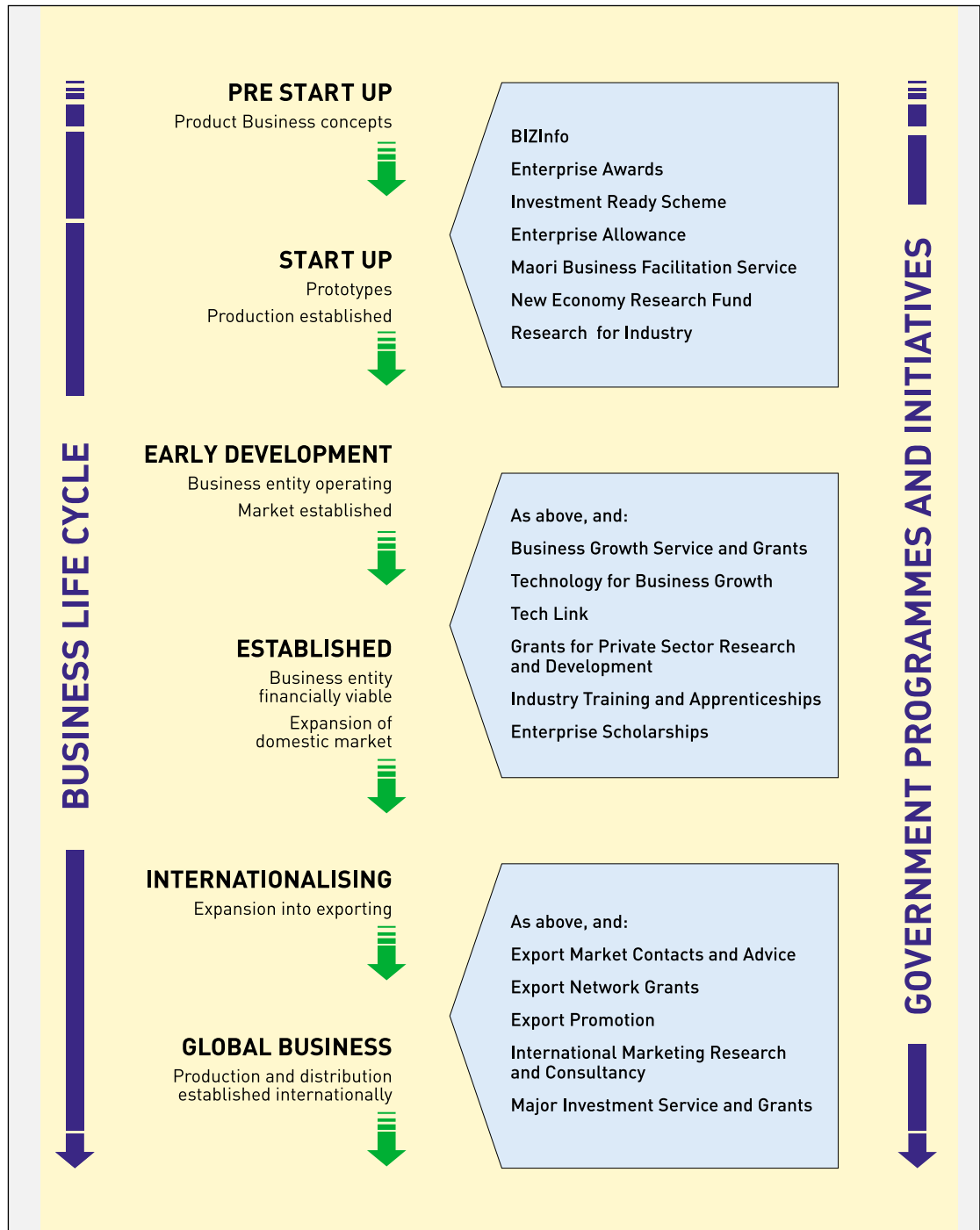
- Improving Infrastructure and Resources, by, for example ensuring efficient electricity and telecommunications markets, and managing effective regimes and property rights for natural resources that are controlled by the State.

Examples include the new telecommunications regime, the new electricity market regulation, the agreement to the Dairy Merger, investment in Air New Zealand, amendments to the Resource Management Act, the Shipping Review and transport (and roading) measures.

- Making more Finance and Investment available by supporting access to different forms of financial capital such as venture capital and ensuring commercial access to capital through local capital markets and links to international capital markets.

Examples include the establishment of the Venture Investment Fund, Industry New Zealand's Business Growth Fund and Investment Ready Scheme, and changes to the Securities Act.

WORKING WITH BUSINESS



INDUSTRY NEW ZEALAND

Industry New Zealand acts as a practical and pragmatic link between government and industry. It works with central and local government, the private sector and non-profit organisations to help competitive businesses, industries and regions to grow.

Industry New Zealand delivers a range of specialist products and services, including advice, facilitation, brokering and, where necessary, funding to individual businesses, regions and industries to help them to fulfill their potential. It helps business people and communities identify their strengths and capitalise on them.

Industry New Zealand provides customised help for global companies wanting to locate in New Zealand, as well as assisting industries that will drive our economy in the future to identify and remove roadblocks to their development.

Industry New Zealand's efforts will be primarily directed at priority sectors and niches of the economy that can compete on the world stage, and at stimulating regional growth based on enhanced business capability and capacity.

Industry New Zealand is modeled on international best practices that have been proven to work in a number of countries that have achieved significant industrial growth over the past decade. The model has been refined to suit the New Zealand situation, but the basic principles remain the same.



CO-OPERATION AND PARTNERSHIP

The government believes that wherever possible it should act in partnership with the private sector, local government and/or the community to assist in the development of the economy. It will help to facilitate and to co-ordinate where it can make a positive difference. It will help to build relationships and networks within the domestic economy, so that New Zealand firms can be more competitive in global markets.

The government is also ready to legislate where necessary, to align spending programmes where appropriate, and to seek the necessary public interest protections where the interests of particular stakeholders are at risk. A good example of this was the government working with industry interests to facilitate the construction of a new vehicle for the dairy industry to compete more effectively in the global dairy market. Another was the updating of the regulatory framework for the apple industry which allowed it to better address the challenges of the global economy.

Industry New Zealand is the government's operational arm for economic development. It acts in partnership with industry to assist in growth and development, regionally, sectorally and at the enterprise level.

For example, Industry New Zealand facilitated the boat-building cluster in West Auckland, assisted with the recent Ericsson Synergy deal and has worked closely with the wood processing industry to develop a sector strategy and bring parties together to form strong business clusters.

WOOD PROCESSING STRATEGY

By 2015, the wood supply from New Zealand's planted forests is forecast to double to 30-35 million cubic meters; ten years later, 55-60 million cubic meters of wood could be harvested.

This "wall of wood" will be a very significant resource for the New Zealand economy, its regions, its businesses and its communities. With clever development, it could enable New Zealand to become one of the world's top five forestry countries.

The Wood Processing Strategy, which is a partnership between the forestry industry, the regions, central government and unions, will significantly accelerate the development of the processing of logs, and associated industries, and get the best value from the regional expansion in wood available for harvest.

The strategy's targets include:

- Creating 20 percent more jobs associated with the industry by 2005;
- Processing half the additional available wood in New Zealand by 2015;
- Attracting at least \$3 billion in processing investment by 2010; and
- Developing efficient, safe and competitive transport networks and infrastructure in new forest regions.



This is a different role from that of the heavily interventionist government action observed before 1984. The government does not propose to rely on ownership stakes or on regulation and tax breaks to transform the economy. This is a market led approach to economic development, not one that is centrally planned. The intention is to unleash the productive potential of the private sector not to replace it.

To achieve this the government also recognises that there must be a good understanding between various sectors in the economy. Government has to understand the issues facing business and vice versa. Government has hosted a number of business forums around the country in the past year which have provided business people and government ministers opportunities to discuss issues and examine options. Such forums will continue to be a hallmark of how this government does business. Government also works closely with unions to ensure issues faced by workers are appropriately integrated into policy development, and with local government and other community organisations. Good policy requires all interests to be addressed.

This approach also recognises, however, that the government has an important leadership role in generating superior economic performance.



SUSTAINABLE DEVELOPMENT

The third characteristic of the government's approach is its determination to link economic policy to social and environmental policy objectives. Using sustainable development as a filter for policy means that economic policy is not approached in isolation but as part of a bigger picture. While we must actively pursue economic growth, that must be done in ways which are both socially and environmentally sustainable. The concept of sustainable development hinges on the reality that economic development in the absence of social and environmental progress cannot be sustained. Nations that have allowed crime, poverty, pollution or habitat destruction to spiral, inevitably find that economic development suffers.

Work continues on developing social and environmental indicators to go alongside traditional economic indicators to measure the overall progress we are making. It is clear however that internationally our economic performance has not kept pace with our social and environmental performance.

The challenge for New Zealand now is to catch up in economic terms while ensuring that both this generation and future generations can benefit. We must grow more quickly than we have in the past. We must do that in ways that fully appreciate the long term as well as the short term consequences, and ensure that the costs and benefits arising from our economic policy settings are appropriately distributed.

BUSINESSCARE PROFIT AND RESPONSIBILITY

The BusinessCare National Trust has been set up as a not-for-profit trust with three year funding from Ministry for the Environment's Sustainable Management Fund. The Trust is also supported by Industry New Zealand and receives in-kind support from a number of local authorities around the country.

BusinessCare's focus is on promoting, supporting and encouraging the implementation of sustainable management and cleaner production practices by local small and medium businesses nationwide. It seeks to work at both the national level and the local level, to make the changes happen. Its work will provide valuable support for the implementation of the 2002 New Zealand Waste Strategy.

The contribution of cleaner production policies to the financial and environmental bottom lines of businesses has been clearly demonstrated by companies such as Tait Electronics Ltd, the Alliance Group and ENZA Foods Ltd who were part of an earlier project also supported by the Sustainable Management Fund. The BusinessCare National Trust will build on this work and through its local networks, carry the message to the hundreds of small and medium businesses in New Zealand.



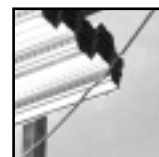
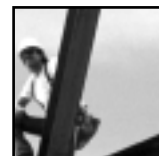
Transforming our economy is not a quick process. Our slide down the OECD rankings has been gradual and the process of moving back up them will also take time.

2.

