



Why a report card?

There's an old saying that 'what gets measured gets managed'.

Single measures (such as Gross Domestic Product per capita) are really important, but they can never tell the whole story. New Zealand need to understand that whole story if we're going to be able to identify linkages, set priorities and make good choices.

The NZahead report card therefore seeks to arm New Zealanders with a Big Picture view of our overall, long-term performance – social, economic, and environmental.

The NZahead project is meant to stimulate better conversations between all New Zealanders about what is important and what we should do about it.

Why 16 measures, and why *these* 16?

Sixteen measures were selected in search of a balance between capturing enough information to make broad judgments about New Zealand's performance, without capturing so much that the details are overwhelming.

The measures have to be relevant to the quality of life of all New Zealanders. The report card must include measures from the social, environmental and economic dimensions to provide a balanced view of all strengths and weaknesses, opportunities and threats. There have to be some flow measures (such as GDP per capita) as well as some stock measures (such as household wealth) to reflect the balance between now and the future.

The measures should be reliable and accurate, and they should be frequently updated with long time series.

And we prefer measures that have direct international comparisons.

Not all of the measures meet each and every criterion. But taken as a whole we think they give a fair and balanced view of the state of New Zealand. We hope some measures will be improved as a result of including them in NZahead.

Who are you to make these judgments?

The entire purpose of NZahead is to encourage better conversations between New Zealanders about the country's choices. In part that is about more and better information: but it's also about having a robust dialogue. One idea or perspective is put forward, followed by counter-arguments, other ideas, questions and challenges. Strong opinion and disagreement is a sign of a democratic society's strength and vitality, not weakness, so long as it is done respectfully.

Have we got the right measures? Should we add some, which will require deleting others? What is causing the improvement or decline in a particular measure? How are they inter-related? And just what was the Director thinking when he gave that overall grade?

We would love for you to agree or disagree about any of it. We have placed some polls in the website to make it easy for you provide feedback. The most important question is the overall grade for New Zealand as determined by those who visit the website. The grade shown on the summary table is updated daily, and collected grades are averaged quarterly to provide 4 overall marks each year.

Why is it important for you to grade New Zealand yourself? There are two good reasons

- If you take your own position then you can better assess other points of view, including the Institute's
- The overall assessment can benefit from your judgement

Why an overall grade, and how is it decided?

The 16 measures are likely to be moving in different ways over time – better or worse, faster or slower. Each has different causes that create those effects, but there are also deep connections between them that play out over time: environmental performance, for example, is eventually going to show up in economic performance.

The overall grade from the Institute is a subjective judgment of what the 16 measures mean when viewed together over the long-term.

- The NZahead overall grade is updated each quarter by the New Zealand Institute's Director
- The grade shown in Your Voice is updated daily based on the responses of visitors to the NZahead website over the previous three months

How can I get involved in the conversation?

- Add your grade using the poll on the Your Voice page
- Have your say on the HearOurVoices website
- See what is being said by others using the Further Information links on the right of the webpages
- Follow us on our Facebook fan page
- Link to this website with the easy-to-install button below
- Let your friends and family know about NZahead using one of the share options at the top of this page
- Sign up for email updates here
- Email the NZahead team with your questions or comments

This is a first step and we know that NZahead can be improved.

We are not expert in all of the specialised areas reported in the measures. No doubt there are ways our interpretation or communication can be improved. You may even know of sources of international comparisons we have been unable to find. If you have a suggestion for improving the content of NZahead we welcome your input. Please contact.

We will update the measures and grades as new information becomes available, and in response to your comments.

Thanks

We couldn't have done this without help from many individuals and organisations who freely shared their information, advice and passion for New Zealand. (But we're responsible for all the judgments and any errors.)

- Child Poverty Action Group
- HRL Morrison
- KEA
- Liggins Institute

- Mental Health Organisation New Zealand
- Ministry of Agriculture and Forestry
- Ministry for the Environment
- Ministry of Economic Development
- Ministry of Health
- Ministry of Social Development
- National Institute of Water & Atmospheric Research
- New Zealand Institute of Economic Research
- New Zealand Superannuation Fund
- The Salvation Army
- Suicide Prevention Information New Zealand
- Solid Energy New Zealand Ltd
- Statistics New Zealand
- The Conference Board, Geneva
- Tindall Foundation
- University of Auckland
- Water New Zealand
- Women's Refuge



	Grade	NZ Rank	Trend	Latest Value	2015 Target	
Social						
Life expectancy	B	11th	✓	80.2 years	82.8	More
Unemployment	C	12th	✗	7.3%	4.0	More
Inequality	D	23rd equal	=	Gini value 33	30	More
Assault mortality	D	23rd equal	=	1.6 per 100,000	1.2	More
Suicide	C	13th	✓	11.0 per 100,000	9.0	More
Economic						
GDP per capita	C	22nd	=	\$46,683	\$56,000	More
Household wealth	D	Not available	✗	\$429,236	\$575,000	More
Labour productivity	D	22nd	✓	\$43 per hour	\$50	More
Innovation and business sophistication	D	21st	✓	4.4 Index value	5.0	More
Educational achievement	B	4th	✓	1043 Combined PISA score	1057	More
Environmental						
Agriculture and forestry land per capita	B	3rd	✗	2.9 Ha	2.4	More
Water quality	C	Not available	✗	0.99 mg/L nitrogen	1.00	More
CO2 concentration in the atmosphere	D	Not applicable	✗	387 ppm	395	More
CO2e emissions per capita	D	23rd	=	18.5 tonnes per capita	15.0	More
Invasive species	C	Not available		\$3.4b cost	3.4	More
Summary grades						
From the New Zealand Institute	C	Not applicable		C. Effort graded B-		More
Your voice	-			Awaiting your grade		More
Net migration of citizens	C	Not available	✓	-15,474 citizens	-15,000	More



From the New Zealand Institute:

Latest = C. Effort graded B

Grade:

C

'Could do better: too many areas of poor performance'

Trend:

X

Deteriorating

Rank: Not applicable

Why New Zealand matters

New Zealand is a country with high potential. Material wealth, a productive and beautiful environment, cultural richness and world-class institutions make it a great place to live. New Zealand's appeal is based on the whole package, not a single attribute.

Success depends on the package, so a suite of measures is needed to track how well the country is performing. Schools use report cards to identify opportunities for students to improve, and businesses use a balanced scorecard to monitor performance. For a country a set of societal performance measures provides an indication of whether outcomes are improving or not, and helps us to identify areas of improvement or where more effort is required.

Looking at all 16 measures to judge performance is complex, so it is helpful to have a summary measure that takes account of all the measures to form an overall conclusion. There are several ways a summary measure could be developed. The one chosen for NZahead is to make a qualitative assessment based on judgement. Others will make different judgements, which is understandable because people are likely to have differing views of what is important.

In forming an overall assessment, there are many considerations. How the country is performing now is important so GDP per capita, life expectancy and carbon emissions matter. The assets available for the future are important, so wealth and environmental quality matter too. Not everyone is doing well so inequality and outcomes for disadvantaged groups matter, not just the averages.

When forming a judgement about how New Zealand performs overall it is important to take account of how the country compares with other countries. New Zealand cannot escape competing with other countries to retain citizens, and to attract migrants and investment. Being a high quality country and improving outcomes is not enough if other countries are improving faster. The comparison used here is OECD countries; the developed and wealthy countries that are most like New Zealand.

The overall assessment answers an important question; should New Zealanders be happy that the country is performing as they want it to, or do we need better strategies or increased effort.

New Zealand's performance

Examining the rank within the OECD, for the 11 measures where comparisons are available, shows there are six measures where New Zealand is ranked between 21st and 23rd. New Zealand is between 11th and 13th for three measures, third for one and fourth for one.

There is an improving trend for six of the measures, and deterioration for five. New Zealand gets three B grades reflecting valuable strengths in education, life expectancy and in agriculture and forestry land per capita. But there are also seven D grades.

Looking beneath the summary measures, there are three important patterns in the data. First, despite improvements on average in some social measures, New Zealand's disadvantaged are not doing well relative to the disadvantaged people in other OECD countries. Second, relatively poor performance in innovation, labour productivity, GDP per capita, and wealth indicate that across the board economic performance must be improved. Third, New Zealand has important environmental strengths but environmental assets are being eroded, as they are for the world as a whole.

What is being done

For most of the measures, the importance of the measure is recognised, and there is action to improve outcomes. However targets are rare, and there is not a sense of mission about achieving improvements. More common is a sense of resignation about the status and trends. So there is effort but not high quality effort, and it is not very effective.

It is well understood by people managing performance improvement that best practice includes setting targets, developing and implementing strategies to achieve the targets, monitoring and reporting performance, and adapting strategies based on observations of outcomes. That performance management approach is used by businesses and schools and should be used for lifting country performance too.

NZahead cannot provide strategy for New Zealand as a whole, or for specific measures. The New Zealand Institute hopes that proposing measures and targets, reporting performance and encouraging conversations will increase commitment to achieving improvement, and lead to new strategies being identified.

Strategy development is complicated by the need to resolve trade-offs and make choices. New Zealand cannot reduce emissions without some short term costs. It is hard to save more to build wealth without reducing current consumption, and that will lower GDP per capita. Improving outcomes for disadvantaged people may cost money that could be spent on other things. Improving river quality means imposing costs on polluters.

If resources were unlimited a lot more could be done but resource constraints mean priorities must be set. There is a natural tendency to hold Government accountable for outcomes and to expect Government to provide the resources required. Realistically though, Government's resources and capabilities are constrained, especially at present, and success will depend on a coordinated effort by the whole nation. We are all in this together.

Sound strategies make choices explicit, and articulate the reasons for the directions chosen. They also involve prioritisation. Most important is to identify ways to improve outcomes that require redeployment of resources rather than increased resources. That requires sound analysis and creative solution development.

A great potential benefit of this process is to discover win-win situations, where trade-offs can be turned into opportunities. For example, what if the tension between water quality and agricultural output led to a business that generated energy from effluent, reducing pollution and increasing profits?

Rationale for the grade of C

With widespread recognition of the issues New Zealand faces, and action in place to improve outcomes on almost all the measures, there is definitely evidence of effort. On balance, New Zealanders care and are taking action, even if they are not confident that they will be successful. Overall a grade of B- for effort.

However, the effort is not being put to good use, failing to comply with best practice for performance management. Targets are not defined, progress towards those goals is not monitored, and objectives in one arena are not coordinated with efforts in another.

In terms of achievement, New Zealand is not currently a star performer. At some point in the past, New Zealand has performed better on most of these measures. Compared to the peer group of OECD countries, New Zealand is often found behind the average. There are a few areas of strength and lots of grades of C and D. That has to be worth more than a D overall. The overall grade cannot be a B, with so many C's and D's awarded. There is no strong evidence for overall improvement, or for deterioration. Therefore the overall grade for achievement is a C.

Life expectancy at birth:

Latest = 80.2 in 2007

2015 target = 82.8

Grade:

B

‘Living longer every year’

Trend:

Improving

Rank: 11th out of 30 OECD countries

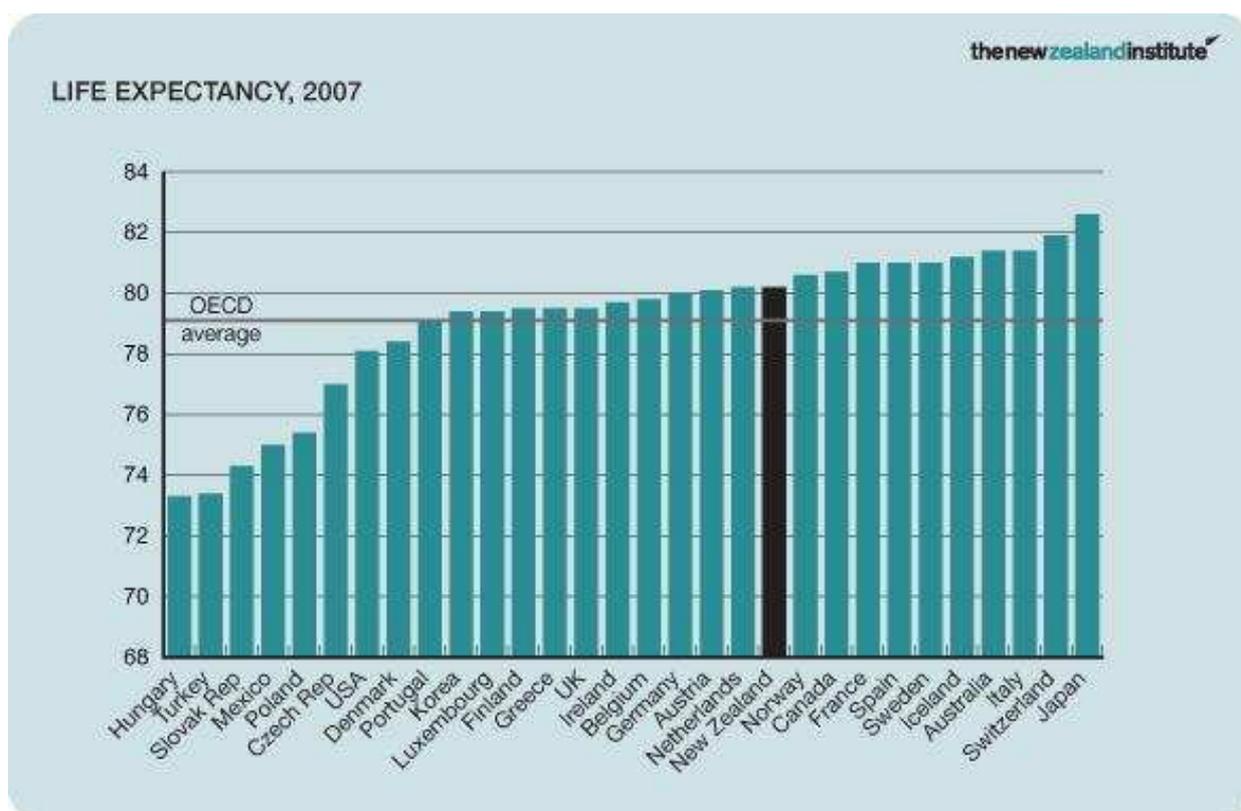


Figure 1

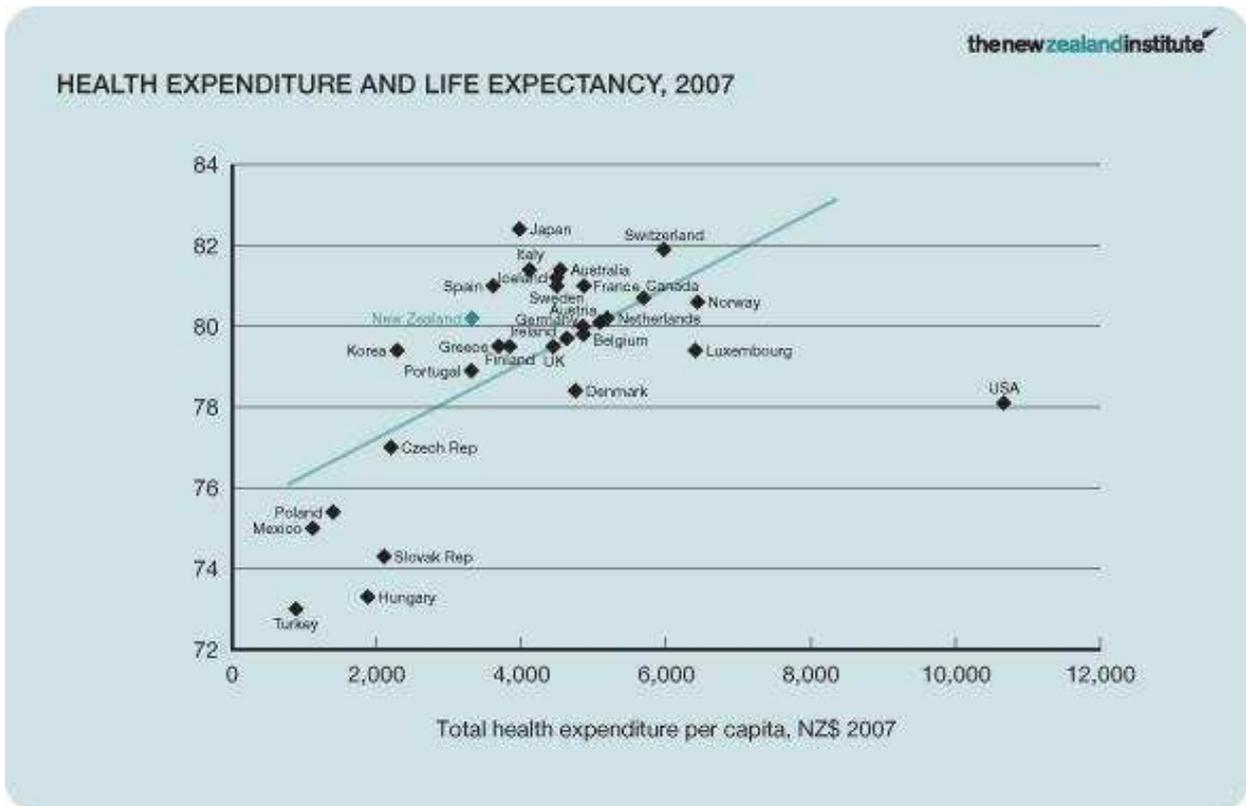


Figure 2

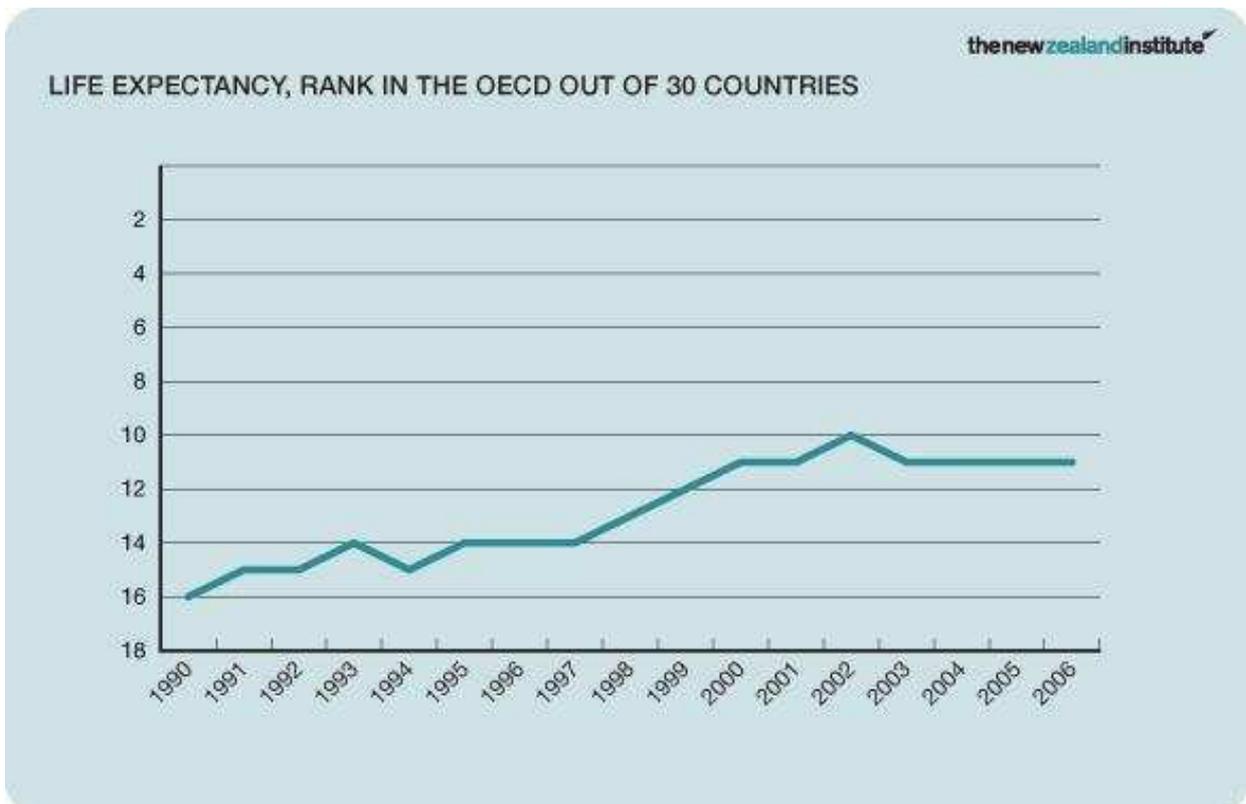


Figure 3

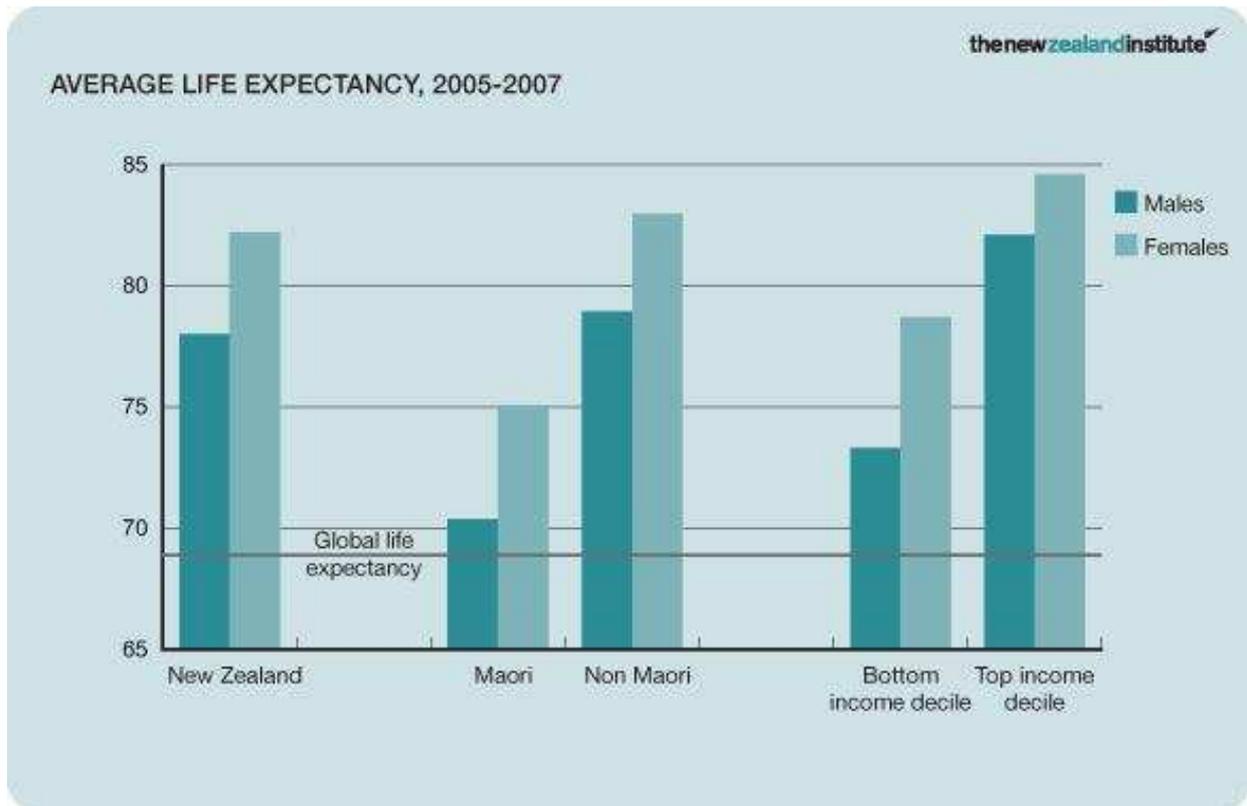


Figure 4

Why life expectancy matters

Life expectancy is an estimate of how long a resident can expect to live from birth. The measure is a high level summary of the health of residents in a country.

Life expectancy is driven by many factors. A higher income level, good diet, and regular exercise lengthen life expectancy while smoking, obesity, and excessive alcohol consumption reduce life expectancy. A family history of health problems may indicate genetic characteristics that result in a lower life expectancy. Factors that determine life expectancy in advanced economies like New Zealand are primarily the result of lifestyle choices. The availability and quality of health services also affect life expectancy.

New Zealand's performance

New Zealanders have enjoyed steadily increasing life expectancies over recent decades, arriving at a value of 80.2 years in 2007. As shown in the first figure, New Zealand is now ranked 11th among the OECD countries in life expectancy. That ranking is a major improvement compared with the 21st place New Zealand held in 1986 (Figure 2).

An aging population and increasing health care costs mean that health care spending will be an important key challenge for developed economies in future. New Zealand spends about \$3,300 per capita each year, or a total of 8.9% of GDP, on health. Healthcare expenditure of less than 10% of GDP is low relative to OECD peers, which may result from an inexpensive or efficient healthcare system, from not providing enough healthcare, or from having a young and healthy population. The third figure shows healthcare expenditure plotted against life expectancy for the OECD countries. New Zealand's location above the trend-line means it is a strong performer.

The final figure shows differences in life expectancy for these segments of the New Zealand population. Women live longer than men, in New Zealand and in other countries. On average people who earn the least, in the bottom decile of income, live 6 – 7 year shorter lives than those who are in the top income decile. Maori, on average, have life expectancies 8-9 years shorter than non-Maori. The differences are even greater for men. Life expectancy for male Maoris is only around 1 year above the global life expectancy of 69.

What is being done

Knowing about health risks can help people make choices that will lead to better health outcomes and longer lives. Some policies designed to improve life expectancy involve increasing public awareness about the consequences of such choices, and ensuring medical care is provided to address illness and injury.

Higher incomes promote longer lives and the average New Zealander's income has been increasing. The performance of health services has been an important concern of governments in New Zealand for some time with substantial effort going into ensuring that high quality outcomes are delivered cost-effectively.

Educational programmes and regulations to reduce lifestyle risks have been a feature of the health improvement efforts of successive governments. Driving behavior, smoking, exercise, sunburn, obesity and drinking have been targeted in various ways with some positive results in the first four but continuing adverse trends in obesity and binge drinking. In their report, *A Portrait of Health*, the Ministry of Health notes that approximately 28% of children in New Zealand and over 50% of adults are overweight or obese; 50% of young males and 30% of young females have a 'hazardous' drinking pattern.

The Ministry of Health's current strategy, *Better Health for All*, focuses on targeting chronic disease, child and youth services, primary health care, the health of older people, and continuing to ensure value for money is achieved. The Ministry will continue to implement *Whanau Ora* to achieve improvements in Maori health and will introduce the *Ready for School* programme to better identify health problems in children. People in disadvantaged groups have higher exposure to many lifestyle risk factors so efforts to improve lifestyles, if successful, may help reduce life expectancy disparities.

Rationale for the grade of B

New Zealand has performed well overall with improvements in life expectancy absolutely and in the OECD ranking. Yet the large disadvantages of Maori and lower income groups, and the worsening trends in obesity and hazardous drinking are significant concerns. If New Zealand can establish trends to close the gaps and reverse obesity and drinking trends the grade should increase to A.

Target for 2015 of 82.8

New Zealand has recently seen life expectancy increase approximately 0.28 years per year on average. The target for 2015 is to achieve 82.8 years, which requires achieving recent growth rates. If this is achieved it would place New Zealand in the top 10 of the OECD rankings, assuming other countries also maintain their current trends.

Analytical description

Life expectancy at birth indicates the total number of years people are expected to live, based on the mortality rates of the population at each age. The measure is useful as an indicator for the health and physical wellness of the population. Recent increases in life expectancy have been attributed to improved health measures.

The estimate of life expectancy at birth is calculated based on age-specific mortality tables. The 2009 age-specific mortality for 53, for instance, is calculated based on the number of the population who died during 2009, aged 53 and those aged 53 who did not die. Life expectancy is then based on combining the age-specific mortality for each year of life to develop a projection of all the ages at which those born now might die, then taking an average of those ages of death.

Under such a calculation method, life expectancy is based on the recent but historical experience of the population. Assuming ongoing improvements in health care, someone born today could therefore reasonably expect to live to an even greater age, based on the treatments for a 53 year old being better and therefore more successful 53 years from now than they were last year. However, as these figures are all averages with a distribution around the estimate, we know that there are some who are born today and are not very lucky who will never get to 53 at all. Life expectancy is more relevant to a population than to predicting the life span of a specific individual.

The data is rigorously collected, highly standardised, and has limited errors or skews across countries or recent history, so comparisons can be reliably made. Changes in life expectancy are generally small, and slow to respond to policy and changed circumstances, particularly in larger populations. OECD updates the data at the end of June each year, and their data on New Zealand is collected through the New Zealand Ministry of Health. More information is available at <http://www.oecd.org/health/healthdata> or www.moh.govt.nz or www.socialreport.msd.govt.nz

Figure 1: OECD, data retrieved from <http://stats.oecd.org/index.aspx> on January 25, 2010, average is an unweighted average of country data. Data are for 2007 for all countries except Canada, Italy, the UK and the US. Data for these countries are from 2006.

Figure 2: OECD, data retrieved from <http://stats.oecd.org/index.aspx> on January 25, 2010.

Figure 3: OECD, data retrieved from <http://stats.oecd.org/index.aspx> on January 25, 2010
Health expenditure is better defined here <http://www.ecosante.org/OCDEENG/411000.html> but is reported by the OECD in 2006 US\$PPP, converted to New Zealand dollars with an exchange rate of 0.70 for 2005, 0.65 for 2006, 0.74 for 2007, retrieved from the Reserve Bank New Zealand at www.rbnz.govt.nz. Data for Canada, Italy, Japan, Luxembourg, Portugal, the UK and the US are 2006. Data for Turkey are from 2005.

Figure 4: Ministry of Social Development, 2009 Social Report, retrieved from www.socialreport.msd.govt.nz on December 19, 2009. World life expectancy value is 68.9 years based on World Bank figures.

