



He Tirohanga Mokopuna

2016 Statement on the Long-Term Fiscal Position

New Zealand Government

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Background papers that informed the development of He Tirohanga Mokopuna are available at <http://www.treasury.govt.nz/government/longterm/fiscalposition/2016>

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*The title of this Statement, **He Tirohanga Mokopuna**, conveys the sense of an intergenerational purview. Mokopuna is used conceptually to signify a new generation; our mokopuna are the future and we have the responsibility today to leave New Zealand a better place for them in the decades ahead. He Tirohanga Mokopuna also underscores the unique relationship between the Crown and Māori under Te Tiriti o Waitangi as an imperative in lifting living standards for all New Zealanders. And for the Treasury, this title is evocative of our fully carved whareniui, Ngā Mokopuna a Tāne, a place at the heart of our organisation and a place for all to stand.*



Foreword

The Treasury takes more than just a short-term perspective. While we provide ongoing advice to the government of the day, we also take into account how New Zealand’s economy and state sector need to evolve over coming decades in response to a changing world.

In our stewardship role, our long-term objective is to help people live better lives, now and into the future – to increase their well-being on a sustained basis. However, we do not judge how people should be living their lives. Rather, we focus on expanding the opportunities and capabilities of people to live the lives they value. Undeniably, well-being will be increased by improvements in people’s material living conditions. But there are also other dimensions of well-being. Broadening the framework of our long-term thinking requires a multi-disciplinary approach to economic, social, and environmental policies.

The Public Finance Act 1989 requires that the Treasury prepares a statement on New Zealand’s long-term fiscal position (the Statement) at least every four years. The Statement must cover at least the next 40 years and include a description of all significant assumptions underlying any projections.

The title of this Statement, He Tirohanga Mokopuna, conveys the sense of a future outlook and taking a long-term view. Mokopuna is used conceptually to signify a new generation; our mokopuna are the future and we have the responsibility today to leave New Zealand a better place for them in the decades ahead. He Tirohanga Mokopuna also underscores the unique relationship between the Crown and Māori under Te Tiriti o Waitangi as an imperative in lifting living standards for New Zealanders.

As in previous long-term fiscal statements, we include “what if” projections of New Zealand’s

long-term fiscal outlook – the government’s revenue and spending – and what drives it. A growing economy makes an important contribution to improved living standards. If the economy is growing, tax revenue also generally increases, and can strengthen the long-term fiscal position, although this will depend on how government spending responds. As was the case in the July 2013 Statement, the projections indicate that governments face long-term fiscal challenges, and they have choices about how to manage these pressures. But unlike previous Statements, this time we also consider whether improving social outcomes provides fiscal benefits in addition to improving living standards.

Since our last long-term fiscal statement, we have:

- Produced an Investment Statement, also required by the Public Finance Act.
- Released our 2014 Briefing to the Incoming Minister, which included the Treasury narrative around priorities for New Zealand’s future (entitled “Holding On and Letting Go: Opportunities and challenges for New Zealand’s economic performance – A perspective from the Treasury”).
- Engaged more extensively with the New Zealand public (this is summarised in a background paper prepared as part of this Statement, titled “Conversations about things that matter”).

This, our fourth long-term fiscal statement, builds on the challenges and opportunities for New Zealand identified through these processes.



“In our stewardship role, our long-term objective is to help people live better lives, now and into the future...”

A number of international trends will impact on New Zealand’s future living standards, of which demographics – and an ageing population – is only one. It also recognises that we cannot consider the fiscal impacts of these trends in isolation from their wider impact on living standards. The approach taken in this Statement will provide the foundations for the Treasury’s future strategic documents, particularly the next Investment Statement, due by 2018.

Amendments to the Public Finance Act in 2013 added new principles of responsible fiscal management. These principles require that when formulating fiscal strategy, governments have regard to the likely impact of that strategy on present and future generations, and work to ensure that the Crown’s resources are managed effectively and efficiently. This Statement, together with the next Investment Statement, will help the Treasury give advice that better enables government fiscal strategies to meet these principles.

This Statement includes the following:

- Section One sets out the Treasury’s Living Standards Framework and the perspectives it can bring to long-term fiscal analysis.
- Sections Two to Five examine: economic growth; employment and skills; social inclusion; and natural resources. This builds on the strategic challenges identified in “Holding On and Letting Go”.
- Section Six summarises updated long-term fiscal projections, scenarios, and options.
- Annexes provide additional information and summarise our key projection assumptions.

The Statement is also accompanied by a set of background papers that underpin our analysis and conclusions.

In preparing this Statement, the Treasury has used its best professional judgement about the risks and outlook for the long-term fiscal position.

Gabriel Makhlouf,
Secretary to the Treasury

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Summary

There is a dynamic relationship between New Zealand's long-term public finances and intergenerational well-being. Intergenerational well-being relies on the growth, distribution and sustainability of the four capitals - financial and physical capital; human capital (e.g. health and skills); social capital (e.g. institutions and trust); and natural capital (e.g. water and biodiversity). Firms, households, and the government combine these four capital stocks in various ways to generate flows of goods and services that are consumed by people and enhance their well-being.

Sustainable government finances are a precondition to improving long-term living standards. They reduce the risks associated with economic, social or environmental shocks, provide current and future generations with the opportunities to participate in society (by allowing governments to provide essential services and infrastructure), and give more certainty in the future for individuals and governments to plan.

While current government finances remain relatively strong, fiscal pressures are projected to build over the next 40 years. Population ageing is projected to apply pressures through slower revenue growth (resulting from less participation) and increased expenses (primarily through New Zealand Superannuation and healthcare). In the future, we may also see threats to our natural resources (e.g. climate change, water quality and natural disasters) as a fiscal pressure.

Governments have many options at their disposal to address these fiscal sustainability challenges, many of which will also have benefits to New Zealand's well-being.

- Economic growth provides revenue and, in turn, provides governments with options on how to address expense pressures. Improved economic growth also means higher incomes for New Zealanders. Sustainable

growth contributes to resilient long-term government finances and creates broader opportunities for individuals to raise their living standards. Productivity growth is the key for New Zealanders to earn higher incomes. Opportunities for productivity growth include enabling strong and dynamic international connections, innovation, and regional and Māori economic development.

- Better education, skill and employment outcomes further enhance these choices through a more dynamic, effective workforce and higher participation. New Zealand's education outcomes remain strong by international standards. This, combined with a flexible labour market, has enabled high labour market participation and relatively low unemployment. As the nature of work continues to evolve and skill requirements continue to change, education and training systems will be challenged to ensure New Zealanders are ready for the future. This will include realising the full potential of an ageing workforce.
- Social inclusion enables all New Zealanders to live the lives they value. This means reducing and removing the significant barriers to social and economic participation for the minority of New Zealanders who face these challenges. These barriers result in poorer health, education, employment and criminal justice outcomes, which are often apparent from an early age. More effective social spending can contribute to a higher level of social inclusion.

These opportunities sit alongside the other options available to governments in terms of changes to taxation and major spending areas. By making well-informed choices with a view to the long-term, governments can ensure long-term fiscal sustainability and help lift living standards for New Zealanders.



A living standards perspective on the long-term fiscal outlook



In performing its role as the government's lead advisor on economic, fiscal and regulatory issues, the Treasury works towards improving the living standards of New Zealanders. In its broadest interpretation, improving living standards is what the objectives of the state sector are all about. A key focus of the Treasury is to improve New Zealand's economic performance, as a driver of living standards.



“In the Treasury's view, good public policy enhances the capacity of the four capitals to generate well-being...”

The Treasury's Living Standards Framework

Numerous factors affect New Zealanders' living standards – for example: health, education, the environment, and freedom – many of which have value beyond their contribution to material comfort.

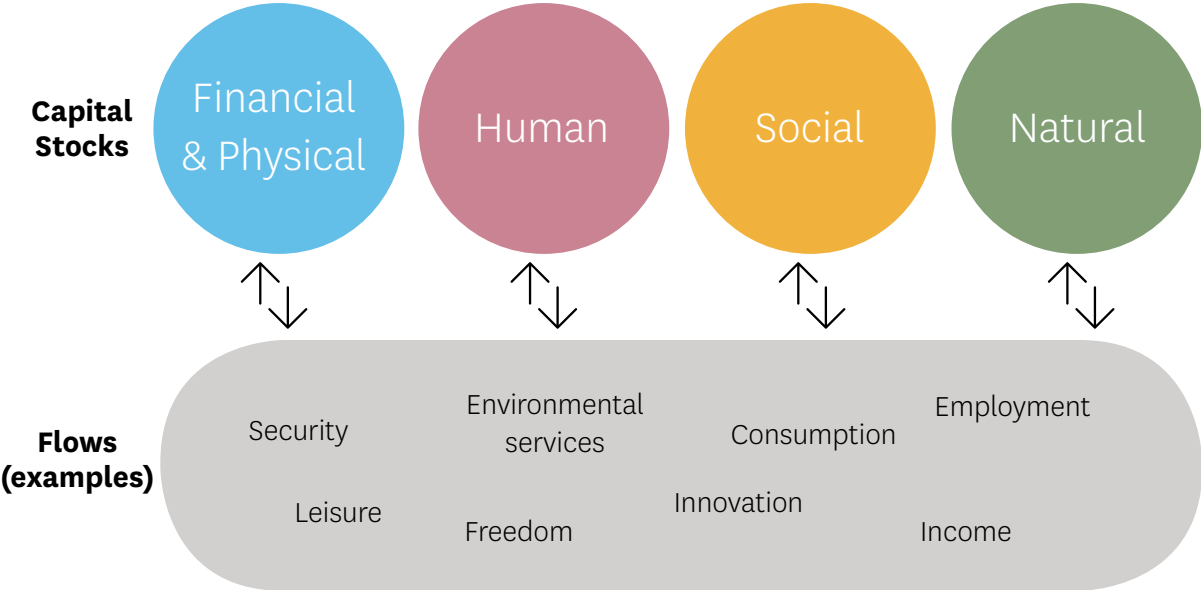
The Treasury uses its Living Standards Framework to incorporate a broad range of factors, distributional perspectives, and dynamic considerations. This framework is based around four types of capital stock: financial and physical capital; human capital (e.g. health and skills); social capital (e.g. institutions and trust); and natural capital (e.g. water and biodiversity).¹ Collectively these capital stocks comprise “comprehensive wealth”.

Firms, households, and the government combine these four capital stocks in various ways to generate flows of goods and services that are consumed by people and enhance their living standards. In turn, the flows can influence the capital stocks. Figure 1.1 illustrates these stock and flow concepts, with examples of the flows that matter for well-being.

¹ See: www.treasury.govt.nz/abouttreasury/higherlivingstandards; Treasury (2011) Working towards higher living standards for New Zealanders. New Zealand Treasury Paper 11/02; Girol Karacaoglu (2015) The New Zealand Treasury's living standards framework – Exploring a stylised model. New Zealand Treasury Working Paper 15/2; Daniel Weijers and Udayan Mukherjee (2016) Living standards, well-being, and public policy. Background paper prepared for this Statement.



Figure 1.1 – The Treasury’s Living Standards Framework: Capital stocks and well-being flows



The approach is similar to the Organisation for Economic Co-operation and Development (OECD) well-being framework.² Both approaches build on the work of Stiglitz, Sen and Fitoussi on the measurement of economic performance and social progress.³ The Living Standards Framework is also based on research emphasising that public policy can improve people’s lives now and into the future by enhancing the capabilities and

opportunities – as well as the incentives – of individuals to pursue the lives they value.

In the Treasury’s view, good public policy enhances the capacity of the four capitals to generate well-being if it:

- is sustained or enhanced, not eroded by current generations at the expense of future generations (sustainability)
- is shared equitably in a way that sustains or enhances the capitals (equity)
- allows for a cohesive society, where all people and groups respect others’ rights to live the

2 See OECD (2015) How’s Life? 2015: Measuring Well-being.
 3 Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi (2009) Report by the commission on the measurement of economic performance and social progress. The Commission: Paris.

kinds of lives they value (*social cohesion*)

- is resilient to major systemic risks (*risk management*)
- generates material well-being (*economic growth*).

The Treasury uses the five dimensions above in analysing the impacts of policy choices. For example, the 2013 Statement on the Long-Term Fiscal Position applied the five dimensions to the analysis of policy choices around increased taxation, restricting government spending, and changes to New Zealand Superannuation policy settings.

Identification of the interactions in the Living Standards Framework is crucial, but challenging. Some of the interactions are mutually reinforcing, while others imply trade-offs. Decisions about acceptable levels of distributional outcomes and trade-offs are ultimately political in nature and thus beyond the realm of policy advice. However, highlighting these issues ensures that the Treasury's advice is robust and that government decisions are well-informed.

The long-term fiscal outlook and living standards

There is a dynamic relationship between New Zealand's long-term public finances and intergenerational well-being. The four capitals of the living standards approach matter for sustained improvements in well-being. They can also matter for long-term public finances via the links from the capitals to economic growth and therefore tax revenues. These tax revenues allow the Government to fund transfer payments and the provision of goods and services. The

Government's own physical capital stock in schools, roads, and hospitals also plays a role in delivering public services.

Links between the other capitals and public finances can also be significant. For example, citizen discontent or unrest, poor health, unreliable water quality and natural disasters can all have negative implications for social, human, and environmental capital, and place significant pressures on public finances. On the other hand, strong and sustainable government finances enable New Zealand to respond to challenges and opportunities arising in the capitals, including decisions to invest and grow them over time. The Treasury continues to advise governments to maintain prudent and low average levels of public debt over time.

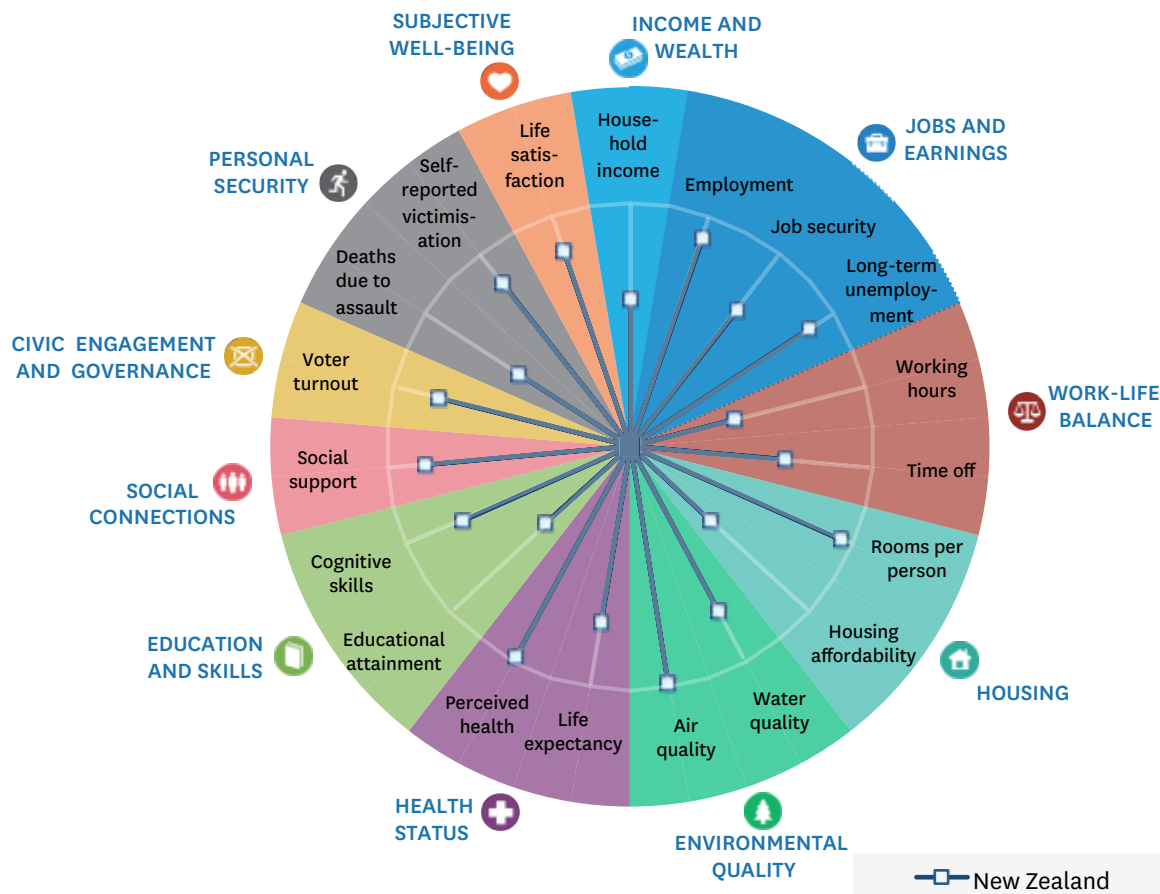
Assessing New Zealand's performance across living standards dimensions

By taking a wider perspective beyond Gross Domestic Product (GDP), we can better evaluate what it's like to live in a particular country. How to achieve this wider perspective and what measures to use are, however, still a work in progress.

The most relevant comparative index for a developed country is the OECD's Better Life Index (BLI). New Zealand ranks above the OECD average in the majority of indicators in the BLI (see Figure 1.2).⁴

4 See OECD (2015) How's Life? 2015: Measuring Well-being.

Figure 1.2 – Better Life Initiative: New Zealand (2015)



Source: OECD (2015) How's Life in New Zealand?

Note: This figure is based on a ranking of all OECD countries. Longer grey lines show areas of relative strength in terms of a higher ranking (e.g. New Zealand's air quality and perceived health ranked among the best in the OECD).

With regard to the “income” dimension of the BLI, New Zealand is below the OECD average.⁵ This is broadly consistent with New Zealand’s GDP per capita ranking within the OECD (see Section Two).

New Zealand performs particularly well in health, civic engagement, employment, environment, and life satisfaction. However, the BLI in-and-of-itself does not reveal differences across groups of New Zealanders. For example, some groups are under-represented in employment, there is a wide gap between the highest and lowest performers in

education (see Section Three), and some groups have worse life outcomes than others (see Section Four). In the case of natural resources, the BLI indicators do not fully capture aspects that matter for long-term sustainability (see Section Five).

5 In Figure 1.2, ‘household income’ is ‘household net adjusted disposable income’ (i.e. after taxes and including cash and in-kind transfers).

Assessing New Zealand's long-term fiscal outlook

In comparison to most OECD economies, New Zealand currently has a strong fiscal position. Many governments around the world are still recovering from the economic and fiscal impact of the Global Financial Crisis. New Zealand's fiscal surpluses are forecast to increase in the short-term, with the ratio of public debt-to-GDP beginning to decline. However, long-term spending pressures are projected to build – see Table 1.1 – and these will require government action in order to maintain sustainable debt. Section Six sets out the spending projections in more detail, the implications for deficits and debt, and the range of possible options to address New Zealand's fiscal challenges.

The structure of this Statement

In the following sections we focus on: economic growth; employment and skills; social inclusion; and natural resources. To raise living standards, it is important that we take into account an assessment of current and future financial and physical, human, social, and natural capital stocks. Such an assessment can also help us manage the long-term fiscal position in the context of a prosperous, sustainable and inclusive New Zealand. The focus areas of this Statement expand on the following strategic opportunities and challenges identified in Holding On and Letting Go and the Treasury's 2014 Briefing to the Incoming Minister:

- *The rapid acceleration of global flows of people, capital, trade and ideas creates opportunities for a small economy like New Zealand. However, it also brings risks of greater volatility and challenges for a distant economy to play a role in global supply/value chains.*
- *The centre of economic activity is moving closer to New Zealand with strong growth in the Asia-Pacific expected to continue. However, distance will still play a role and New Zealand may face greater cultural challenges in connecting with Asia than with traditional trading partners.*
- *Strong income growth in emerging markets is supporting demand for our natural resource-based commodities. However, there is increasing scarcity of natural resources and growing evidence of environmental pressures. The way that resources are managed and allocated is becoming increasingly important for our living standards.*
- *New Zealand, like much of the world, is in the midst of an unprecedented demographic transition towards an older age structure. Most developed economies, including New Zealand, will face declining labour market participation rates and fiscal challenges from rising health and pension costs over the next fifty years.*

Table 1.1 – “What if” projections of government expenses (percent of GDP)

	2015	2030	2045	2060
Healthcare	6.2	6.8	8.3	9.7
New Zealand Superannuation (NZS)	4.8	6.3	7.2	7.9
Education	5.3	5.4	5.5	5.7
Law and order	1.5	1.4	1.4	1.4
Welfare (excluding NZS)	4.2	4.5	4.7	4.7
Other (excluding finance costs)	6.3	6.7	6.7	6.7

Note: 2015 are actual results. Projections are from the “Historical Spending Patterns” scenario in Section Six. These projections represent a “what if” scenario and are not a prediction for how expense areas will actually grow.

Although we have taken a wider perspective in this Statement than in the three previous Statements, for technical reasons not all elements are reflected in the long-term fiscal projections set out in Section Six. For example, economic growth and employment have connections to both living standards and sustainable public finances via productivity and participation. We have included illustrative scenarios around the fiscal and wider effects of improved social outcomes. Sustainable economic growth depends on good management of our natural resources. Due to information gaps and significant uncertainties in future trends and impacts, natural resources are currently difficult to incorporate in long-term fiscal projections.

The Treasury is still developing the capabilities to more effectively measure and assess New Zealand’s capitals and the interventions and investments required to improve them. He Tirohanga Mokopuna and the associated background papers show evidence of this progression, while the next Investment Statement will further demonstrate this evolution.

This Statement contains no specific or detailed policy prescriptions, and no criticism of previous or current policies is intended or should be inferred. The work in this Statement is an important part of our ongoing role to apply evidence, analysis and strategic perspectives in a way that informs public debate on important issues relevant to higher living standards and sustainable public finances.



“There is a dynamic relationship between New Zealand’s long-term public finances and intergenerational well-being.”



Economic growth

2



Economic growth matters for material well-being. Improved economic growth means higher incomes for New Zealanders but it also contributes to fiscal sustainability (e.g. through taxation). It can also create broader opportunities for individuals to raise living standards and live the lives they value.

New Zealand's GDP per capita is below the OECD average. The Treasury considers that improved economic growth would come from a more productive, adaptable, and resilient economy – through:

- **Stronger international connections**
- **Improved investment and innovation**
- **Greater competitive intensity**
- **Greater export diversity and a more complex mix of exports**
- **Collaborating for regional economic development**
- **Benefiting from Auckland's economy and role as an international connector**
- **Supporting Māori economic development.**

Economic growth matters for the improved material well-being of New Zealanders. Economic growth provides individuals with more options for spending, saving, and investing. Beyond that, growth can also create broader opportunities for individuals, such as through work participation and learning on the job. A growing and prosperous economy also affects New Zealand's long-term public finances, and provides governments with options for spending, saving, and investment. Economic growth is driven by increases in population, labour participation, and productivity.