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framework

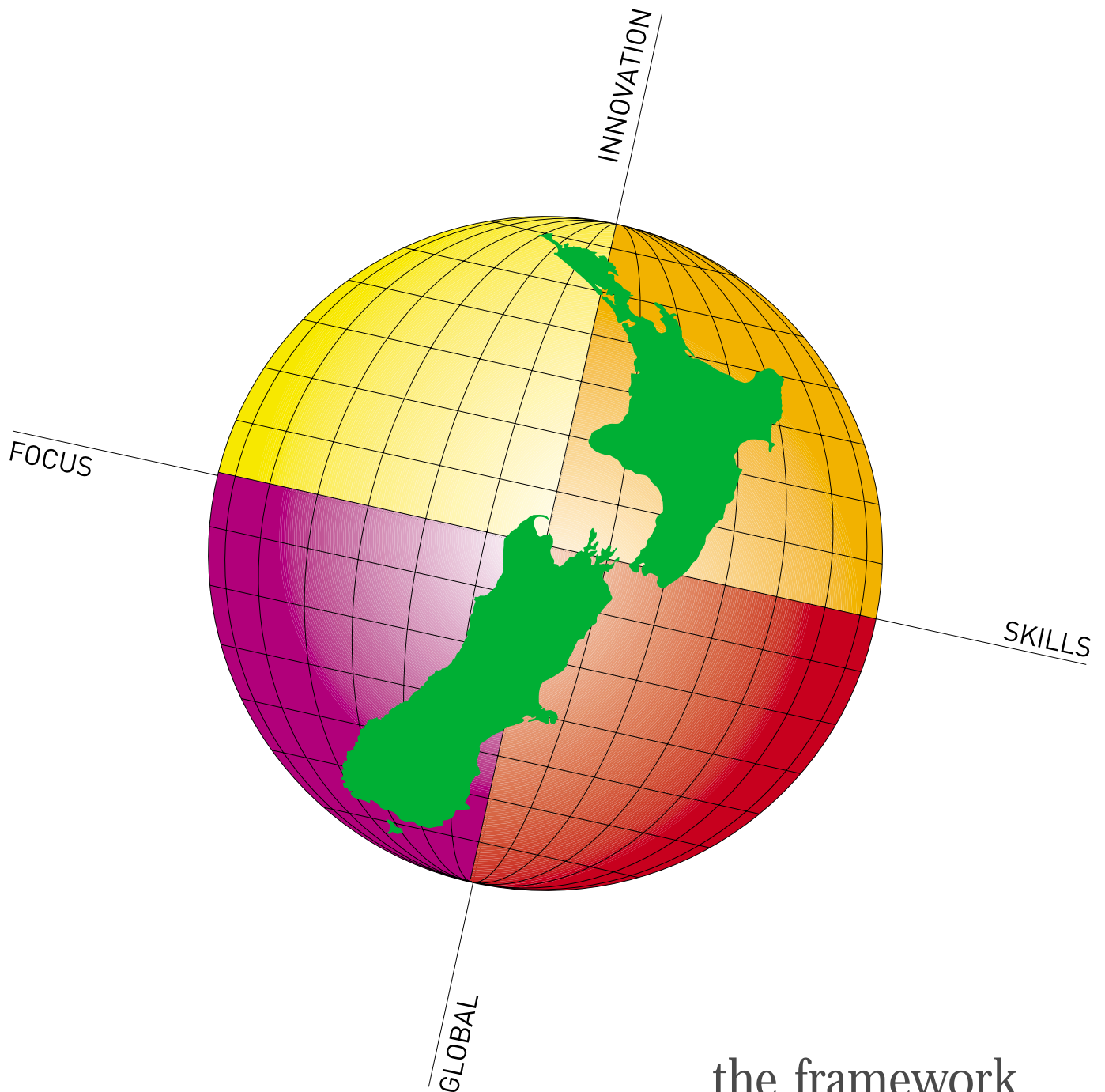
Our first economic priority on becoming government was to change the role of government in the economy and then to work with business and other sectors to develop a shared vision of where the economy was capable of going. Now there is widespread acceptance that government, business, workers, local government, and communities can work more effectively together to achieve shared goals. While competition remains of paramount importance in fields of commerce, we recognize that co-operation can also play a significant role. For example improving our competitiveness internationally will often require co-operative approaches at home.

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The challenge for New Zealand now is to pursue economic activity in ways which will achieve the transformation and higher growth rates required while at the same time being sustainable over the long term, economically, socially and environmentally.

Achieving that transformation will require economic policies to be aimed at not only strengthening the economic foundations but also at building an effective innovation culture which permeates the whole economy.



two.1. » strengthening the foundations

Much of the effort of economic policy in the past two years has of necessity been aimed at strengthening the foundation of the economy. That will continue to be of paramount importance.

One of the strengths of our economy is that we are working from the foundation of a highly productive, developed market economy, with strong institutions, high levels of employment and a network of effective businesses and service providers.

There are a number of elements which sustain that base, and which create the necessary, even if not sufficient, conditions, for its transformation. Each is important to the overall strength and potential for growth of the economy.

- ⊙ A stable macroeconomic framework.
- ⊙ An open and competitive microeconomy.
- ⊙ A modern cohesive society.
- ⊙ A healthy population.
- ⊙ Sound environmental management.
- ⊙ A highly skilled population.
- ⊙ A globally connected economy.
- ⊙ A solid research and development and innovation framework.

These factors are all important whichever development path is chosen for the economy. For that reason the government has given, and will continue to give, priority to initiatives aimed at ensuring each of these areas is capable of providing the base from which higher growth can be driven.

(* these areas will be discussed within section two.2)

⊙ A STABLE MACROECONOMIC FRAMEWORK

Sound monetary and fiscal management makes a major contribution to achieving ongoing economic expansion and higher living standards. The government has consistently maintained a prudent fiscal stance and price stability, which has assisted in maintaining a low inflation environment and has given confidence to the business sector and provided a framework within which investment is encouraged.

Performance to date indicates that the government is making good progress towards achieving its long-term objectives. Gross debt was 36.8 per cent at GDP at 30 June 1999, and net debt 21.7 per cent. Latest financial information (at 30 November 2001) shows that these ratios have fallen to 32 and 17.2 per cent respectively.

The government has retained the fundamental macroeconomic legislative framework, such as the Reserve Bank and Public Finance Acts, and has implemented new workplace legislation which continues to allow flexibility in employment relationships while ensuring a fair balance between the rights of workers and those of employers.

Foreign investment is welcomed, the government is actively supporting fair and open global trade, and pursuing trade agreements where possible.

The current account has been steadily improving and actions taken to implement the New Zealand Superannuation scheme will serve to improve our low savings ratios while at the same time providing security for all New Zealanders in their old age.

The government will continue its sound fiscal management (with long-term objectives for gross debt at under 30 per cent of GDP and government spending at around 35 per cent of GDP).

The government has already taken steps to improve the co-ordination and planning of its capital spending programme and more strategic investment planning will arise from initiatives outlined in this document.

◎ AN OPEN, COMPETITIVE MICRO-ECONOMY

Over the last two years, the government has taken a number of steps to improve the environment for business in New Zealand and to expand the opportunities for New Zealand business internationally. These include:

- ◎ Commerce Act amendments to bring New Zealand's competition law in line with Australia's.
- ◎ A new takeovers code to give greater protection to small shareholders and a beefed up insider trading regime.
- ◎ Compliance cost reduction, including proposals to simplify tax compliance rules for small and medium businesses.
- ◎ A new telecommunications regime to promote greater competition and speedier dispute resolution in the telecommunications industry.
- ◎ A new electricity market regulatory regime.
- ◎ Freeing up the markets for primary products that give producer and consumers more choices, including for pip fruit and dairy products.
- ◎ A closer economic partnership with Singapore, while continuing to strengthen the closer economic relationship with Australia.
- ◎ A significant contribution to the prospects for freeing up world trade in agricultural products as a result of the Doha meeting of the World Trade Organisation.

◎ A MODERN COHESIVE SOCIETY

A modern cohesive society is an essential building block for a growing and innovative economy and society. It is nearly 64 years since this country led the world in the development of a comprehensive system of social security. The principles that informed that piece of legislation are as relevant today as they ever were – security of income for those in need, the primacy of sustainable paid employment, access to high quality and affordable health care, and dignity for older New Zealanders through a guaranteed retirement income.

Economic and social development go hand in hand. A growing economy is the best guarantee of social security, and encouraging sustainable employment is one of the best contributions that government can make. That is why the government has moved to refocus social welfare as an active and enabling force in people's lives.

That means:

- Ensuring adequacy of income for people in need.
- Ensuring that individuals, families, and communities have the skills and knowledge to participate in economic life.
- A more active approach to social security, which is about lifting individual and community capacity.
- A much more integrated approach to economic and social policy.

The government recognises that well developed communities which offer all New Zealanders access to opportunities and networks are an essential part of, and precondition for, an effective economy.

That requires that communities have the human, physical, institutional and technological infrastructure to allow them to operate effectively.

The government has implemented many initiatives in this regard and will build on these in coming years. Initiatives to revitalise communities are as diverse as the communities they serve - for example:

- Heartland Service Centres in provincial centres - restoring face to face access to a range of Government services and providing support to local voluntary groups through access to resources.
- Income related rents and regional housing initiatives - to build community and family security and stability.
- Ensuring superannuation payments are appropriately linked to average wages to ensure older people are able to maintain a satisfactory standard of living and so continue to participate fully in their community.
- Strengthening the community sector by building relationships across the sector, improving communications, and developing a strategy to support the sector.
- Capacity building initiatives to assist Maori and Pacific communities to achieve their goals by funding infrastructure, business and enterprise development.
- Establishment of a Community Voluntary sector working group tasked with making recommendations to government on rebuilding a healthy and vibrant social sector - the very heart of civil society.
- Improving central government's understanding of the values, governance arrangements and working realities of the community, voluntary and iwi/Maori organizations with which they interact.
- Growing jobs in local communities by funding the development of community capacity through Community Employment Organisations, and by social entrepreneurs.
- Community Organisation Grants Scheme (COGS) on line - using information technology to streamline grants applications.
- Stronger Community Actions Funds - providing communities with the ability to fund local priority projects.
- A range of projects to rebuild the capacity of community based social service organisations.

Social connectedness is a way of describing the relationships people have with others, and the benefits those relationships bring to the individual, as well as to society. People who feel socially connected also contribute towards building communities and society.

New Zealand scores well in some measures of social connectedness. For example access to a telephone is almost universal at 97 per cent and on measures of internet access within the home New Zealand ranks 9th in the OECD.

However experience suggests that certain groups are more likely than others to be left behind in the information revolution. In New Zealand these include Maori and Pacific peoples, those on low incomes, sole parents, older people, people with low or no qualifications or poor literacy, the unemployed and underemployed, people in locations lacking a sound telecommunications structure (such as rural areas), and people with disabilities.

The government is committed to closing this 'digital divide' by way of a 'digital opportunity' strategy. Already significant progress has been made. For example:

- In partnership with industry, the government is contributing \$10m to pilot schemes to give more young New Zealanders, especially in less advantaged communities, the chance to develop information, communication and technology skills.
- Piloting broadband telecommunications access in, for example, the Far North District and Southland with a view to improving broadband infrastructure throughout the country.
- Funding community based ICT projects through the Department of Internal Affairs, and hosting and maintaining the Community Net Aotearoa website.
- Working with local communities to train and up-skill communities to develop computer skills and establish community hubs.

FOUR DIGITAL OPPORTUNITIES PILOTS

Four Digital Opportunities pilot projects were announced on 8 February 2001, following a series of meetings between senior government ministers and information and communication technology business leaders.

The businesses involved in this partnership are Microsoft, The Learning Centre Trust, TVNZ, Telstra, Saturn, Telecom NZ, Compaq, Clear Communications, IBM, Renaissance, Independent Newspapers Ltd, Sky Television, and BCL.

The government has committed \$10.4 million over four years to the Digital Opportunities programme. The business partners are contributing in a variety of ways including offering products at reduced rates as well as the skills and experience of their staff.