Percent unemployed:

Latest = 7.3

2015 target = 4.0

Grade:

C

'Doing well overall but neglecting the young'

Trend:

X

Deteriorating

Rank: 12th out of 30 OECD countries

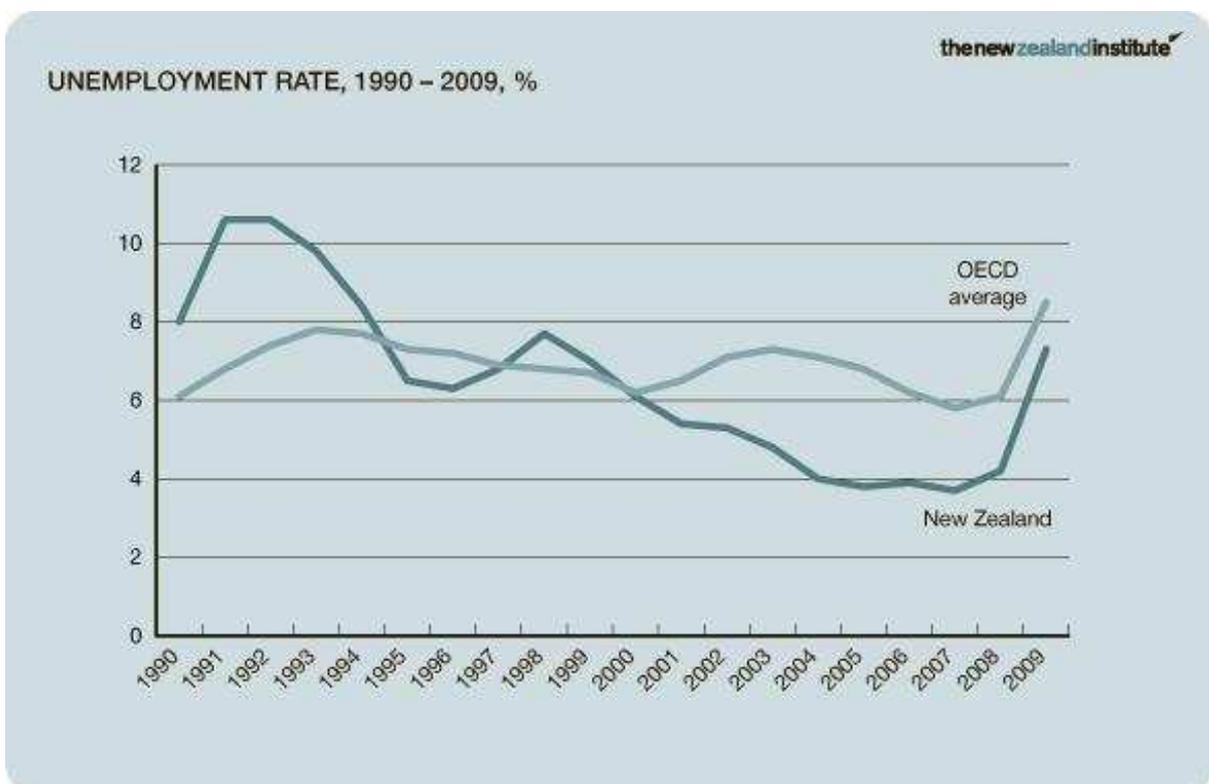


Figure 1

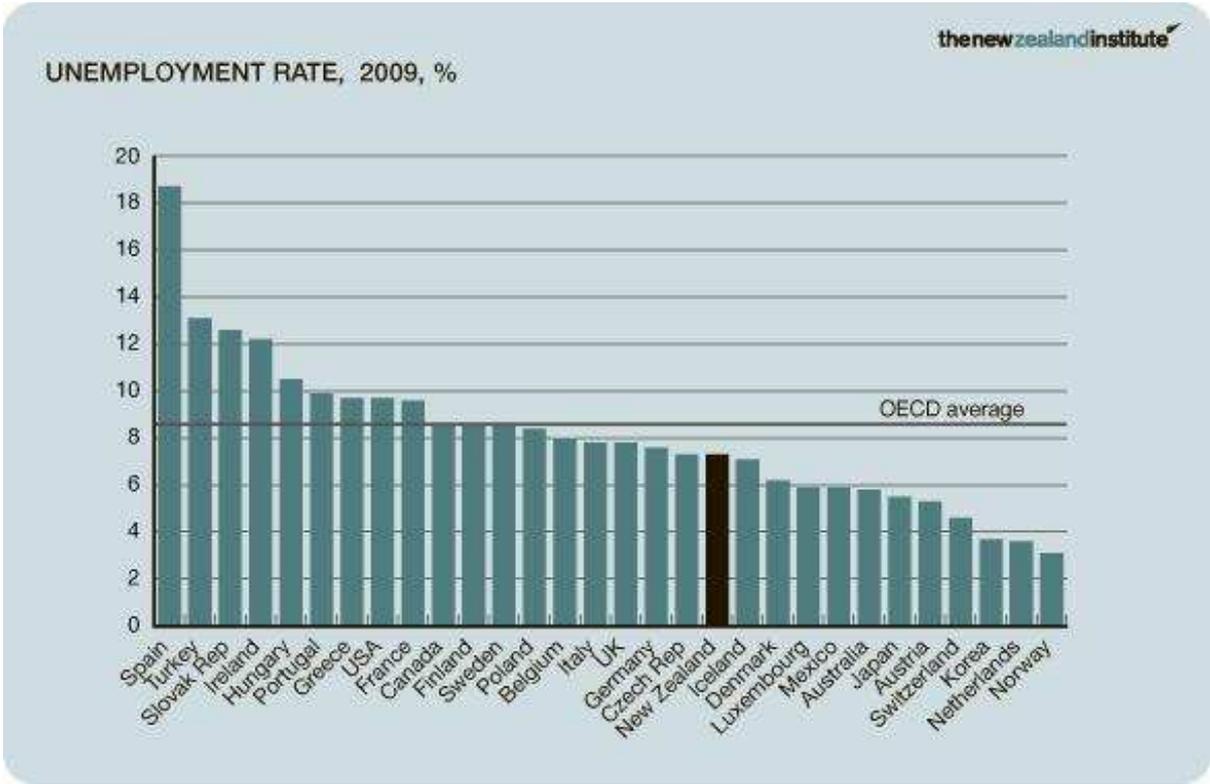


Figure 2

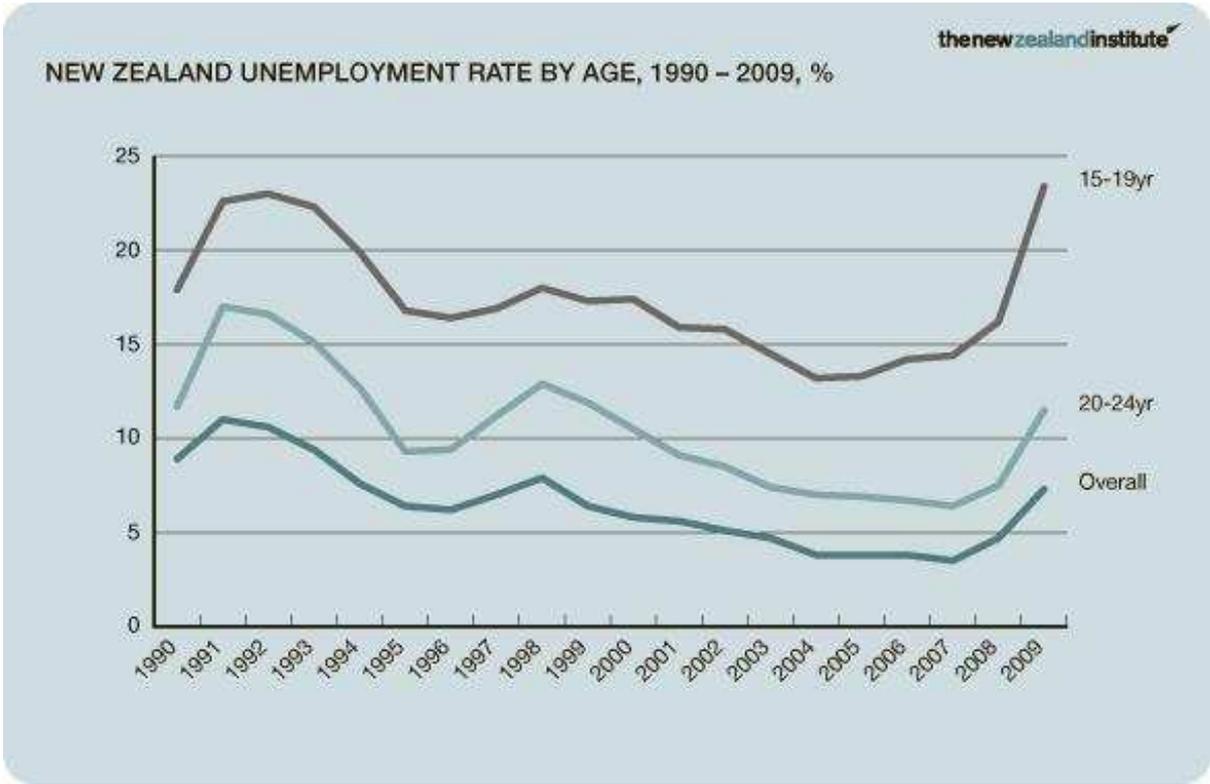


Figure 3

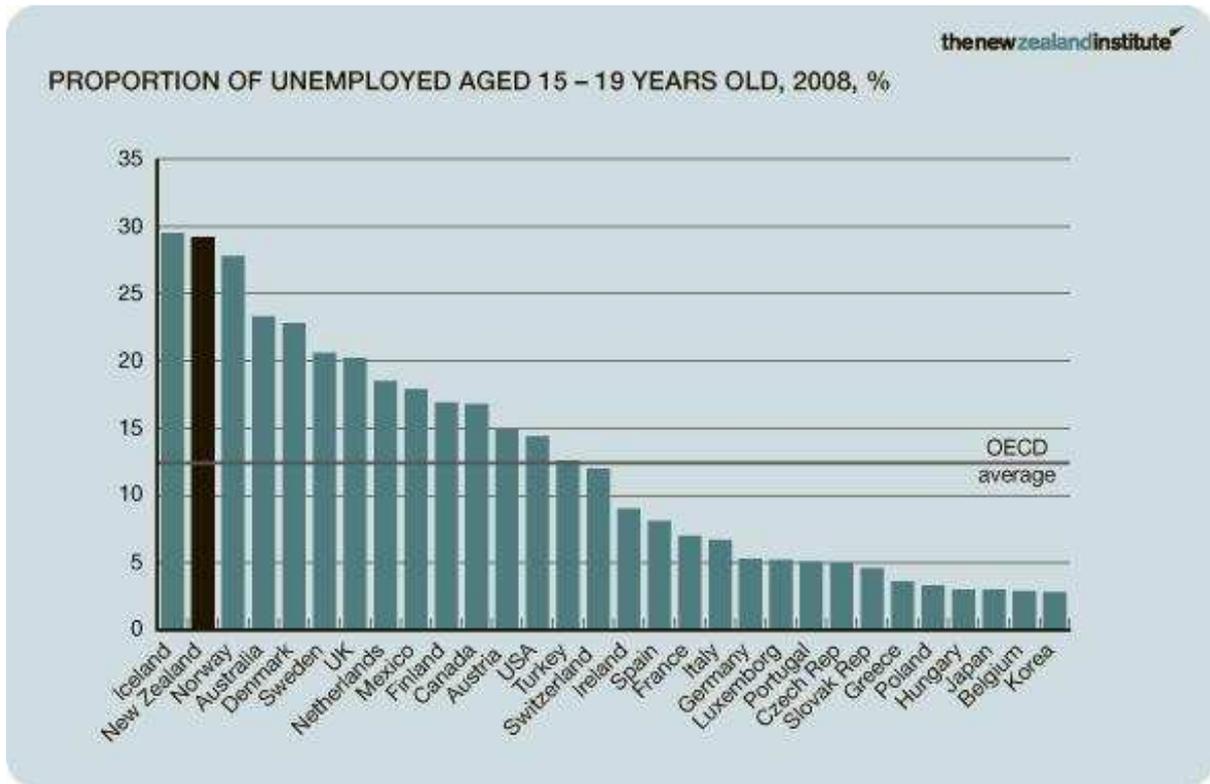


Figure 4

Why unemployment matters

Unemployment affects the individual and the households they live in. Unemployment is associated with serious problems including reduced self-esteem, depression, more risk of illness, greater likelihood of committing crime, and of suicide.

Young people are especially vulnerable to unemployment because they are not already established in the workforce and they have not yet developed the skills needed to compete with older workers. If young people are not in education or employment they are not learning skills they will need in later life and may make bad choices about how they spend their time. The resulting social and skill deficits may affect them for a long time and reduce the contribution they make to New Zealand’s community and economy.

Unemployment increases welfare payments. In September 2008 almost 30,500 people were receiving the unemployment benefit with an annualized cost of just over \$500 million. By September 2009 the number of people receiving the benefit had doubled to 61,000.

Reduced income as a result of unemployment leads to less spending in the economy, exacerbating the recession because businesses lose revenue so they reduce their workforce to lower their costs.

New Zealand’s performance

Prior to the recession unemployment was low in New Zealand and there were shortages of skilled and unskilled workers. By September 2009 there were 150,000 registered unemployed people in New Zealand, with around 40% of them receiving unemployment benefit.

New Zealand’s unemployment rate has risen faster during the recession than the rate in OECD countries on average (Figure 1). Currently the unemployment rate is 7.3%, almost double the unemployment rate of 2007. The unemployment rate is still lower than the OECD average of 8.6%, and New Zealand is ranked 12th out of the 30 OECD countries (Figure 2).

Youth unemployment is different. Figure 3 shows New Zealand ranks 29th out of 30 OECD countries for the proportion of unemployed who are 15-19 year olds. New Zealand's position is only slightly better for 20-24 year olds. Over 20% of 15-19 year olds are unemployed and over 10% of 20-24 year olds.

In New Zealand, young people make up a very large proportion of unemployed people. Figure 4 shows almost 30% of the unemployed in New Zealand are aged 15-19 compared with around 12% for OECD countries, on average. Around 40% of New Zealand's unemployed are aged 15 – 24.

What is being done

New Zealand's response to the recession has been remarkable in some ways. Average hours worked per week in New Zealand reduced from 35 to 33, reflecting what could have been a 4% increase in unemployment but instead was shared across the workforce. Many businesses are making efforts to avoid making workers redundant by reducing working hours. Businesses are motivated partly by desire to look after their workers and partly by wanting to retain capacity and capability to grow again once economic conditions improve.

A nine day fortnight scheme was introduced by the government to abate the impact of the global economic turmoil which New Zealand businesses and their employees faced. The job support scheme was initially aimed only at private sector businesses with 100 or more employees. Uptake within the programme was limited, but the evidence discussed above indicates businesses may have adopted the idea independently. Government also introduced the Restart programme which is a package of payments, employment and job services to help people who have recently been made redundant from full-time work.

A Youth Unemployment Package was introduced in August 2009. The package, costing \$152 million, aims to create about 17,000 job opportunities for young people over the next two years. The package will create 4,000 new tertiary training places for 16 and 17-year-olds. In addition, it includes 4,000 job placements of 6 months for low-skilled young people in businesses and about 3,000 of up to 6 months in community programmes. This package was justified by claiming it is important that young people do not become completely detached from the world of skills and work. The intention is to make sure New Zealand does not risk diminishing the potential of a generation of New Zealanders whose work opportunities have been affected by the recession.

Rationale for the grade of C

New Zealand entered the recession with an unemployment rate of 3.5%, below the OECD average, and at that time was 7th in the OECD. New Zealand's unemployment rate in December 2009 is 7.3% and the country has slid to 12th in the OECD.

The unemployment rate is relatively low but New Zealand's overall grade is reduced due to poor performance in youth unemployment. Youth unemployment rates are much higher than adult rates and have been above the adult rates for many years. The Youth Unemployment Programme was introduced to avoid diminishing the potential of a generation of New Zealanders but the program funded only 17,000 opportunities for so only a portion of those at risk will be helped.