From the early 1970s to the early 1990s, New Zealand's GDP per capita (as a measure of average incomes) declined relative to other countries. Relative GDP per capita was broadly stable in the early 2000s, with modest convergence back towards the OECD average since then. This is despite New Zealand having what are regarded as comparatively good policy settings.



It is important to recognise that New Zealand is positioned in about the middle of a group of economies that are often larger (in terms of domestic market base) and/or geographically closer to current and potential trading partners. New Zealand's GDP per capita is around 8 percent below the OECD average.⁶ This gap reflects higher than average labour utilisation (hours worked per capita) which is offset by below average labour productivity (output per hour worked). While there is no "best" set of comparator economies, Figure 2.1 compares New Zealand's labour productivity performance against a group of small advanced economies (of which it is a member).⁷

There has been a slowdown in aggregate labour productivity growth across the OECD that began prior to the onset of the Global Financial Crisis. Despite the slowdown, firms at the 'global frontier' are experiencing strong productivity growth, which suggests there is ongoing technological progress. However, there are questions about how this progress is being transferred (or diffused) more widely, as well

as the extent to which resources are being reallocated from low to high productivity firms.⁸ The New Zealand Productivity Commission (the Productivity Commission) has examined these issues in the New Zealand context (see below).⁹



"...improved economic growth would come from a more productive economy that is also adaptable and resilient against unexpected shocks and other changes."

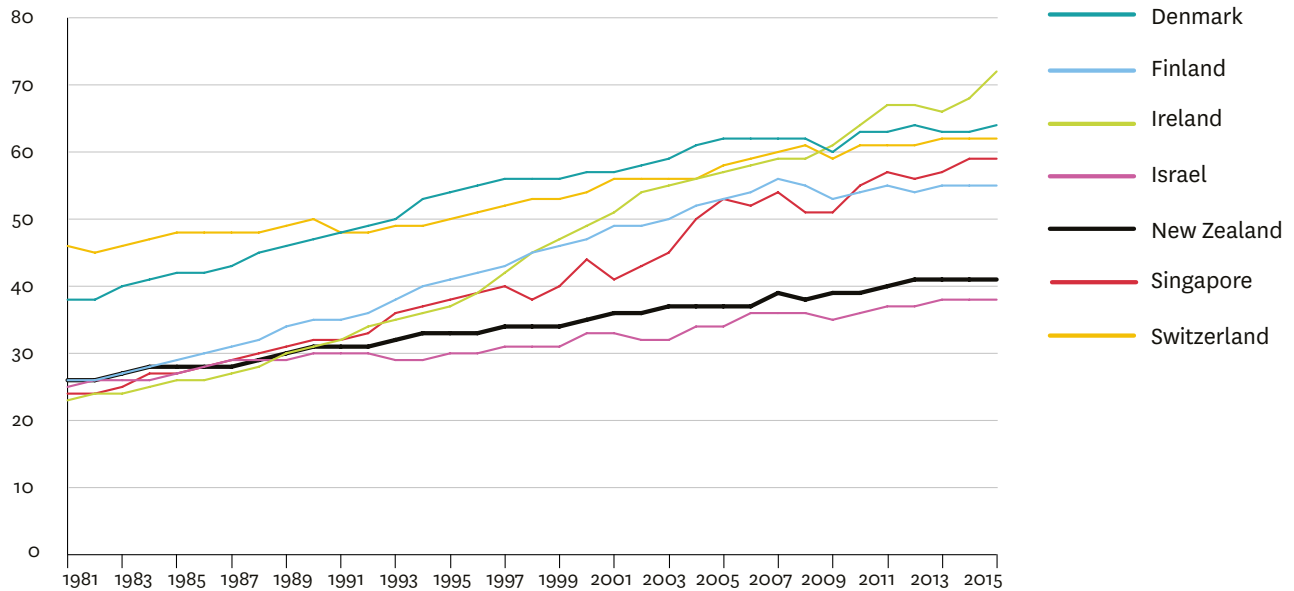
6 This gap is for 2015 and is based on an average of all 35 OECD economies. Given data availability, comparisons of New Zealand's GDP per capita from the early 1970s are against a sub-set of OECD economies.

7 The Small Advanced Economies Initiative (SAEI) is a collaboration between Denmark, Finland, Ireland, Israel, New Zealand, Singapore, and Switzerland. All of the countries are advanced economies by International Monetary Fund standards, and are of similar scale in terms of population with around 5 to 10 million inhabitants.

8 OECD (2015) The future of productivity.

9 Paul Conway (2016) Achieving New Zealand's productivity potential. New Zealand Productivity Commission Working Paper 2016/1.

Figure 2.1 – Labour productivity in small advanced economies (output per hour worked, 2015 US dollars)



Source: The Conference Board (2016) The Conference Board Total Economy Database™, <http://www.conference-board.org/data/economydatabase/>

Note: This data is constructed on an internationally comparable basis and so may not match other estimates used elsewhere in this Statement.

There will be a number of influences on New Zealand’s future economic growth, including: demography; external shocks; changing patterns of technology and globalisation; skills; social inclusion; and public policy settings.

Looking out to 2060, this Statement projects real GDP growth to average around 2 percent per year. Taking into account the effects of an ageing population on labour force growth, labour productivity growth is projected to be the main contributor to increases in GDP per capita. For modelling purposes, the Treasury assumes that labour productivity growth will average 1.5 percent per year from the early 2020s, which is broadly in-line with historical averages.

Recent events, such as volatile dairy prices and global political and economic instability reinforce the importance of a resilient and adaptable economy. Geopolitical events (e.g. terrorist attacks, the inflow of refugees into Europe, the United Kingdom’s decision to leave the European Union, and tensions in the Middle East) create new uncertainties about global interactions and trade. New Zealand also faces the relatively new global challenge of increasing protectionism and negative views towards global economic integration, along with wider concerns about the benefits and costs of globalisation not being equally distributed. New Zealand’s economic prospects depend on an open global trading system, and it needs to be able to mitigate and manage the impacts of unexpected shocks and to ensure that the benefits are shared.

A more productive, adaptable, and resilient economy

The Treasury considers that improved economic growth would come from a more productive economy that is also adaptable and resilient against unexpected shocks and other changes. This Section outlines where the Treasury sees the challenges and opportunities for a more productive, adaptable, and resilient economy now and in the future. Many of these are also addressed by the Productivity Commission in its work and inform its narrative on productivity, and are captured in the Government's Business Growth Agenda.¹⁰

*The Productivity Commission's narrative draws on existing work on New Zealand's productivity performance and brings two new sources of evidence to the table: insights from the Commission's inquiries, and new research using the Longitudinal Business Database (LBD). The Commission's narrative highlights the value of using detailed micro-data to understand productivity at the level of the firm, creating an opportunity to look beyond the performance of the "average firm". This is consistent with productivity analysis carried out by the OECD and the analytical gaps noted in *Holding On and Letting Go*. A more nuanced view of policy issues can come from understanding the distribution of performance at the firm level.*

The Commission's analysis illustrates that in New Zealand, the processes of technical diffusion and the reallocation of resources from low to higher productivity firms are impaired. Labour productivity growth in New Zealand's leading firms has generally been much lower than in global frontier firms. There is also limited spread of technology and production techniques between New Zealand's frontier and non-frontier domestic firms. A long tail of low productivity firms indicates a lack of "up or out" dynamics.

*As noted in *Holding On and Letting Go*, the productivity of the state sector is also important because it is a significant part of the non-tradable sector. For example, the state sector provides*

goods and services such as investment in infrastructure, and education. Non-tradable goods and services are often an input into exports, and so a more productive domestic economy (including the state sector) can enhance international competitiveness. The Productivity Commission is currently undertaking analysis on public sector productivity (e.g. in education).

Stronger international connections

International connections open up access to markets, people, capital, and ideas that a small domestic market cannot offer. The performance of New Zealand's international connections is mixed. New Zealand's trade intensity, and participation in Global Value Chains (GVCs) are relatively low, compared to the OECD averages (while its migration flows are above the average – see Section Three). Its level of outward direct investment (as a proportion of GDP) is also low, compared to the OECD average and for a small, advanced economy.¹¹ In some cases, such as for GVCs, New Zealand's performance is influenced by size, distance, and export profile.

The nature of global trade is changing rapidly and services are growing as a proportion of our trade, both in absolute terms and as inputs to our goods trade (e.g. transport and logistics). Improving our services trade performance could have a material impact on trade growth, offsetting many distance challenges. Although domestic and foreign barriers to trade are reducing via trade agreements, New Zealand firms continue to face scale and capability challenges to growing in offshore markets.

¹⁰ <http://www.mbie.govt.nz/info-services/business/business-growth-agenda>

¹¹ Outward direct investment (ODI) is direct investment flowing outside of New Zealand. New Zealand's stock of ODI is at 9 percent of GDP. Most of our flow is to Australia (55 percent) and from the manufacturing sector (41 percent). See the Business Growth Agenda report, International Investment for Growth, October 2015.

*New Zealand has a large percentage of foreign-born population and a large proportion of New Zealand citizens offshore (compared with other OECD economies).*¹² The opportunities this presents for the economy include encouraging the use of our foreign-born population as a source of ideas and market knowledge, to use our offshore diaspora to connect to new markets, and improving cultural literacy so we better understand and engage with growing Asian markets (see the discussion on immigration in Section Three).

Improved investment and innovation

*In New Zealand, non-residential business investment (as a share of GDP), is close to the OECD median – although investment relative to employment growth is toward the lower end of OECD economies.*¹³ Factors that impact on investment decisions include access to the right productivity-enhancing capital, the cost of access, regulatory settings, macroeconomic aspects of the economy, and different incentives and obstacles faced by foreign and domestic investors. New Zealand's capital markets are highly integrated into international markets and capital flows from large emerging markets are likely to increase in coming years, providing further sources of capital for investment. Having a strong, resilient economy will make New Zealand a more desirable place to invest.

The pace at which innovation is spread throughout the economy is a key factor in lifting productivity. New Zealand has one of the lowest (public and private) research and development (R&D) intensities in the OECD and this could explain up to one-third of the productivity gap (investment in knowledge-based capital also appears to be low).¹⁴ This may be a reflection

of the nature of New Zealand's economy (e.g. the primary sector tends to use less R&D compared to manufacturing). Comparably lower investment in R&D may be another factor impacting on the diffusion of innovations from the 'frontier'.

The ability of firms to attract the quality of skilled workers required to cope with a rapid pace of innovation could also be a contributing factor to the slowdown in the pace of diffusion from the firms at the 'frontier' (see Section Three on the importance of labour quality for productivity).¹⁵

Exporting increases incentives to invest and innovate. New Zealand's 'small' domestic market and distance from foreign markets may lead to fewer incentives to invest in new technology (both in terms of physical capital and process improvements). New Zealand firms may need to enter international markets at an earlier stage than their counterparts overseas would otherwise.

Greater competitive intensity

Competition motivates firms to become more productive and shifts resources from less to more-productive firms. Pressure from competitors incentivises firms to innovate – by improving the quality of their products, reducing their costs, applying the latest technology from New Zealand and overseas, or introducing new business or management practices. More productive and profitable firms grow at the expense of their less competitive counterparts, and the economy's productivity grows with them.

Competition in New Zealand varies significantly across industries. The Productivity Commission and the Ministry of Business, Innovation and Employment (MBIE) find that service industries tend to face less intense competition than manufacturing industries, though MBIE suggests that competition intensity increased between 2000 and 2010.¹⁶ The difference in competition between goods and services markets

12 See Section Three for a comparison of New Zealand to other OECD economies in terms of the percentage of the total population that is foreign-born. See also OECD (2015) *Connecting with Emigrants: A Global Profile of Diasporas 2015*, Table 4.2, p.179.

13 Conway (2016), above note 9.

14 Alain de Serres, Naomitsu Yashiro and Hervé Boulhol (2014) *An International Perspective on the New Zealand Productivity Paradox*, New Zealand Productivity Commission Working Paper 2014/1.

15 OECD (2015), above note 8.

16 Productivity Commission (2014) *Boosting productivity in the services sector*, Second Interim Report; MBIE (2016) *Competition in New Zealand industries: Measurement and evidence*, Occasional Paper 16/01.

matches international experiences, although New Zealand's small size and distance to market further reduces the levels of competitive intensity. New Zealand's dispersed population also creates a series of small markets insulated against national or international competition.

The impact that cooperative structures have on innovation and productivity (positive or negative) is unclear. In New Zealand, cooperatives are most dominant in the primary sector, although they also exist in other industries (e.g. retail, insurance and finance). The cooperative structure helps to spread risk, however, corporate business owners may be more motivated than cooperative members to grow their businesses. This may affect innovation and the pace of investment in cooperatives.

Greater diversity and complexity of exports

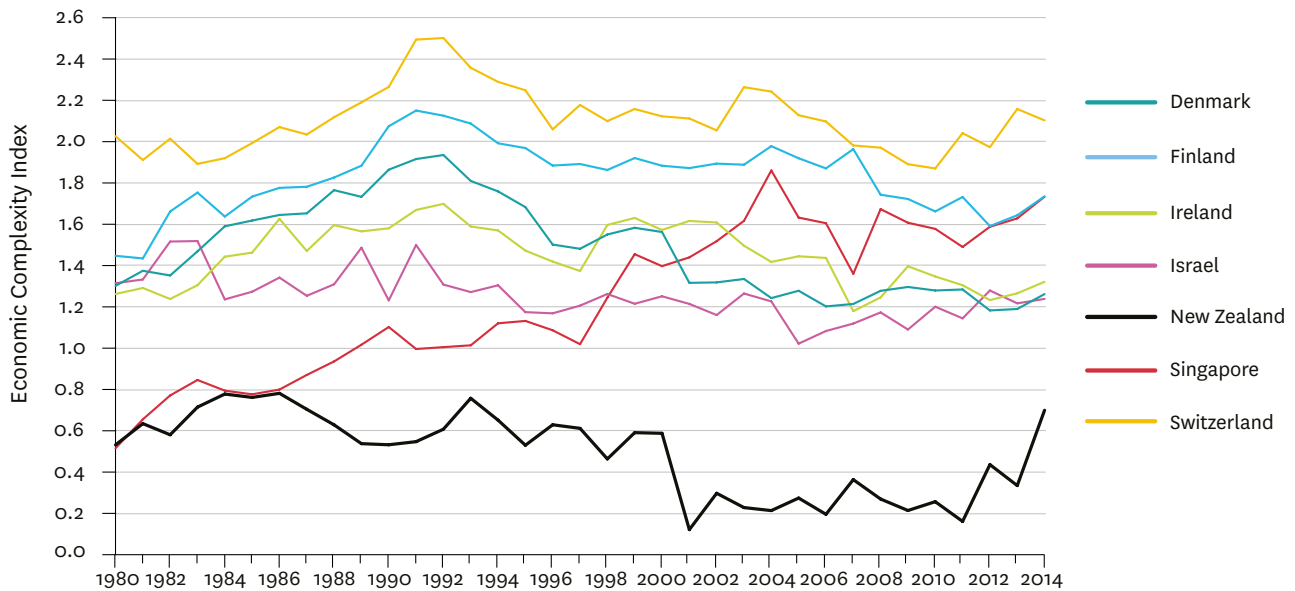
Primary sector exports are likely to remain an important part of New Zealand's exports. Rising demand for protein in emerging countries creates opportunities for higher primary export volumes. Further processing and innovation in primary products will add to total export revenues. This is likely to build on existing capabilities, such as our strength in agricultural technologies, and could occur at different parts of the supply-chain.

Moving into more knowledge-intensive goods and services exports will enable us to exploit opportunities for innovation and productivity growth, as well as making us less vulnerable to fluctuations in commodity prices. A focus on a broader mix of exports will mean a wider spread of innovation opportunities, and will require a wider range of skills (see Section Three).

The diversification and nature of an economy's exports can be an indicator of its productive capabilities. Exporting a wide range of products, where those products tend to be only produced by a small number of countries, can reflect strong productive capabilities. While complexity in service exports is difficult to measure, New Zealand's goods exports appear to be relatively less complex than other small advanced economies (see Figure 2.2). In the case of primary exports, New Zealand has a relatively sophisticated set of capabilities with ongoing productivity growth in the sector. As a result, the primary sector is likely to be more complex than the indicators show. However, the analysis suggests that increasing the overall complexity of exports, including at different stages of the supply chain, may have a role in lifting incomes. More recently, New Zealand has been making progress in developing higher-value export industries in areas like ICT, high-tech manufacturing, agricultural-technology, and high value foods.¹⁷

17 MBIE (2015) Information and Communications Technology, New Zealand Sectors Report Series; MBIE (2013) High Technology Manufacturing, New Zealand Sectors Report Series; MBIE, Investor Guide to the New Zealand Technology Sector; MBIE, The Investor's Guide to the New Zealand Food and Beverage Industry.

Figure 2.2 – Economic complexity trends of small advanced economies



Source: Kuan Ming Leong (2016) Economic complexity trends over time: Upgrading complex capabilities in small economies. Paper prepared for the September 2016 meeting of the Small Advanced Economies Initiative.

Note: The Economic Complexity Index (ECI) is derived from information on the diversity of a country’s exports and the complexity of those exports (where the less common an export is, the more complex it is assumed to be). Countries with a high ECI tend to export a wide range of products that are more complex. The global average ECI is equal to zero.

Collaborating for regional economic development

Regions vary in their incomes, levels of inequality, demographics, types of resources, industry composition, and the degree to which they are reaching their economic potential. While some of New Zealand’s non-urban regions have higher GDP per capita than its cities, others have experienced persistently weak economic performance relative to the rest of New Zealand over many years and opportunities for economic participation in these regions have been scarce.¹⁸ Government operating expenditure on services per capita tends to be weighted towards our least economically prosperous regions.¹⁹ Improved economic performance that makes the most of local assets, including people and their skills, has the potential to boost the prosperity of

communities, and could also strengthen New Zealand’s economic resilience through greater overall industry diversity.²⁰

Collaborative regional economic development can lift the living standards of all New Zealanders. Regional economies have unique characteristics that can be leveraged for the benefit of all New Zealanders (e.g. mussel production in Marlborough can indirectly generate jobs in the finance and insurance industries in Auckland). Although labour mobility is often sticky because people have strong connections to land and communities²¹, areas with a strong sense of community and trust can foster appropriate development and use of common resources, such

18 MBIE (2015) Regional Economic Activity Report.

19 NZIER (2013) Regional Government Expenditure – Estimates of core Crown spending by region.

20 Thomas Farole, Andres Rodriguez-Pose, and Michael Storper (2011) Cohesion Policy in the European Union: Growth, Geography, Institutions. *Journal of Common Market Studies*, 49(5), 1089–1111. Ron Martin (2012) Regional economic resilience, hysteresis and recessionary shocks. *Journal of economic geography* 121, 1–32.

21 David Autor, David Dorn, and Gordon Hanson (2015) Untangling trade and technology: Evidence from local labour markets. *The Economic Journal* 125(May): 612–46.

as water.²² The *Seamless Boundaries Project* is a New Zealand example of collaboration between two mayors which connected underemployed young people in Kawerau with employers in Matamata-Piako.²³ Using local knowledge can also help identify new opportunities for infrastructure or deliver culturally appropriate social services.

Central government collaboration with communities offers an opportunity to build on unique talents, knowledge and influence of communities. Local leadership and community buy-in can be complemented by ideas and initiatives at a national level.²⁴ International policymakers are increasingly recognising the importance of central government agencies partnering with local stakeholders.²⁵ Partnering reduces the risk of diverting economic resources and opportunities from elsewhere (i.e. displacement effects) and helps enable interventions to be developed and delivered at a level where costs and benefits can be captured. Government and local partners can work together to identify local strengths and to ensure social and economic initiatives complement each other. A New Zealand example is the assignment of senior officials from central government to act as an entry point for regional stakeholders to engage with government (since 2015). Stakeholders have indicated that this a positive step forward to improve government's responsiveness to regional issues.²⁶ The Treasury considers that looking through a regional lens and actively partnering with regions is an integral part of developing policy for resilient and inclusive

growth for the whole of the country.

There are benefits from both agglomeration and regional development. The bringing together of people, resources and industry can create spillovers in knowledge capital and other benefits. These spillovers are called 'agglomeration benefits' and can happen in small towns as well as in big metropolitan areas (such as Auckland in the New Zealand context). Similar to the approach outlined by others,²⁷ the Treasury takes a regional lens to its policy advice, recognising that every region has comparative advantages, some of which can be grown or strengthened through bespoke interventions.

Benefiting from Auckland's economy

Auckland's economic performance matters for lifting overall national economic growth. Auckland is New Zealand's largest city and represents over a third of the economy. Its GDP per capita was eight percent greater than the rest of New Zealand and, from March 2010 to March 2015, it contributed around 42 percent of total national GDP growth. Auckland firms are generally more productive than those in the rest of the country. Labour productivity is 13.5 percent higher than firms in other New Zealand urban areas²⁸, and productivity in its central business district is 72 percent higher than the rest of New Zealand.²⁹ This indicates that job growth in Auckland would have a bigger impact on national outcomes than other regions. Although Auckland firms are more productive, its GDP per capita gap has reduced since the early 2000s (when it was 14 percent greater than the rest of the country). This suggests that we are not seeing the agglomeration effects we would expect from Auckland's size and scale.

22 Elinor Ostrom (2015) *Governing the Commons*. Cambridge: Cambridge University Press.

23 Dan Henderson (2016) *The Future is Young: How the Regions Can Address Youth Underachievement*. In *Rebooting the Regions*, ed. Paul Spoonley.

24 Amartya Sen (2009) *The Idea of Justice*. London: Allen Lane.

25 World Bank (2003) *World Bank Development Report: 2003: Transforming Institutions, Growth and Quality of Life*. Washington, D.C.: World Bank; Fabrizio Barca, Philip McCann, and Andres Rodríguez-Pose (2012) *The case for regional development intervention: place-based versus place-neutral approaches*. *Journal of Regional Science*, 52(1), 134-152; OECD (2009) *How Regions Grow*; U.S. White House (2010) *Developing Effective Place-Based Policies for the FY 2012 Budget*. Washington, D.C.

26 Christine Cheyne (2016) *No Region Left Behind*. In *Rebooting the Regions*, ed. Paul Spoonley.

27 Refer note 25.

28 David Maré (2016) *Urban productivity estimation with heterogeneous prices and labour*. Motu Working Paper.

29 Productivity is lower in Waitakere and Rodney – which reinforces the importance of understanding Auckland's performance at a sub-regional level.

Auckland has a role as a connector to the international and domestic markets. Auckland is New Zealand's main international gateway with over 8.8 million international passenger movements through Auckland International Airport in the last reporting year. It also exports 24 percent of New Zealand's goods and 42 percent of its services. The city provides services to the rest of the country through its specialisation in professional services and logistics. A greater understanding of how to maximise its value – including ensuring strong connections to surrounding regions – will benefit Auckland and national growth outcomes. However, pressures on New Zealand's infrastructure may be a factor that impacts Auckland's ability to maximise its connector potential (e.g. from Auckland's congestion challenges).