The four pilot projects are education-based and planned to run for two years initially. They are targeted to turn the 'digital divide' into digital opportunities. Their aim is to use ICT to enhance educational achievement, particularly in the areas of mathematics, science and technology. The pilots are:

FarNet: A community of ten schools in the Far North using ICT to collaborate and enhance teaching and learning through the development of a virtual school.

Generation XP: A group of eight schools in West Auckland and Gisborne offering industry certification, beginning with Microsoft courses and later CISCO programmes, to senior secondary students.

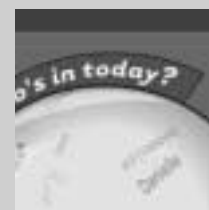
Notebook Valley: A group of four secondary schools in the Wellington region using laptops to collaborate and enhance teaching and learning in senior maths and science. Teachers and students have been issued with laptops and students have been provided with Internet connections at home.

WickED: A group of four study support centres in the South Island using ICT to provide online self-study activities.

In practical terms, the pilots are also testing a number of technical solutions to e-learning as well as developing the skill base of the teaching staff and the repertoire of curriculum material they can access.

Evaluation of the pilots and the impact they are having on teaching and learning in the participating school communities is a major strand of the programme.

More information on the Digital Opportunities pilot projects can be found on TKI at www.tki.org.nz/e/community/digiops/



© A HEALTHY POPULATION

Good health is a necessary condition for effective learning. Health is fundamental to the enjoyment of life, and vital for effective social interaction. Last, but not least, the workforce must be healthy to be productive.

Government has given priority to:

- Re-establishing community involvement in decision making in health.
- Reducing waiting times for elective surgery.
- Introducing a new primary care strategy aimed at ensuring that the health system concentrates on keeping people well, rather than just treating them once they are sick.
- Improving service delivery for example by increased use of Maori and Pacific Island providers.
- Investing heavily in mental health services.
- Tackling health workforce shortages and building workforce capacity for the future.
- Providing a three year funding path to give the health sector greater certainty about future funding so that it can properly plan for the development of services.

© SOUND ENVIRONMENTAL MANAGEMENT

Central to New Zealand's unique value in the world is our natural environment. Our geographical and biological features are building blocks for many of our industries, from primary to creative.

Our reliance on primary industries makes biosecurity imperative, while at the same time, the importance of protecting our environment means that our economic policies must be environmentally sustainable.

Government has:

- Tightened border controls and introduced instant fines for biosecurity infringements.
- Increased funding for the national bovine TB strategy.
- Addressed compliance cost issues arising from the RMA.
- Introduced legislation to govern the management of genetic modification technology in New Zealand.
- Committed to ratification of the Kyoto Protocol on climate change.

Our environment also presents us with many emerging opportunities and challenges. Delineation of our enormous continental shelf will increase New Zealand's domain fourteen-fold. Its survey is due to be completed in 2002, and by 2004 a new framework for managing our ocean resource will be implemented.

On the other hand pressures on energy, water, and waste are increasing. Our energy efficiency and conservation strategy aims to increase energy efficiency by twenty per cent by 2012 and to increase our supply of renewable energy. With local government as partners, our waste minimisation strategy sets targets to minimise waste and promote recycling.

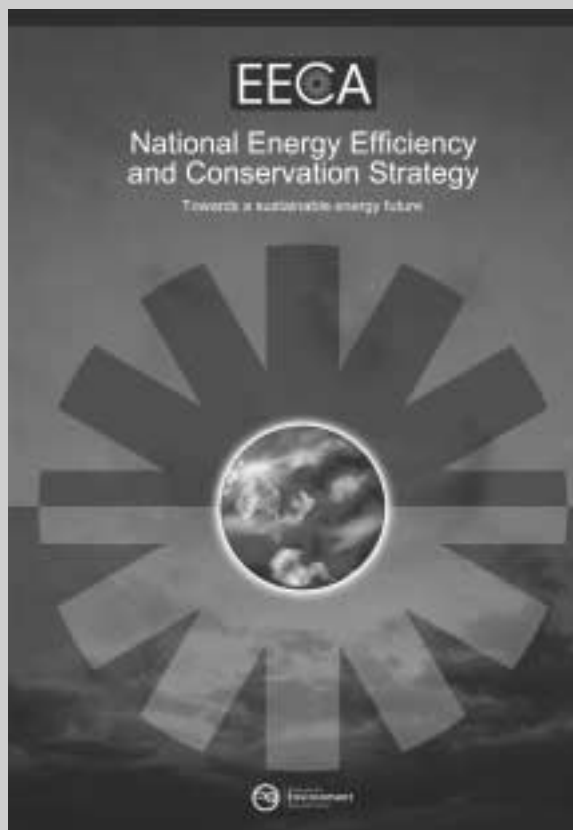
ENERGY EFFICIENCY AND CONSERVATION

The aim of the national energy efficiency and conservation strategy, launched in September 2001, is to improve energy efficiency by 20 per cent, and increase the use of renewable energy by 2012.

This will slow the growth in our energy demands, thus reducing our greenhouse gas emissions and the need for new power stations. Better energy use in houses has the same effect, while at the same time giving New Zealanders warmer, healthier homes.

The significant environmental benefits are supplemented by the economic benefits. The work of the Energy Efficiency and Conservation Authority already shows that on the most conservative estimate, \$12.5million spent on programmes with hard quantifiable benefits has achieved benefits valued at \$59 million – a 500+per cent return. If the unquantified benefits, such as benefits to the environment (e.g. climate change mitigation) and health are factored in, the value rises dramatically.

Technological innovation and a new approach to energy management and design are key to gains in this area. As an example, The Warehouse, is saving \$2.5 million in its operation costs around New Zealand by implementing a state-of-the-art energy management system which nearly halves average energy use per square metre of building.



two.2. » building effective innovation

A SOLID FOUNDATION IS NOT ENOUGH

Solid economic fundamentals enable an economy to grow but they do not guarantee we grow as fast as our competitors, nor do they ensure that growth occurs in areas which are most beneficial in the long term. If they did, New Zealand's economy would be performing better today.

The challenge is to build on the sound fundamentals with policies that actively focus on growth.

In July 2001 the Science and Innovation Advisory Council published the first report on a proposed Innovation framework for New Zealand. Their second report is now being presented.

That report argues convincingly that if we are to achieve our economic objective of returning to the top half of the OECD per capita income ladder then we must "excel globally". New Zealand must become a source of high value innovation in particular sectors of the global economy. This will require a significant strengthening of our innovation system.

The government agrees. As SIAC points out, we must increase the value of our commodity and manufactured exports by applying more world class knowledge and innovation, and appropriate branding. In essence our exports need to reduce in weight and become heavier in knowledge and value.

To achieve this we need a vibrant and well integrated innovation system which is capable of creating wealth from ideas.

Over the past year, other groups, some within the public sector and some joint public and private sector, have also been working to identify the key policy initiatives which can transform the New Zealand economy into the global competitor it must be to achieve a step change in our growth rates.

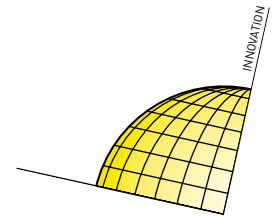
Although each of these groups has looked at different aspects of the issue, or have approached the issue from a different angle, there is a broad consensus on what needs to be done. All agree that to achieve our growth objectives we need to be more effective innovators. We need an economy which encourages and rewards the creation and commercialisation of good ideas and which aggressively promotes the adoption of new ideas throughout the economy.

This suggests that government initiatives need to be aimed at:

- Enhancing the existing innovation framework.
- Developing, attracting and retaining people with exceptional skills and talents who are able to innovate and so contribute to increasing our overall productivity significantly.
- Increasing our global connectedness to overcome the tyranny of distance.
- Focusing government resources to maximise impact of innovation across the whole economy.

In each of these areas, government has made some moves already to strengthen our performance, but much more remains to be done.

two.2.1. » enhancing the innovation framework



PROTEMIX

Auckland biotech company Protomix was named 'Start-up of the Year' at the 2001 New Zealand Hi-Tech Awards in Wellington.

Protomix CEO Neville Jordan said the award was in recognition of the "outstanding scientists who have been responsible for world-beating discoveries in the search for therapies to combat type-2 diabetes".

Diabetes afflicts around 140 million people worldwide. Complications caused by the type-2 strain can lead to blindness, heart problems, kidney failure and gangrene. More than 50 per cent of patients with type-2 diabetes die from the effects of cardiovascular disease. Modern drugs and technology have failed to suppress the progression of diabetes and diabetic complications.

Protomix has a drug in trials which, they say, may suppress the diabetes' complications. The first trial targets the reversal and prevention of cardiomyopathy in patients with type-2 diabetes. Concurrent Phase II trials of GC811007 will target safety, pharmacology and diabetic nephropathy.

Protomix Corporation Ltd is a New Zealand company dedicated to the discovery and development of novel treatments for diabetes. Protomix' laboratories are part of the University of Auckland, who are shareholders in the company.



As noted earlier a solid research and development framework is a key element in the foundation of any economy. It is fundamental to maintaining the quality and relevance of the knowledge base of the economy, it is essential for the quality of the education system and it ensures our products stay competitive in the global contest.

For these reasons government has put considerable effort into increasing the emphasis on R&D in its first two years in office. But we recognise that we must continue to enhance the quantity, the quality, and the relevance of R&D in New Zealand. And we must give greater emphasis to ensuring that more of our R&D leads to economic benefit through commercialisation of the ideas generated. i.e. we must put more effort into innovation not just research.

SIAC sees the innovation system as extending beyond public research institutions, universities, and the research and development efforts of private institutions and firms. It must incorporate links between the idea and knowledge creators (the innovators), the firms and people who can turn those ideas into products, businesses, jobs, and wealth (the entrepreneurs), and the sources of specialist expertise and finance essential for commercialising innovation for fullest value.

They recognise the system as a complex web of relationships and interdependencies, rather than a collection of atomised institutions, whose effectiveness derives from the interactions, linkages, and coherence of the relationships, rather than just the excellence of any one aspect.

The SIAC report makes a number of detailed recommendations, some for action by the government and others aimed primarily at the private sector. Government agrees with the overall direction proposed and is already addressing many of the specific issues raised. For example government has already:

- Established the Venture Investment Fund.
- Improved tax treatment of R&D expenditure.
- Sharply increased funding in basic research through the Marsden Fund and the New Economy Research Fund (NERF).
- Announced funding for Centres of Research Excellence.
- Adopted consortia funding to improve linkages between research and business.
- Doubled funding of grants to support private sector R&D.
- Implemented an e-government strategy aimed at positioning government to deliver more co-ordinated and efficient government services and demonstrate leadership in innovation and technology uptake.
- Led an e-commerce strategy aimed at increasing competitiveness and uptake of e-commerce solutions.
- Established a \$1.8 million incubator development programme to assist the development of entrepreneurs and start-up ventures.
- Developed a new tertiary education strategy which will involve the Tertiary Education Commission facilitating stronger linkages amongst tertiary education providers, and between providers and their stakeholders in industry and the community. The Commission will also be able to use a new, more flexible approach to tertiary funding in order to resource more strategically, in accordance with New Zealand's needs as a nation.