A grade of B would be awarded if New Zealand's rank in the OECD improved to previous levels or if action to improve outcomes for youth has a positive effect.

Target for 2015 of 40%

Between 2004 and 2007 New Zealand managed steady unemployment rates between 3.7% and 4.0%. The target for 2015 is 4% based on a return to a low rate.

Analytical description

The unemployment rate is the number of people aged 15 years and over who are not employed and who are actively seeking and available for paid work, expressed as a percentage of the total labour force.

The labour force is defined as the population aged 15 years and over who are either employed or unemployed.

The unemployed are defined in the Household Labour Force Survey as those who are without a paid job (or unpaid work in a relative's business) and who have actively sought work in the four weeks before the survey, who are available to take work or who have a new job to start within the next four weeks. "Actively seeking" includes any actions such as contacting an employer, asking friends and relatives and contacting an employment agency or Work and Income but excludes those who have only checked newspaper advertisements.

Persons temporarily absent from their jobs with no formal job attachment who were currently available for work and seeking work will be regarded as unemployed along with students, homemakers and others mainly engaged in non-economic activities who satisfy the criteria mentioned above will also be regarded as unemployed.

This information is collected by Statistics New Zealand as part of the [Household Labour Force Survey](#).

Harmonised unemployment rates used for international comparisons are seasonally-adjusted rates and conform with standard International Labour Organization guidelines for comparability.

The international comparison is from the [OECD](#)

Figure 2 has data for unemployment rates from the OECD countries from the 3rd quarter of 2009 or latest.

Figure 1: OECD: <http://stats.oecd.org/Index.aspx> and Statistics NZ data was used for New Zealand's unemployment rate _ <http://statisticsnz.govt.nz/> Straight average was used to calculate the OECD average.

Figure 2: OECD: <http://stats.oecd.org/Index.aspx> Straight average was used to calculate the OECD average. Unemployment rates for the OECD countries are from the 3rd quarter of 2009 or latest.

Figure 3: Statistics New Zealand: <http://statisticsnz.govt.nz/> Straight average was used to calculate the OECD average.

Figure 4: OECD: <http://stats.oecd.org/Index.aspx>

Limitations:

The definition of the unemployed excludes some people who regard themselves as unemployed, including the "discouraged unemployed" – those not meeting the "actively seeking work" criterion. This group is classified in the "not in the labour force" category.



Gini value (lower is better):

Latest = 33

2015 target = 30

Grade:

D

'A big gap between rich and poor'

Trend:

=

Stable

Rank: 23rd equal of 30 OECD countries

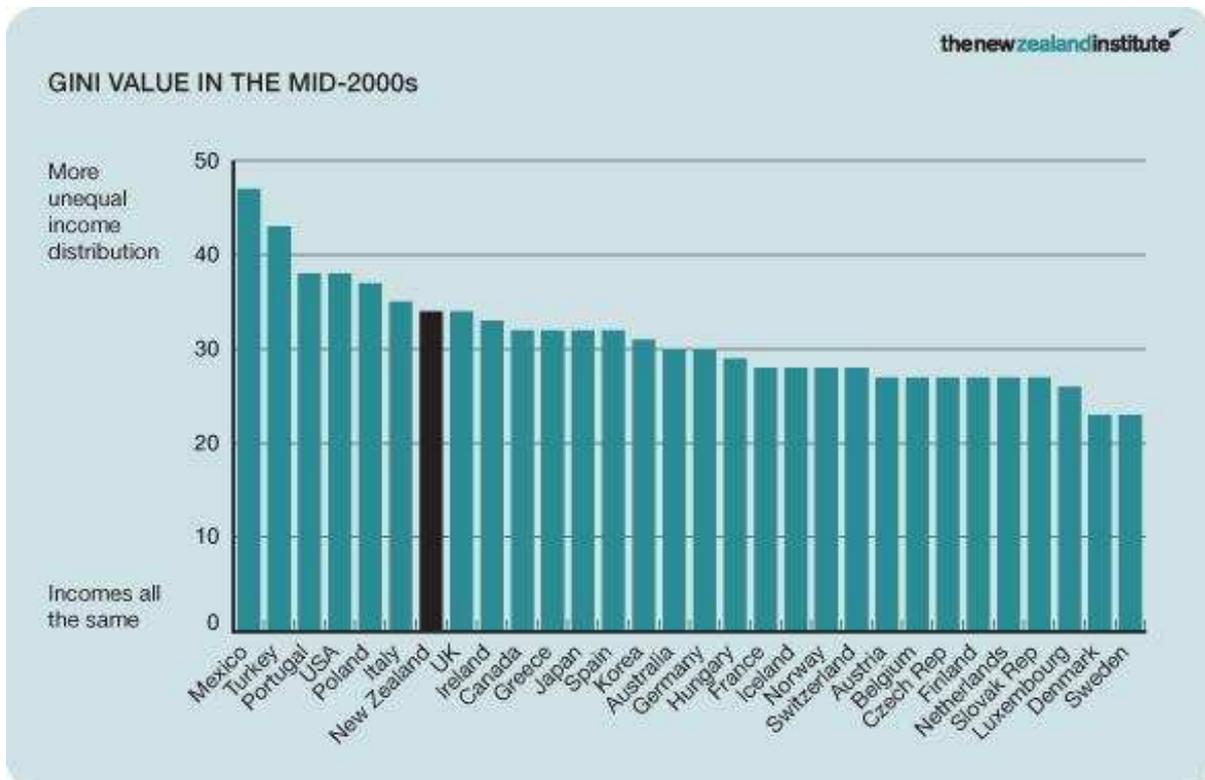


Figure 1

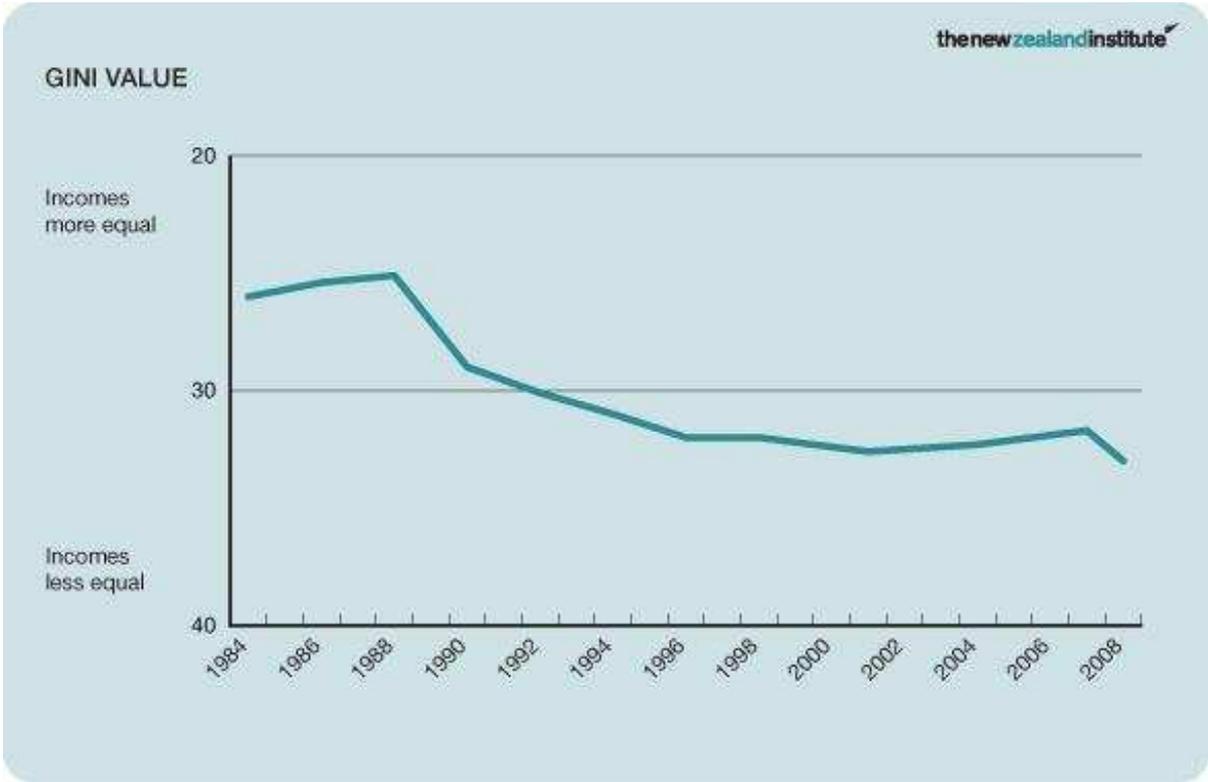


Figure 2

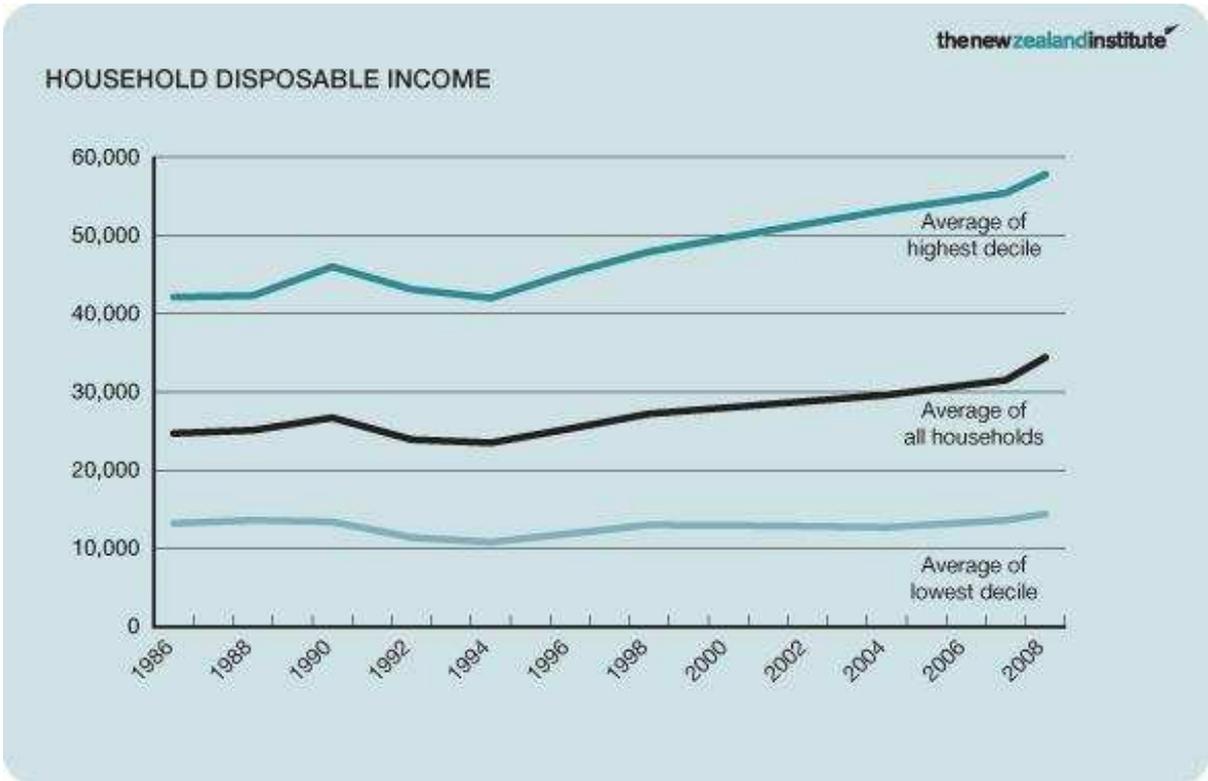


Figure 3

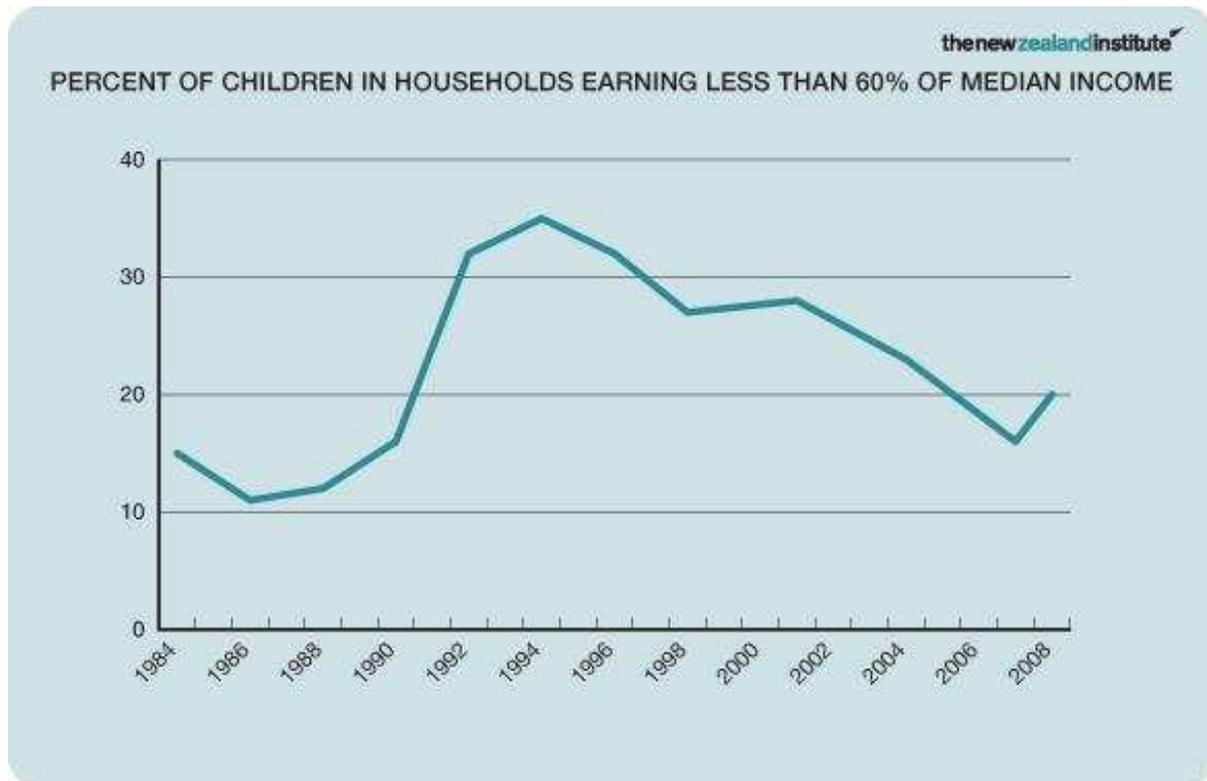


Figure 4

Why inequality matters

“The test of our progress is not whether we add more to the abundance of those who have much, it is whether we provide enough for those who have too little.”

- Franklin D. Roosevelt, US President 1937

The original intent of this measure was to assess the progress New Zealand achieved in the sense that Franklin Roosevelt described it. Having too little is often understood to mean that one cannot meet basic needs like food and housing. Such absolute poverty may not be as useful a yardstick for advanced economies because there are generally few truly impoverished people in the community, so inequality is the measure assessed here. Inequality is a measure of relative deprivation, representing the gap between the richest and the poorest, or the extent of the range of distribution of wealth levels.

Poverty is always undesirable in a society whereas some inequality can be beneficial. Inequality can provide incentives to aim higher and worker harder. Too much inequality however leads to unhappiness, frustration and stress.