Auckland's transport system is critical for access to employment. In Auckland, access to transport varies significantly by location and declines comparatively rapidly outside the central area. There is evidence that travel time variability has increased, especially during the evening peak; and inter-peak congestion has continued to increase over the past decade.³⁰ Pressure on Auckland's transport network also represents a significant challenge for freight, as Auckland's freight is projected to increase by 78 percent over the next 30 years, with a significant majority of freight travel being internal distribution within Auckland.³¹ Growth in visitor arrivals will add to the infrastructural and transport challenges of Auckland and the rest of the country in the future.

Diversity brings advantages. Auckland has the fastest growing population in New Zealand – it is growing more rapidly than other similar-sized international cities because of comparatively high birth rates and strong immigration inflows. It also has a younger population and is ageing at a slower rate than elsewhere in New Zealand. Current projections suggest that in 30 years, over 80 percent of the total working age population growth will be in Auckland.³² It is culturally diverse, with over half of all immigrants to New Zealand settling there (containing around 200 different ethnicities) and 44 percent of its workforce being born overseas (a level comparable to London). Evidence suggests a positive relationship between employment of highly-skilled immigrants and innovation.³³ International research suggests that skilled migrants are more likely to create spillover benefits³⁴ and migration can also result in a boost in imports and exports (see discussion on migration and its contribution to the growth of Auckland in Section Three).

30 Auckland Transport Alignment Project *Foundation Report* 2016.

31 Auckland Transport Alignment Project *Foundation Report* 2016.

32 Medium growth population projections, Statistics New Zealand.

33 Keith McLeod, Richard Fabling and David Maré (2014) Hiring new ideas: International migration and firm innovation in New Zealand. MOTU Working Paper 14-14.

34 Julie Fry (2014) Migration and macroeconomic performance: Theory and evidence. New Zealand Treasury Working Paper 14/10.

Challenge and opportunity – Housing

New Zealand’s residential real estate market is approximately valued at one trillion dollars — nearly four times GDP. Since the 1990s, New Zealand national house prices have risen from around three times median household income to around six times³⁵ and to around ten times in Auckland³⁶. Price growth in New Zealand has predominantly been seen in high growth cities and towns (especially Auckland) and is creating an affordability challenge for New Zealanders as well as inhibiting opportunities for economic growth (e.g. through preventing land and private investment being put to their most productive use).

Rapid price growth can be attributed to an unresponsive supply of housing, land and infrastructure, given significant and fast population growth as well as tax settings that can give housing a relatively attractive tax treatment. Uncompetitive land markets are at the core of the problem. Densification and the expansion of housing in the high-demand locations is being inhibited by a combination of planning constraints, incentives on local decision makers, infrastructure limitations and prescriptions on firm locations. House price volatility can also present resilience challenges for many property holders and the economy.

More affordable, quality housing would likely result in a range of positive well-being and social outcomes for communities. The affordability of quality housing has implications for: people’s ability to purchase a home; household debt; educational attainment; health outcomes; and consumption of other essential goods (e.g. medical care and food). The fiscal expenditure on other parts of the housing system would also benefit from improvements in housing affordability (e.g. social housing, rental subsidies, and emergency housing places). Given the size of long-term population growth in high-demand areas (e.g. Auckland’s population is projected to be 2 million by 2033),³⁷ how these challenges are addressed will have a significant impact on future affordability and living standards.



“More affordable, quality housing would likely result in a range of positive well-being and social outcomes for communities.”

35 See house price-to-income multiple produced by www.interest.co.nz, available at <http://www.interest.co.nz/property/house-price-income-multiples>

36 12th Annual Demographia International Housing Affordability Survey: 2016, available at <http://www.demographia.com/dhi.pdf>

37 Statistics New Zealand, subnational population projections.

Supporting Māori economic development

Māori economic development offers new opportunities for the New Zealand economy to reach its full potential and to lift the living standards of New Zealanders. Māori economic development matters in terms of, for example, social cohesion (e.g. our identity as a nation and our institutional arrangements as underpinned by Te Tiriti o Waitangi) and equity (e.g. promoting opportunities for Māori to fully participate in the economy). It also offers potential to improve economic growth through more effective utilisation of existing capital stocks, improving sustainability, and better managing risks by broadening the base of the New Zealand economy.

Māori economic development can be broadly characterised as consisting of two components: “the Māori economy” and “Māori in the economy” (Māori in the economy is discussed more extensively in Section Three). The Māori economy includes the capital stock that is specifically identified as Māori (e.g. Māori freehold land³⁸, Iwi assets and Māori businesses³⁹), while Māori in the economy refers to people identifying as Māori participating in the economy. While there is overlap between the two, many Māori do not work in the Māori economy (e.g. Māori students in university study or Māori working in the government sector).

The Māori economy is growing and there is potential for further growth. Between 2010 and 2013 the Māori asset base grew from an estimated \$36.9 billion to \$42.6 billion in nominal terms, a 7.2 percent real increase.⁴⁰ \$11.2 billion of this asset base was in agriculture, forestry and fishing and \$8.2 billion in property.

Just under half the assets of Māori collective enterprises are in the primary sector.⁴¹ It is estimated that improving the productivity of underutilised agricultural Māori freehold land could increase real GDP by up to \$2.3 billion between 2013 and 2025.⁴²

A survey of Māori Small and Medium Enterprises (SMEs) found that one in five Māori SMEs are exporters (most of these using Māori branding or intellectual property). A higher proportion of Māori SMEs introduced any kind of innovation to their enterprises compared to New Zealand businesses in general.⁴³

Cultural authenticity is key to the Māori economy. Māori economic development in the Māori economy is a multifaceted concept encompassing economic, social, environmental, and cultural factors.⁴⁴ Cultural authenticity and provenance provides a unique value proposition for Māori businesses and New Zealand’s reputation overseas. Developing resources in alignment with te ao Māori (Māori worldviews), tikanga Māori (Māori protocol and approach) and kaitiakitanga (guardianship), and telling the stories of these goods’ sources are valued by overseas consumers and trading partners.⁴⁵ For example, many Chinese and Māori share values around the significance of responsibly using pounamu (yù) and the significance of long-term

38 Māori freehold land is a class of collectively owned land governed by its own legislation, Te Ture Whenua Māori Act 1993. It is typically different to land held by Māori individuals in fee simple title (e.g. the majority of land on which private dwellings are situated) and land held by Iwi as part of a Treaty of Waitangi settlement or otherwise.

39 Māori businesses are typically self-identified (i.e. the owners consider themselves to be a Māori business) or are linked to the Māori economy in some way (e.g. Iwi Asset Holding Companies, Māori trusts and incorporations that administer Māori Freehold Land).

40 Te Puni Kōkiri (TPK) (2015) Te Ōhanga Māori 2013: Māori Economy Report 2013. Authors: Ganesh Nana, Masrur Khyan, Hillmaré Schulze, BERL.

41 TPK (2015), above note 40.

42 Ministry for Primary Industries (MPI) (2014) Growing the Productive Base of Māori Freehold Land – further evidence and analysis.

43 Statistics New Zealand (2016) Tatauranga Umanga Māori 2016: Statistics on Māori businesses.

44 Māori Economic Development Panel (2013) He kai kei aku ringa: The Crown-Māori economic growth partnership.

45 Māori Economic Taskforce Summit (2011) Discussion Paper: Increasing Exports.

relationships.⁴⁶ Māori-led development has the potential to be enduring across generations, and therefore a significant contributor to long-term economic outcomes for the whole New Zealand economy.⁴⁷ This perspective also came out of the Treasury’s regional engagement with stakeholders (see Annex One).

Leveraging off the Crown-Māori relationship remains important. Treaty settlements are progressing to the point where the resolution of historical settlements is within reach. The Crown - Māori relationship is moving beyond the Treaty settlements space driven by a desire from both parties for greater collaboration. Better leveraging of the relationship will be critical to enabling Māori economic and social development. The focus is shifting to how the Crown and Māori can work together to provide new solutions to systemic issues, unlock innovative ways to achieve economic growth, and improve the living standards of Māori and all New Zealanders. As the relationship evolves to include new ways of working and different models of service delivery, both parties will need to be nimble at knowing when to lead and when to follow - and when collaboration might lead to better results (e.g. more effective Māori participation in the management of natural resources or delivery of social outcomes).



“Māori-led development has the potential to be enduring across generations, and therefore a significant contributor to long-term economic outcomes for the whole New Zealand economy.”

46 Andrea Stevens (2014) Discovering cultural links through pounamu and jade (軟玉) Auckland Museum.

47 Māori Economic Development Panel (2013) He kai kei aku ringa.



Employment and skills



Knowledge and skills enable individuals to participate in society and the economy. New Zealand's education outcomes remain strong by international standards – with high rates of participation and performance in school and tertiary education. This, combined with a flexible labour market, has enabled high labour market participation and relatively low unemployment compared with other OECD countries. However, as highlighted in the previous section, improving New Zealand's labour productivity growth is the main opportunity for boosting wage growth over time.

As the nature of work continues to evolve and skill requirements continue to change, education and training systems will be challenged to ensure all New Zealanders are ready for the future. Ensuring that high education performance is achieved consistently

across and within all providers lays a foundation for skill development. Training and development opportunities beyond school, both in and between jobs, are also important. This is particularly so for those groups most likely to be affected by technological and other workforce changes. Immigration will continue to play an important role as part of an integrated system response to shortages in skills and broader human capital.

The demographic composition of New Zealand is evolving, which presents future challenges and opportunities for our workforce. While New Zealand currently has relatively high participation rates of older citizens, realising the full potential of our ageing workforce will become increasingly important.



Employment and skills play a key role in New Zealand's public finances. A labour market consisting of highly skilled, diverse, connected, and adaptable people is more likely to grow the economy.⁴⁸ Rising labour quality is estimated to account for almost half of New Zealand's labour productivity growth between 1998 and 2005, with around 70 percent of the increase in labour quality attributable to rising qualification levels.⁴⁹ Stronger economic performance brings increased choices and reduced need for government assistance through welfare and social expenses. This reduces fiscal pressures and increases the ability of governments and citizens to withstand, or manage the impact of, shocks to the economy, environment or society.

Skills and employment also provide much more than just income and growth. Educational performance is associated with a range of other individual and societal goods, such as healthier lifestyles, lower propensity to commit crime, and richer social networks⁵⁰. Work provides income as well as social connections, provides learning opportunities, develops people's

confidence and self-worth, and gives them opportunities to improve their living standards,⁵¹ including nurturing the development of the next generation of New Zealanders.⁵²

Government plays a role in enabling people to move into work that is meaningful, productive and sustainable through regulatory settings, education and skills systems, and immigration policies. While these areas are explored below, they should always be considered alongside other influencers of people's ability to participate in the labour market (e.g. housing, health, and transport).

New Zealand's labour market

New Zealand's labour market has produced positive outcomes for New Zealanders. Relatively light regulation of individuals and firms has helped to provide people with opportunities to access jobs suited to their abilities and for businesses to adapt to a number of global changes. These include changing markets for our exports and imports, changing consumer demand, technological changes and increasing competition from emerging economies.

48 See, for example, Eric Hanushek and Ludger Woessmann (2008). The role of cognitive skills in economic development. *Journal of economic literature*, 46:3, 607-668, and Eric Hanushek and Ludger Woessmann (2012). Do better schools lead to more growth? cognitive skills, economic outcomes, and causation. *Journal of Economic Growth* 17 (4), 267-321.

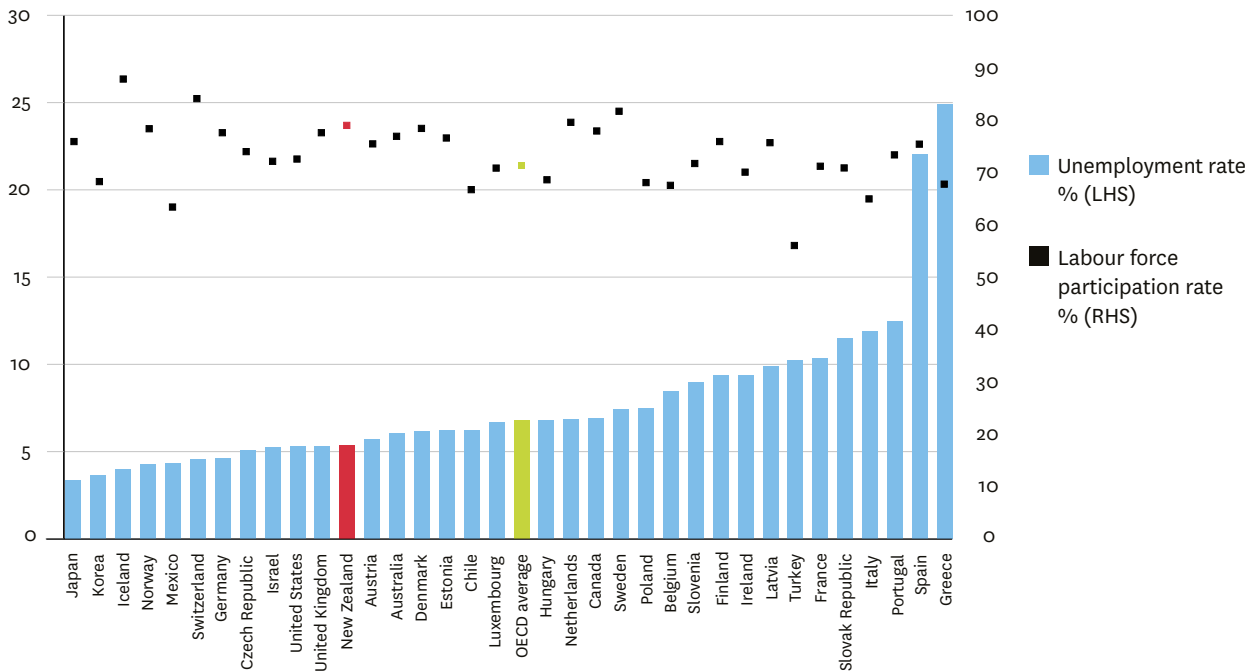
49 Kam Szeto and Simon McLoughlin (2008) Does Quality Matter in Labour Input? The Changing Pattern of Labour Composition in New Zealand. New Zealand Treasury Working Paper 08/01.

50 OECD (2013) What are the social benefits of education? Education Indicators in Focus 2013/01.

51 John Helliwell, Richard Layard, and Jeffrey Sachs (eds) (2012) World Happiness Report.

52 See, for example, Keith McLeod, Robert Templeton, Christopher Ball, Sarah Tumen, Sarah Crichton, and Sylvia Dixon (2015) Using integrated data to identify youth who are at risk of poor outcomes as adults. <http://www.treasury.govt.nz/publications/research-policy/ap/2015/15-02>

Figure 3.1 – Unemployment and labour force participation (2015)



Source: OECD.

Note: As per the OECD definition, this figure refers to the working age population as people aged between 15 to 64. This differs from the Statistics New Zealand definition of those aged 15 and older.

Low levels of regulation have been beneficial overall, however as the labour market continues to evolve and change the impacts may also change. Regulatory flexibility has contributed to relatively high re-employment rates for displaced workers, and low levels of long-term unemployment. Less than one percent of the population is unemployed for a year or more, well below the OECD average of 2.3 percent. New Zealand’s labour force participation is fifth highest among OECD countries and New Zealand’s unemployment rate is in the bottom third (see Figure 3.1). However, further work is required to understand how regulatory flexibility impacts New Zealand’s ability to sustain and build both human and social capital, particularly as the nature of work continues to evolve.

Changes to the nature of work and business are inevitable. As knowledge continues to develop and diffuse among societies (e.g. through the proliferation of the internet and smartphones), and the capabilities of technology expand and become cheaper, labour market functions and roles will continue to evolve.⁵³ This is expected to result in work opportunities with greater flexibility for workers, such as freelancing using online platforms and a greater prevalence of self-employment, part-time work, fixed term contracts and other flexible working arrangements. However, some forms of flexible working arrangements (such as zero-hour contracts) may provide less job security or may involve “informal” arrangements that do not recognise the rights and entitlements of workers under existing labour market regulation. To ensure that regulation remains fit for purpose, governments should continue to assess the

53 See, for example, Chartered Accountants Australia and New Zealand (2015) *future[inc] A Plan for Australia and New Zealand’s Prosperity – Disruptive Technologies Risks, Opportunities – Can New Zealand Make the Most of Them?*; and OECD (2016) *New Markets and New Jobs*.

prevalence of these ongoing trends and the implications for labour market regulations, and be ready to respond.

Developing knowledge and skills

Facilitating a learning environment where everyone can achieve to the best of their ability contributes to raising living standards. Children who develop in a strong and positive learning environment are more likely to have better education and labour market outcomes – such as higher incomes and lower unemployment. This can also lead to better social outcomes and mental and physical health outcomes.⁵⁴ International evidence suggests that the development of non-cognitive or social/emotional skills, as well as educational achievement, will be increasingly important as our economy continues to move towards knowledge work and service occupations.⁵⁵

*Skill development and education take place in all facets of our lives.*⁵⁶ Better outcomes are achieved when both formal and informal, technical and soft skill development work together. This process begins well before formal education, with families, communities, technology and the natural environment all providing opportunities for learning. Developing and supporting life-long learning practices within formal and informal education as well as training and re-training within workplaces are important for sustainably raising living standards.

The schooling and tertiary systems work well for the majority of New Zealanders, equipping them with the skills to participate in society and the economy. The OECD's Programme for International Student Assessment (PISA) data suggest that

New Zealand school students have performed better than the OECD average on international measures of achievement – particularly in both science and reading.⁵⁷ However, there are some signs of a decline in performance for New Zealand students in PISA across the achievement distribution, in maths and science in particular. On the other hand, New Zealand has high participation and completion rates in tertiary education. In 2015, 21 percent of adults had a bachelor degree or higher level qualification.⁵⁸

But the education system could work better for some New Zealanders. There is significant variability in performance within and between schools, including between schools with similar socio-economic mixes.⁵⁹ Furthermore, socio-economic background has more impact on educational attainment in New Zealand than in most other OECD countries⁶⁰ and fewer students from disadvantaged backgrounds go on to study at a higher level after completing schooling. There has been a significant improvement in the proportion of Māori students achieving National Certificate of Educational Achievement (NCEA) level 2 in recent years and some closing of the gap with the overall population,⁶¹ however, too many Māori still leave school without NCEA. The education system should remain focused on enabling all students to reach their potential.

54 See, for example, http://www.oecd-ilibrary.org/education/education-at-a-glance-2016/indicator-a8-how-are-social-outcomes-related-to-education_eag-2016-14-en

55 See, for example, Airan Liu (2016) Non-cognitive skills and the growing achievement gap. Population Studies Center Research Report 16-861. University of Michigan: Ann Arbor; and Pedro Carneiro, Claire Crawford, and Alissa Goodman (2007) The impact of early cognitive and non-cognitive skills on later outcomes. London School of Economics: London.

56 John Hattie (2009) Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement. Routledge: Oxfordshire.

57 <https://www.educationcounts.govt.nz/publications/series/PISA/pisa-2012/pisa-2012-new-zealand-summary-report>

58 Ministry of Education (2016) Profile and Trends – Tertiary Education Outcomes and Qualification Completions 2015

59 For example, see <https://www.educationcounts.govt.nz/indicators/main/education-and-learning-outcomes/1781> (click on decile bar).

60 OECD (2013) PISA 2012 Results: Excellence through Equity. Giving every student the chance to succeed. Volume II. <http://www.oecd.org/pisa/keyfindings/pisa-2012-results-volume-ii.htm>

61 <http://www.educationcounts.govt.nz/statistics/schooling/senior-student-attainment/18-year-olds-with-level-2-or-equivalent>

While problems become more visible at NCEA level, the solutions need to start much earlier. There is mounting evidence that the first three years of life are crucial for the development of the foundations that underpin cognitive, language, social and emotional functions. And there is a strong correlation between the development of these functions and a child's socio-economic status.⁶² This underscores the importance of investing early in children at risk of poor outcomes. High quality early childhood education for the most disadvantaged children can significantly improve their outcomes.⁶³ And early childhood interventions need to be followed and reinforced by the schooling system.⁶⁴

*Effective and responsive teaching is a key contributor to learner outcomes within schools and other learning environments.*⁶⁵ There is strong evidence that the best drivers of collective shifts in teaching practice are:

- evaluative practices involving data and evidence clearly focused on learner outcomes;
- collaboration among educators; and
- leaders creating conditions that encourage learning and collaboration.⁶⁶

These practices are at the heart of a learner-focused education system that has high expectations

for all children; recognises – and is responsive to – the diversity of learner needs; and provides early identification and intervention for children who need additional support.

Applying knowledge and skills

*Labour market skill requirements are likely to continue to increase.*⁶⁷ Strong competition from overseas labour, capital, and technology means that people are expected to keep developing their skills over their lifetime, so that they can participate in the labour market and achieve higher living standards for themselves and their families. While the level of qualifications has been increasing in all industries, Figure 3.2 shows that jobs growth has been strongest in those industries that have a greater concentration of workers with post-school qualifications.⁶⁸ The need for people to develop relevant and higher skills over time will require people to make informed decisions around their skill development and retraining, and a responsive skills development system.

Well-functioning tertiary systems, which provide training informed by employers' needs, should support development of skills for the types of jobs available. A common message heard from employers through the Treasury's stakeholder engagement was that new labour market participants lack the skills that employers require (see Annex One). This is supported by data from the Business Operations Survey.⁶⁹ This gap has been described by employers as both a lack of non-cognitive skills, and a disconnect between tertiary providers and business. The outcomes from the Productivity Commission's review of new models of tertiary education, should assist in identifying the opportunities for improvements to labour market-relevant skill development.

62 Sneha Elango, Jorge Luis García, James Heckman, and Andrés Hojman (2015) Early Childhood Education. NBER Working Paper No. 21766

63 Lynn Karoly and James Bigelow (2005) The economics of investing in universal preschool education in California. Rand Corporation.

64 Kathy Sylva, Edward Melhuish, Pam Sammons, P, Iram Siraj-Blatchford, Brenda Taggart, and Steve Hunt (2008) The Effective Pre-School and Primary Education 3-11 Project (EPPE 3-11): Influences on Children's Attainment and Progress in Key Stage 2: Cognitive outcomes in Year 6. London: DCSF / Institute of Education, University of London.