NEW ZEALAND VENTURE INVESTMENT FUND

The New Zealand Venture Investment Fund (VIF), established in 2001, is designed to accelerate the development of the venture capital market in New Zealand. Through VIF the government is investing NZ\$100 million over three years in innovative New Zealand businesses.

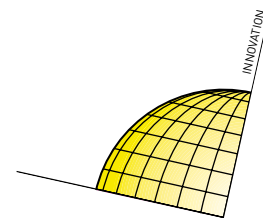
The VIF programme will invest this capital through a series of individual investment funds (VIF Seed Funds) selected by VIF and operated by private sector fund managers. These funds will include venture capital raised from the private sector as well as the government's investment contribution.

The VIF investment programme targets are:

- Seed stage investment which is funding to enable the development, testing and preparation of a product or service for commercialisation.
- Start-up investment which is funding to enable a business enterprise to begin trading.
- Early-stage investment which provides capital for initial manufacturing and marketing where the business is still cash flow negative.

The VIF goals are:

- To accelerate development of the New Zealand venture-capital industry by increasing the level of seed, start-up and early expansion investment activity in the New Zealand market.
- To develop a larger pool of people in New Zealand's venture capital market with skills and expertise in seed and start-up investment.
- To facilitate the commercialisation of innovations from Crown Research Institutes, universities and the private sector.
- To get more New Zealand businesses on paths to global success by increasing their access to international experts, networks and market knowledge.



BUSINESS INCUBATORS

Designed to assist businesses to become established and profitable during their start up phase, business incubation is a relatively new concept here. As of September 2001, there were 15 established incubators throughout the country, with more in the planning stages.

Steve Corbett, manager of the Enterprise Centre (e-centre) attached to Massey University's Albany campus, sees university based incubators as an effective way of taking research ideas into a commercial format.

Incubators do not all focus on 'high-tech' industries. Dunedin's fashion incubator has been identified as an area of huge potential for the city. An exciting new tier of designers is emerging, alongside established brands such as Nom D, Carlson and Blanchet.



One of these is emerging designer Cat Callanan, who graduated from Otago Polytechnic's School of Fashion in 1999 and wasted no time in joining the incubator. Says Callanan, "It gives us the skills and confidence to really push our business. Also, because you're working with like-minded people, it is creatively stimulating and removes that feeling of isolation."

Industry NZ supports the formation of incubators through facilitation and funding and in the current financial year a total of \$1.5 million has been allocated for incubator development.

But government recognises there is still more to do. In line with SIAC recommendations, (many of which are replicated in the BCG and LEK reports) government will continue to build on initiatives which increase and improve the linkages within our innovation framework including:

- Developing a specific entrepreneur support strategy to increase the number and enhance the viability of, high value, high-growth ventures, particularly in those areas where New Zealand can create a competitive advantage.
- Assisting in the development of mentoring frameworks, to enable people with experience in excelling globally with innovative ventures to mentor innovators and entrepreneurs starting out on this path.
- Assisting New Zealand researchers/innovators and entrepreneurs to access global knowledge bases and build international linkages that will enable them to transfer technology to New Zealand based companies.
- Supporting the partnership development of incubator processes which are focused on best practice.
- Supporting clusters to link up with research capability, and enhancing the capacity of regional ventures to take part in virtual clusters.
- Making it easier for innovators, entrepreneurs, and specialist advisors to connect both within New Zealand and internationally. For example MORST already employs a country co-ordinator in Germany to facilitate interaction between the New Zealand and German science communities, and a similar position in Japan is in the process of being established.
- Encouraging and incentivising universities, and CRIs, to play a more active role across the innovation system.
- Improving our intellectual property framework to ensure New Zealand receives full value for our innovations.
- Reviewing the operation of New Zealand capital markets in terms of their ability to provide the structures and incentives necessary to encourage investment in more high-value ventures, while also allowing investors to manage the risk.
- Increasing collaboration between arts and science and arts and the business community.



CRIs MAKE AN IMPORTANT CONTRIBUTION

A natural gene which makes meat more tender has been discovered by AgResearch scientists in New Zealand cattle.

AgResearch Ruakura scientist Dr Chris Morris has discovered a variant of the Calpain1 gene in Jersey/Limousin cross cattle. His research suggest that this genetic variant is responsible for differences in tenderness, and believes the discovery could potentially have a major impact on the New Zealand meat industry. The project has been carried out in collaboration with Adelaide University scientists.

Farmers may be able to breed the gene into their cattle herds, enabling a bull carrying two copies of the gene to produce offspring with more tender meat. This in turn would allow a meat processing plant to reduce the time required for chilled storage of steaks before sale, or produce more tender steaks if they are stored for the usual time.

Obviously the meat consumer will then benefit from access to reliably tender beef in the market place.

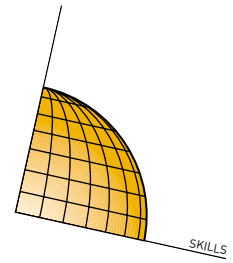


"It's just one piece in the puzzle, but never-the-less a very significant first step in finding the causes of meat tenderness," Dr Morris said. "Those involved in the table beef industry in New Zealand are likely to be very excited at implications of this discovery."

A DNA test for tender beef will soon be offered by AgResearch, which will enable farmers or breed groups or societies to identify carriers of the tender form of the gene within their own herds. This will then allow them management options for improving tenderness in the herd, either by breeding up existing carriers of the tender version of the gene, or buying it in from a specialist stud.

Another alternative could be to separate the tender gene carriers from the tough gene animals, and manage them to meet the different demands of the chilled export and local table meat trade, versus the hamburger meat market.

two.2.2. » developing skills and talent



A well educated and skilled and adaptable workforce is an essential ingredient in producing a successful economy in the 21st century.

New Zealand has a quality education system which has consistently produced graduates able to compete internationally in their chosen fields.

YOUNG DESIGNER WINS

Rodney Mackrell, a young designer from Massey University's School of Design in Wellington, won the grand prize at the prestigious International LG Electronics Industrial Design Competition held in Korea on October 8 2001. New Zealand's Ambassador to Korea, Roy Ferguson attended the award ceremony. "It shows that New Zealand is very much a place where good industrial design is taught and encouraged. It is particularly helpful in persuading Koreans, and others, that New Zealand has a lot to offer in this area of the knowledge economy" he said.



Rodney won the prize out of a field of 1,962 entries from 56 countries. The theme of the competition was "bridging the digital with the human". He designed a cellular remote that operates as a cellular phone and also allows people to control their home or office computer from a distance.

New Zealand has now won the grand prize on three occasions since the competition began in 1991.

But government recognises that to make the jump to a successful high growth economy, we need not only to ensure that all New Zealanders have the education skills they need to be productive members of society, but also we must develop, attract and maintain a solid core of the exceptionally talented, who can lead the way in the innovation stakes.

We must also ensure that the specific skills which are needed in our potentially world-class sectors are available in New Zealand. Skill shortages can be a major barrier to firms expanding.

Ways of addressing these issues have been examined in detail in the SIAC report and also in a paper "New Zealand Talent Initiative" commissioned by the government from LEK consulting. The reports of the Tertiary Education Advisory Commission, and government's Industry Training Review have also explicitly addressed the problem.

This work suggests three key ways to address the talent issue:

- Grow more talent.
- Attract overseas talent to live and work in New Zealand.
- Embrace the talents of New Zealanders currently living and working overseas for the benefit of New Zealand and New Zealand companies.

In each of these areas, government has already taken some action but recognises there is room for additional initiatives.



GROUND BREAKING RESEARCH

Kaa-Sandra Chee is the overall winner of the 2001 Foundation for Research, Science and Technology FiRST Awards for young scientists, innovators and researchers. If her ground breaking research at Auckland University's Centre for Gene Technology pans out, it will pave the way for a drug cure for cataracts, which blind 20 million people worldwide, and potentially eliminate the need for surgical removal of cataracts.



Kaa-Sandra's keen interest in vision goes back to her school-days at Otumoetai College in Tauranga where at the age of 14 she required glasses. A visit to her optometrist sparked a lifelong interest in how the eye functions.

Her research is focused on studying chloride transporters, one of a variety of transport mechanisms in the lens that ensure the lens remains transparent so that people can see. "My work is to identify what transporters are working in lenses with normal tissue and to compare this with what transporters are affected in a cataract lens".

New Zealand Nobel Prize winner Professor MacDiarmid (pictured above) attended the FiRST Awards and urged New Zealanders to be proud of their achievements. "The New Zealand population of 3.8 million is smaller than that of Philadelphia where I live but New Zealanders are known throughout the world for doing great things!" He believes New Zealanders have done so well in so many fields because of our farming roots, with people having to be innovative and find practical solutions to everyday problems. In the 21st century, however, we have to be innovative in different ways.

GROWING MORE TALENT

Recent international comparisons show that on certain measures of literacy and numeracy, our education system is performing exceptionally well, but on other measures we are failing, because our results are not consistent across socio economic measures.

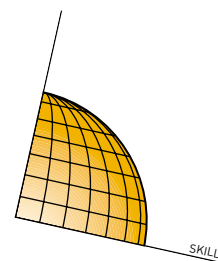
Providing a quality education system which is effective for all New Zealanders including Maori, is as much an essential economic policy as it is a social policy goal.

This requires increasing participation in early childhood education and ensuring high quality services. It requires creating a culture of continuous improvement and a focus on quality teaching and learning. It involves focusing on better learning in our schools by emphasising literacy and numeracy, embedding ICT into learning processes, ensuring that schools reflect the curriculum's focus on giving students the skills needed for a modern economy and society, and outlining higher and clearer standards of achievement.

It also requires strengthening pathways for students, from school to tertiary education, from school to the workforce, and from the workforce back into the education system. The government accepts the need to focus the tertiary sector on high quality and relevant teaching and research and recognise excellence within the system, and to strengthen the overall skill base in New Zealand.

Government has put in place a number of initiatives to address these issues from early childhood through to tertiary education. Initiatives include:

- The development of an early childhood education strategic plan.
- Community based programmes to lift participation in quality early childhood education.
- The extension of a successful numeracy programme into an additional 400 primary schools to ensure that children get a good start in basic numeracy.
- Implementation of the National Certificate of Educational Achievement to provide a detailed picture of what students know and can do, giving them a better foundation for further study, lifelong learning and the world of work.
- Investment of significant funds in an adult literacy strategy, including workplace literacy.
- A leadership and management development programme for principals, and investment in teacher professional development.



- Working with businesses, schools and communities on a variety of high quality ICT initiatives and creating digital opportunities projects in schools including the Kaupapa Ara Whakawhiti Matauranga (KAWM) project which provides multimedia on-line learning opportunities for Maori students, and ICAN which includes a high speed network between the schools.
- Supporting students at risk of underachievement by taking a more integrated approach to their health, welfare and education needs.
- Stabilising tertiary fees and improving the student loans scheme.
- Investing in the establishment of Centres for Research Excellence to support world class research in New Zealand.

The government is also committed to ensuring that the tertiary education and training system is much more closely connected to the challenges facing the New Zealand economy. In practice, this means:

- Greater alignment between the focus of the tertiary education and training system and the priorities for national development goals.
- The tertiary education and training system shaping and being shaped by national priorities.
- Improving the cost-effectiveness of the system in order to gain greater value from our nation's almost \$2 billion annual investment.