Several measures can provide an indication of how equal or inequal is the distribution of wealth or income within a society. Many involve substantial calculations and they are not simple, intuitive measures. The Gini coefficient has been chosen because it is widely used and has an extensive dataset that includes many countries. A more detailed description is provided below in the section labeled Analytical Description, but the important thing to understand about the Gini is that lower values reflect greater equality and a more even distribution of income, and a zero value would mean perfectly even income distribution.

New Zealand’s performance

The first figure shows that New Zealand’s Gini value of 34 was well behind the OECD average value of 31 in the mid 2000s. New Zealand is one of the less equal countries in the OECD, sharing the 23rd rank with the United Kingdom.

The second figure shows that New Zealand had a much more equal distribution of income in the 1980s, which deteriorated rapidly over a decade and has been basically flat recently. Note that using

the convention of preferred outcomes at the top or right of the page, the figure shows the more equal Gini values at the top.

Another way of assessing wealth distribution is shown in the third figure. The middle line represents average disposable income before housing costs for all New Zealand households. The line at the top shows the average disposable income of those households in the highest decile. The line at the bottom shows the average disposable income of those households in the lowest decile.

The difference in growth rates shown in Figure 3 between 1994 to 2008 is actually quite small, but the average 2.3% annual growth for those in the highest income decile resulted in an additional \$15,800 whereas the 2.1% growth rate for households in the lowest income decile provided only an additional \$3,600.

The fourth figure shows the percent of children in households earning less than 60% of the median income. The percent of children disadvantaged more than doubled from the 1980s to the 1990s, and despite a steady decline through most of the new century, has not returned to the 1980s levels. The number of children raised in relative poverty began to increase again from 2007 to 2008.

The Innocenti Report by Unicef placed New Zealand 22nd out of 24 countries on the percentage of children in households with equivalent income less than 50% of the median income, based on 2000-1 data. Similar data for 2005 showed that New Zealand's rank was 19th of 29 OECD countries. Comparing those ranks with the data in Figure 4, showing households below 60% of median income, however, indicates that New Zealand is likely to remain a bottom-third performer in the OECD.

Susan St. John of the Child Poverty Action Group (CPAG), notes that the Ministry of Social Development's 2008 survey of living standards, reported 19 per cent of children are experiencing "serious hardship" and "unacceptably severe restrictions on their living standards". Having about one out of every five children facing 'unacceptable' restrictions is a situation that must be improved.

What is being done

Working for Families was introduced to help low to middle income families by providing extra support. The decline in child poverty levels shown in the fourth figure has been attributed to the effect of the Working for Families programme. Both CPAG and the recent Tax Working Group note that benefits and tax programmes are not well coordinated, making families face poorly structured incentives as a result.

Three and four year olds are now entitled to 20 hours of free early childhood education. Over 80% of eligible children in early childhood education are making use of these hours.

It does not appear that there will be a joint review of tax and benefit programmes, and the Government has announced intended changes in how beneficiaries will be assessed. There are suggestions these changes will exacerbate inequality for children in particular.

We are not aware of policy specifically addressing inequality. No targets have been discussed or set.

Rationale for the grade of D

Despite any perception New Zealanders may have of their country as fundamentally egalitarian, all but 6 of the OECD countries are more equal in terms of income distribution. Most other OECD countries are at a level which New Zealand also once had, and children enjoyed better outcomes at that level. The lack of recognition and response results in an overall grade of D.

Target for 2015 of 30

The OECD average Gini value is drawn on to set the target for this measure, at 30. A Gini value of 30 today would rank New Zealand's performance just behind Australia.

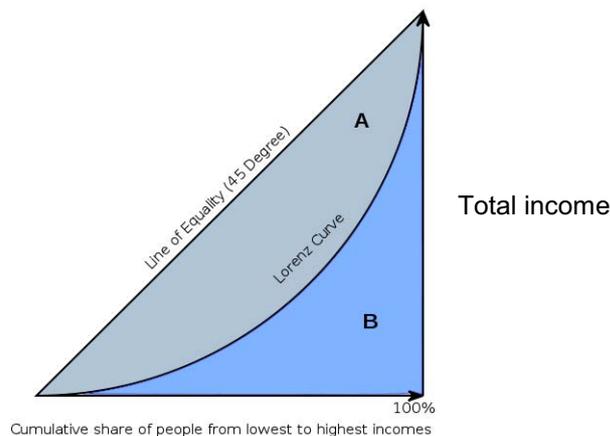
Analytical Description

The Gini value has been used as an international comparison measure. Treasury describes this measure as

“a statistical measure of inequality and ranges between 0 and 1. In a state of perfect equality, where every person has the same household income, the Gini coefficient would be 0. In contrast, in a state of complete inequality where only one household receives income, the Gini coefficient would be 1. An increase in the Gini coefficient indicates that income has become less equally distributed. Gini coefficients are a common summary measure in the literature on income distribution.”

The measure is calculated as the ratio of area A to area B, as shown in the chart below.

The x axis is the cumulative income of those arranged from lowest on the left to highest on the right. The top value on the far right represents the total income of the country. If income was distributed perfectly evenly, and everyone earned exactly the same amount, the graph would show a line running up the chart at a 45 degree angle. If, however, there were variations in income, the line would first move at a slope of less than 45 degrees while accumulating the incomes of those earning the least, then increase at a slope of more than 45 degrees when adding the incomes of those who earned more.



The Gini value is calculated based on the ratio of the area marked A to the area marked B. The smaller the area marked A, the closer the line is to the perfectly equal 45 degree line, and the lower the Gini value.

Equivalised household disposable income is the measure shown in Figure 3 and behind the calculations for Figure 4. Disposable household income is the total of all after-tax income for all household members. Equivalising is a means of standardising household incomes in terms of household size and composition so that the relative material wellbeing of households of different sizes and compositions can be more sensibly compared. The adjustment also makes comparisons over time more realistic because it takes into account the changes over time in the composition and average size of households. There is an excellent discussion of what is and is not included in the process of equivalising in the Household Incomes report cited below, running from page 11 to page 15.

Figure 1: OECD, data retrieved from <http://stats.oecd.org/index.aspx> on November 17, 2009. Note that this dataset is from a different source and varies slightly to the dataset shown in the second figure. Caution should be used in comparing data across the two sources.

Figure 2: Data are from table D.15 in *Household incomes in New Zealand: trends in indicators of inequality and hardship 1982 to 2008* prepared by the Ministry of Social Development in 2009. Available at www.msd.govt.nz/about-msd-and-our-work/publications-resources/monitoring/household-incomes/index.html Please note that the continuous line in the figure is drawn based on datapoints for only every other year from 1986 to 1998, then 2001, 2004, 2007 and 2008.

Figure 3: Data are from Table D.1 and D.6 in *Household incomes in New Zealand: trends in indicators of inequality and hardship 1982 to 2008* prepared by the Ministry of Social

Development in 2009. Available at www.msd.govt.nz/about-msd-and-our-work/publications-resources/monitoring/household-incomes/index.html

This information is reported in 2008 dollars. The decile boundaries have been calculated by the Ministry of Social Development. Please note that the continuous lines in the figure is drawn based on datapoints for only every other year from 1986 to 1998, then 2001, 2004, 2007 and 2008.

Figure 4:

Data are from table H.2 in *Household incomes in New Zealand: trends in indicators of inequality and hardship 1982 to 2008* prepared by the Ministry of Social Development in 2009. Available at www.msd.govt.nz/about-msd-and-our-work/publications-resources/monitoring/household-incomes/index.html Please note that the continuous line in the figure is drawn based on datapoints for only every other year from 1986 to 1998, then 2001, 2004, 2007 and 2008.

Assault mortalities per 100,000:

Latest = 1.6

2015 target = 1.2

Grade:

D

'Deaths stable but reported violence increasing'

Trend:

=

Stable

Rank: 23rd equal out of 28 OECD countries

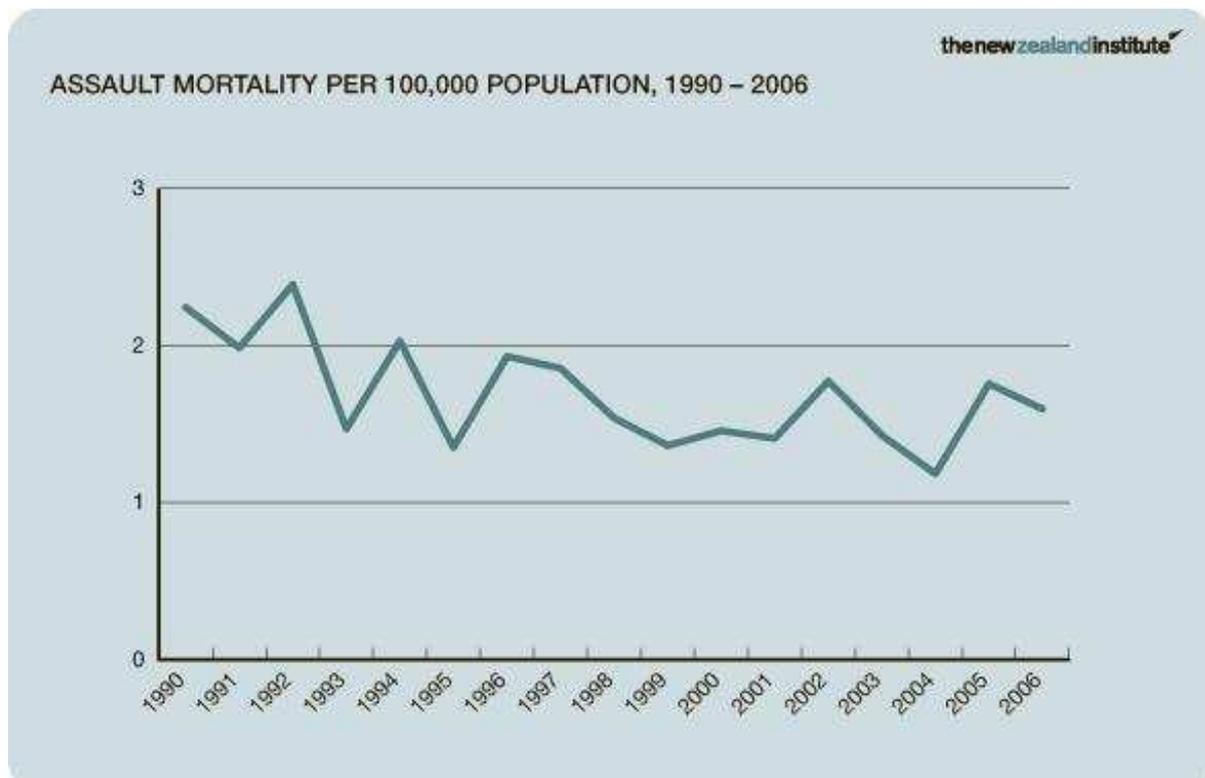


Figure 1

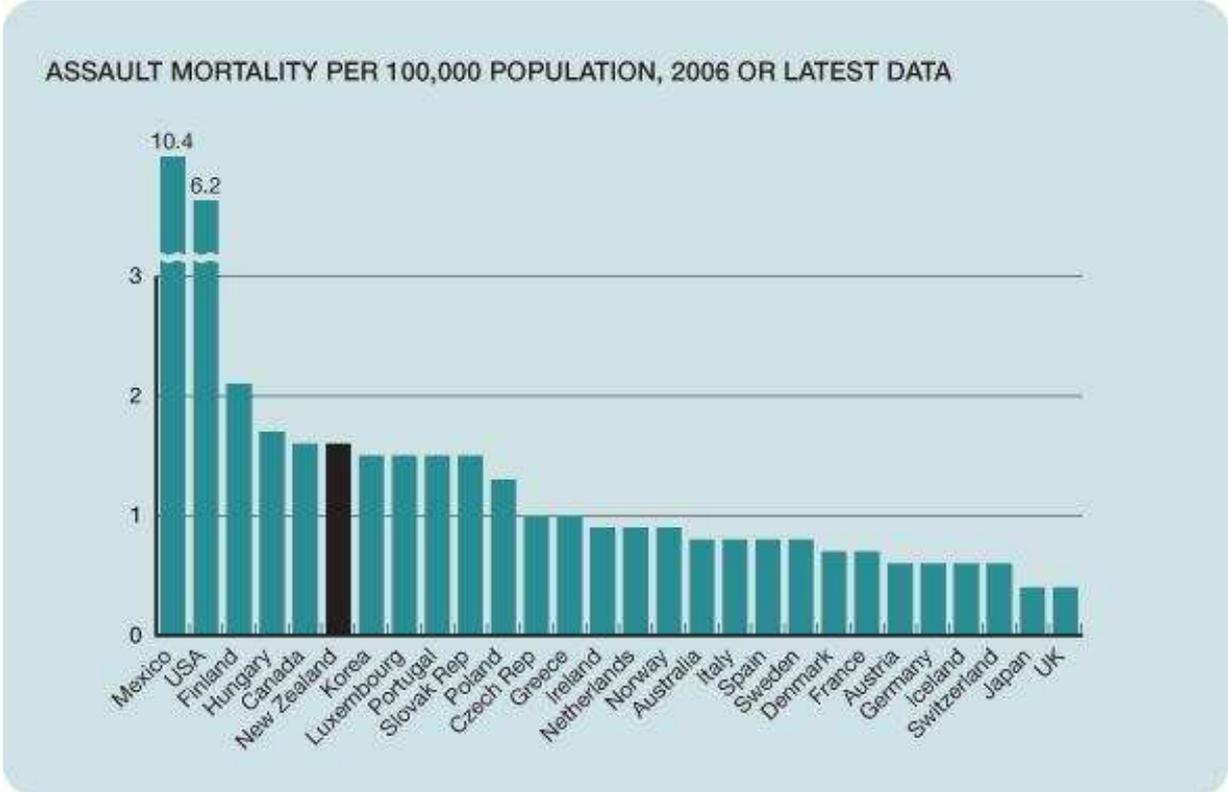


Figure 2

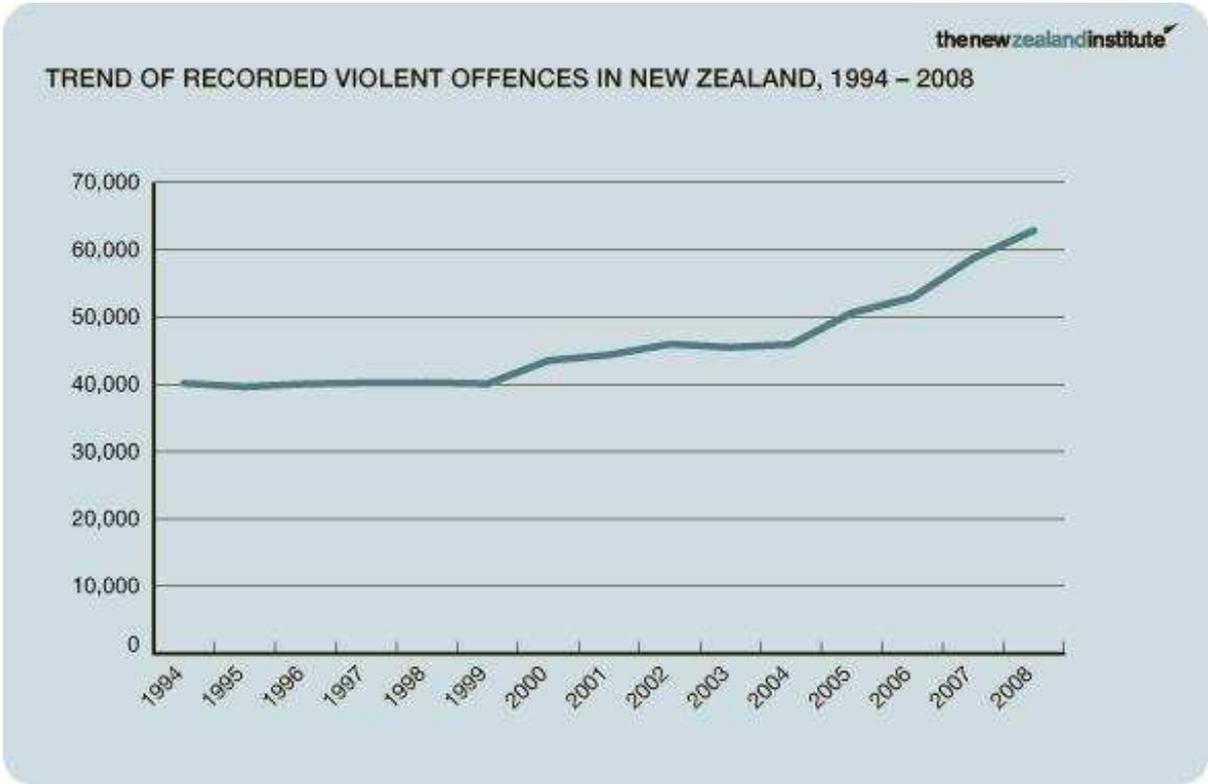


Figure 3

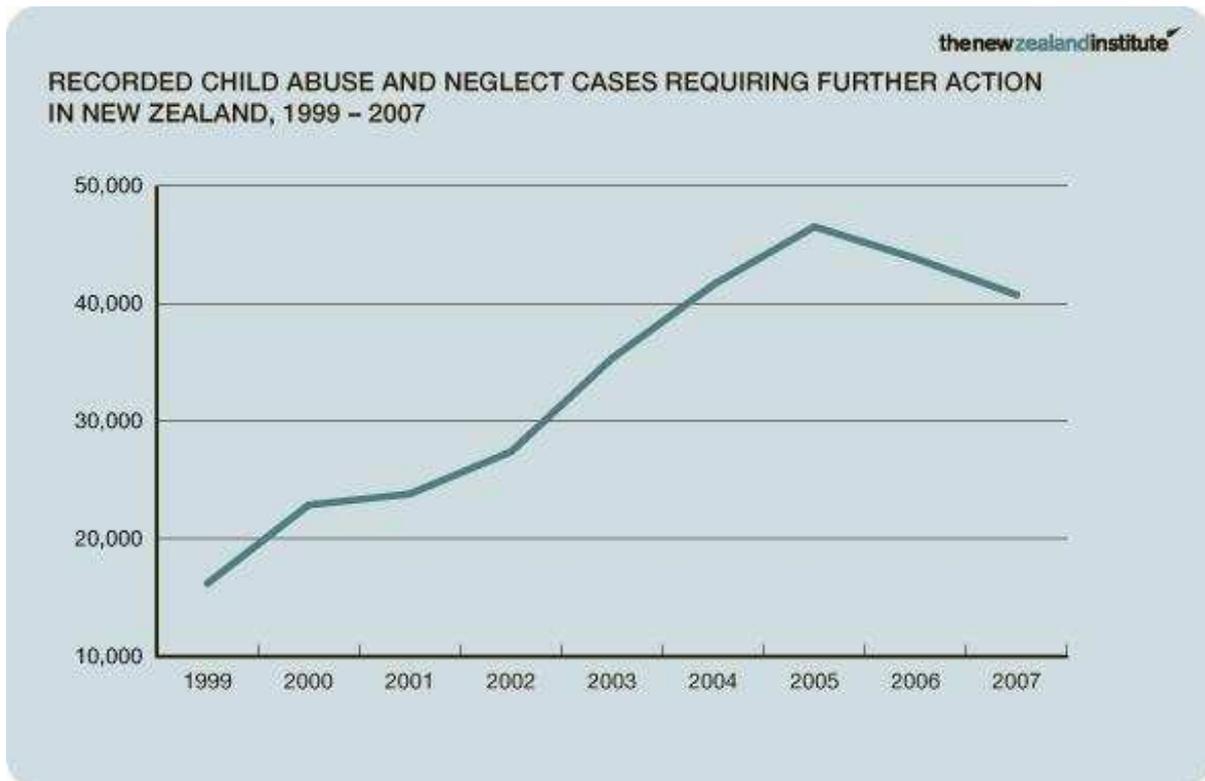


Figure 4

Why assault mortality matters

The assault mortality rate measures the risk of death from intentional assault. It contributes to perceived personal safety. Assault mortality is the tip of the iceberg of violence in a country. A country with a high prevalence of violence is likely to have a high assault mortality rate. The advantage of assault mortality as a measure of violence is that it is less affected by under-reporting and by changes in the likelihood that crimes will be reported.

Violent crime affects many more people in New Zealand, with almost 1,000 violent crimes reported per death from assault.

Family violence causes approximately one-third of assault mortality. It is estimated that family violence costs government approximately \$1.2 billion dollars a year in health care, welfare payments and law enforcement. It also costs New Zealand employers, through absenteeism, when offenders and victims take time off work to deal with problems arising from family violence such as doctors visits or court appearances.

Violence against children accounts for around one third of family violence deaths, or one-tenth of reported deaths from assault. Research has shown that survivors of child abuse often suffer long term psychological effects including depression, post-traumatic stress disorder, substance abuse and suicide. Also, child abuse has been identified as one of the reasons why teenagers leave school early.

New Zealand's performance

. The assault mortality rate shown in the first figure fluctuates from year to year because of the small number of deaths, but despite the fluctuations one can see a definite improvement from 1990 to 2000. Despite holding that improvement into the middle of the 2000s, New Zealand's performance placed it 23rd equal out of 28 OECD countries reporting (Figure 2). New Zealand is amongst the worst performers in the OECD, behind only Mexico, and the US, Finland and Hungary.

Running counter to the trend shown in assault mortality is reported violent crime, which as shown in the third figure, has increased substantially since around 2000. Increased awareness and stronger social

disapproval can lead to increased reporting. Increased reporting of violence can be consistent with decreased levels of assault mortality if the reporting of violence means the behaviours are stopped before they result in death. Increases in reported violence that carry on for many years would not likely be the result of changes in reporting and therefore would be a cause for greater concern.

Comparisons of child maltreatment deaths are not readily available but a 2003 UNICEF report on child maltreatments in the 1990s ranked New Zealand 3rd worst, of 27 OECD countries. Since then, the number of notifications received by Child, Youth and Families relating to children being abused or neglected in New Zealand showed a worrying increase through 2005. Since 2005 the numbers have begun to decrease, but remain well above the levels reported in the 1990s.

What is being done

Programmes and policies to reduce assault mortality are targeted to reduce the violent crime issue in New Zealand.

The 1995 Domestic Violence Act was aimed at reducing and preventing violence in domestic relationships by recognising that domestic violence is unacceptable behaviour; and ensuring that there is effective legal protection for its victims. Also, Parliament amended the Crimes Act in 2007, and the defence of reasonable force used to correct a child was removed. Now parents have no justification available for being violent towards children.

The Ministry of Women's affairs has made violence against women one of its priorities. Sexual and domestic violence impact disproportionately on women. The Ministry has a specific focus on providing policy advice to reduce the incidence and impact of violence against women. They also conduct research to develop an evidence base to inform policy advice.

Rationale for the grade of D

The grade of D is because New Zealand performs poorly relative to OECD peers on assault mortality, and measures of violence and child abuse are rising. Efforts to address the violence may have resulted in increased reporting, but seem to be having little positive effect so far.

Target for 2015 of 1.2

In 2004 the assault mortality rate was 1.2 per 100,000 people. A target of 1.0 per 100,000 would be preferable because it would place New Zealand around the OECD average, but such a low target would be unrealistic given the starting position and the time it takes to change a violent culture.

Analytical Description

Assault Morality is the number of people who have died as a result of an assault, per 100,000 population.

Age-standardisation is an adjustment made to enable comparison across different population groups despite their different age distributions. This is required when the action measured is more or less likely at certain ages. A population with more people in the age group that takes that action more often may appear to have a higher rate than a population with fewer people in that age group, so age-specific rates are weighted to apply to a standardised population and enable comparison.

Violent offences involves either a direct act of violence against a person or a threat of violence. Note that the violent crimes offence does not include sexual offences.

Child abuse and neglect cases recorded by Child Youth and Family refer to those cases which required further action after being recorded.

Figure 1: OECD Health Data 2009 courtesy of the Ministry of Social Development. Data retrieved on 19th November 2009.

<http://www.socialreport.msd.govt.nz/safety/assault-mortality.html>

Figure 2: Statistics New Zealand. Data retrieved on 24th November 2009.

<http://statisticsnz.govt.nz/>

Figure 3: New Zealand Family Violence Clearinghouse. Data retrieved on 4th December 2009.

<http://www.nzfvc.org.nz/>

Figure 4: OECD Health Data 2009 courtesy of the Ministry of Social Development. Data retrieved on 24th November 2009. <http://www.socialreport.msd.govt.nz/safety/assault-mortality.html>

For international comparisons the data used is from 2006 or the latest available. Majority of our data sets come from 2006 and 2007. Japan, Austria, UK, Iceland, Ireland, Netherlands, Czech Rep, Greece and Finland had 2007 data sets available. New Zealand, Germany, Switzerland, Denmark, France, Italy, Sweden, Norway, Poland, Korea and Mexico had 2006 data sets available. Spain, Luxemburg, Slovak Rep and Hungary had 2005 data sets available. Australia and Canada had 2004 data sets available. Portugal had 2003 data sets available. Belgium and Turkey were excluded as they did not have data sets available.



Suicides per 100,000 population: Latest = 11.0 2015 target = 9.0

Grade:

C

'Reducing suicide rates'

Trend:



Improving

Rank: 13th out of 29 OECD countries

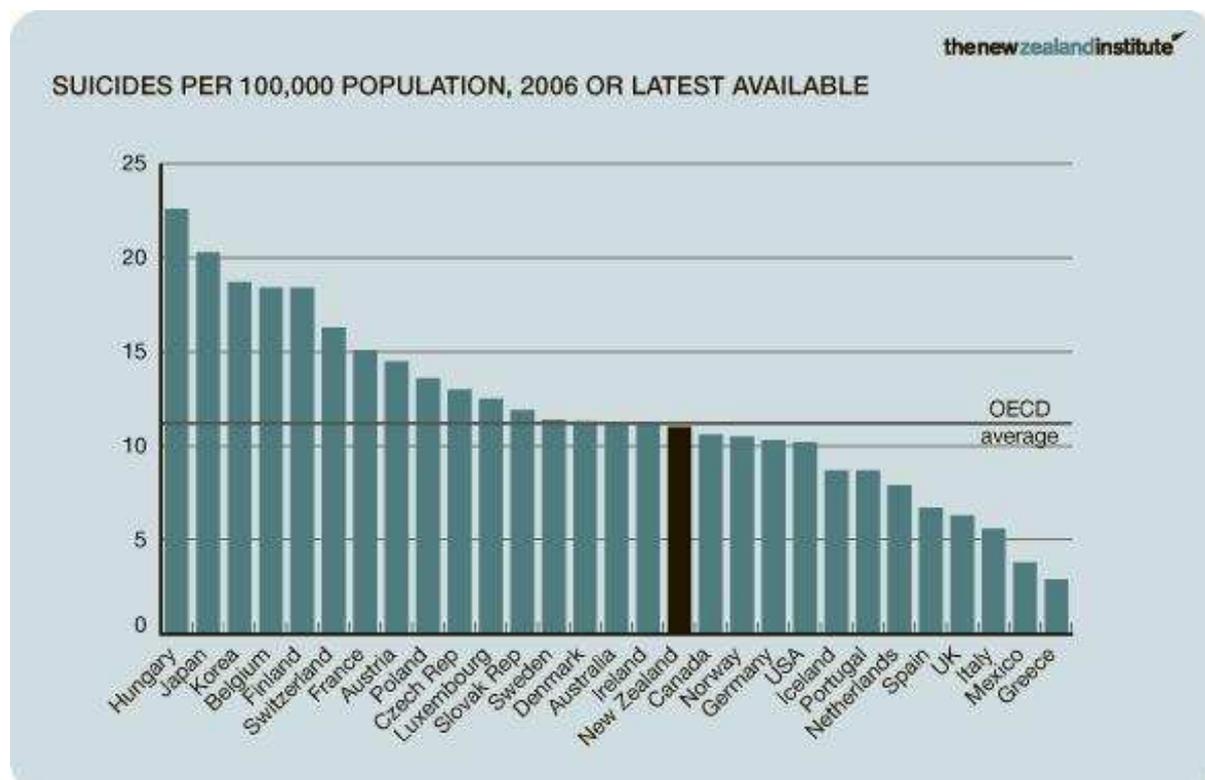


Figure 1

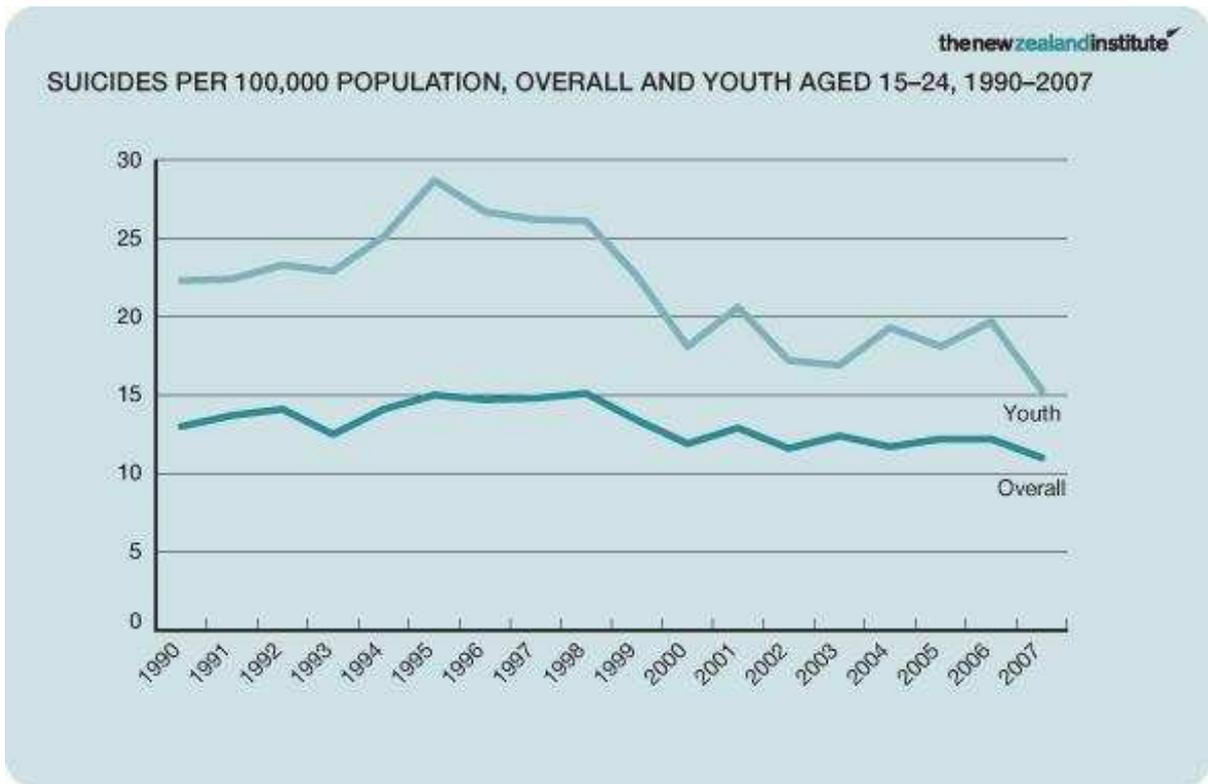


Figure 2

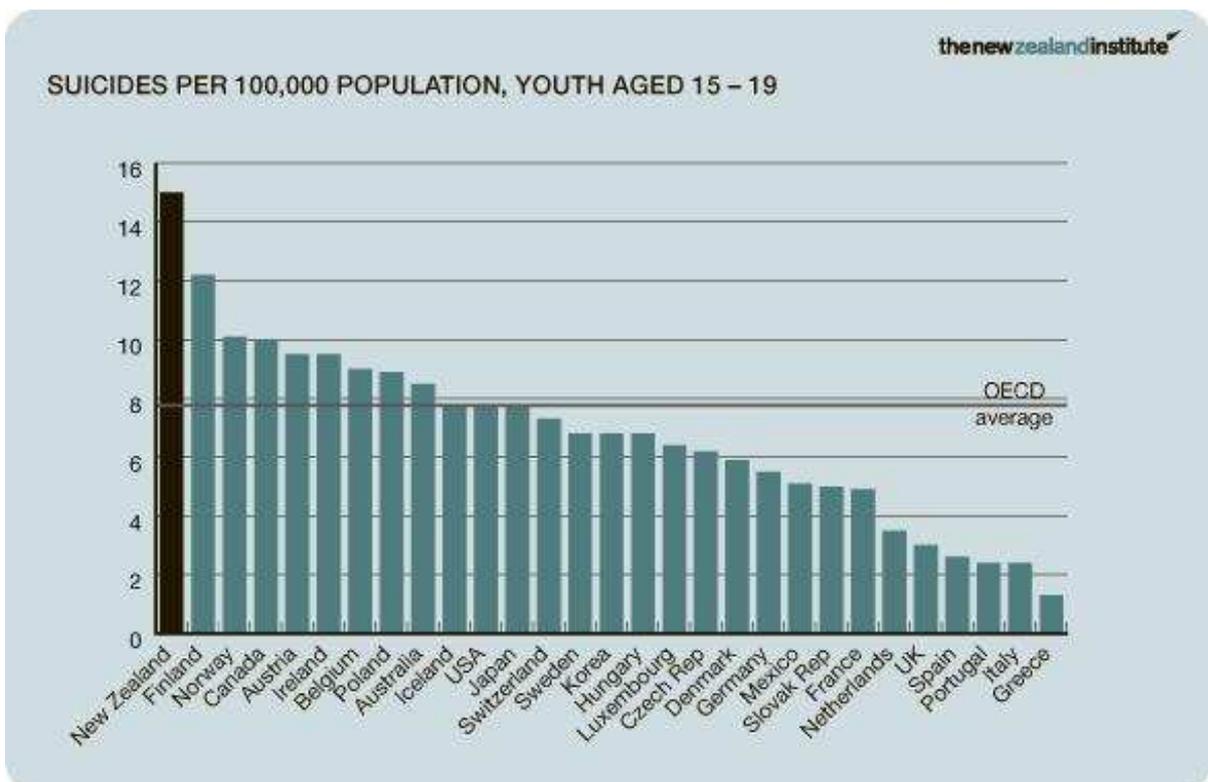


Figure 3

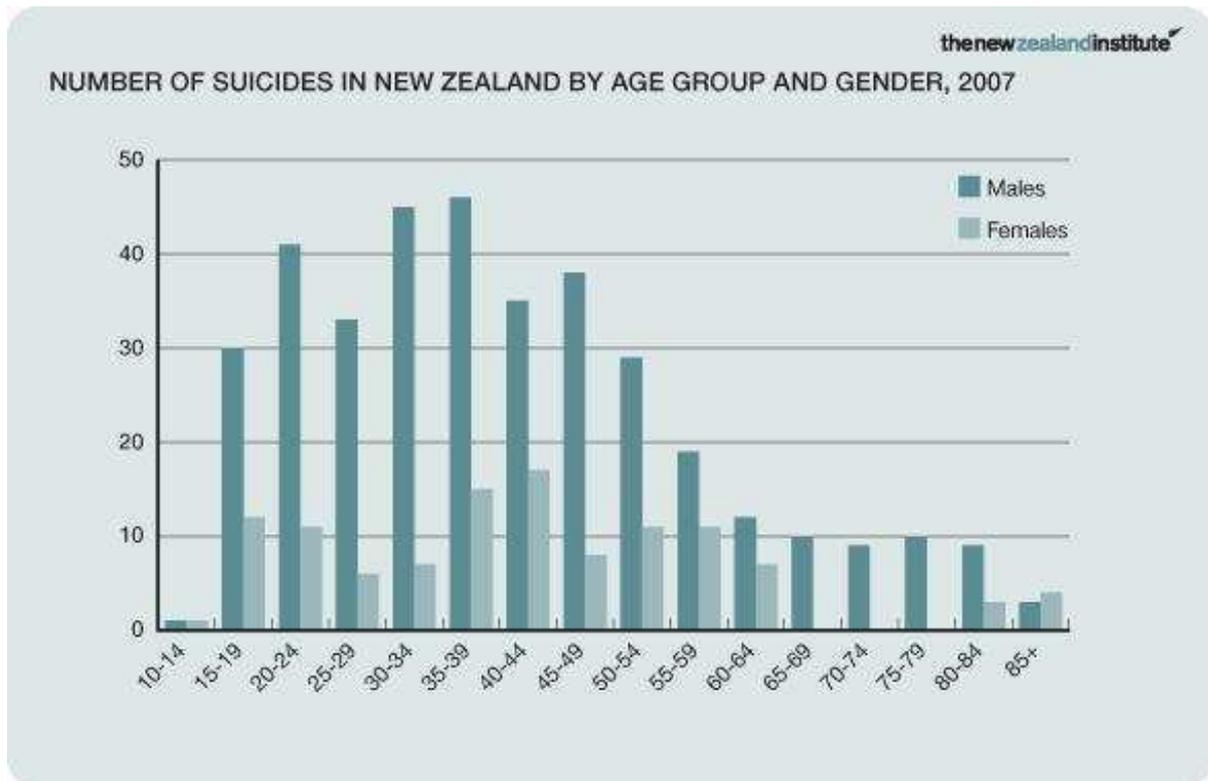


Figure 4

Why suicide matters

Suicide is an indicator not just of individuals unable to overcome a challenge or crisis, but of unaddressed mental disorders and a lack of social cohesion and integration.. People may suicide because they do not have the skills and resilience to resolve or overcome issues and then, when they encounter issues, there are insufficient protective factors to avoid the suicide.

Suicide rates are included in this report card partly as a proxy for mental health and community strength. Both the background factors that increase risk of suicide and the absence of protective factors that help to reduce suicide likelihood indicate deficiencies in social systems and poor social outcomes.

Recognised risk factors for suicide are a family history of suicide, low socio-economic status, childhood abuse or adversity, and specific personality characteristics like high levels of neuroticism, hopelessness, impulsivity, risk-taking, and low self-esteem. These background factors mean that when presented with a stress, often a conflict or loss or unemployment, an individual may consider suicide. Yet there are many people with these backgrounds who successfully navigate such stresses, and that is attributed to protective factors which lead the individual away from suicide.

Protective factors identified include an adaptable temperament, good self-esteem, problem-solving skills, social support and networks including a close relationship with at least one family member, and spiritual faith. Research on the degree of resilience provided by these factors is not comprehensive, and has been focused on youth in New Zealand to date, but advocates point out many of these factors also deliver other benefits. Overall, suicide rates indicate the degree of undiagnosed, untreated depression in the community.

New Zealand's performance

As the first figure shows, New Zealand's overall rate is near the OECD average. New Zealand has been around the OECD average for several decades, with slow improvements moving the country from just behind average to just better than average.

Figure 2 shows that the overall suicide rate has declined from around 15 per 100,000 in the 1990s to 11 per 100,00 in 2007. Recently the downward trend has slowed. The trend has been rated as improving but it is improving very slowly.

In the late 1990s, New Zealand was recognised as having amongst the worst suicide rates in the world for youth aged 15 – 24, and several targeted programmes were established. Figure 2 shows that youth suicide rates have declined a lot. However, as Figure 3 shows, New Zealand's youth suicide rate remains high relative to the rate in other countries.

What is being done

When youth suicide rates in New Zealand were recognised as relatively high, programmes were initiated under the youth suicide prevention strategy called In Our Hands / Kia Piki Te Ora O Te Taitamariki to address the issue. However, Figure 4 shows that youth suicides represented less than 20% of the suicides in New Zealand in 2007.

Programmes and policies to reduce suicide rates do not all specifically address suicide, but promote mental health and general wellbeing. Programmes focused on alcohol and drug services, relationship services education, and community development are expected to have an effect on suicide rates.

Suicide may be an individual action but successful suicide prevention is more often the result of collective behaviour. Systems that put the onus on individuals to seek help are less likely to be successful than approaches that recognise the role of social policy and public health. One of the priority goals of the current strategy is to increase support for primary care providers in the recognition, treatment and management of the mental disorders commonly associated with suicide.

Designing, managing and monitoring of programmes is provided through the NZ Suicide Prevention Action Plan, 2008-2012. The first year review recognises progress on all of the high priority areas, and identifies areas that require further attention including targeted initiatives for high risk groups, development of guidance materials for media coverage of suicide issues, and further focus on management of suicide risk through primary care services. About 70% of the actions in the plan are underway after the first year assessment, but there are further requirements in each of the high priority areas.

Rationale for the grade of C

New Zealand has established programmes to prevent suicides and support high risk groups, with admirable efforts at monitoring and better information collection.

The high rates of youth suicide should not distract from the data shown in the final figure. Influencing the overall rate will require efforts to address men of working age, who represented more than two thirds of the 483 suicides in New Zealand in 2007.

Until intervention programmes reduce the overall suicide rate to distinctly better than average outcomes, the grade is a C.

Target for 2015 of 9.0

The target for 2015 is 9.0 suicides per 100,000 population. Achieving the target would place New Zealand just inside the top 10 of the OECD ranking, assuming similar rates persist in other countries. Reaching an overall rate of 9.0 requires ongoing progress through established programmes targeting higher risk groups as well as across-the-board improvement.

Analytical Description

Suicide rates are reported as the number of suicides in a year, per 100,000 population. Suicide is relatively rare, so rates can vary a great deal from one year to the next because of the small numbers.

Conclusions should not be drawn from a few data points, and trends should be identified based on data over several years. In some countries death by suicide requires an official finding and delays in reporting suicide data are based on the time to complete these assessments.

Age-standardisation is an adjustment made to enable comparison across different population groups despite their different age distributions. This is required when the action measured is more or less likely at certain ages. A population with more people in the age group that takes that action more often may appear to have a higher rate than a population with fewer people in that age group, so age-specific rates are weighted to apply to a standardised population and enable comparison.

A comparison of international trends in suicide death is problematic due to the different methods used to classify suicide, and cultural bias may influence the likelihood of classifying a death as suicide. The New Zealand age-standardised rate in the international comparison data presented by the Ministry of Health has been calculated in a manner consistent with the international figures available, and may differ slightly from the rates presented elsewhere.

More information is available at www.moh.govt.nz or www.socialreport.msd.govt.nz

Figure 1: OECD, Ministry of Health. Retrieved from <http://stats.oecd.org/index.aspx> on January 25, 2010. New Zealand data 2007 from Ministry of Health retrieved as noted below. OECD average is an unweighted average of country data.

Figure 2: Ministry of Health. Retrieved from [http://www.moh.govt.nz/moh.nsf/Files/suicide/\\$file/suicidefacts2007-16dec.pdf](http://www.moh.govt.nz/moh.nsf/Files/suicide/$file/suicidefacts2007-16dec.pdf) on January 25, 2010.

Figure 3: OECD and Ministry of Health. Retrieved from <http://stats.oecd.org/index.aspx> on January 25, 2010. Data for almost all countries is the most recently available 3 year average, with the exception of New Zealand which shows only the 2007 value, a figure that has substantially improved over recent years. New Zealand data 2007 from Ministry of Health retrieved from [http://www.moh.govt.nz/moh.nsf/Files/suicide/\\$file/suicidefacts2007-16dec.pdf](http://www.moh.govt.nz/moh.nsf/Files/suicide/$file/suicidefacts2007-16dec.pdf) on January 25, 2010. Turkey did not report data on youth suicide. OECD average an unweighted average of country data.

Figure 4: Ministry of Health. Retrieved from [http://www.moh.govt.nz/moh.nsf/Files/suicide/\\$file/suicidefacts2007-16dec.pdf](http://www.moh.govt.nz/moh.nsf/Files/suicide/$file/suicidefacts2007-16dec.pdf) on January 25, 2010.