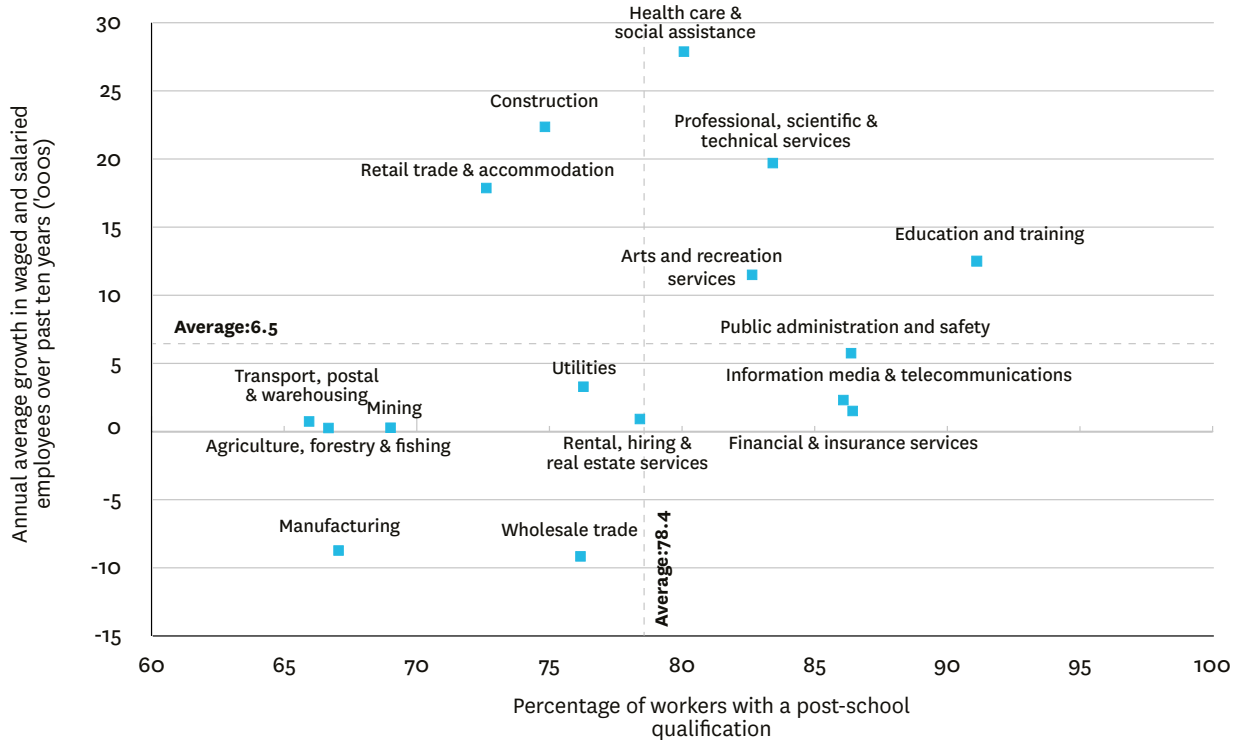
65 See, for example, John Hattie (2009) Visible learning: A synthesis of over 800 meta-analyses relating to achievement. Abingdon: Routledge and Adrienne Alton-Lee (2003) Quality teaching for diverse students in schooling: Best Evidence Synthesis. Ministry of Education.

66 See, for example, John Hattie (2015) What Works in Education: The Politics of collaborative expertise. London: Pearson; Michael Fullan, Santiago Rincon-Gallardo, and Andy Hargreaves, A. (2015) Professional Capital as Accountability, prepared for Education Policy Analysis Archives; and Viviane Robinson, Margie Hohepa, and Claire Lloyd (2009) School Leadership and Student Outcomes: Identifying what works and why Best Evidence Synthesis, Wellington: Ministry of Education.

67 MBIE (2015) Medium-Long-term Employment Outlook – Looking Ahead to 2024.

68 Statistics New Zealand, Census 2013, 2006.

69 Statistics New Zealand (2013) Business Operations Survey.

Figure 3.2 – The trend towards higher growth in more qualified industries

Source: Statistics New Zealand.

Employers also have a key role to play by using employees' existing skills and providing skill development on the job.⁷⁰ There is increasing evidence internationally that under-utilisation of skills in the workplace inhibits productivity.⁷¹ The OECD's Programme for the International Assessment of Adult Competencies (PIAAC) data suggests that New Zealanders have high levels of work-related learning, compared to other OECD economies.⁷² However, this is uneven across different professions, with those in lower skilled jobs less likely to receive learning and development opportunities.⁷³

The nature of potential skills mismatch needs to be explored further. The perceived lack of non-cognitive skills may also reflect the so called "attitude gap" between employers and employees. This is where the misalignment of expectations, cultures, or values between employers and employees can hinder employment opportunities for groups from diverse backgrounds.⁷⁴ Addressing this attitude gap will be increasingly important as the population and labour force become more diverse. For example, between 2013 and 2038, those who identify as Māori are projected to increase from around 16 percent to almost 20 percent, Asian from 12 percent to 21 percent, and Pacific from eight percent to 11 percent.⁷⁵

70 OECD (2016) Employment Outlook 2016.

71 OECD (2016) Skills Matter – Further Results from the Survey of Adult Skills.

72 Including on-the-job training, seminars/workshops, private lessons, and open/distance learning.

73 OECD (2016) Skills Matter – Further Results from the Survey of Adult Skills.

74 See recent research into the attitude gap in South Auckland: <http://www.aucklandco-lab.nz/attitudedgap>.

75 <http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-national-highlights/cultural-diversity.aspx>

Building the capability and resilience of the Māori labour force is a key challenge. Tertiary participation by Māori aged under 25 years increased from 24.8 percent in 2005 to 27.2 percent in 2015, while Māori participation in Bachelors studies increased from 5.6 percent to 8.1 percent over the same period.⁷⁶ Ten percent of Māori hold a bachelor degree and a third have tertiary qualifications. While tertiary participation is similar to that of the general population, more Māori tend to study at sub-degree and lower qualification levels. Completion rates are also lower for degree or higher qualifications.⁷⁷

Greater capability and resilience for Māori would enable better employment outcomes and greater resilience to shocks. People with tertiary qualifications tend to have higher earnings and lower unemployment rates than those without post school qualifications.⁷⁸ From 1988 to 2015, growth in real equivalised median household income for Māori broadly followed the same trend of New Zealand incomes as whole, but there remains a persistent gap between the incomes of Māori and non-Māori households.⁷⁹ This is partly due to Māori having greater representation in primary sectors and less representation in high-salary service sectors, such as ICT.⁸⁰ The unemployment rate for Māori also continues to be relatively higher, but the difference has narrowed in recent years. Māori have also tended to be more severely impacted during economic downturns than the general population. Recessions in 1992, 1998 and the Global Financial Crisis all saw Māori unemployment rates increase much higher than the general population. As Maori education outcomes have improved, this gap has been trending in the right direction (e.g. the gap in unemployment peaked at around seven percent during the Global Financial Crisis, compared to 16

percent in 1992).⁸¹

Pacific peoples face similar challenges. Like Māori, Pacific peoples experience disproportionately high unemployment rates and have also been more severely impacted during economic downturns.⁸² Educational achievement, while improving, still remains significantly below that of the national population.⁸³ The growing size of the Pacific community and its young demographic profile (median age of 22 years compared to 41 years for the European population⁸⁴) provides opportunities both for raising Pacific living standards and supporting an ageing population.^{85 86}

Immigration is another key driver of diversity. A well-functioning immigration system not only supplements the development of knowledge and skills in the domestic workforce but also increases diversity of thinking. However, immigration needs to be considered as part of an integrated response to strengthening New Zealand's human capital (see box). Like the Māori (and Pacific) population, migrants will continue to play an important role in an ageing population by contributing an increasing share of the labour force.

76 Education Counts (2016) 2015 Māori Tertiary Education Students by Gender.

77 Ministry of Education (2014) Māori Tertiary Education Students in 2014.

78 See note 77 above.

79 Ministry of Social Development (MSD) (2016) Household incomes in New Zealand: Trends in indicators of inequality and hardship 1982 to 2015. Figure D.8.

80 Westpac, Industry Insights: Māori in the New Zealand Economy, 6 September 2016.

81 Ministry of Education (2014) Māori Tertiary Education Students in 2014.

82 Statistics New Zealand, Labour force status by ethnic group by regional council.

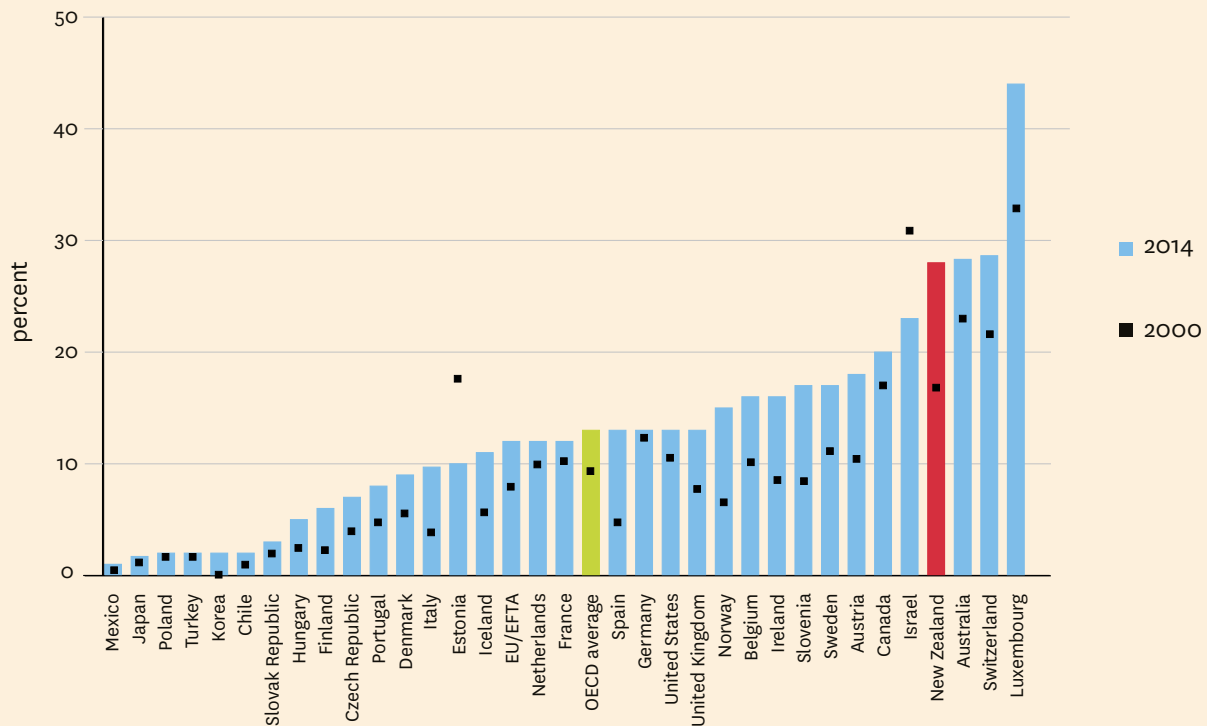
83 <http://www.educationcounts.govt.nz/indicators/main/education-and-learning-outcomes/114325> (click on ethnicity bar)

84 Statistics New Zealand, Census 2013.

85 NZIER (2013) Pacific Economic Trends and Snapshot.

86 See Su'a Thomsen (2016) The Treasury's Pacific Engagement. Treasury Staff Insights: Rangitaki, October <http://www.treasury.govt.nz/publications/research-policy/staff-insights/pacific-engagement>

Foreign-born population as a percentage of the total population



Source: OECD (2016), International Migration Outlook 2016, OECD Publishing, Paris.

Challenge and opportunity – Immigration

Immigration has supported New Zealand's economic and social prosperity. Immigration has created a larger, more diverse workforce, strengthening our international connections. New Zealand's foreign-born population as a proportion of total population is one of the largest in the OECD, increasing from 17 percent to 28 percent from 2000 to 2014 (see figure above), and contributes just over 27 percent of the current working-age population.⁸⁷ Immigration has also contributed to the growth of Auckland as a city of global significance, with just under half of all recent working migrants settling in the Auckland region.⁸⁸

Immigration will continue to play an important role in New Zealand's economy. Immigration can support productivity by encouraging diversity of ideas, innovation, entrepreneurship and addressing short-term skill shortages that may constrain economic growth.⁸⁹ Immigration can also make a contribution to addressing the long-term fiscal challenge of an ageing population (see discussion in Section Six). Migrants tend to contribute more in taxes than they use in public services, more-so than New Zealanders; however, migrants' positive fiscal contribution declines as they age.⁹⁰ Immigration can also place additional short-term pressure on housing and infrastructure⁹¹ that may limit more productive

⁸⁷ Statistics New Zealand

⁸⁸ <http://www.mbie.govt.nz/publications-research/research/migrants--monitoring/migration-trends-and-outlook-2014-15.pdf>

⁸⁹ Julie Fry (2014) Migration and macroeconomic performance: Theory and evidence. New Zealand Treasury Working Paper 14/10.

⁹⁰ <http://www.mbie.govt.nz/publications-research/research/migrants--economic-impacts/fiscal-impacts-of-migrants-in-2013.pdf>

⁹¹ See: <http://www.mbie.govt.nz/publications-research/publications/housing-and-property/nidea-report-immigration-housing-literature-review.pdf/view>



“Immigration can support productivity by encouraging diversity of ideas, innovation, entrepreneurship and addressing short-term skill shortages that may constrain economic growth.”

investment opportunities.⁹²

Maximising the economic and social contribution of immigration will be an ongoing challenge. This will involve attracting and selecting migrants with high levels of human capital, who can make the largest contribution to New Zealand’s living standards. It also involves ensuring that immigration is part of an integrated system response (including welfare and tertiary systems) to human capital shortages. A key part of this response is encouraging employers to take responsibility for workforce planning rather than relying on migrant labour alone. This approach to immigration provides employment opportunities for domestic workers, with higher wages or improved working conditions where appropriate, and incentivises greater capital intensity, innovation and productivity.

92 Julie Fry (2014) Migration and macroeconomic performance: Theory and evidence. New Zealand Treasury Working Paper 14/10.

Ageing and the labour market⁹³

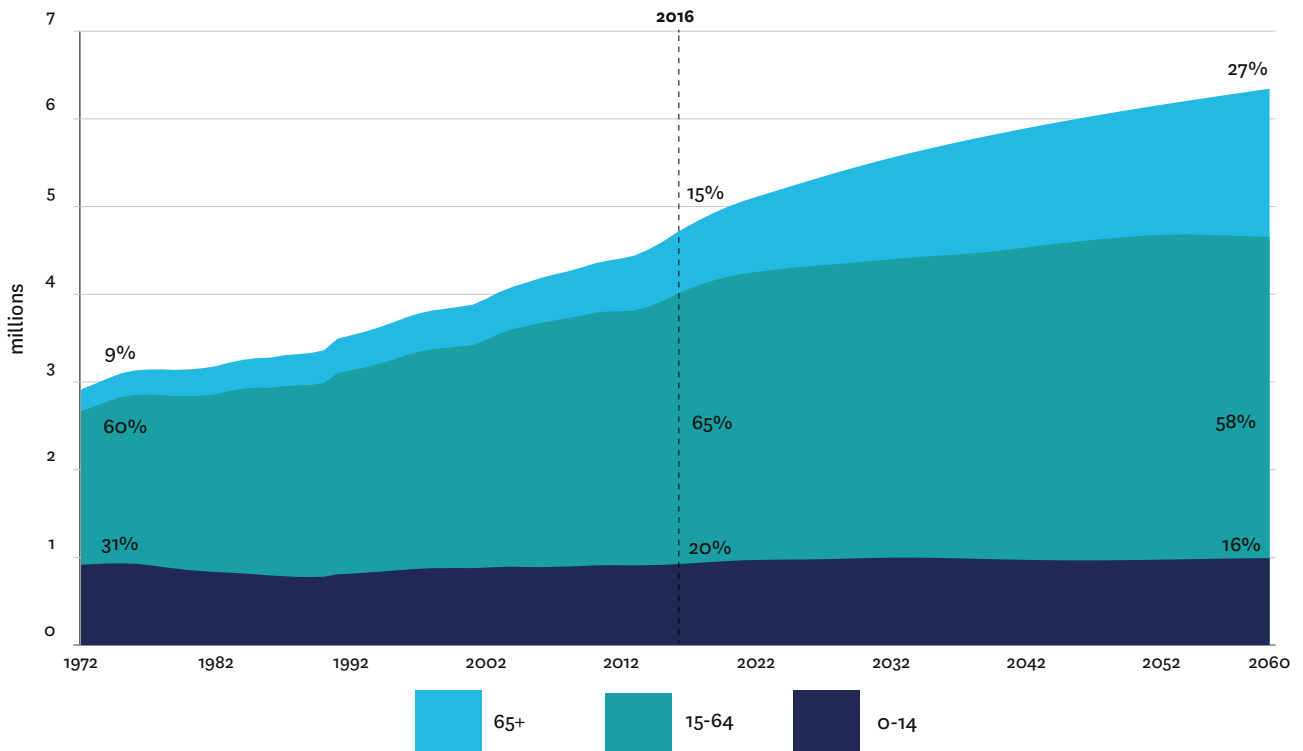
In the past century, New Zealand’s population has increased from around one million people to around 4.7 million. Population growth increased due to a combination of; increasing life expectancy, declining age specific mortality rates, net inflows of migration, and births per female being generally above the natural replacement rate. The population is projected to increase to around 5.3 million by 2025 and to reach around 6.3 million by 2060.

Historically high levels of immigration have contributed significantly to strong population growth in recent years. From mid-2013 (around the release of the last Statement) to mid-2016, New Zealand’s population is estimated to have increased by over 250,000 people. Net migration has accounted for around 165,000 over this period. Given that long-term birth rates are projected to be below replacement rates, net migration is projected to remain a major source of long-term population growth.

Ageing will also continue to play a large role in New Zealand’s demographic composition. Those born today are expected to live around 20 years longer than their ancestors born a century ago, with males and females born in 2016 expected to live to around 80 and 84 years respectively. Rising life expectancy is generally positive for living standards but does have a wide range of implications.

The historical uniqueness of New Zealand’s current demographic composition is the ageing of the baby boomers (people born between 1946 and 1965). The baby boomers represent a large cohort of the population, born at a time when births per female were historically high (around 3.5). Over the next 15 years this population cohort will continue to move past 65 years of age (see Figure 3.3).

93 Population statistics in this section are from Statistics New Zealand.

Figure 3.3 – New Zealand population age structure: 1972 – 2060

Source: Statistics New Zealand.

The last 25 years has seen a significant increase in the labour force participation of older workers. This shift has been particularly prominent for those aged over 60. The labour force participation rate over the past 25 years has risen from around 26 percent to around 73 percent for those aged between 60 and 64, and from around six percent to around 22 percent for those aged over 65 (see Figure 3.4).⁹⁴ This has been assisted by a number of factors including; healthy ageing, flexible labour market settings, and New Zealand Superannuation settings (e.g. increases in the age of eligibility, absence of a means test). New Zealand now has one of the highest participation rates for over 65s among OECD countries.^{95 96}

To assist the economy through this transition, labour market settings should ensure older workers are not discouraged from working. As healthy ageing is projected to increase, it is anticipated the participation of older workers will also continue to rise. Participation rates for those over 65 are projected to increase from around 22 percent to almost 26 percent by 2060.⁹⁷ Given the proportion of New Zealanders aged above 65 is projected to increase from around 15 percent to around 27 percent over this period,⁹⁸ labour market, tax and retirement age settings, and supportive employers will play important roles in future economic growth. The fiscal impacts of ageing are further explored in Section Six.

94 Statistics New Zealand.

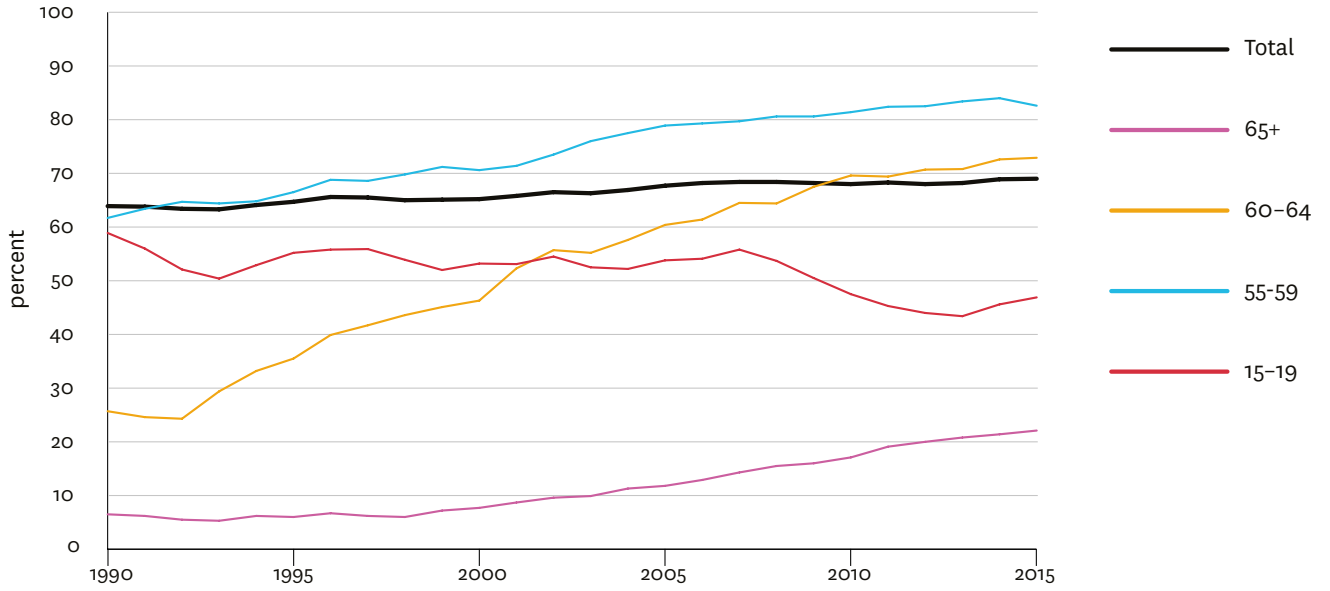
95 <https://data.oecd.org/emp/labour-force-participation-rate.htm>

96 <https://www.educationcounts.govt.nz/publications/series/education-at-a-glance/56219/4>

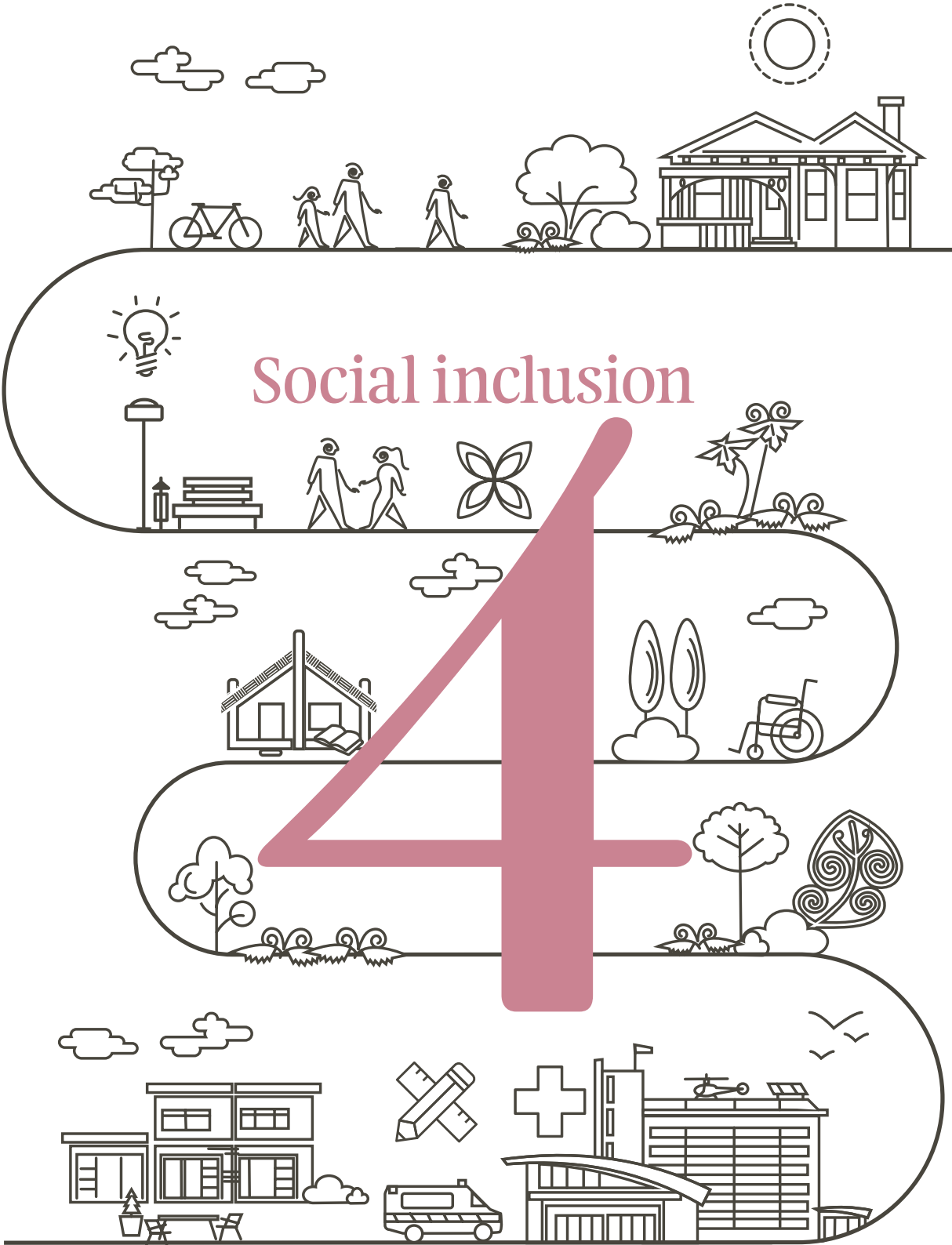
97 The Treasury's Long-Term Fiscal Model.