Accordingly, government will ensure there are

- Stronger linkages between employers and tertiary providers to ensure that the gaps between emerging skills shortages and education responses are reduced.
- Stronger links and partnerships between tertiary research and other sectors, with research better informing the development of new services and industries and improving on our existing foundation.

INDUSTRY TRAINING

The skills and talent required for a modern economy cannot however be provided only through the formal education system. The new economy requires people with strong technical skills and people able to adapt regularly to changes in technology and the demand for skills.

To this end the government has already taken significant steps to enhance industry training. These include:

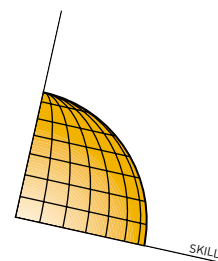
- The development and implementation of Modern Apprenticeships. Developed within the first 100 days of the election of the government and launched in 2000, Modern Apprenticeships is a prestige pathway for young people to access high quality, mentored, work-based learning. By July this year 3000 Modern Apprentices will be employed across a range of industries throughout the country.
- Government decisions arising out of a comprehensive review of Industry Training will lift the volumes, quality and responsiveness of industry training, and encourage higher rates of completion. The Tertiary Education Reform Bill, now before a Select Committee, will make a number of changes, including requiring Industry Training Organisations to take a leadership role in identifying, and responding to, training needs.
- In each budget since it was elected the government has increased funding to industry training. The Industry Training Fund was increased by \$8 million to \$78 million this financial year and will increase a further \$16 million in 2002/2003. This will enable more New Zealanders than ever before to participate in formal structured workplace training. During 2000, more than 81,000 people participated in training purchased through the Industry Training Fund.
- Technology in Industry Fellowships, which enable students and experienced researchers to complete R&D projects in companies, so exposing them to an industrial environment.
- A New Technology Fund of \$1 million dollars has been established through the Industry Training Fund to increase employees access to industry training through the use of new technology such as computer based training.

- Gateway, a new programme to improve the transition from secondary school into the workforce, currently involves 722 students from 24 schools. Employers are showing strong interest in providing systematic workplace training for school students. Gateway is also helping strengthen links between Industry Training Organisations and schools.
- Four Industry Training Organisations and six companies have received allocations from the newly established Workplace Literacy Fund to deliver literacy training in a range of industries.

Steps are also in place to introduce more differentiation, more co-operation and more performance based research in our universities which will ensure the quality of our graduates continues to improve.

The big issue now is to ensure the momentum is maintained and in some areas increased and to ensure that the initiatives are adequately considered and evaluated against stated aims.

SIAC also points out that historically New Zealand has not celebrated entrepreneurial talent in the same way we have regarded sporting heroes. Government accepts that this has often been the case and will support initiatives in conjunction with the private sector to celebrate New Zealand talent.



AVIATION FIRST FOR MODERN APPRENTICESHIPS

Chris Wischnowsky is breaking new ground as one of the first Modern Apprentices to be employed in the aviation industry. Chris, who works for Paul and Brenda Muller at Muller Aircraft in New Plymouth, began his Modern Apprenticeship in July.

Chris' Modern Apprenticeship was arranged by aviation industry training adviser Gary Danvers, who oversees the training of 50 trainees and Modern Apprentices throughout the country on behalf of the Aviation, Tourism and Travel Industry Training Organisation (ATTTO).

Chris is learning all aspects of general aviation engineering and maintenance and is working towards a National Certificate in Aeronautical Engineering.

"I like the fact that my learning is very practically-based. You're assessed according to what you can actually do, not just how well you've read a book," says Chris. "I'm lucky that this is a small shop that incorporates a wide range of things. I'm gaining lots of exposure to all facets of the industry – airframe work, painting, brakes, undercarriages – and because the training is so practical, I can learn a lot of it just in the course of my everyday duties."

Gary says a major skill shortage is looming for the industry unless it trains sufficient numbers of young people to replace its aging workforce.

"In the United Kingdom the average age of aircraft engineers is 50. It's a similar situation here. In another 5-10 years these people will need to be replaced. If we don't start training people to replace the baby-boomers now, we'll be in trouble. Without an apprenticeship-type training system there is no way you can train the number of people required, that's my message to employers."

"There is a definite shortage of aircraft engineers, particularly in general aviation, to work on smaller aircraft," confirms Brenda Muller.

Brenda says the support they receive through Modern Apprenticeships has been one of the keys to their participation.

"When I first came to this industry from teaching in 1996, I was shocked how little support there was for young people wanting to train. Without support from the outside, training for young people just falls by the wayside. In a small business like ours there's no way that the person doing the instruction has time to do all the paperwork. That's where I see Modern Apprenticeships coming into its own."



ATTRACTING OVERSEAS TALENT TO LIVE AND WORK IN NEW ZEALAND

The SIAC and BCG reports, and, particularly, the LEK report, all place emphasis on the need for New Zealand to perform more effectively in the global competition for talent.

The LEK report emphasises that talented people are a key driver of innovation and economic growth and advises that as the market for talent has globalised so must our approach.

The LEK report developed ten objectives, most of which had some relevance to government. While this document is not addressing those recommendations in detail, we have already signalled our strong support for both the direction and some of the specifics by implementing a number of policy initiatives.

For example:

- Skilled migrants have now been accorded priority in the New Zealand Immigration programme quota, and policies have been put in place to make it easier for employers to recruit IT and other skilled workers in short supply.
- The Talent Visa, a key LEK recommendation, is being introduced as part of the overall change in our immigration policy. This visa will make it much easier for accredited businesses in need of specialist talent to recruit from overseas.
- Government has also, in the past two years, put more emphasis on programmes to improve settlement of immigrants after their arrival, thereby improving the prospects of them becoming established in New Zealand.

TALENT VISA AND SKILLS SHORTAGE WORK PERMIT

The government will introduce a Talent Visa and Skills Shortage Work Permit in April 2002.

TALENT VISA

The Talent Visa will enable accredited employers to recruit highly skilled and talented individuals from overseas. The Talent Visa aims to boost employers' access to global skills and knowledge, enabling accredited employers to tap into global talent as the opportunity arises.

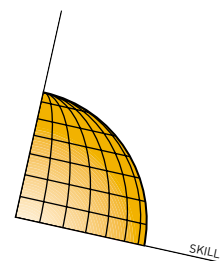
Once accredited, employers will be able to recruit talented individuals directly from overseas as the need arises. The Talent Visa will allow successful applicants to work for an accredited employer for two years. After this period, Talent Visa holders will be eligible for permanent residence, provided they have met the conditions of their visa, meet standard health and character requirements, and have an offer of on-going employment.

SKILL SHORTAGE WORK PERMIT

A Skill Shortage Work Permit will complement the Talent Visa. Where an acknowledged skill shortage exists, employers will no longer need to go through the standard labour market test to prove that no New Zealander is available to fill the position. NZIS will maintain a Labour Market Skill Shortages List of occupations that will qualify. The List will be reviewed and enhanced in conjunction with unions and employer groups.



A Skill Shortage Work Permit will be issued for up to two years and, in some circumstances, allow permit holders a pathway to permanent residence.



The report also emphasised the need to ensure talented people are aware of the opportunities New Zealand is able to provide them, not only in terms of business opportunities, but also lifestyle choices. Such people need to be convinced that if they come to New Zealand they will find an economy which is not only technologically advanced, but is also exciting and rewarding with a society to match.

In the past most of our international publicity has been focused around our environment and/or our sport. While this has been successful in attracting tourism, it does not necessarily encourage entrepreneurial migrants.

Effort is going into broadening that image. Considerable resources are being invested in conjunction with events such as the Americas Cup and the launch of The Lord of the Rings, to portray New Zealand as being technologically advanced, innovative, creative, and successful. If we can combine those attributes with the established images of a beautiful and clean environment and a safe and secure lifestyle, there is much more likelihood of attracting the talent we need to supplement home grown talent.

More clearly needs to be done, and this issue is discussed further in relation to improving our global connectedness later in this document.



UTILISING OVERSEAS KIWIS

There are estimated to be 600,000 New Zealanders currently living and working overseas. Many of these are potentially both ambassadors for this country and/or sources of information or expertise that might be usefully harnessed to assist in the growth of New Zealand firms. This issue was not only a key part of the LEK report, but it was also addressed extensively at the Knowledge Wave conference.

The recently announced World Class New Zealanders initiative being led by Industry New Zealand forms an integral part of the work the government has already started to address this issue. That strategy includes initiatives such as:

- Building a network of talented New Zealanders currently based overseas.
- Using this network to establish internships, business exchange programmes and mentoring for young New Zealand entrepreneurs and emerging talent.
- Arranging inbound and outbound missions and seminars aligned with the economic development strategy both to increase New Zealand's exposure to international thinking and to encourage the development of more strategic partnerships.
- Building "connectedness" through both targeted communications and a website that links to private sector expatriate related sites.

A number of private sector initiatives are also already underway, some specifically deriving from the Knowledge Wave conference. Government will continue to work with the private sector to examine the further specific recommendations that have been made such as:

- Developing a Jobs New Zealand website.
- Talent spotting foreign students and encouraging them to stay in New Zealand.
- Various initiatives to better celebrate New Zealand talent.
- A Kiwi Clubhouse network – where Kiwis abroad are encouraged to network with a view to expanding the range of initiatives and ensuring there is appropriate co-ordination wherever possible.

two.2.3. » increasing global connectedness

For a small country of 3.8 million people, economic integration with the rest of the world to expand our potential market is critical. New Zealand's ability to integrate with the rest of the world and to keep pace with technological change is made more difficult by its distance from major markets. As noted earlier, New Zealand does not export as much as most other small developed economies. Increasing New Zealand's exports of goods and services is obviously critical to New Zealand's growth and welfare. But, greater integration will not only assist the exchange of goods and services, it will also increase our access to skilled people, capital, ideas, and knowledge.

Global connectedness can be increased in several ways. The various pieces of work commissioned by the government, plus our own analysis, suggests attention should focus primarily on three areas:

- **Attracting Foreign Direct Investment.** The recent BCG report on FDI showed that New Zealand is not performing well in terms of attracting FDI, and is missing out on the benefits international capital, expertise and contacts can bring. More aggressive FDI promotional activities may generate considerable benefits for the New Zealand economy.
- **More aggressive export promotion.** Improving New Zealand's export performance is critical for a small, distant country like New Zealand. Government involvement is important as the vast majority of our firms are very small and find the move into export markets very challenging.
- **Improved National branding.** Modernising New Zealand's brand is key to the world understanding what New Zealand has to offer in terms of ideas, talent, entrepreneurships and opportunity.

ATTRACTING FOREIGN DIRECT INVESTMENT

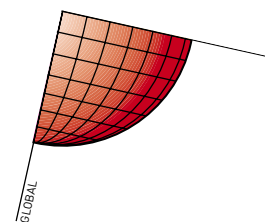
New Zealand's approach to foreign direct investment (FDI) has been essentially passive, and relatively few resources have been dedicated to attracting it.

New Zealand has experienced periods of substantial inflows of FDI, particularly in the early to mid-1990s. That largely related to the acquisition of existing companies with most concentrated in the property, finance, and communications sectors. Relatively little FDI occurred in the export sector. The consequence of this is that foreign companies now have substantial ownership stakes in parts of the non-tradables sector – such as banking – and the flow of FDI has reduced sharply over the past few years.

One of the problems with this pattern, is that New Zealand as a whole did not extract significant benefits from the investment of foreign capital. Direct acquisition in the areas it occurred has done little to generate the expertise, knowledge, contacts, and technology that overseas companies can bring with them.

The BCG report on FDI also demonstrated that relative to other small countries New Zealand is not performing well in terms of attracting FDI. That report recommended that government take a more active approach to FDI as one element of our strategy to increase our economic growth rates.

They argue that FDI can play an important role in building up domestic capacity in a sector by bringing technology and contacts, spreading knowledge, and creating linkages within a sector. This could be valuable in terms of developing world-class scale and specialisation in parts of the economy, and will enable New Zealand business to develop and sustain the strong competitive advantage needed to compete successfully internationally.



Government accepts that FDI could play a much more positive role in New Zealand if it is appropriately targeted. To be most effective FDI must build on our domestic strengths. It must be investment which adds to our competitive advantage, rather than blunting it.

New Zealand's size and location means that it is unlikely to attract the type and levels of FDI that were attracted to countries like Singapore and Ireland.

New Zealand is currently off the radar screen when major investment decisions are made by international corporates. To address this government recognises that a continued passive approach will not generate the quality or quantity of investment needed. We need to take the lead from other small countries and actively promote New Zealand as an attractive investment destination in a targeted way.

Realistically this promotional activity can not rely on providing large financial inducements to individual companies. Indeed, New Zealand is unlikely to win a bidding war with other countries or regions in terms of attracting particular companies. We need to attract investment on the basis of the existence of clusters in New Zealand that are already operating at world-class levels. For example, every telecommunications company in the world has a research presence in Finland because of Nokia - not because of its cost structure or tax rates. A sector with some critical mass is more likely to act as a magnet for quality FDI and act to anchor it in New Zealand for the long term.

Accordingly, in order to attract quality FDI, and to extract the full benefits from it in terms of developing domestic strengths, we should target investment in areas where there is already at least the start of a strong domestic capacity. An existing domestic base will not only make it easier to attract quality investment, it will better position New Zealand to leverage the benefits across the economy.

Funding increases for FDI will need to be staggered. While some increases are appropriate now, substantial increases will only make sense when the economy has undergone sufficient transformation to ensure that FDI can be well integrated, as an accelerant, into vibrant domestic sectors.

In the past two years government has begun to improve the FDI environment in New Zealand by:

- Increasing funding to Investment New Zealand, a branch of TradeNZ.
- Establishing the first dedicated offshore investment team, in New York.
- Establishing the Major Investment Fund, within Industry New Zealand.
- Proactivity by Ministers at home and abroad in encouraging and facilitating FDI. This has resulted in a number of new greenfields investments, including Sovereign Yachts, Kiwi Yachts and the Ericsson wireless initiative. More are being pursued currently.

ERICSSON

Ericsson Synergy's Wellington-based centre for developing mobile internet services could receive up to \$1.6 million of government funding over the next three years. Government ministers Jim Anderton, Pete Hodgson and Paul Swain announced the funding in August 2001. "The government is prepared to be active in chasing investment that is good for New Zealand". The funding depends on Ericsson Synergy achieving a number of growth milestones, including employment rates.

Since it began operating in January 2001 ESL has developed solutions for mobile office, mobile commerce, advanced wireless application protocol (WAP) and messaging. It has also created advanced service platform technology that integrates mobile networks, web/WAP sites, customer management and billing systems. The company is attracting a number of expressions of interest from expatriate Kiwis who want to return to work for a company at the leading edge of technology development.

ESL's establishment was announced in November 2000 by global telecommunications company Ericsson and Wellington-based management consultancy Synergy International. Investment NZ and Industry NZ had been working for several months to help bring this joint venture into existence and, since then, Industry NZ has also been co-ordinating government assistance for the project.



However, as the BCG report shows, New Zealand must lift its game considerably in this area. The BCG report recommends that New Zealand create a vision, set targets, consolidate the activities of Investment New Zealand and the Major Investment Service, integrate FDI into its broader economic, research and talent strategies and increase funding.

Broadly the government agrees and intends to:

- Strengthen co-ordination between the activities of Investment NZ and Industry New Zealand's Major Investment Service.
- Seek further advice on the structural configuration which would provide most focus to our FDI activities.
- Ensure that FDI promotional activity is focused on those areas (biotechnology, ICT and creative industries) identified as being the priorities for enhancing economic growth.
- Review Business Migration policies with a view to exploring ways of utilizing the investment funds required of business migrants, in a more strategic manner.

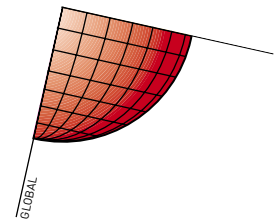
Increased resources will follow as structures are better aligned and domestic initiatives have begun to impact.

The taxation regime may also play a significant role in either encouraging or discouraging foreign direct investment. The government is considering the recommendations of the McLeod Committee in relation to both the level and structure of taxation on foreign direct investment. It is intended to make decisions on these matters during this year.

MORE AGGRESSIVE EXPORT PROMOTION

As described earlier, New Zealand's export sector occupies a lower share of GDP than most other small OECD countries. Moreover, relatively few companies are large exporters.

We can celebrate our many successes. For example, that in the past decade, New Zealand wine exports have grown by over 1000 per cent, totalling \$NZ169 million in 2000. This is projected to grow to 40 million litres, worth \$NZ390 million in foreign exchange earnings, by 2005. Importantly also there has been a rapid increase in high and medium high tech industries and exports of elaborately transformed manufactures over the past decade. But a dispassionate analysis indicates that transformation must be accompanied by, indeed led by, continued improvement in export performance.



TOHU WINES

The first Pinot Noir from high-flying New Zealand wine maker and exporter Tohu Wines has been snapped up within a few months of its release, confirming the company's standing both as a producer of high quality wine and as the exporter of New Zealand's first indigenous branded wine. The only real limitation faced by Tohu according to the company's Chief Executive James Wheeler is that demand hugely outstrips what the company can supply.

Tohu's success in one international market could not have happened without the help provided by Trade New Zealand and the Maori Business Unit. Tohu enlisted Trade New Zealand support to carry out research in target markets. "We took a range of different labels, colours, shapes and names and Trade New Zealand staff in the US and UK used their local knowledge to find out what would work" James Wheeler says. "The name was pivotal with Americans in particular – if they're going to buy the wine they have to be able to say it".

The government has taken a series of initiatives over the past two years to assist export growth. For example:

- TradeNZ funding has been increased.
- TradeNZ is undertaking an extensive capital expenditure program to rapidly advance e-exporting capability.
- The Business Grow programme within Industry New Zealand has started focusing on those enterprises with an ability to grow quickly and to grow exports quickly.
- A pilot Fast Forward programme within Industry New Zealand has commenced with a similar aim, and pilot efforts to promote business cluster development are also under way.
- The Export Credit Office has been established to assist those exporters required to provide medium long term finance to their buyers, or those dealing with countries with a high risk of economic instability.
- More open trade arrangements have been advanced, particularly with Singapore and Hong Kong and through the Doha Round launched by the WTO initiative.
- Considerable ministerial and diplomatic effort has gone into new market development.

In coming months government will give priority to:

- Monitoring and evaluating existing programmes to ensure they are meeting the needs of the market.
- Exploring a "beach head" programme in which the government either leases separate premises, or expands TradeNZ offices to
 - Create an incubator for small or medium sized businesses trying to establish themselves in offshore markets.
 - Create a forward marketing base for new exporters in strategic offshore markets.
- Ensuring closer co-ordination of the services of FORST, Industry New Zealand and TradeNZ to ensure their services are delivered seamlessly.
- Considering increasing government support for overseas trade delegations or missions.

BRAND NZ

Offshore perceptions of New Zealand are outdated. While there is some awareness internationally of our "clean green image" from a tourism point of view there is too little awareness of New Zealand as an innovative country at the leading edge of knowledge.

We need to develop and promote a contemporary and future-focused Brand NZ, which projects New Zealand as a great place to invest in, live in, and visit. Maori have a unique contribution to make in this regard, and the government is working with Maori to find ways of leveraging this for the benefit of all New Zealanders.

Government has committed a significant level of resources in conjunction with events such as the Americas Cup and The Lord of the Rings to help to promote an image of New Zealand as technologically advanced, creative and successful.

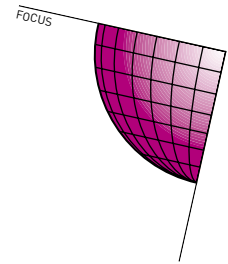
One of the reasons why the image of New Zealand internationally is not strong is that we have not presented a consistent brand image across our various sectors. This must change. To that end government, through Industry New Zealand, Trade New Zealand, and Tourism New Zealand is working with the private sector to develop a Brand New Zealand programme. The aim is to reposition the brand and develop a joint management structure so that government, industry and business can all utilise the same brand.

TRADE NZ PROMOTES NEW ZEALAND THROUGH TRADE FAIRS AND CREATING AN OFFSHORE PRESENCE



The accelerating pace of change in business means companies are increasingly requiring physical presence offshore. Managing this in a cost-effective way is challenging, given the small size of most of our firms. TradeNZ has begun a programme of identifying appropriate shared "beach head" facilities and will actively work with companies to ensure smooth market entry. The initial focus is Singapore and facilities are also being investigated in the US.

two.2.4. » focusing government resources



Government recognises that it has an important role to play in encouraging the adoption of more innovation throughout the economy. It also recognises that its resources, financial and other, are limited. It is therefore essential to ensure that in choosing where to direct government effort, we concentrate on those areas which can achieve the biggest impact.

For these reasons government will more aggressively focus its policy intervention in relation to innovation and growth. In the first instance biotechnology, ICT and the creative industries have been chosen as the areas for particular emphasis, because of their extensive influence on so many parts of the economy.

Needless to say, this policy focus will not be exclusive. The government has already engaged with a number of sectors to remove bottlenecks and barriers to maximising their growth potential. The Wood Processing Sector Strategy is a key example of how many government departments and crown agencies have focused their efforts and resources to address issues of skills, infrastructure and investment.

The 2001 Budget also recognised the opportunity for government engagement with other sectors as diverse as manufacturing (especially boat-building and casting), fashion, apparel and textiles, and tourism. Much has been achieved working in partnership with these sectors (such as implementing the Tourism Strategy) and this work will continue.

To date, however, government agencies have not clearly determined common priorities for action. That must change. It is crucial to ensure that, for example, the focus of Industry New Zealand, Trade New Zealand and the Foundation for Research Science and Technology are aligned to a high degree so they can have maximum impact.

What the new approach means is that a disproportionate effort will be put into achieving more momentum in a few areas.