98 The Treasury's Long-Term Fiscal Model.

Figure 3.4 - Labour force participation rates of selected age groups



Source: Statistics New Zealand.



Social inclusion



Most New Zealanders are benefiting from the country's increasing prosperity but a minority face significant economic and social barriers to inclusion and improved living standards. This minority has poorer health, education, employment, and criminal justice outcomes, which are often apparent from an early age.

New Zealanders spend a great deal of time and money on improving social outcomes for themselves and others through volunteering and donations, taxes, and service delivery. Government can contribute to improved living standards and enhanced productivity and growth by focusing on improving the outcomes from social spending. This would contribute to better outcomes for people and the country's long-term fiscal position.

This contribution can be achieved in part by a social investment approach. Social investment involves applying evidence-based investment practices to social spending to improve the fiscal and non-fiscal returns from government's investment in social services.⁹⁹

⁹⁹ See "Social Investment" at: <http://www.treasury.govt.nz/statesector/socialinvestment>

Modelling of the potential impact of implementing social investment for this Statement demonstrates that improving the effectiveness of services can also deliver fiscal returns for the country (as set out in Section Six). It identifies that the real challenge will come from the public sector responding to the need to be more flexible, more effective at targeting resources and better at using available data.

More effective social spending can contribute to a higher level of social inclusion. By targeting social investment well, government can support New Zealanders to participate in society and the economy to the best of their ability.



Social inclusion is about building on the capabilities of individuals, families and communities to improve outcomes for every New Zealander. There is variation in outcomes across society, both positive and negative. For example, most New Zealanders have strong support networks – 99 percent of people, the highest in the OECD, believe they know someone they could rely on in a time of need.¹⁰⁰ Yet in 2015 between five and eight percent of New Zealanders were experiencing material hardship¹⁰¹ – that is material well-being below a minimum acceptable level,¹⁰² or “doing without the things most New Zealanders consider essential.”¹⁰³

Including all New Zealanders can deliver long-term benefits across society and improve longer-term prospects for the most vulnerable. By contrast, when people are excluded from participating in society there is greater pressure on government finances and opportunities for economic growth are inhibited (e.g. through reduced labour market participation). This Section discusses the barriers to social inclusion and ways to address social

challenges in the context of the long-term fiscal position.

Barriers to social inclusion

Some New Zealanders experience barriers to social and economic participation that lead to lower living standards. For example, a lack of skills, previous criminal convictions, and health issues, can make finding employment difficult.¹⁰⁴ Government has a range of services designed to reduce these barriers. However, accessing some services can itself be a barrier for participation, for example because of the time required to gather supporting evidence and the challenge of complying with paperwork.¹⁰⁵

The Treasury’s analysis shows most people experiencing persistent disadvantage access government services repeatedly. Figure 4.1 uses the Integrated Data Infrastructure (IDI), a data set that links routinely-collected government data,

100 See the “How’s Life?” summary at: <http://www.oecdbetterlifeindex.org/countries/new-zealand/>

101 Bryan Perry (2016) The material well-being of New Zealand households: trends and relativities using non-income measures, with international comparisons, Ministry of Social Development, p 67. Note that the variation between rates reflects the difference between more or less stringent thresholds of “material hardship”.

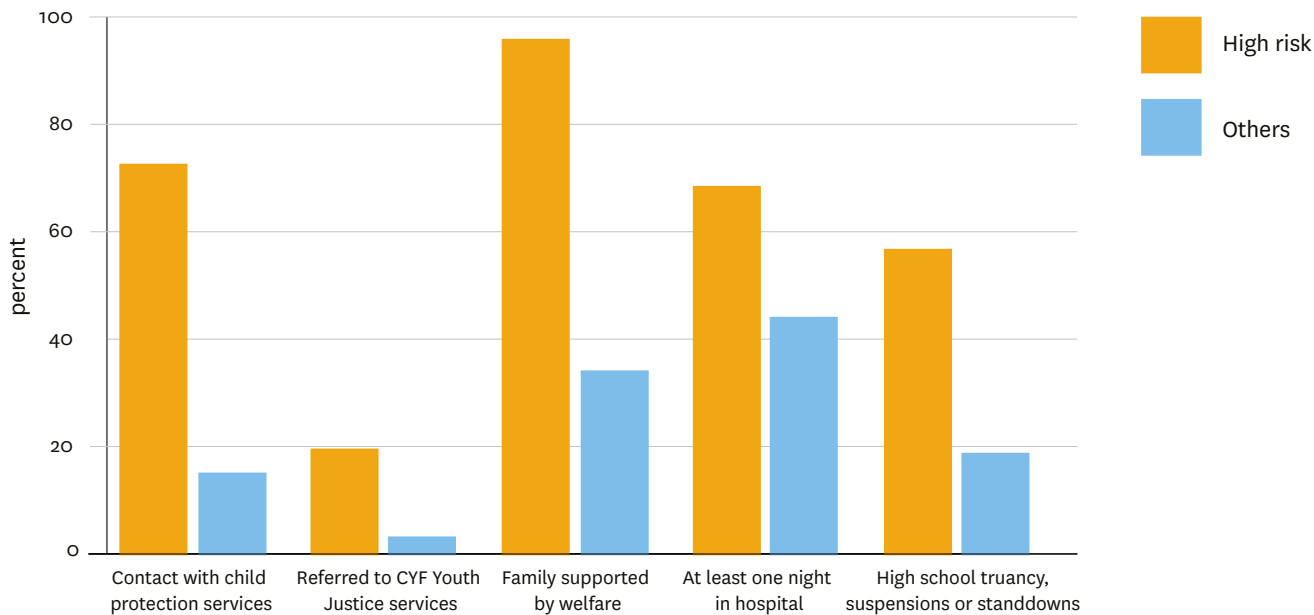
102 Perry (2016), above note 101.

103 See Child Poverty Monitor website at: <http://www.childpoverty.co.nz/flow-infographics/material-hardship>

104 Auckland City Mission (2014) The Family 100 Project Speaking for Ourselves: The truth about what keeps people in poverty from those who live it, p 20.

105 Auckland City Mission (2014) The Family 100 Project Demonstrating the Complexities of being poor; an empathy tool, pp 18-19.

Figure 4.1 – Differences in outcomes between people at high risk and others



Source: See the background paper prepared for this Statement: The benefits of improved social sector performance.

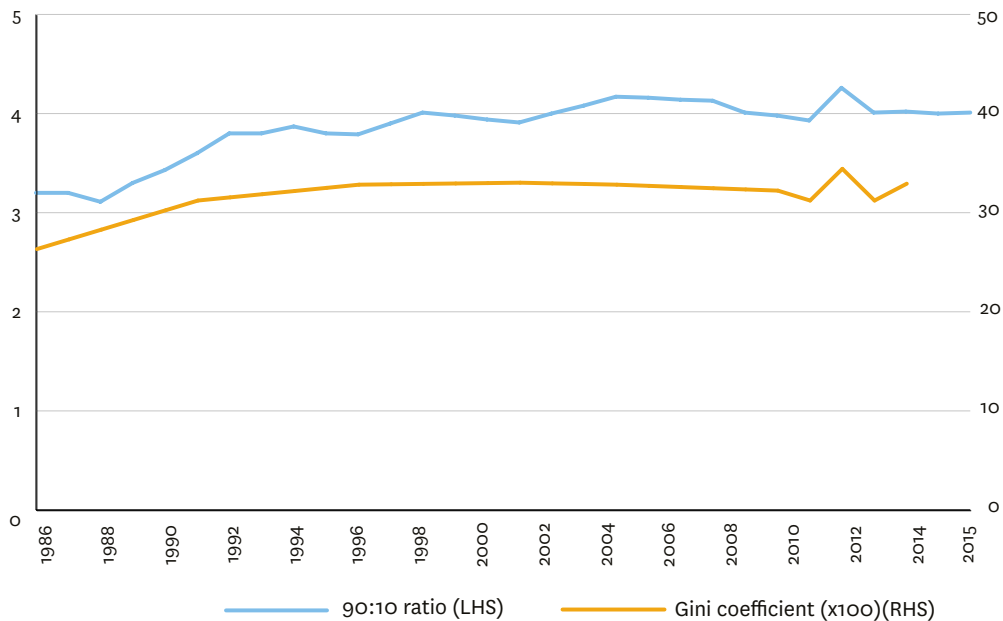
Disclaimer: Access to the data presented here was managed by Statistics New Zealand under strict micro-data access protocols and in accordance with the security and confidentiality provisions of the Statistic Act 1975. These findings are not Official Statistics. The opinions, findings, recommendations, and conclusions expressed are not those of Statistics New Zealand.

including on children and their families.¹⁰⁶ The figure shows the rates of uptake of services for two groups – the 10 percent of people now in their early 20s who at birth could be shown to be at high risk of poor welfare and corrections outcomes and other people of the same age. The IDI information shows that high-risk children have a significantly increased likelihood of engaging with social services throughout their lifetimes.

A long-term challenge for New Zealand is to reduce the number of disadvantaged people. Most measures of income inequality in New Zealand show relatively little change over the past 20 years (see Figure 4.2). However, income inequality is only one input into life outcomes. Outcomes for people also depend

on a range of other factors including access to quality education, jobs, healthcare, stable home environments, material hardship and persistent disadvantage. This highlights the importance of providing all New Zealanders with the opportunities they need to participate and develop their capabilities so that they can live independent and productive lives.

¹⁰⁶ The Integrated Data Infrastructure (IDI) is a large research database containing microdata about people and households. Data is from a range of government agencies, Statistics NZ surveys including the 2013 Census, and non-government organisations. Researchers use the IDI to answer complex questions to improve outcomes for New Zealanders. (see: http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/integrated-data-infrastructure.aspx)

Figure 4.2 – Income inequality in New Zealand

Source: Adapted from Bryan Perry (2016) Household incomes in New Zealand: Trends in indicators of inequality and hardship 1982 to 2015, Ministry of Social Development.

Note: The Gini coefficient compares cumulative proportions of the population against cumulative proportions of income they receive. It ranges between 0 in the case of perfect equality and 1 in the case of perfect inequality.¹⁰⁷ The 90:10 ratio represents the equivalent consumption at the 90th percentile of the equivalent consumption distribution divided by the equivalent income at the 10th percentile – which means that if the ratio were equal to 4, for example, then the poorest person in the richest 10 percent of the population would consume four times as much as the richest person in the poorest ten percent.¹⁰⁸

Addressing social challenges

There are ways for governments to respond to social inclusion challenges. As discussed in previous Sections, macroeconomic, labour market and institutional settings can provide an economic environment that helps individuals achieve their aspirations. This is true for all New Zealanders, including those who experience social exclusion. For example, such settings can support employment, and having a job helps people to feel valued and to support themselves and their families. But some people, for example those with health and disability problems, will not thrive without effective social services.

Social investment involves targeting resources to where we know we can make the biggest difference to improve living standards. Around 70 percent of government spending is on health, education, welfare, and superannuation.¹⁰⁹ Economic and social benefits can increase even if a small proportion of this money is used more effectively. Social investment puts the needs of people who rely on public services at the centre of decisions on planning and resourcing. This includes identifying people for whom early investment will improve long-term outcomes, and better understanding their needs.

This Statement includes long-term scenarios that use data on current outcomes to estimate the potential impact of improved future social outcomes. Previous Statements have analysed future cost pressures and modelled increased taxes or reductions in services to reduce cost

¹⁰⁷ See Statistics New Zealand's social indicators website at: http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/nz-social-indicators/Home/Standard%20of%20living/income-inequality.aspx

¹⁰⁸ See The World Bank (2000) Making Transition Work for Everyone, "Appendix A – Measurement of Living Standards and Inequality", p 372.

¹⁰⁹ See 2016 Budget website at: <http://www.budget.govt.nz/budget/2016/economic-fiscal-outlook/core-crown-expenses.htm>

pressures. Section Six of this Statement and the background paper *The benefits of improved social sector performance* supplement those analyses with social investment scenarios that estimate both the fiscal and non-fiscal outcomes of improving the effectiveness of social services. These scenarios identify that social investment can bring substantial improvements to people’s outcomes while also delivering improved fiscal outcomes for the country.

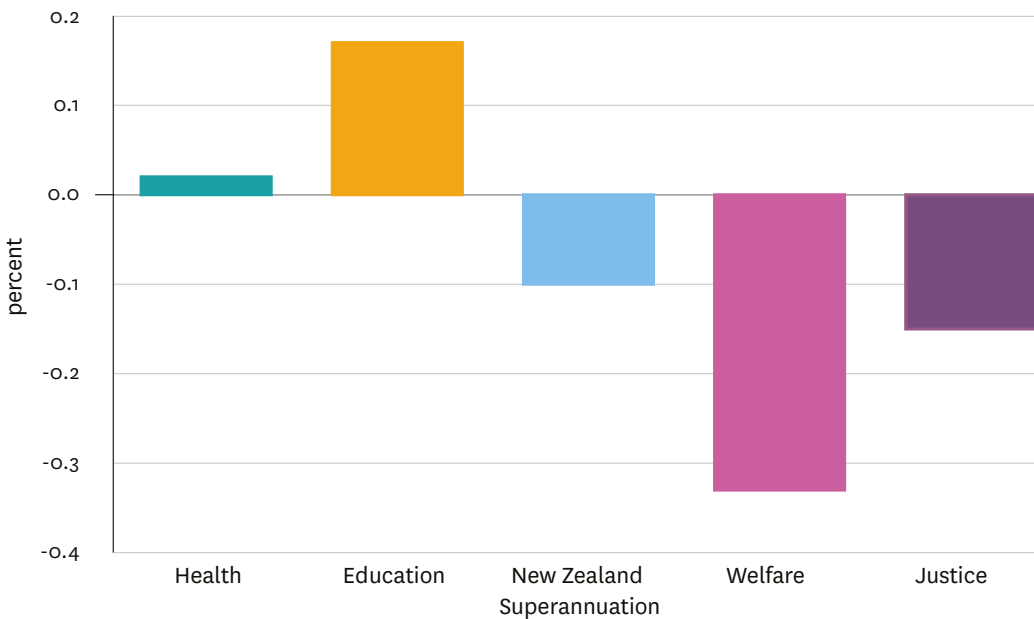
The social investment modelling demonstrates that the state sector can act to improve outcomes by responding to the challenge of changing how it operates. For example, relatively small reductions in the risk of poor outcomes for our most at-risk children could considerably improve their outcomes in life.¹¹⁰ Figure 4.3 shows the potential change in costs from marginally reducing the risk of poor outcomes for the 10 percent of children at highest risk to equate with that of the next 10 percent.

110 See the background paper prepared for this Statement: The benefits of improved social sector performance.

The effectiveness of social investment will depend on the flexibility of the system to use data more effectively and implement policies and programmes that better target resources. This will include being more responsive to new information, better at moving resources to where they can make the most difference and more willing to co-operate across government agencies, between government and non-government agencies and with the community. The benefits of social investment will not be realised unless we find these better ways of operating.

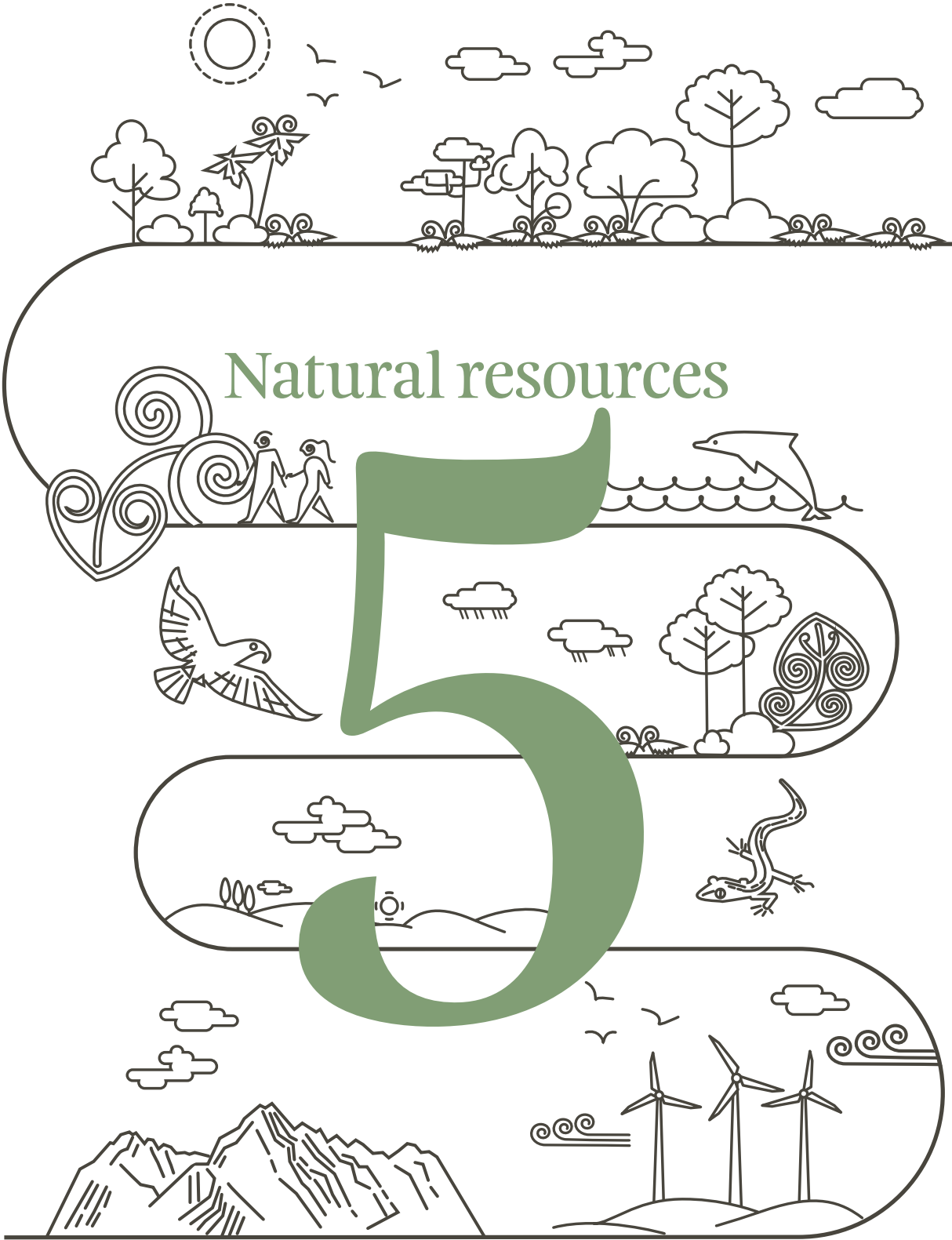
Improving state services through a focus on social investment will contribute to improved outcomes, particularly for our most disadvantaged. However, government cannot improve social inclusion and outcomes for New Zealanders by itself – it needs to be working with the broader community. This includes working more in partnership with communities, and may mean supporting changes that improve transparency, interaction, and participation of the public in improving outcomes for all New Zealanders. In the Treasury’s view, such involvement underpins social inclusion.

Figure 4.3 – Potential fiscal impacts of improved outcomes for the most vulnerable children



Source: See the background paper prepared for this Statement: The benefits of improved social sector performance.

Note: This figure relates to Scenario E in Figure 6.3 of this Statement. Fiscal impact is the percentage point of GDP change in costs relative to the Historical Spending Patterns scenario, in 2060.



Natural resources



New Zealand's natural resources (such as our land, air and water) are seen as a comparative strength. They enable many of our economic, social, and cultural activities. Therefore, sustainable use of our natural resources is essential for our long-term living standards.

Opportunities lie in improving the management of New Zealand's natural resources, in order to maximise the value society derives from them now and in the future. This includes how decisions are made for the consumption of, and investment in, natural resources. The goods and services that these resources provide continue to be undervalued in many decisions, as they can be difficult to accurately identify and quantify, which may result in sub-optimal resource use.