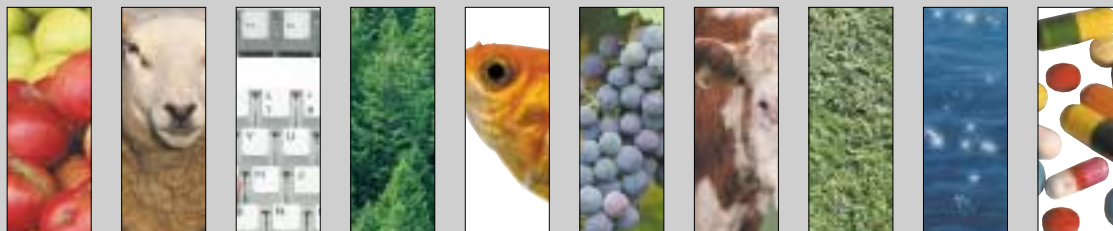
CHOOSING THE SECTORS

There is no completely objective way of choosing which areas to target. Various pieces of work have been undertaken, however, to replicate international best practice in sector targeting in a New Zealand context. BCG has worked on sector targeting in the context of their report on FDI, and Industry New Zealand, FORST, and Trade New Zealand have also been working on sector targeting. There has been a significant level of agreement between the analyses.

The methodologies – particularly those used by Industry New Zealand and BCG – are very similar.

The methodology considers both the global market in particular sectors and the state and potential of the New Zealand market in those sectors. In terms of global attractiveness, measures of global market size, investor return and sustainability were used. To examine 'fit with New Zealand', measures which capture the level of location and scale independence, the requirement for skilled labour, and the fit with New Zealand's existing industry structure were used. To capture the existing state of development of the sector in New Zealand, measures of the current domestic market size, the state of cluster development, and the level of innovation are used. More detail on these methodologies is available from the specific reports.

BIOTECHNOLOGY



Horticulture

Sheep and Cattle

International Consultancy

Forestry

Marine

Wine

Dairy

Grass

Natural Products

Medical

HORTICULTURE

New products are being developed to give the horticultural industry a competitive advantage as they fill premium niches on world markets. Work is being carried out on a new commercial variety of the kiwifruit which is the size of a large cherry, has a super-sweet flavour and can be eaten whole like a grape.

SHEEP

Genetic research is being carried out to understand muscle development in sheep. This research is aimed at improving greater meat yields, but also has the potential to enhance our understanding of gene disorders that are involved in muscle disease in humans.

FORESTRY

Forest biotechnology can be used to maintain and further develop trees of superior genetic quality to maximise profitability, log and wood quality, and improve resistance to disease. Research is producing new tree varieties focussed on useful products such as higher strength timber and high quality clear timber.

MARINE

Biotechnology is utilized in ocean management to monitor the recovery of protected whale species. Research in New Zealand using molecular genetic modelling estimates the impact that exploitation of these animals may have on populations and therefore help protect threatened species.

WINE

Biotechnology is enabling us to develop fungicide controls to benefit New Zealand's wine and horticulture industry and to sell to the international wine industry. Work is underway to develop a new fungicide to control Botrytis, the grey mould fungus that causes rot in grapes as well as other crops.

DAIRY

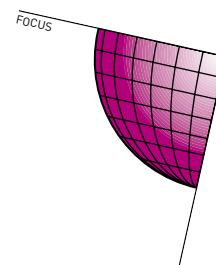
Methane emissions from dairy cows may be able to be reduced through the manipulation of the cows' gut bacteria or by changing the composition of forage grasses. This would benefit the dairy sector by providing some increases in milk productivity as well as helping it meet New Zealand's commitment to reducing global greenhouse gas emissions.

NATURAL PRODUCTS

New Zealand's rich and often unique diversity of plants and animals are good sources of natural products with potential health-promoting properties. Biotechnology can be used to help identify, extract and process natural products which already include products such as anti-bacterial manuka honey, high anti-oxidant berry fruit, medicinal herbs and plants like echinacea, and green shell mussel extracts used for relieving arthritis symptoms.

MEDICAL

There is a wide range of medical biotechnology developments in New Zealand. One example is an antibacterial agent that is being developed to prevent throat infections which will also prevent associated complications such as rheumatic fever and rheumatic heart disease.



In considering the targeting recommendations from these studies, the government applied three broad principles.

- **Capable of having a material impact on growth rates**

First, the areas need to be capable of having a material impact on economic growth. Focusing policy interventions on an area that impacts on only two per cent of GDP is likely to be less useful than focusing policy so as to enhance productivity across the whole economy.

For this reason the areas chosen need to have a "horizontal" impact rather than just a vertical one. They should have clear linkages to many other parts of the economy (e.g. providing specialised inputs into various production processes) so that productivity improvements in the target area have spillover effects in many others. By significantly improving performance in areas which impact on all aspects of the economy, we can achieve enhanced productivity, and hence higher growth rates across many sectors. In this way we are not relying on increased growth in the target sectors alone to achieve the growth targets. Ideally targeted areas should also already have a number of high performing niches within them. Together, this will ensure that the targeted sectors have the capacity to have a material effect on growth.

- **Competitive advantage**

Second, the areas chosen should be capable of developing a degree of scale and specialisation in their own right which makes them relevant on a global scale. Without such a level of scale or specialisation we are unlikely to be able to attract the skill, talent, and investment necessary to maintain higher growth rates. For practical reasons this should occur in areas of existing or potential competitive advantage, rather than trying to start from scratch in a new area. The targeting process should be 'market led' in the sense that the government takes its cue from existing strengths. Identification of the areas of New Zealand's competitive advantage need to be informed by observation of the current performance of sectors, and where the private sector is investing. This requires us to identify areas in which New Zealand excels and provide support to these so that they can develop world-class scale and specialisation.

- **Consistency with the vision**

Third, the areas need to contribute to the vision of a global, innovative New Zealand economy and be consistent with the 'New Zealand brand'. In particular, there needs to be the potential for sustained productivity growth through increased innovation and global connectivity.

NUMBER OF TARGETED SECTORS

Given the need to target areas that are capable of generating a transformational change in economic performance, there is an issue of how many such sectors should be targeted.

Government believes it is desirable to target relatively few sectors, in the first instance. If there are too many targets, the likelihood that critical mass, with world-class scale and specialisation in any sector will be achieved is much reduced. There is also an organisational capacity issue; targeting too many areas would be difficult for existing institutions and would mean that available financial resources would be spread too thinly. Further, it is difficult to concentrate on more than 3-4 strategic economic priorities at the same time, particularly across the whole of government.

While there is an argument that targeting more areas would minimise risk, government believes there is enough spread available within the sectors chosen for this not to be a serious problem.

The appropriate number of targets will be that which maximises the sum of the gains from critical mass, organisational capacity, and diversification. Given the characteristics of the New Zealand economy, and the current state of public sector institutions, government has concluded that it should focus policy initially on three areas.

Results

Given that the approaches to targeting are reasonably similar, it is not surprising that the lists of target sectors generated by BCG and Industry New Zealand are also reasonably similar. Although they do not overlap perfectly, there are many common elements; for example biotechnology and ICT consistently turn up on the lists that are constructed. Five other sectors rank highly; creative industries (film, TV, music, design), food and beverages, niche manufacturing, environmental technologies, and education exports. Of the areas recommended by the various groups, the three that best matched the government principles for target selection were biotechnology, ICT, and creative industries.

BIOTECHNOLOGY AND INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

Biotechnology is an example of a horizontal technology as it has applications across many other sectors such as forestry, agriculture, specialist food production and pharmaceuticals.

Biotechnology is directly related to New Zealand's strength in the primary sector, the only sector in which New Zealand currently has world-class scale and specialisation. Focusing innovation effort on biotechnology, for example, is a way of leveraging New Zealand's comparative advantage in the primary sector to add more value to our products.

New Zealand has a very good understanding of biological systems because of its strength in the primary sector. New Zealand firms have already begun to establish competitive advantage in parts of the biotechnology sector by leveraging these strengths. Although the biotechnology sector itself represents only about one per cent of GDP, it has an impact on much more.

BIOTECH

Biotenz defines biotechnology as "...the application of science and technology to generate increased biological-based wealth". Biotech industries provide a way of generating greater innovation in the primary sector, and leveraging our knowledge of biological systems. Indeed, biotechnology is not so much a separate industry as a set of tools with applications across a wide range of industries. There are applications in the pharmaceutical, agricultural, nutraceutical, environmental, and industrial fields, among others. Specific technologies involved in the biotech sector include microbiology, cell biology, genomics, genetic and protein engineering, and biochemical engineering.

There are significant global opportunities in biotech. New Zealand currently has made important contributions to R&D, has a strong academic base, and has many promising start-up and development stage companies with potential in selected niches (for example, agricultural applications).

Genesis

New Zealand's most prolific biotech company is Genesis Research and Development Corporation. Chief Executive Dr Jim Watson left Auckland Medical School in 1994, where he was head of the department of molecular medicine, and established Genesis, risking his own capital in the process. The company's own discovery, a psoriasis vaccine, PVAC, is undergoing US Food and Drug Administration Phase 2

clinical trials. The company is also working on immune therapy in relation to asthma and type 1 dermatitis, and on developing therapeutics in tuberculosis and cancer.

The company's business strategy is to develop partnerships with biopharmaceutical, agricultural and forestry companies to market end products from its gene discovery "pipeline".

Blis Technologies

Dunedin-based firm Blis Technologies was established in June 2000 to commercialise a number of biotech products, including Salivaricin B - a promising treatment for streptococcal throat infections. Blis, or bacteriocin-like inhibitory substances, are antibacterial agents able to kill or control the growth of closely related bacteria. Other Blis-producing organisms, researched at the University of Otago and purchased by the company, have been found to control mastitis in cows, skin infections, dental disease, food pathogens and enterococcal infections.

Blis Technologies major asset in its current phase is intellectual property and it has or is pursuing patents in Australia, Western Europe, the United States, Singapore, Hong Kong, Taiwan and Japan. It continues to develop antibacterial agents and other products based on Blis-producing organisms. Blis Technologies listed on the main board of the New Zealand stock exchange in July 2001.



Technologies involved in the biotechnology sector include microbiology, cell biology, genomics, and biochemical engineering. There are applications in the pharmaceutical, agricultural, nutraceutical, environmental, and industrial fields, among others. BCG noted particular opportunities in agricultural biotechnology; where there are at least 50 New Zealand companies that operate in this niche, mostly located in Auckland or Christchurch.

The Royal Commission on Genetic Modification noted that the 21st century has already been dubbed the biotechnology century and that New Zealanders have a history of quickly adopting and adapting new technologies.

They advised that it would be wise to establish a Bioethics Council and develop a biotechnology strategy for New Zealand which would take into account factors such as, scientific, environmental, economic, cultural, consumer preference and the interplay between them. Work on that has begun within the public sector, but it is clear that if New Zealand is to take full advantage of the potential benefits of this technology, we can not be passive.

We must identify the potential strengths within the New Zealand industry along with the potential market opportunities internationally and we must develop those in ways which are sustainable.

Targeting ICT also allows New Zealand to leverage some of its strengths. ICT has an impact on many sectors, and New Zealand firms have established competitive positions within niches of this sector already.

For example, there is a small but active wireless technology sector and some New Zealand software firms are world leaders in their fields. ICT is a rapidly growing area, and New Zealand can leverage its investments in innovation and global connectivity by focusing on some niches within it.

INFORMATION AND COMMUNICATIONS TECHNOLOGY

There is no single accepted definition of the Information & Communications Technology (ICT) sector. However, there is an emerging consensus that the ICT sector includes goods and services that use electronic means for information processing, transmission, display and communications. ICT sub-sectors include telecommunications, IT hardware, IT software, IT services, Internet services, and wireless technologies.

Some of these sectors – like IT hardware – are not likely to hold opportunities for NZ firms. However, parts of the ICT sector do hold promise and are growing quickly. For example, there is a small but active wireless technology sector (Talon Technologies, Ericsson-Synergy, and Vodafone) and some New Zealand software firms are world leaders in their field (for example, Jade, Tait Electronics).



Pulse Data

A Christchurch company, Pulse Data International, received an Innovative Technology Commendation from the Foundation for Research, Science and Technology for its development of BrailleNote, a world first in portable notetakers for the blind. Featuring a special suite of software, a Braille keyboard and display, and a speech interface, this innovation allows blind people to send and receive emails, link up with standard computer software applications such as Microsoft Word, and exchange information with their sighted peers.

The BrailleNote has subsequently been combined with Global Positioning Software. With the addition of the new GPS software and a small receiver, the BrailleNote becomes a powerful and invaluable device to assist blind and sight impaired people to navigate their way independently.

The process begins by first entering a series of landmarks and other specific pieces of information as 'waypoints'. One 'waypoint' might be the user's front door, while another is the bus stop down the road. After the initial entering of the data as 'waypoints', the map can be replayed to act as a verbal announcement device that 'speaks' to the user.

The GPS software has been trialed in the U.S. with huge success and Pulse Data aims to release it to New Zealanders early next year.

Pulse Data International was included in the inaugural Deloitte/Unlimited fastest 50 growing companies in New Zealand.

New Zealand has real potential to be world class in parts of the biotechnology and ICT sectors. Because New Zealand will only be competing in niches in these sectors, and the niches in which we exhibit real competitive advantage are likely to differ from other countries, it is not a major concern that other countries also target biotechnology and ICT. We can also be smart about which specific parts of sectors to target. Given that New Zealand firms will not be operating on the same scale as firms in many other countries, we need to aim to succeed by operating in profitable niches. Together, biotechnology and ICT are central to New Zealand's aspirations to become a knowledge economy and to extracting value from our primary production and natural resources.

CREATIVE INDUSTRIES

The Creative industries sector is chosen as the third target. This is a diverse sector, which includes film and television, visual arts, design, music, fashion, and multimedia art. Creativity is at the heart of innovation and it satisfies all three of the targeting principles. Creative industries input into many other sectors.

For example, strengths in design can become strengths in industrial design that can add value to the niche manufacturing sector, and if we are to establish a more distinctive New Zealand identity which is reflected in our products and services, excellent and unique design must be an integral part.

New Zealand has also clearly established competitive advantage in some niches within this sector, such as film and television production and post-production. Fashion and design are growing strongly. New Zealand can perform at world-class levels in this sector, because large parts of it are relatively independent of scale and distance. The sector also is able to leverage off New Zealand's unique culture and capabilities, which international competitors can't replicate. It therefore has the potential to generate wealth on a sustained basis.

This focus will not see the government closing the door on engagement with other sectors. The government is mindful that the economy is dynamic and that significant new opportunities will emerge over time. While operating within this framework, government will preserve sufficient flexibility to respond to emerging developments in other potentially high growth sectors of the economy.

CREATIVE INDUSTRIES

Britain's Creative Task Force has defined the creative industries as "those activities which have their origin in individual creativity, skill and talent, and which have the potential for wealth and job creation through the generation and exploitation of intellectual property."

The sector is very diverse, including industries such as Advertising, Architecture, Art, Design, Fashion, Film and Video, Music, Performing Arts, Publishing, and Television and Radio.

The creative industries act as an input into many other sectors. In particular, industrial design can add value to the niche manufacturing sector. Indeed, design is increasingly playing a significant role merging creativity and innovation with products and services across a wide range of industries. New Zealand has also clearly established competitive advantage in some niches, such as film and television production and post-production. Fashion and design are also growing strongly. This sector leverages off New Zealand's unique culture and capabilities.



WETA

Transforming the fantasy world of J.R. Tolkien's epic story The Lord of the Rings into a movie has brought worldwide attention to New Zealand and to filmmaker Peter Jackson. The first of the three films is already breaking box office records in a number of countries.

Weta brings together a multitude of departments under one roof and is New Zealand's foremost special effects business. The Weta Digital arm of the business is estimated to be the third largest computer special effects studio in the world.

Set up in the early 1990s to supply an all inclusive effects facility to the New Zealand film industry, creating Middle-earth for The Lord of the Rings was by far Weta's biggest task with 1,500 effects shots created in total.

Weta Workshop were responsible for the design, fabrication and on-set operation of all the armour, weapons, prosthetics, special make-up effects and creatures, and also constructed the large number of extensive and highly detailed miniatures.

A large portion of the trilogy's monsters were brought to life by Weta Digital, employing the very latest advances in the field of computer generated imagery.

At the height of production Weta Digital was employing 220 staff. Originally it was thought between 80 and 90 graphic artists would be needed to complete the trilogy's special effects. Artist numbers hit 165 at the peak of the Rings production. Nearly 40 percent of the artists were Kiwis, and Weta attracted world class talent to work on the film. Between \$15 million and \$20 million has been spent so far on Weta's IT infrastructure. The digital demands have spin offs throughout the IT industry.

This document sets out a direction which the government believes can help move New Zealand on to a higher growth plane.

There are four broad means by which this framework will be given effect:

- **Ministerial leadership across all related portfolios.**
- **Specific strategies within each of the identified target areas.**
- **Budget prioritisation.**
- **Advisory board.**

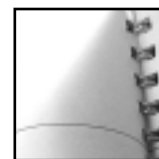
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Ministerial leadership

Implementation of this framework relies on ensuring that policy initiatives across all portfolio areas which impinge on economic transformation are appropriately aligned. To this end, where ministers are making choices about priority setting and new initiatives within their portfolios, they will be ensuring that they are consistent with, and contribute to the achievement of our innovation and growth objectives.

tation



Ministers will be using all the tools available to them, such as statements of intent, purchase agreements and government policy statements to reinforce the direction outlined in this document. This will particularly affect policy agencies such as the Ministry for Economic Development, MORST, MFAT, Ministry of Education, Ministry of Social Development, Department of Labour, Ministry for Culture and Heritage, Ministry of Tourism, and delivery agencies such as; Industry New Zealand, Trade New Zealand, FORST, Tourism New Zealand, TEC, Creative New Zealand, and the New Zealand Film Commission.

For example, the tertiary education strategy which is currently being finalised, is aimed at ensuring the sector becomes better aligned to the requirements of a knowledge economy and society. The strategy will be finalised in April, and will incorporate priorities identified in this strategy.

SPECIFIC STRATEGIES

For this framework to be effective, specific strategies must be developed jointly with those directly involved in each of the target areas. The aim is that the private sector will shape the direction of development, with government facilitating in those areas where it is best positioned and can be most effective. Consultation with each of the identified areas has already begun, focussing principally on the appropriate scope of each target. Some work is also underway on strategies for both biotechnology and the creative industries. This must be stepped up.

Taskforces will be established for each of biotechnology, ICT and creative industries. These will comprise both business and employee representatives from the area, representatives from other sectors involved in facilitating development, (e.g. the tertiary education and research sectors), and government officials from a range of departments.

The development of the strategies will be co-ordinated by the Ministry for Economic Development.

The initial stage of defining the specific strategies will be the completion of a strategic analysis of each area including:

- Global mapping of sector opportunities and trends.
- An analysis of New Zealand capability and trends.
- Information about investment and growth opportunities along with current constraints, such as skill or management capability deficits.
- Advice on the extent and nature of potential government involvement in the sector.

The work already begun by the public sector on these issues must now be brought together with that of the private sector.

The types of issues likely to be addressed in the strategies will include areas such as:

- Facilitating cluster development and operation.
- Establishing networks and aligning resources both between government agencies, and between government agencies and the sectors.
- Identification of the talent, skills and research expertise required and how to ensure their availability.
- Attracting and retaining strategic investment in the sector.
- Identifying infrastructure needs.
- Promoting the sector.
- Setting of goals and targets.
- Monitoring and evaluation.

BUDGET 2002

This framework is not simply about spending money, it is much more about the kind of economy we are aiming to grow and the need to focus our effort to get maximum leverage from available financial and human resources.

Government will however be ensuring that where new initiatives are related to economic development and growth objectives they are focused consistently across government and this will be reflected in the upcoming budget.

Beyond the 2002 Budget, future budgets will provide further opportunities to consolidate and focus the government's efforts and enhance the effectiveness of the government's investment in promoting more effective innovation and stronger economic growth.

ADVISORY BOARD

This framework has picked up on the consensus of recommendations from a range of public and private sector reports. It recognises that to grow more quickly, we need to be both more innovative and more focused. Sustaining higher growth rates will however require us to continually re-evaluate where the opportunities lie and how we should take advantage of them. A key part of the success of this strategy will therefore be ensuring that we keep our focus continually relevant. We will need to monitor progress in each area and be prepared to adapt policies or to change course if the evidence warrants it. To do that effectively we must ensure we are continually looking ahead as well as evaluating the success of initiatives.

Government will therefore establish an Advisory Board with strong private sector representation. It will report to government on progress within the areas identified within the framework, and advise on future opportunities for government focus. The aim is to ensure that our economic growth rates achieve and maintain a margin over the OECD average so that over time we achieve our stated objective of establishing the New Zealand economy back in the top half of the OECD ladder.

conclusion

New Zealand's next phase of its economic development must be characterised by innovation. There are many great things already happening in the economy. Many individuals and firms have great ideas. Many policy initiatives are beginning to have an impact. There are pockets of excellence throughout the economy. The challenge for New Zealand is to make those pockets of excellence the norm rather than the exception.

This framework documents a broad consensus that has emerged over the last two years as to what needs to be done to develop New Zealand's innovative potential.

That consensus says we must continue to strengthen the fundamentals of our economy. We must have an economy able to weather shocks, and to adapt to new challenges. But we must do more than that.

If we are to reverse declining trend in our relative income measures we must achieve a step change in growth rates.

We must become a nation known internationally for our innovation, our creativity, our skills and our lifestyle.

To do that government is committing to implementing policies with more emphasis on:

- Enhancing our innovation framework.
- Developing our skills and talents.
- Increasing our global connectedness.
- Focusing innovation initiatives in those areas which can have maximum impact.

Government has chosen to target its innovation initiatives initially in biotechnology, Information and Communication Technology and the creative industries. These are all areas which, if they attain their growth potential, can have a significant influence on the broad scope of the New Zealand economy. But obviously they cannot achieve the growth required for the whole economy on their own.

Innovation must happen across the board. Skills and talents in all areas will be important. We must attract the right sort of foreign direct investment.

The government is committed to working with all parts of the economy to help to make that happen.

The process will not be short. We cannot expect to recover our position in per capita income rankings overnight. But we have the potential in New Zealand to succeed and with a determined effort by all players, New Zealand can, and will, enjoy sustained economic success.



For more information, contact

THE OFFICE OF THE PRIME MINISTER
PARLIAMENT BUILDINGS, WELLINGTON

or visit

www.beehive.govt.nz