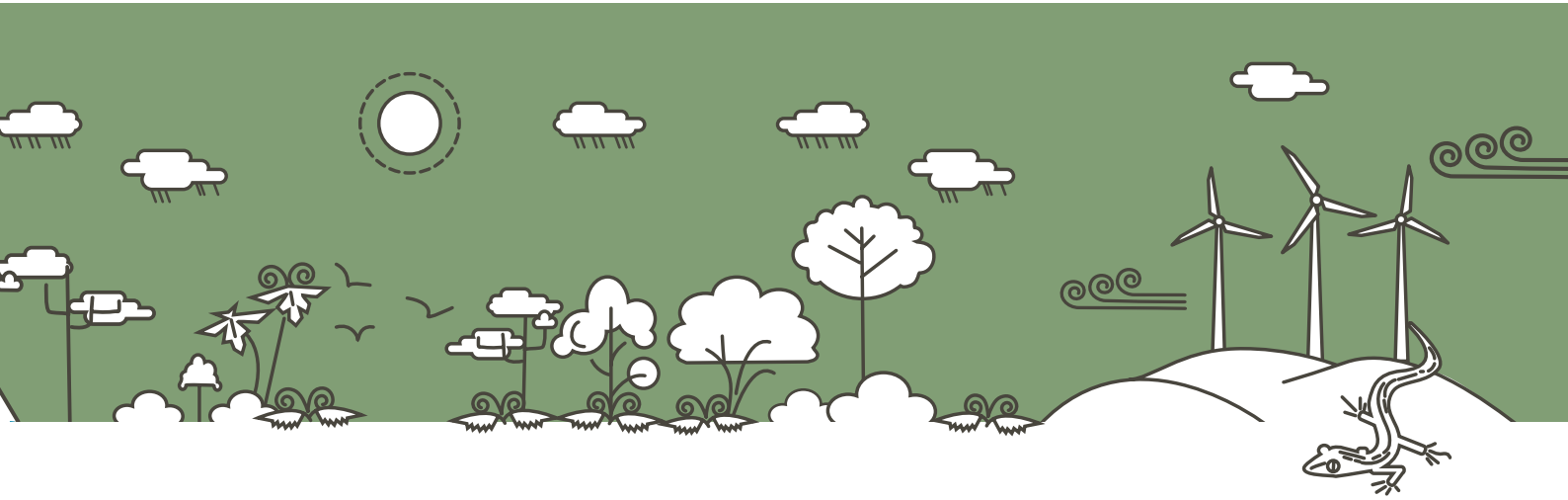
In particular, resource management could be improved by building a better evidence base to assess the state of our natural resources, the value derived from them, rate of change, and return on investments. Benefits are also possible from enabling the resource management and planning system to be more responsive to emerging issues and effective at balancing competing interests.

New Zealand is richly endowed in natural resources. These include both non-renewable resources (such as soil, coal, oil, gas, and minerals) and renewable resources (such as forests, fish, and water). These resources, together with ecosystem services¹¹¹ – for example, climate regulation, flood and disease regulation, water purification, nutrient cycling and soil formation – make up New Zealand's natural capital. In addition to underpinning the country's primary production and attracting a large number of tourists, the environment provides significant opportunities for recreation and is integral to our cultural identity.

Some aspects of New Zealand's natural capital are in decline.¹¹² The goods and services provided by natural resources continue to be undervalued in many consumption and investment decisions, as they can be difficult to accurately identify and quantify. This section notes particular pressures on fresh water, soil, and biodiversity – and the challenge of climate change – but does not

¹¹¹ Ecosystem services are the benefits people obtain from ecosystems, including provisioning services such as food, water, timber, and fibre; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling. Source: United Nations Millennium Ecosystem Assessment (2005) *Ecosystems and Human Well-being: Synthesis*. Island Press, Washington, DC.

¹¹² Ministry for the Environment & Statistics New Zealand (2015) *New Zealand's Environmental Reporting Series: Environment Aotearoa 2015*. Available from www.mfe.govt.nz and www.stats.govt.nz



attempt to be exhaustive. Rather, outlined are important concepts and particular challenges governments and societies face in managing New Zealand's natural resources in order to maximise benefit from them now and in the future.

The direction of resource management

The management of New Zealand's natural capital is improving, in recognition of its importance to the economy and living standards. There is a growing focus on concepts such as limits, allocation, resilience, and investment. The challenge of managing the country's natural capital to maximise living standards is no easy task given competing and evolving goals, complex interdependencies, and shifting scientific understanding.

'Limits' can play an important role in ensuring that New Zealand does not exceed biophysical thresholds or irreversible tipping points in an ecosystem. In some circumstances, the setting of more conservative limits or targets may better reflect societal and cultural values, or possible economic benefits, such as obtaining a premium from environmentally-friendly products. If there is uncertainty around where a tipping point is, a precautionary approach would ensure a buffer is maintained between the amount of a stock used and the estimated tipping point.

Albeit, uncertainty of environmental impacts makes this difficult in practice. Exactly who should set limits on use (e.g. governments, iwi, businesses, communities and individuals) will differ depending on the resource type in question.

Within the agreed limits, resources should be allocated to the users who will create the highest benefits for society. Greater long-term benefits will be possible if users are incentivised to improve their productivity over time, and resources can be moved to higher value uses as they arise. In some instances, the best course of action may be preservation of a resource, including because of its value to economic growth. For example, natural landscapes and unique biodiversity can attract tourists; trade benefits may be possible from protecting the country's 'clean, green' image; and new technologies could be adopted that increase or maintain productivity while protecting the environment. For finite, exhaustible resources – such as petroleum, coal and minerals – the aim should be to use these assets at a rate and in a manner that will provide the greatest contribution to living standards as a whole, over time.

Challenge and opportunity – Freshwater quality and allocation

While recent reforms have improved management, fresh water is an example of a resource that has traditionally been undervalued. Users typically pay little or nothing for its use and fresh water resources have historically been allocated without reference to water replenishment rates and environmental outcomes. As a result, the quality and availability of fresh water is under pressure and deteriorating in some locations.

Although some quality indicators (such as water clarity) have recently shown improvements, other quality indicators (such as nitrogen and phosphorus levels) show deteriorating trends – particularly in intensively farmed lowland and urban areas. For example, between 1990 and 2012, the estimated amount of nitrogen that leached into soil annually from agriculture increased 29 percent.¹¹³ Excessive nitrogen in water bodies causes growth of nuisance slime and algae that can reduce oxygen in the water, impede river flows, block irrigation and water supply intakes, and smother riverbed habitats.

In addition to quality concerns, some areas face pressures on the quantity of water available. For example, in the Bay of Plenty, a 2013 water allocation status report highlighted that 62 percent of rivers and lakes in the region (for which there are adequate flow records) were over-allocated.¹¹⁴ Also, in Canterbury, a number of river and aquifer takes are either fully allocated or near the limit of what can be abstracted while maintaining environmental flows.¹¹⁵

Recent freshwater reforms¹¹⁶ have recognised that New Zealanders cannot keep increasing their

use of freshwater resources, and have introduced limits to use based on sustainability. In particular, the National Policy Statement for Freshwater Management 2014 requires the quality of all freshwater bodies to be maintained or improved, introduces mandatory quality bottom lines, and provides opportunities for regions to set additional limits and objectives. This reform – together with increased monitoring; freshwater clean-ups; greater involvement of communities in decision-making; improvements in irrigation infrastructure; and a focus on science and data – should result in improved outcomes for the country's freshwater resources.

Now that a limits-based approach has been adopted for freshwater management, the key issue for central government is how to best support the transition to a world of 'growth within limits'. This includes ensuring that: appropriate limits are set and monitored; freshwater is allocated to its highest value use; and the resource is allowed to move to higher value uses as they arise. The Crown and Māori also need to agree on how iwi/hapū rights and interests in freshwater will be recognised. Until such agreement is reached, there will be investment, regulatory and legal uncertainty, which will make it difficult to transition to the new management regime.

113 Ministry for the Environment & Statistics New Zealand (2015) New Zealand's Environmental Reporting Series: Environment Aotearoa 2015. Available from www.mfe.govt.nz and www.stats.govt.nz

114 New Zealand Institute of Economic Research (2014) Water Management in New Zealand – A Road Map for Understanding Water Value.

115 Canterbury Water (2009) Canterbury Water Management Strategy: Strategic Framework – November 2009.

116 For more information on the freshwater reform programme see: <http://www.environment.govt.nz/fresh-water/regulation-and-reform>

There are opportunities to restore natural resources that have been degraded over time, or at least reduce the rate of degradation. This would entail short-term costs, but in many cases, these costs should be seen as an investment in New Zealand’s natural resources, and should be weighed against the expected long-term benefits. Necessary interventions may include requiring users to cover the costs to society of their activities (e.g. to internalise the downstream costs of pollution), investing in infrastructure (such as wastewater and stormwater infrastructure), and clean-up initiatives (such as pest control or lake weed removal). This requires determining how costs should be distributed and how to smooth the transition, including by encouraging innovation and adoption of new technologies.

Resource use decisions should also take into account society’s desired level of resilience to natural hazards (including droughts, storms, sea-level rise, earthquakes and biosecurity incursions). Such events or changes can have significant economic impacts (e.g. the Treasury estimated that the 2013 drought reduced real GDP by 0.7 percentage points).¹¹⁷ The resilience of government finances can also be tested if weaker economic growth reduces revenue and government assistance is sought for those adversely impacted. Planning for environment-related shocks can reduce the impacts on individuals, communities, industries, and the environment. This is becoming increasingly important as the growing complexity of societies makes the consequences of shocks more wide-ranging and difficult to predict.¹¹⁸ Particular attention should be given to those elements of the economy and environment that are less able to adapt and are more vulnerable to shocks – such as water resource allocation, biodiversity, and infrastructure – and to identifying any others.



“Particular attention should be given to those elements of the economy and environment that are less able to adapt and are more vulnerable to shocks...”

117 The Treasury (2013) Budget Economic and Fiscal Update 2013, pp.17-18.

118 Patrick Helm (2015) Risk and resilience: strategies for security. Journal of Civil Engineering and Environmental Systems.

Challenge and opportunity – Climate change

*New Zealand is seeking to reduce greenhouse gas emissions to play our part – and meet international obligations – in the global challenge to mitigate climate change.*¹¹⁹ New Zealand has committed to reducing emissions by 30 percent below 2005 levels by 2030. This target could be achieved in three ways – by reducing New Zealand’s greenhouse gas emissions; by growing more trees to absorb emissions; and/or by buying emissions reductions from overseas carbon markets. Economic modelling has estimated the costs to New Zealanders of meeting this target to be between \$14 billion and \$37 billion over 2021–2030 (in 2012 prices)^{120 121}. The actual economic impact will depend on: the details of international agreements; how New Zealand implements them; trends in the international emissions price; the degree and pace of technology change; and how affected sectors respond (such as technology adoption or land-use changes).

New Zealand is likely to face higher economic costs than other countries in meeting its emission reduction targets, at least in the short term. A high proportion of New Zealand’s emissions come from emissions-intensive, trade-exposed sectors, particularly the agriculture sector. There are few cost effective opportunities to quickly reduce emissions in these industries, and so meeting our international target will probably mean off-setting rather than reducing these emissions. Even so, pursuing the opportunities that do exist to reduce emissions is likely to result in a smoother and less costly transition to a low carbon economy over the long-run. There is more scope to reduce emissions in the non-tradable sectors, such as energy and transport, and there are potential productivity benefits from adopting low-emissions technology and practices. For example, there would be benefits from replacing imported petroleum with cheaper, domestically produced electricity from renewable resources. Forestry also offers an important opportunity. Establishing new forests on marginal land could provide a higher economic return for that land, while offering a low-cost way to offset emissions along with potential other co-benefits, such as erosion control.

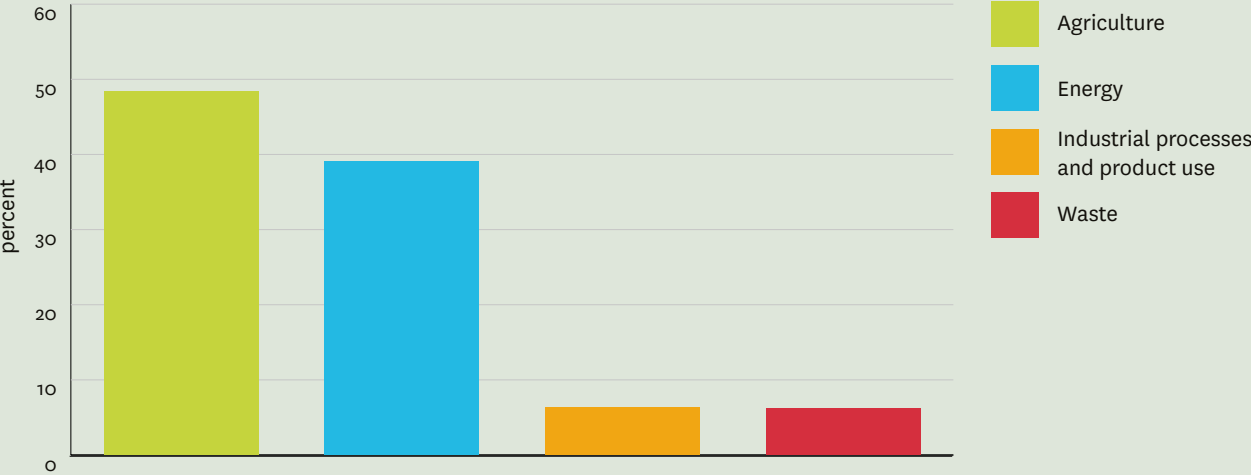
Consideration should also be given to how to distribute the costs of meeting our international emissions reduction target. This target includes all sectors of the economy and all greenhouse gas emissions. However, the Emissions Trading Scheme, which is New Zealand’s primary policy tool for reducing emissions, does not cover emissions from agriculture. It is important to find the right balance between encouraging the agricultural sector to reduce its emissions at the lowest possible cost, while maintaining the trade competitiveness of the sector, at least until major trading partners impose emissions obligations on their agricultural producers. The responsibility for emissions reductions that cannot either be achieved from, or offset by, the agricultural sector, will either fall primarily to non-trade

119 For more information on climate change and what we are doing about it see: <http://www.environment.govt.nz/climate-change>

120 Assuming the availability of international carbon markets and a carbon price starting at \$25 in 2021 and rising to \$50 by 2030.

121 Office of the Minister for Climate Change Issues (2016) New Zealand’s intended contribution to the new global climate change agreement. Paper to the Cabinet Economic Growth and Infrastructure Committee. Available at <http://rma.govt.nz/more/cabinet-papers-and-related-material-search/cabinet-papers/new-zealands-intended-contribution>

New Zealand’s greenhouse gas emissions in 2013 (by sector)¹²²



Note: Emissions from the Land use, land-use change and forestry (LULUCF) sector are not included in the estimate of total emissions.

exposed sectors of the economy, such as fuel and electricity (resulting in higher household bills), or the Crown, resulting in an increased pressure on taxation revenue.

Adapting to climate change is also an important long-term issue. Localised impacts from sea level rise (including flooding of homes, businesses and infrastructure) are predicted to be felt within the next 40 years - even if there is stringent mitigation of global emissions.¹²³ Most other physical impacts, such as changing precipitation patterns, are not expected to be widely felt in New Zealand until later in the century. Even so, planning for these now - and building more resilient businesses and communities - will help reduce the long-term impacts and costs of climate change.

“Localised impacts from sea level rise (including flooding of homes, businesses and infrastructure) are predicted to be felt within the next 40 years”

122 <http://www.mfe.govt.nz/publications/climate-change/new-zealands-greenhouse-gas-inventory-1990%E2%80%932013-snapshot>

123 In New Zealand, the sea level is projected to rise by about 30 centimetres between 2015 and 2065. Available data shows that at least 9,000 New Zealand homes, 150 businesses and 145 kilometres of roads lie less than 50 centimetres above spring high tide levels. Source: Parliamentary Commissioner for the Environment (2015) Preparing New Zealand for rising seas: Certainty and Uncertainty. Available from www.pce.parliament.nz

Specific areas for improvement

Currently, information on the stocks and flows of New Zealand's natural resources is patchy and not always kept up-to-date, or is not sufficiently utilised.¹²⁴ It is also difficult to identify and quantify some aspects of natural resources such as water filtration and habitat for wildlife, and cultural services. This means the value of natural resources, and the long-term impacts of a change in stock, is not always given due weight in decision making. In addition, there is room to improve monitoring of initiatives, identification of emerging issues (particularly where there is slow degradation), and defining the outcomes sought.

More comprehensive and nationally consistent data on the state of the country's resources and how they are being used would help New Zealanders make better decisions. Science has an important role in building understanding of ecosystem services (including the interactions between them), thresholds, and resilience. Better information will enable better policy and investment decisions, and improve understanding of how living standards are changing over time.

Improvements can be made to how resource management accommodates values and perspectives that are not easily quantified. Economic models do not tend to reflect well intrinsic values (that something has value "of itself"), cultural perspectives, or the needs of future generations. For example, in te ao Māori (the Māori worldview) the relationship between people and the environment is based on co-dependency, which gives rise to a kaitiakitanga obligation (guardianship or stewardship responsibility) to nurture and care for the environment. Another example is the intrinsic value placed on the presence of reserve and conservation land, and the biodiversity contained within that land.

Greater opportunities could be provided for Māori participation in the management of natural resources. Iwi/hapū relationships with the natural environment are expressed through the exercise of kaitiakitanga informed by traditional knowledge. Natural resource regulation currently provides for the participation of iwi/hapū into natural resource decision making, however implementation by local government is highly variable across New Zealand. Where central and local government are working more closely with iwi/hapū and communities (e.g. in the recent freshwater reforms), resource management can be better integrated and durable, with a more holistic approach to environmental, economic, social and cultural values. There is scope to build off current successful partnerships and arrangements to better integrate iwi/hapū participation across the country.

Decision-making processes, such as under the Resource Management Act, are continuing to improve. But more could be done to better plan for the management, allocation and trading of resources, especially where there are conflicts between the natural and built environment (e.g. whether to use highly productive land for urban expansion). The resource management and planning system is not able to respond quickly to emerging issues (such as rapid urbanisation). Nor does it deal well with competing demands for resources and taking into account broad or indirect effects of activities. The system needs to be clearer about what the desired outcomes are (both short and long-term) and establish principles to help decision makers prioritise outcomes when faced with competing resource demands or conflicting priorities. These issues are not limited to land alone – there are a variety of different decision making regimes in the marine environment, and similar challenges in balancing current demands with sustainability aspirations across those regimes.

¹²⁴ Ministry for the Environment & Statistics New Zealand (2015) New Zealand's Environmental Reporting Series: Environment Aotearoa 2015. Available from www.mfe.govt.nz and www.stats.govt.nz

Challenge and opportunity – Soil and biodiversity

Soil and indigenous biodiversity are both examples of natural capital which are in decline. In addition to building a better evidence base of these trends (such as data on the stock of resource, rate of loss and replenishment, and the causes of loss), improving understanding of the long-term impacts of changes in stock levels would be beneficial for decision making. Such impacts may be economic, environmental, social or cultural.

New Zealand's indigenous biodiversity (i.e. variability within nature, including of genes, species and ecosystems) is under pressure. For example, there is continued loss of indigenous forests¹²⁵ and extinction is an ongoing threat to many species which are endemic to this country. Between 2005 and 2011, the extinction risk increased for seven percent of New Zealand's indigenous species, and improved for only 1.5 percent.¹²⁶

Biodiversity provides a range of (known and potential) benefits, including ecosystem services¹²⁷, tourism and recreational opportunities (such as, walking, bird-watching, snorkelling/diving, and fishing), and bioprospecting value (i.e. species may contain compounds that could yield commercially valuable products, such as pharmaceuticals).¹²⁸ Species may also have existence and/or cultural value. Although challenging, better incorporating these values in decision making could help maximise the return from investments in conservation. The benefits of such investments may be broader than preservation of native biodiversity. For example, controlling wilding pine (introduced pines which spread across the landscape as a weed) may increase the amount of water available for

downstream users.

Soil erosion rates in parts of New Zealand are naturally very high by world standards because of our geology and climate. Widespread deforestation, livestock grazing and intensive land use in some areas have accelerated rates of erosion.¹²⁹ Loss of fertile top soils reduces the land's productivity.¹³⁰ Soil is largely irreplaceable and underpins a large proportion of New Zealand's economy – the estimated export revenue from land-based primary industries for year ending June 2016 was \$34.9 billion.¹³¹ It also provides a range of ecosystem services, other than provision of food, wood and fibre, such as water flow regulation and carbon storage.¹³² Decision making in relation to soil would benefit from an improved understanding of the long-term impacts of soil loss and degradation (particularly for the productivity of the primary sector), including how this differs across the country.



“Biodiversity provides a range of benefits, including ecosystem services, tourism and recreational opportunities, and bioprospecting value...”

125 Between 1996 and 2012, New Zealand lost a further 10,000 hectares of indigenous forests (MFE & Statistics New Zealand, 2015).

126 Ministry for the Environment & Statistics New Zealand (2015) New Zealand's Environmental Reporting Series: Environment Aotearoa 2015. Available from www.mfe.govt.nz and www.stats.govt.nz

127 Claude Gascon, et al (2015) The Importance and Benefits of Species. *Current Biology*, Vol 25, Issue 10.

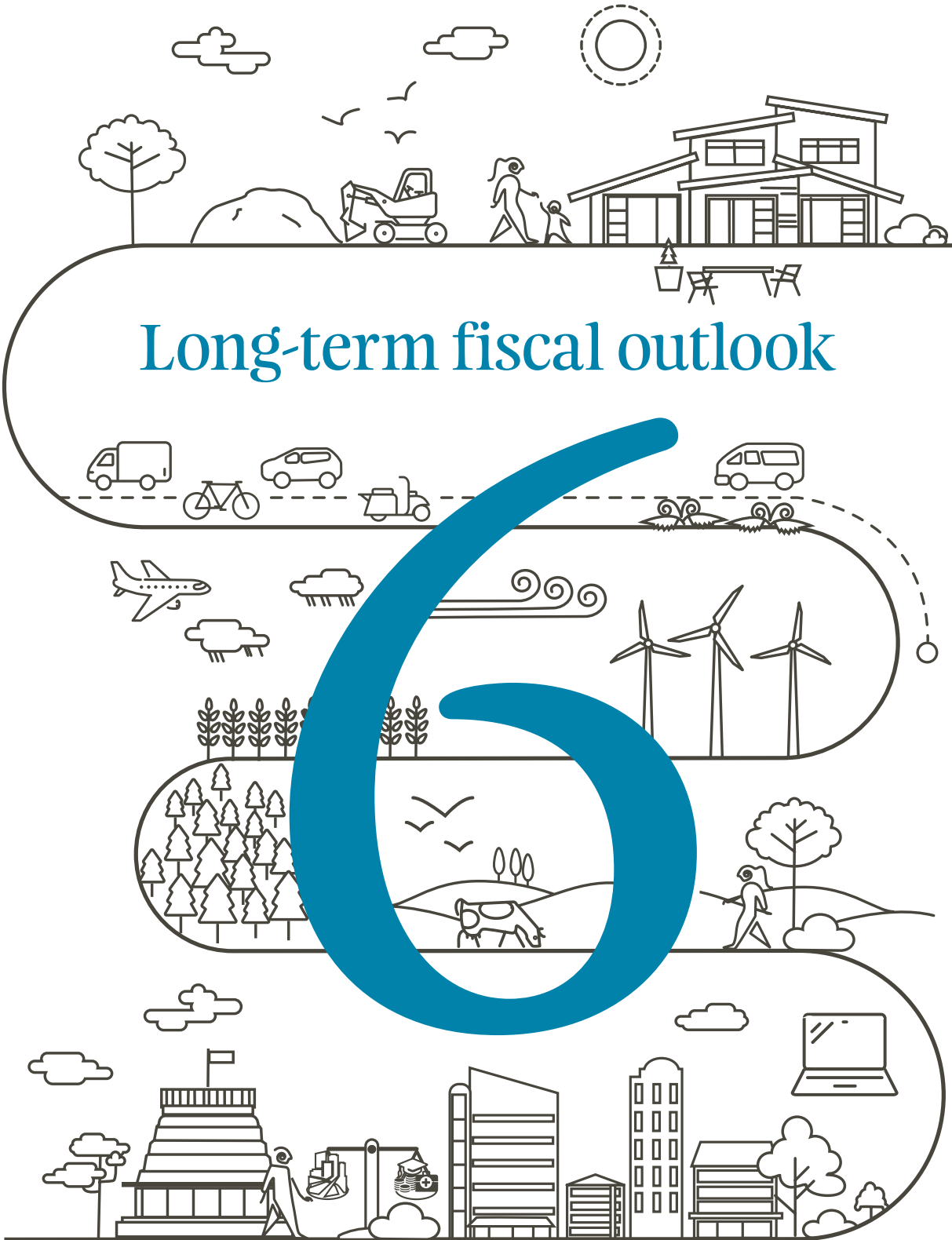
128 Stephen Polasky, Christopher Costello, and Andrew Solow (2005) The Economics of Biodiversity. Chapter 29, Vol. 3, 1517-1560 in *Handbook of Environmental Economics*, eds. Mäler, K-G and J.R. Vincent, North Holland.

129 Les Basher (2013) Erosion processes and their control in New Zealand. In John Dymond (ed). *Ecosystem services in New Zealand – conditions and trends*. Manaaki Whenua Press, Lincoln, New Zealand.

130 Haydon Jones, Peter Clough, Barbara Höck, and Chris Phillips (2008) Economic costs of hill country erosion and benefits of mitigation in New Zealand: Review and recommendation of approach. Report for Ministry of Agriculture and Forestry.

131 Ministry for Primary Industries (2016). *Situation and Outlook for Primary Industries 2016*.

132 Estelle Dominati (2013) Natural capital and ecosystem services of soils. In John Dymond (ed). *Ecosystem services in New Zealand – conditions and trends*. Manaaki Whenua Press, Lincoln, New Zealand.



Long-term fiscal outlook



Sustainable government finances are a precondition to improving long-term living standards. They reduce the risks associated with economic, social or environmental shocks, provide current and future generations with the opportunities to participate in society (by allowing governments to provide essential services and infrastructure), and give more certainty in the future for individuals and governments to plan.

While current government finances remain relatively strong, fiscal pressures are projected to increase significantly over the next 40 years. As with all three previous Statements, population ageing is projected to be a key driver of these increased pressures. These additional pressures are expected to come both through slower revenue growth (resulting from less labour participation) and increased expenses (primarily through healthcare and New Zealand Superannuation). In the future, we may also see threats to our natural resources as a key fiscal pressure.

As the previous sections have indicated, governments have many options at their disposal to address these challenges, but the challenge gets harder the longer we delay. Economic growth provides revenue (e.g. through taxation) and, in turn, provides governments with options on how to address expense pressures. Opportunities to lift economic growth through improving productivity, skills, and social outcomes further enhance these choices and can reduce some of the expense pressures (e.g. from welfare and justice expenses). These opportunities sit alongside the other options available to governments in terms of changes to taxation and major spending areas.



Building on the analysis from the previous sections, this section discusses the long-term challenges and opportunities for government finances. As discussed in Section Three, New Zealand's changing age structure in the next 15 years will see a significant shift in the ratio between those aged 15-64 and those aged 65 and over. The following fiscal projections incorporate a detailed assessment of how people at different ages participate in the labour force, how much tax they pay, and what government services they use.

New Zealand's intergenerational contract assumes that people pay most taxes during their working lives and less at the beginning and end of life (when they are more likely to receive services and payments funded by taxpayers). These come primarily in the form of education for the young, and healthcare and retirement income support towards the end of life. The combination of the implied intergenerational contract and population ageing will have consequences for future public finances.

Table 6.1 summarises fiscal projections using "Historical Spending Patterns" and the 2016 Budget forecasts as the base. This scenario does not include a government response to growing deficits and debt, even though previous

governments have made such responses.¹³³ However, population ageing combined with the retirement of the baby boomer population cohort presents a challenge for governments unlike those faced in the past.

“While current government finances remain relatively strong, fiscal pressures are projected to increase significantly over the next 40 years.”

¹³³ See: Anne-Marie Brook (2013) Making fiscal policy more stabilising in the next upturn: Challenges and policy options, New Zealand Economic Papers, 47:1, pp.71-94; Dhritiduty Bose, Renee Philip and Richard Sullivan (2016) Returning to surplus: New Zealand's recent fiscal consolidation experience. Paper presented to the New Zealand Association of Economists Conference, June.

Table 6.1 – Projections for “Historical Spending Patterns” scenario (percent of GDP)

	2015	2030	2045	2060
Healthcare	6.2	6.8	8.3	9.7
New Zealand Superannuation (NZS)	4.8	6.3	7.2	7.9
Education	5.3	5.4	5.5	5.7
Law and order	1.5	1.4	1.4	1.4
Welfare (excluding NZS)	4.2	4.5	4.7	4.7
Other expenses	6.3	6.7	6.7	6.7
Debt-financing costs	1.6	2.2	5.3	11.0
Expenses	30.0	33.3	39.1	47.1
Tax revenue	27.6	28.6	28.6	28.6
Other revenue	2.3	2.4	2.4	2.5
Revenue	29.9	31.0	31.0	31.1
Operating balance	(0.1)	(2.3)	(8.1)	(16.0)
Primary expenses	28.4	31.1	33.8	36.1
Primary balance	0.5	(1.2)	(4.0)	(6.3)
Capital expenditure	0.7	0.9	1.0	1.0
Net debt	25.1	32.5	94.0	205.8
NZSF assets	12.2	21.0	25.1	31.7
Net debt incl NZSF	12.9	11.5	68.9	174.1
Net worth	13.8	16.1	(41.3)	(146.3)

Note: All variables are on a core Crown basis; New Zealand Superannuation expenses are on a gross basis; bracketed numbers represent negative values; primary expenses are expenses excluding debt-financing costs and the primary balance is the difference between revenue (excluding interest revenue and dividends) and primary expenses; these projections represent a “what if” scenario.

Projecting government finances

To assess the potential size and timing of changes to future public finances, the Treasury develops “what if?” projection scenarios. These projections represent scenarios which illustrate different possibilities – they are not predictions. We use different approaches for projecting the future paths of different areas of government spending. As with previous Statements, projected long-term fiscal pressures are primarily due to increased costs for New Zealand Superannuation (NZS) and healthcare expenses. Annex Two sets out the key assumptions underpinning the projections and where those assumptions have changed from the 2013 Statement.¹³⁴

In projecting how NZS costs will grow, the main considerations are the current legislative settings, the future demographic structure, and future average wages (as NZS payments are pegged as a proportion of the average wage). NZS will become more costly as more people move into older age groups, and the ratio of people paying income tax declines.

In projecting the possible future path of healthcare, we use the future demographic structure, together with information on how spending has grown in the past. Spending on public healthcare is projected to rise because of increasing demand for healthcare services and the rising prices we will need to pay for those services. From 2025, around one-quarter of the annual growth in healthcare spending is the result of demographic change.

We assume that tax revenue is equal to around 29 percent of GDP over most of the projection period. This is broadly consistent with the average tax take in recent history. Holding tax revenue constant as a share of GDP over the longer term assumes that governments adjust tax settings to compensate for the effects of rising prices and wages, which move people into higher tax brackets (so-called ‘fiscal drag’). Without these compensating adjustments, tax-to-GDP would

increase over time.

In addition to the operating side of government finances, Table 6.1 includes elements that influence the wider Crown balance sheet – assets and liabilities. For example, capital expenditure includes spending on schools, hospitals, and defence. Capital expenditure projections are linked to GDP, and any amounts borrowed for this spending will change debt. Over the longer term, borrowing to fund long-lived assets (such as infrastructure) spreads costs across the different generations that are expected to benefit from those investments.

The New Zealand Superannuation Fund (NZSF) was created in 2001 to help smooth the increasing cost of NZS. Currently, the Government is not contributing to the Fund given its priority to reduce net debt. Table 6.1 assumes that contributions will resume from 2020/21 and withdrawals will commence in 2032/33. Current projections indicate that capital withdrawals fund around 4 percent of NZS expenses in 2060.

A consequence of holding tax-to-GDP constant as expenses increase, is that from the mid-2020s projected revenues do not cover projected expenses. Governments would need to borrow to make up the difference. Table 6.1 reflects the cost of this borrowing in the line “Debt-financing costs”, which shows these costs increasing over time. “Net debt” also increases as a consequence. Growing debt financing costs create further borrowing and more debt servicing. To separate out these effects, we present “primary expenses” and the “primary balance” – both of which exclude debt-financing costs.

Projecting the long-term economic and fiscal impact of changes to the environment (e.g. resulting from climate change or natural disasters) is challenging. While the projections in this Statement assume these impacts will be in line with those faced in the past, they remain an opportunity for further analysis.

¹³⁴ These changes mean the 2016 results for this scenario cannot be directly compared with those from the 2013 Statement. For more detail on the projection methodology, changes since the last Statement, and sensitivity analysis, see the background paper by Matthew Bell and Melissa Piscetek (2016) Demographic, economic and fiscal assumptions and modelling methods in the 2016 long-term fiscal model.

Alternative projection assumptions

Fiscal projections require assumptions about demography and the economy. The projections are based on Statistics New Zealand's median population projections and the assumptions it contains about birth rates and life expectancy. Based on long-term historical trends, net migration (permanent and long-term) is assumed to be 12,000 per year over the projection period. The transition to this rate is assumed to occur before the end of 2020. The projections also incorporate assumptions about labour force participation, the rate of unemployment, average hours worked, inflation, and the interest rate paid on government debt.

A higher net migration assumption of 25,000 per year would see net debt projections reach around 180 percent of GDP in 2060. This is the net long-term effect of both higher GDP and hence taxes, but also higher government spending on education, healthcare, and NZS. In its most recent population projections, Statistics New Zealand (2016) has revised its median net migration assumption to 15,000 per year. Our analysis indicates this makes only a relatively small change to the long-term fiscal outlook and we have retained the net migration assumption of 12,000 per year.

The projections assume that (economy-wide) labour productivity growth increases to 1.5 percent per year in the early 2020s. Higher labour productivity growth would likely lead to more tax being collected. In turn, this provides governments with more options to spend (e.g. address expense demands), save (e.g. reduce debt) or invest (e.g. spend today to reduce expense pressures tomorrow). The Historical Spending Patterns scenario assumes that governments will choose to spend this money. For example, it assumes that higher labour productivity growth will lead to increased public sector wage growth, higher NZS costs (because NZS payments are pegged to the average wage), and higher healthcare spending (given the relationship with incomes). A higher labour productivity growth assumption of 2 percent per year would see net debt projections reach around 200 percent of GDP in 2060.

We also need to consider how a changing fiscal position might influence economic variables such as the interest rate paid on government debt. Reviewers of the 2013 Statement suggested the inclusion of feedback effects between the fiscal position and the economy, and providing more information on uncertainty and the timing of policy changes. As a result, the Treasury has looked at fiscal-macro feedbacks.¹³⁵

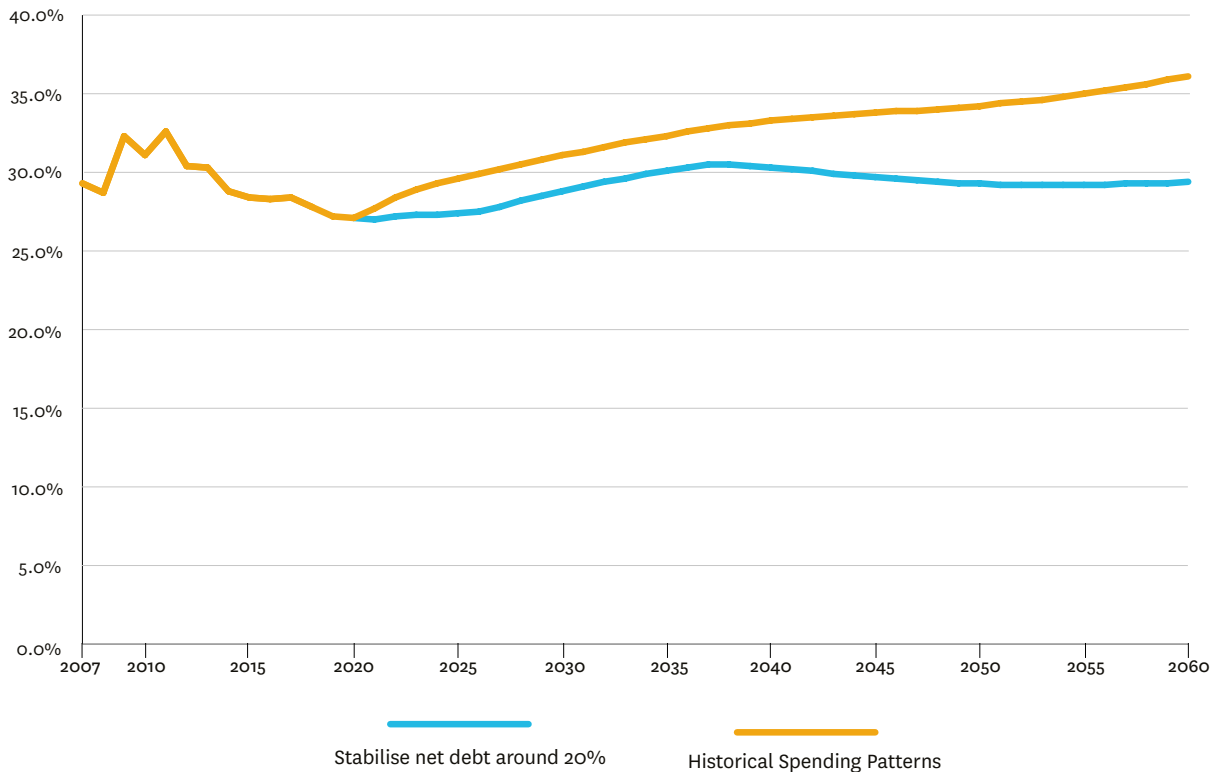
For this Statement we have considered potential feedbacks between the fiscal position and the interest rate on government debt. The Historical Spending Patterns scenario, with the 10-year interest rate remaining at 5.3 percent from 2025 onwards, has net debt rising from 20 percent of nominal GDP in the early 2020s to 206 percent in 2060. The literature and evidence suggests that as the public debt-to-GDP ratio rises, overseas debt holders demand a higher return for holding what they see as increasingly risky debt. As a result, we model the 10-year interest rate as climbing slowly until the debt-to-GDP ratio reaches 100 percent and then accelerating for higher debt values. A rising debt-to-GDP ratio feeds into rising interest rates and then into higher debt-financing costs, and then adds to debt, with most of the change occurring in the last 10 years of the projection. This produces a cumulative rise to 16.9 percent in the 10-year interest rate and net debt of 288 percent of GDP in 2060.

*Analysis undertaken since the 2013 Statement has also examined the nature of uncertainty in the fiscal projections and the timing of possible tax policy changes.*¹³⁶ Overall, this work tends to support more of a “wait and see” approach in the face of projected fiscal pressures. This would be in combination with processes that allow for policy revisions in light of actual outcomes and new information, while at the same time keeping important policy variables within a reasonable range. Nonetheless, uncertainty, feedback effects,

¹³⁵ John Creedy and Grant Scobie (2016) Debt projections and fiscal sustainability with feedback effects. New Zealand Economic Papers.

¹³⁶ Christopher Ball, John Creedy and Grant Scobie (2015) Long-run fiscal projections under uncertainty: The case of New Zealand. New Zealand Treasury Working Paper 15/10. Christopher Ball, John Creedy and Grant Scobie (2015) Optimal timing of tax policy in the face of projected debt increases. New Zealand Treasury Working Paper 16/02.

Figure 6.1 – Stabilising net debt in the long-term: Expenses-to-GDP (excluding debt financing)



and the timing of policy changes are complex analytical and policy issues, requiring further consideration.

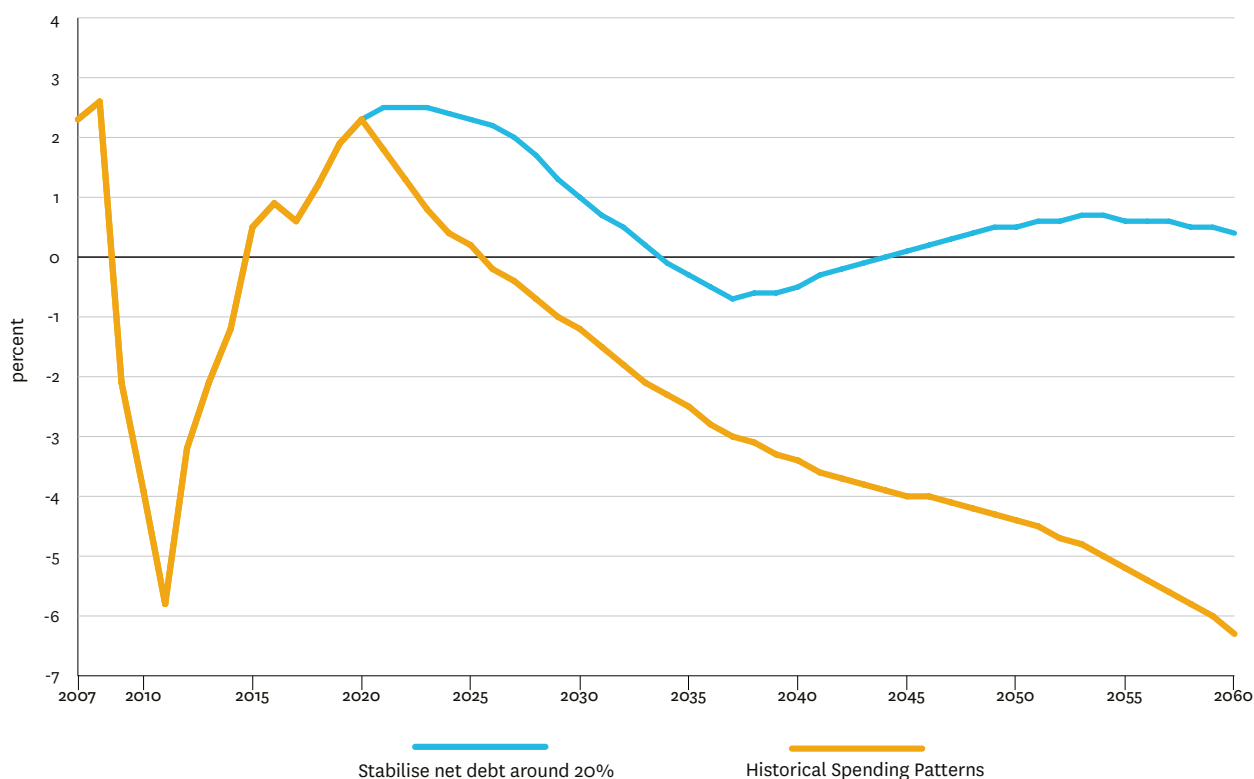
What if governments stabilise net debt?

Fiscal sustainability requires the maintenance of prudent and low average levels of debt over time, as has been the Treasury’s advice to governments over recent decades. As demonstrated over the past decade, temporary fluctuations in the fiscal balance and debt can be an appropriate government response to economic cycles and other shocks. They avoid the government having to make sharp adjustments to spending and/or taxes in order to balance the budget in a single year. Allowing these fiscal stabilisers to operate is more feasible when debt is kept relatively low – at a level that facilitates temporary financing and temporary increases in debt.

Following the approach of the 2013 Statement, one way of assessing the size of long-

term fiscal challenges is to compare the spending path of the Historical Spending Patterns scenario with a spending path that stabilises net debt. In this scenario, successive governments are assumed to operate fiscal policy so that net debt averages around 20 percent of GDP across the projection period.

Figure 6.1 projects primary expenses (e.g. expenses excluding debt financing costs) as a percentage of GDP. It provides an example of the size of the challenge governments could face in meeting spending pressures while maintaining prudent debt levels. In 2060, there would be a gap of just over six percent of GDP between the two spending paths. Were the figure to include debt financing costs this challenge would be even greater. Because NZS payments are determined by current legislation, the two spending paths contain the NZS projection from Table 6.1. This means net debt is assumed to be stabilised through changes in non-NZS operating expenses. These changes are assumed to occur gradually with net debt declining to around 15 percent

Figure 6.2 – Stabilising net debt in the long-term: Primary balances-to-GDP

of GDP in the early 2030s, before stabilising at around 22 percent of GDP by 2060.

Another way to compare the two scenarios is to consider the path of the primary balance (e.g. revenue less expenses, both excluding interest). The stable net debt scenario does not require the running of large, ongoing fiscal surpluses (see Figure 6.2). However, it does assume surpluses in the medium-term to be in a position to absorb and respond to fiscal pressures in the future.

What options do governments have?

Broadly speaking, there are three ways to bring the two lines in Figure 6.1 closer together:

- by collecting more tax than with the 29 percent of GDP assumption, meaning that more could be spent while still stabilising net debt-to-GDP
- by shifting the orange line downwards by

curbing growth in expenses, or

- a combination of both.

The timing of action makes a significant difference to fiscal sustainability. The longer governments delay the return to stable debt, the larger debt-financing costs will be. As a consequence, the adjustment to spending and/or revenue would need to be larger. How quickly governments make the adjustment to a stable debt-to-GDP ratio depends on a number of factors. For example, some government actions, such as social investment (refer Section Four and the analysis below) may involve upfront fiscal costs in order to generate both long-term fiscal savings and non-fiscal benefits to living standards. Other policy changes, such as those related to NZS settings, generally require a degree of clear signalling and phasing-in.

In its most recent Fiscal Strategy Report, the Government said its short-term intention is to reduce net debt from around 25 percent of GDP in

2016 to around 20 percent of GDP in 2020. The Government's long-term objective, for the next ten years, is to manage net debt within a range of 0 to 20 percent of GDP. Achieving this debt objective involves spending control through annual allowances for both operating expenses and capital expenditure. These allowances represent discretionary new (net) spending that has not been allocated to specific spending areas. Rather, they can be used flexibly to meet a range of new initiatives and cost pressures. Increases in NZS expenses are not met from operating allowances.

Top-down discretionary spending is only part of the story. As noted previously, some spending areas such as NZS are determined by legislation. If total government spending needs to be constrained to achieve a particular debt objective, growth in the number of people receiving NZS means that it will take up a growing share of total government spending. Already, between 2014 and 2015, the number of people receiving NZS payments grew by around 25,000. Between 2015 and 2020, we expect an increase of around 125,000.

Allowances for operating spending are around \$1.5 billion (or 0.5 percent of GDP), and assumed to grow at 2 percent per year from 2020, to allow for inflation. As this growth rate is below the rate of the overall economy, these allowances will decline as a share of GDP.

However, operating allowances that decline relative to GDP will provide less scope for governments to meet cost pressures and new initiatives. In comparison, the scenario where net debt is stabilised to an average of 20 percent of GDP assumes future allowances will be in the range of 0.5 percent and 0.8 percent of GDP. Although these are larger than allowances in recent years, they are not large enough to fund growth in terms of the Historical Spending Patterns scenario.¹³⁷

Managing operating allowances and debt over the medium-term is one option to help governments

¹³⁷ In the scenario where net debt is stabilised, capital spending is projected as in the Historical Spending Patterns scenario rather than via capital allowances. In addition, contributions to the NZSF are as per the Historical Spending Patterns scenario.

prepare for long-term fiscal pressures. Long-term cost pressures will still need to be addressed, but future governments would have a wider range of choices and more time to make adjustments.¹³⁸ However, as with all ways of managing future fiscal pressures, a medium-term strategy is still likely to require trade-offs in order to deliver the same range of services. It will need to be combined with ongoing efficiency savings and finding new ways to work with existing spending.

More broadly, the 2013 Statement considered a range of options to address long-term cost pressures, including changes to:

- Taxation – only inflation indexation of income thresholds so that fiscal drag is not fully compensated for and tax-to-GDP rises; and a higher rate of GST
- Government spending – reduce growth in healthcare spending
- Settings around NZS – raising the age of eligibility; and pegging payments to inflation rather than wages.¹³⁹

The options were assessed using the five dimensions of the Living Standards Framework set out in Section One above. Figure 6.4, at the end of this section, updates some of these options and compares them to options that improve social, economic, and fiscal outcomes.

What if governments could improve social outcomes?

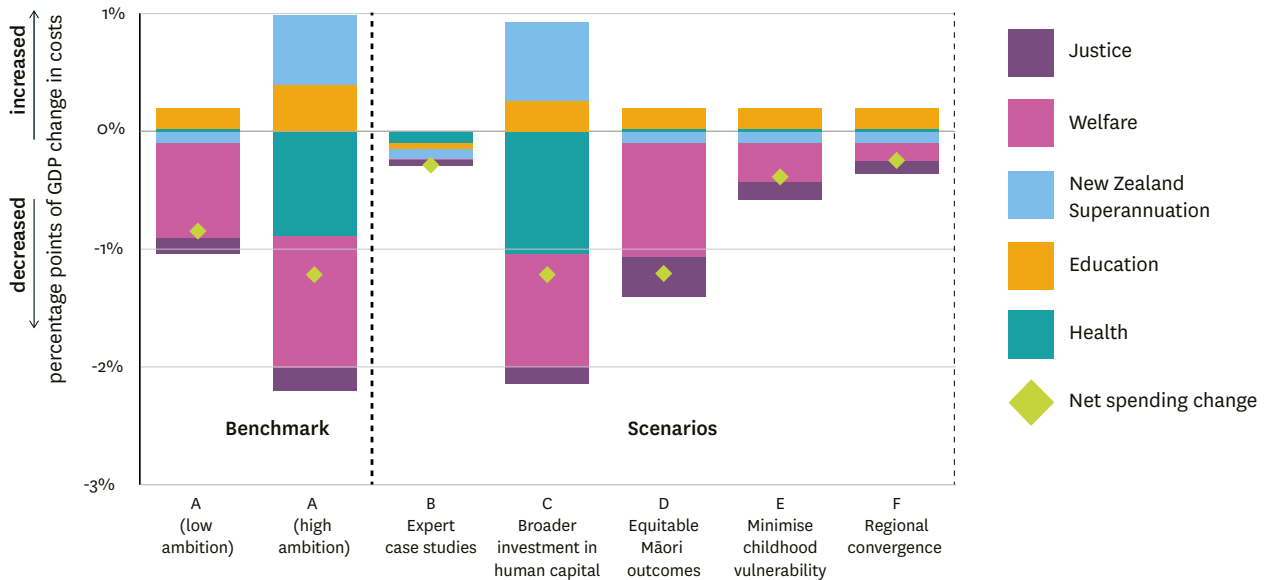
Building on the analysis in Section Four, we explore the potential impact on the long-term fiscal outlook if governments improved the impact of social services on the outcomes of New Zealanders.¹⁴⁰ Not only could social outcomes improve, but social

¹³⁸ The Treasury has not modelled this option in terms of the impact on long-term primary spending and deficits because it requires a judgment about when to switch from operating allowances to Historical Spending Patterns.

¹³⁹ Under the New Zealand Superannuation and Retirement Income Act 2001, the Retirement Commissioner is required to review retirement income policies every three years. The last review was released in December 2013.

¹⁴⁰ For more detail, see the background paper prepared for this Statement: The benefits of improved social sector performance.

Figure 6.3 – Improved social outcomes: Differences across six scenarios in 2060



sector reforms could contribute to reducing the long-term fiscal challenges. However, this is challenging to measure. There are limitations to the evidence base and the long-term projection model itself when applied to broad changes that cut across the state sector and the economy. The Treasury has considered a range of ways to address these limitations, but the scenarios remain “what if?” in nature.

The main goal of effective social investment is to improve non-fiscal outcomes. This means looking at how improved non-fiscal outcomes would impact fiscal outcomes. Fiscal benefits are a side effect of reducing expenditure on services we would rather not need: instead of welfare payments, removing barriers to employment; instead of CYF services, children having nurturing families; instead of prisons, reducing incidence of crime, and so on.

The Treasury has developed scenarios that quantify the potential impact of achieving significant change through better social spending (see Annex Two). Predictably perhaps, the largest economic growth benefit is from increased labour market participation. To varying degrees, the scenarios assume an increase in participation that would increase GDP and increase nominal tax revenue.

However, we have not included the fiscal gains

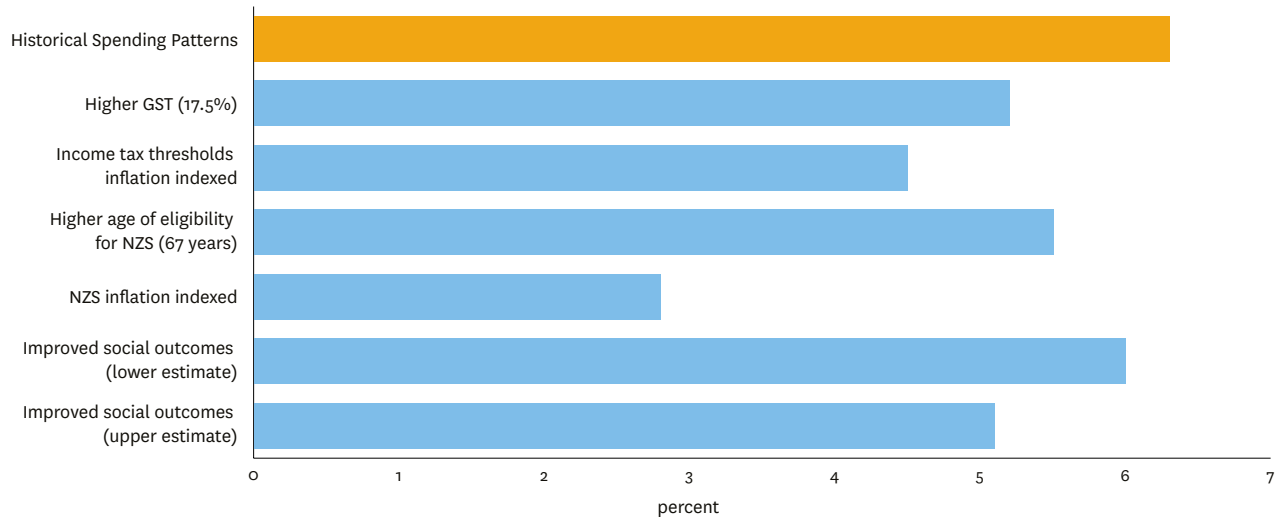
from increased labour market participation. This is because the underlying model (Historical Spending Patterns) assumes that a larger economy also leads to increases in government expenditure, which offsets the effect of higher participation. There are two reasons behind this assumption.

First and most importantly, the role of the long-term fiscal statement is to draw out the fiscal challenges facing New Zealand. The modelling of social investment suggests that there may be approaches that both reduce spending and improve social outcomes. However, this cannot be achieved if government organisations continue to operate as they have in the past.

Secondly, and more pragmatically, the estimated labour market impacts are uncertain. No model can capture everything, so the approach is to be conservative in the estimates of potential benefits where there is substantial uncertainty.

There is a great deal of variation between the social outcome scenarios. Most of the scenarios reflect a combination of expense increases and reductions. The components of each bar in Figure 6.3 are the difference between the baseline cost (i.e. Historical Spending Patterns) and the scenario cost in each sector, as a percent of GDP, in 2060. For example, the orange area is how much spending in education changes in each

Figure 6.4 – New Zealand’s long-term fiscal outlook: Projected primary fiscal deficits in 2060 (percent of GDP)



Note: The primary deficit is the shortfall between core Crown revenue-to-GDP (excluding interest revenue and dividends) and core Crown expenses-to-GDP (excluding debt-financing costs). The impact on net debt will reflect accumulated primary balances and debt financing costs. The GST increase is assumed to occur in 2024; and inflation indexation of income tax thresholds starts in 2021. For NZS, the increase in the age of eligibility is phased in between 2021 and 2024; and inflation indexation starts in 2021.

scenario. Generally, welfare expenses are the largest contributor to reduced costs. The "low ambition" scenario in Figure 6.3 represents a change equivalent to delivering and sustaining the improvements in the Better Public Service targets. The "high ambition" scenario presents more favourable outcomes. Therefore, the low ambition scenario represents success at meeting and sustaining current system objectives, while the high ambition scenario is beyond what people working in the current system feel is feasible.

Importantly, the analysis assumes more effective social sector interventions are feasible and that any upfront costs are merely transition costs. If these "transition costs" become part of ongoing spending then the fiscal benefits will be reduced. Moreover, the fiscal benefits are diffuse and difficult to collect. Long-term settings will need to be in place that ensure reductions in ineffective spending can be spent anywhere in the state sector, and that the state sector is innovative and flexible enough to adopt innovations. There is uncertainty about the timing of the outcomes because social investment is a process of change that accumulates. Its impact is dependent on when it starts and the rate of change.

How do the options compare?

Overall, improved effectiveness of social spending has potential to be substantial enough to support sustainable long-term public finances. By 2060, the reductions in primary expenses (and the primary deficit from Figure 6.2) are broadly similar to some of the options considered in the 2013 Statement and updated in Figure 6.4 above.

As the previous sections of this Statement have indicated, governments have many options at their disposal to address long-term fiscal challenges. Economic growth provides revenue (e.g. through taxation) and, in turn, provides governments with choices on how to address expense pressures. Opportunities to lift economic growth by improving productivity, skills, and social outcomes further enhance these choices and can reduce some of the expense pressures (e.g. from welfare and justice expenses). These opportunities could assist governments in achieving their medium-term fiscal strategy, and sit alongside broader changes to taxation and major spending areas.

Conclusion

Economic performance, the government's fiscal position and the well-being of New Zealanders are inextricably linked. When people are able to participate fully in the economy and society it improves their quality of life, the strength of New Zealand's economy and the health of the government's books. In turn, managing government finances responsibly and making services more effective can make a significant difference to living standards now and in the decades ahead.

There are many big opportunities in front of New Zealand that can have a positive impact on its long-term future. A labour market consisting of highly skilled, diverse, connected and adaptable participants is more likely to grow the economy and associated fiscal revenue; improving New Zealanders' participation in society not only improves long-term prospects for those currently excluded, but will also reduce the long-term cost of welfare and other social services; and natural resources can be managed with a focus on what will make the greatest contribution to higher living standards based on what is important to New Zealanders.

Changes to economic growth, labour markets and social outcomes will have direct effects on the government's long-term fiscal position and New Zealand's long-term well-being. The scenarios outlined in this report show governments have many options that can help shape what those effects could be. While fiscal benefits are not the only measure of success, they can help choose the policies and actions which will be most effective. Ultimately the aim is to be able to look ahead 40 years and see what it might take to ensure a prosperous, sustainable and inclusive New Zealand. By making well-informed choices today and over the next several years with a view to the long-term, governments can ensure long-term fiscal sustainability and help lift living standards for future generations.

Annex One – External engagement

To inform He Tirohanga Mokopuna, the Treasury undertook an external engagement programme and reflected the findings in the supporting document, “Conversations about things that matter”. That document provides some insights into what people value and the long-term challenges and opportunities we face as New Zealanders.

Our engagement process began with a national survey of representative New Zealanders. The survey asked over 1000 New Zealanders to make trade-offs between a range of things that matter (e.g. OECD Better Life Index dimensions, such as health, environment, education, and incomes, and the dimensions of the Treasury’s Living Standards Framework such as risk and equity).

The survey revealed that people strongly value their physical and mental health, and feeling able to recover or withstand a sudden loss of income, job, or home. These findings reinforce the need to understand some of the pressing issues facing New Zealanders every day while we look to address the long-term challenges and opportunities facing New Zealand.

The Treasury also facilitated a series of small workshops and discussions with over 300 New Zealanders from various cultures, occupations, ages, and regions. We discussed what changes could bring about the greatest improvement in living standards, from the perspective of a broad sample of people. This engagement helped us to improve how we work, and strengthen our approach to community involvement and policy development.

At each session we asked the open question “what do you see as the key challenges and opportunities facing New Zealand?”. While there were some regional differences, there were also some consistent messages. People wanted greater attention to be paid to the natural environment, a more inclusive and supportive society, a greater

link between education and employment, more collaboration between businesses nationally and internationally, and national discussions to be had about what being a Kiwi means. These discussions have illuminated the challenges and opportunities covered in this Statement.

The regional workshops also included “deep dive” discussions where participants elaborated on the key challenges and opportunities and what should be done to address these. The discussions highlighted some key opportunities, particularly around: the importance of cultural authenticity for Māori economic development; a perceived gap between job requirements and the skillsets of employees; and working in collaboration with the community sector to improve social outcomes.

By continuing to engage people from all walks of life in conversations on the things that matter, the Treasury will be better able to ensure that central government policies take into account broad perspectives on how to enhance the lives of New Zealanders.

“Conversations about things that matter” is available at <http://www.treasury.govt.nz/government/longterm/fiscalposition/2016>

Annex Two – Projection assumptions

The Treasury has made four key alterations to the Long-Term Fiscal Model (LTFM) since the 2013 Statement:¹⁴¹

- The spending base for the projections is now the end of the 2016 Budget forecast period and so the first projection year is 2020/21. In the 2013 Statement the spending base was part way through the 2013 Budget forecast period. This means that spending is now treated in the same way as other economic, demographic, revenue, asset, and liability variables.
- For a large number of areas (comprising around seven percent of GDP), spending is projected by returning it to historical ratios of GDP.
- Growth in Health and Education spending is determined by: sector-specific, demographically-linked cost weights (to capture the effects of demographic change); sector-specific price-inflation; and labour productivity. We have simplified the last two drivers, to place more emphasis on historical trends.
- Welfare payments, excluding NZS, are also returned to an historical ratio of GDP. In the 2013 Statement, most benefits were projected to grow with price inflation only.

Table 1 – Key projections and assumptions: 2013 LTFM and 2016 LTFM (June years)

Assumptions	2013 LTFM	2016 LTFM
Demographic		
Base case population projection	50th percentile 2011-base, 2012-2061	50th percentile 2014-base, 2014-2068 ¹⁴²
Fertility	Falls to 1.9 babies per woman from 2032	Falls to 1.9 babies per woman from 2036
Life expectancy at birth	Rises to 87.9 (M), 90.4 (F) in 2060	Rises to 88.0 (M), 90.7 (F) in 2060
Net migration	Reaches and holds 12,000 from 2015	Reaches and holds 12,000 from 2019
Labour force	Reaches 3.2 million in 2060	Reaches 3.25 million in 2060
Economic		
Participation rate	50th percentile labour force (2012); participation rate in 2060: 65%	50th percentile labour force (2015); participation rate in 2060: 64.5%

¹⁴¹ In addition to the changes listed here, the historical series of (nominal) GDP has been revised. Historical averages for spending and tax are calculated over the period 1996/97 to 2014/15.

¹⁴² Statistics New Zealand's most recent population projections (2016 base), which were released on 19 October 2016, have not been used in this version of the LTFM.

CPI measured inflation rate (annual growth per year)	2% from 2018	2% from 2021
Labour productivity growth per year	1.5% from 2020	1.5% from 2023
Long-term government bond rate per year	5.5% in 2020s, rising to 6% from 2030s	5.3% from 2025
Unemployment rate	4.5% from 2022	4.5% from 2021
Average weekly hours worked	33.20 from 2018	33.08 from 2022
Average hourly wage growth	3.53% from 2020	3.53% from 2023
Fiscal		
Revenue as a ratio of GDP	Core Crown taxation revenue building to 29% by 2020 and holding there (“Resume Historic Cost Growth”)	Core Crown taxation revenue building to 28.6% by 2027 and holding there (“Historical Spending Patterns”)
Expenditure	Growth controlled by operating allowances for three years (to 2015) Bottom-up projections begin in 2016	Growth controlled by operating allowances for five years (to 2020) Bottom-up projections begin in 2021
Operating allowance controlled expenditure (excluding health and education expenditure)	Growth controlled by operating allowances for three years (to 30 June 2015) Bottom-up projections begin in 2015/16	Ratio of nominal GDP: Operating allowance controlled expenditure (excluding health and education) are transitioned to a stable percentage of GDP from 2021 (i.e. expenditure is indexed to nominal GDP growth). Expenses reach a combined stable percentage of 6.8% once they all attain their long-term stable rates. A transition rate of 0.05 percentage points from the end of the forecast period is applied.
Health expenditure (non-demographic growth in spending in projection period)	Spending growth rate of 4.5% per year Healthy ageing effects modelled	Spending growth rate of 4.6% per year Healthy ageing effects modelled
Education expenditure (non-demographic growth in spending in projection period)	Spending growth rate of 3.9% per year	Spending growth rate of 4.1% per year
Other spending (non-demographic growth in spending in projection period)	Spending growth rate of 3.7% per year	Spending growth rate of 3.53% per year ¹⁴³
NZ Superannuation (NZS)	Per recipient spending indexed by nominal wage growth	Per recipient spending indexed by nominal wage growth

143 Reflects the non-demographic growth in nominal GDP, which is effectively the nominal wage growth rate.

Non-NZS welfare	Main benefits adjusted by CPI, some supplementary benefits adjusted by CPI and others by nominal wage growth	Ratio of nominal GDP: Main benefits, supplementary benefits and others reach a stable percentage of GDP. Total non-NZS welfare spending reaches a stable percentage of GDP of 4.7% (i.e. payments are indexed to nominal GDP growth).
Debt finance costs	Average of opening and closing stock for the year multiplied by an effective interest rate	Average of opening and closing stock for the year multiplied by an effective interest rate. This is transitioned to the 10-year government bond rate early in the projections.
NZ Super Fund contributions	Capital contributions resume in 2021; drawdown from the fund begins in 2032	Capital contributions resume in 2021; drawdown from the fund begins in 2033
Property, plant and equipment	Nominal GDP growth	Nominal GDP growth

The main assumptions behind the six social outcome scenarios are as follows:

Scenario A: Benchmark (Low ambition)

- Three and four-year-old participation of Early Childhood Education rises to 98 percent between 2021 and 2035
- Halve the number of school leavers with no qualifications by 2026
- NCEA2 levels rise to 95 percent by 2026
- Five percent higher tertiary attendance by 2028
- Reduced demand for main welfare benefits by 25 percent by 2026
- Reduced justice costs for six years from 2021. 10 percent saving by 2026
- Labour force increases by 40,000 at average wage by 2040

Scenario A: Benchmark (High ambition)

- Start with Scenario A: Low ambition
- Public health productivity growth of 0.3 percent per year above Historical Spending Patterns scenario
- Only two percent of students leave secondary school with no qualifications by 2026
- 15 percent increase in Effective Full-Time students in tertiary education by 2037
- Population projections replaced with higher life expectancy projections
- Further cost reductions in justice sector so costs fall to around 14 percent below the Historical Spending Patterns scenario in 2027
- Only 50 percent of people coming off main benefits take up supplementary benefits (lagged by a year) by 2031
- Labour force increases by 100,000 by 2040 and 130,000 by 2060 at average wage

Scenario B: Expert case studies

- Nine initiatives are implemented as recommended by experts in the field
- For each initiative, net fiscal impacts are layered over the Historical Spending Patterns scenario
- Labour force increases by an additional 34,000 workers by 2060

Scenario C: Broader investment in human capital

- Start with Scenario A: Low ambition
- Population projection replaced with higher life expectancy projection
- Public health productivity growth of 0.15 percent per year above Historical Spending Patterns scenario
- Health cost convergence reduces costs by five percent by 2035
- Higher NCEA achievement (97 percent)
- Effective Full-Time tertiary places grow by 10 percent through the decade ending in 2032
- Reduced demand for supplementary benefits by a further 50 percent by 2031
- Labour force increases by 100,000 at average wage by 2060

Scenario D: Equitable Māori outcomes

- Start with Scenario A: Low ambition
- Interventions reduce the risks to Māori of long-term unemployment and incarceration to the risk faced by the rest of the population
- Estimated cost of main benefits reduced to 65 percent of the Historical Spending Patterns scenario over a 35-year period
- Supplementary benefits reduce at a quarter of this rate, lagged a year
- Estimated cost to the justice sector reduced to 52 percent of the Historical Spending Patterns scenario over a 35-year period

Scenario E: Reduce risk of poor outcomes for the most vulnerable

- Start with Scenario A: Low ambition
- Interventions halve the probability of long-term unemployment and incarceration for the most vulnerable and more gradually reduce risk for others
- Assume welfare and corrections/courts costs reduce to 88 percent and 79 percent of the Scenario A levels respectively by 2055

Scenario F: Regional

- Start with Scenario A: Low ambition
- Interventions lower the probability of long-term unemployment and incarceration for those living in the regions with the most risk to the average of the three regions with the least risk. For the most risky region this lowers the risk for most of the population to half of the pre-intervention levels with lower reductions for regions with lower initial risk profiles
- Assume main benefit and corrections/courts costs reduce to 87 percent and 82 percent of the Scenario A levels respectively by 2055