GDP per capita:

Latest = \$46,683 2015 target = \$56,000

Grade:

C

'Incomes below OECD average'

Trend:

=

Stable

Rank: 22nd out of 30 OECD countries

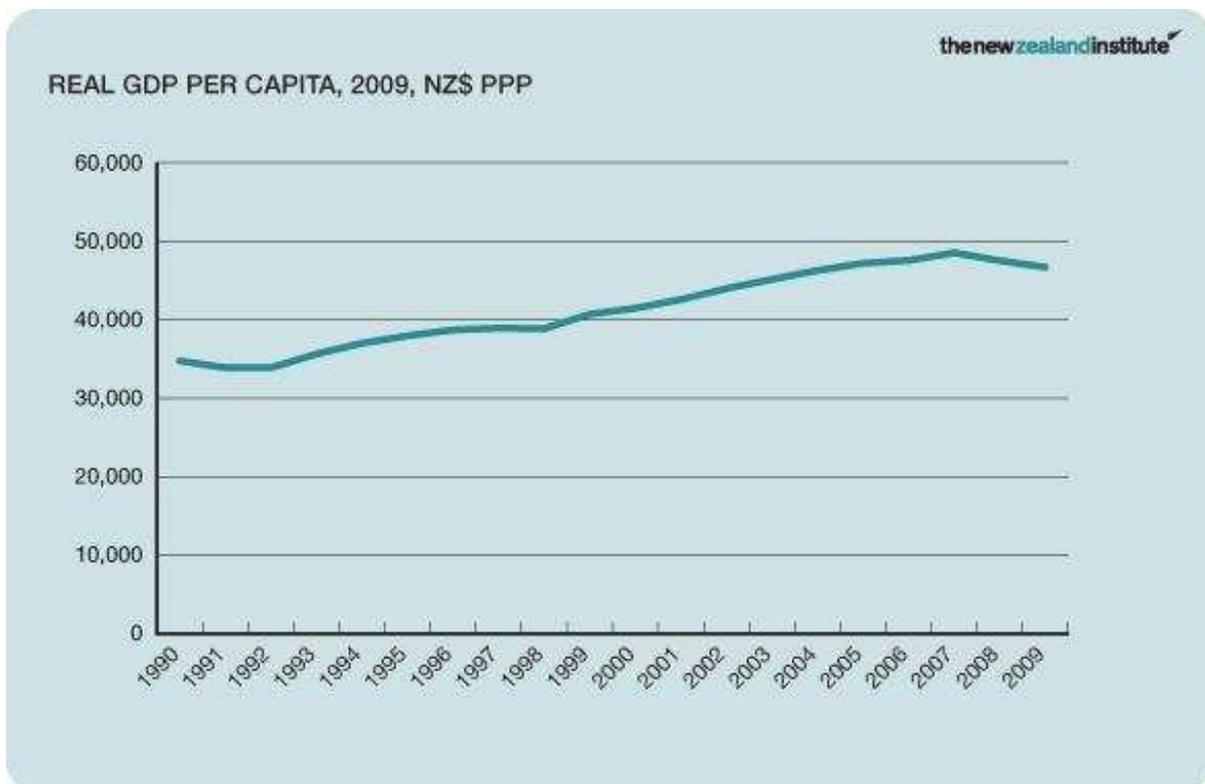


Figure 1

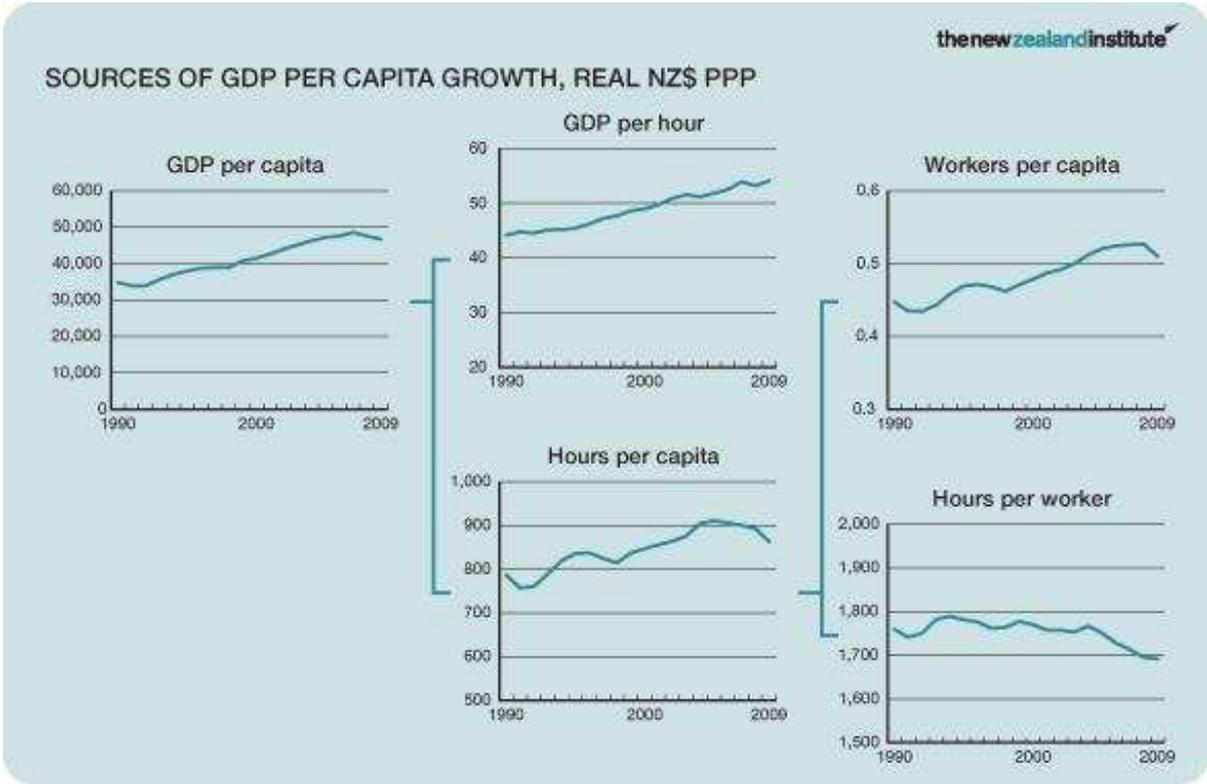


Figure 2

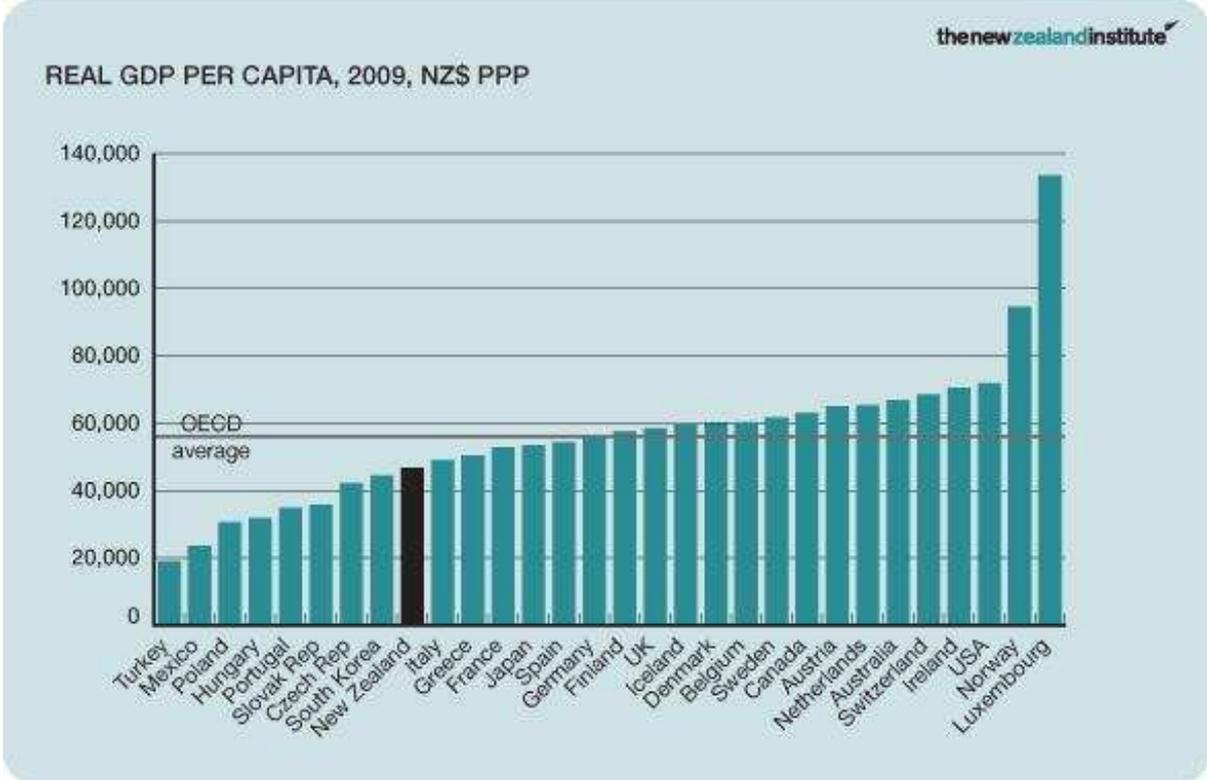


Figure 3

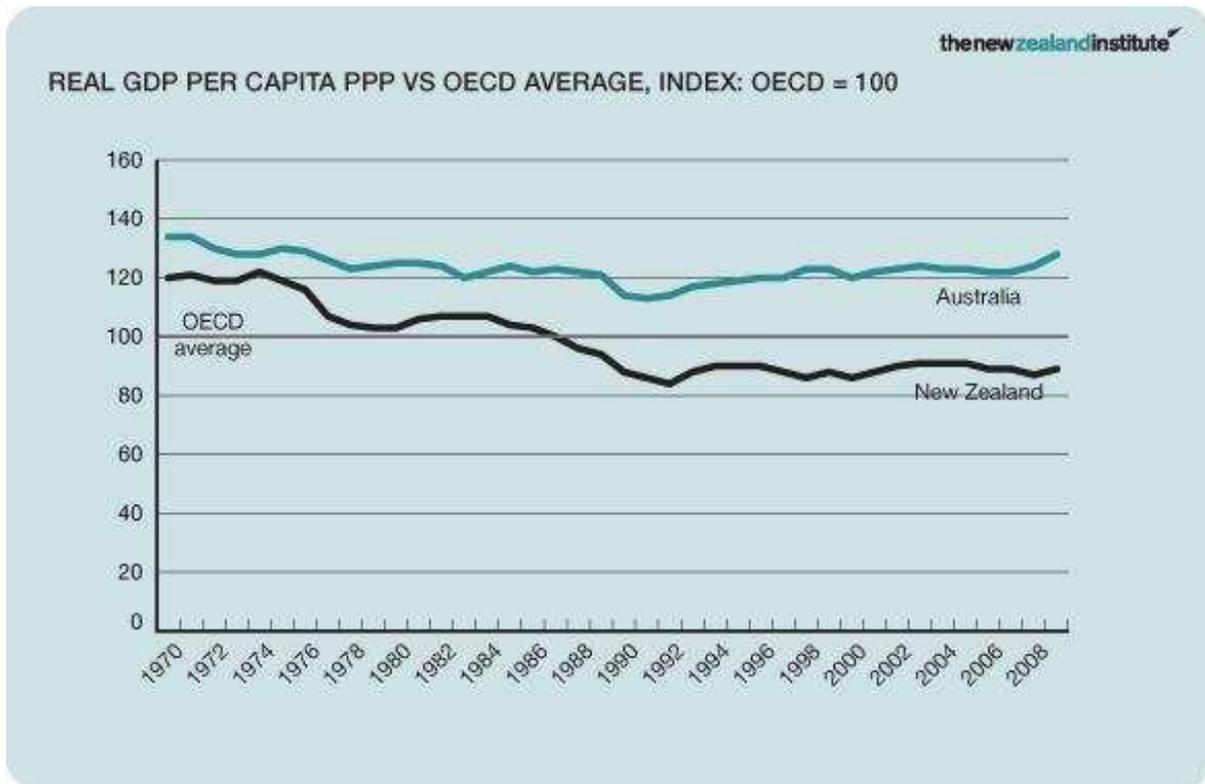


Figure 4

Why Real GDP per capita matters

GDP (Gross Domestic Product) per capita is a summary measure of the country's economic prosperity. The measure indicates the value of production per person within the country. Everything produced that has a price is meant to be included, and when the product or service is sold within the country's borders it contributes to national income.

Generally people pay for something because they want it, but sometimes one has to pay for something they do not want: like the cost of repairing a window broken in a burglary. Even if it is something that we consider bad, paying for it means that GDP is increased. And those things that are not priced, such as volunteer work, are not reflected in GDP.

- Shamubeel Equb video:
http://sta-nzi.shift.co.nz/index.php/nzahead/measures/gdp_per_capita/

GDP per capita indicates the ability of New Zealand and New Zealanders to afford the goods and services that people need and want, including spending on education, health and welfare, security, leisure time, and environmental protection.

New Zealand's GDP per capita compared to other countries is also important because *relative* economic prosperity affects

- where friends and children will want to live, work, and bring up their children.
- the ability to retain and attract talented people and business opportunities, affecting the ability of the economy to grow, and so affecting New Zealanders' absolute standard of living.

New Zealand's performance

Until the 1960s New Zealand had one of the highest levels of GDP per capita in the world. From 1970 to 1990 GDP per capita declined steadily so by the early 1990s New Zealand was about 20% below the OECD average.

As the first figure shows, New Zealand's real GDP per capita increased steadily from 1992 until the latest recession began.

The second figure shows the sources of this growth, breaking the GDP per capita data into components. The GDP per hour worked line in the top chart shows a slow but steady growth of just over 1% per year, for a total increase of about 20%. GDP per hour is also referred to as labour productivity, and is one of the other measures in the NZahead report card. Growth in GDP per hour has contributed two thirds of growth in GDP per capita since 1990.

Hours worked per capita data shown in the bottom middle chart is more variable. Hours per capita has increased at about half the rate that GDP per hour has, and contributes about one third of the total increase in GDP per capita.

Moving to consider the charts on the far right of the second figure, the bottom chart shows that hours per worker have decreased overall from 1990 to 2009. But that decrease was more than offset by the increased number of workers per capita (participation rate) shown in top far right chart, resulting in the overall increase shown in hours per capita.

Further gains in GDP per capita will be made by increasing one or more of these drivers. Workers per capita and hours per worker are measures where New Zealand performs around the OECD average. Increasing labour participation, especially by reducing unemployment and developing work options to would allow greater participation, would help lift GDP per capita. Figure 2 shows that hours per worker has been dropping recently, probably because of increased part time work opportunities before the recession, and now because many firms have reduced hours worked rather than lay off workers in response to recession.

New Zealand's workers per capita and hours per worker prior to the recession were in line with other OECD countries. Labour productivity is the major source of New Zealand's low GDP per capita rank and provides the best opportunity for improvement.

The third figure shows that despite recent improvements in GDP per capita, New Zealand is ranked 22nd of 30 OECD countries.

The final figure shows that New Zealand has remained below the OECD average income levels for the last two decades. That was an improvement over the previous two decades when New Zealanders' income levels slid steadily relative to the average OECD income. New Zealand' does not compare favourably to the income levels achieved in Australia, which has managed to maintain a GDP per capita about 20% above the OECD average.

What is being done

Government is now developing an economic strategy to match Australia's GDP per capita by 2025, with the following priorities

- Develop a growth-enhancing tax system
- Drive better performance across the public sector
- Encourage innovation and help firms grow by connecting them with scientists and improving access to capital and world markets
- Reforming regulations to make it easier for businesses to grow, invest, and create jobs
- Boosting infrastructure, particularly in roads, broadband and electricity

The economic strategy is a work in progress with several taskforces and policy development efforts launched. In response to recession, Government has increased spending in some areas to stimulate the economy, while in other areas it is reducing spending to limit the fiscal stresses. Strategies that require high levels of investment will be difficult to fund in the current economic climate, though Government has already announced it will invest in innovation and broadband. Additional policy announcements are expected in the budget.

While there are many plans and there has been some significant steps towards implementing some of these recommendations – including the KiwiSaver programme and the broadband fund – there have also been steps backwards, including the repeal of the R&D tax credit and the weakening, rather than strengthening of Kiwisaver.

Rationale for the grade of C

Despite a low GDP per capita ranking and disadvantages of size and distance, New Zealand has held its own versus the OECD average since the early 90s.

Government has the goal of lifting GDP per capita and is developing policies. In arriving at the overall grade of C, credit has been given for the promised policies. If the policies selected do not have potential to make a material difference, the situation is more deserving of a grade of D.

Target for 2015 of \$56,000

The 2015 target in real NZ dollars is based on the Government's target of matching Australia in GDP per capita in 2025. Assuming that each country's GDP per capita grows at the same rate as it did over the last ten years and that New Zealand catches up with Australia in 2025, the 2015 target can be estimated. The target is based on a steadily increasing growth rate to 2015, and then a stable growth rate of just under 5% each year for the decade to 2025.

Analytical description

GDP is the country's income earned from production in New Zealand. It includes income from production carried out by New Zealanders and by foreign firms operating within New Zealand. This information is collected by Statistics New Zealand as part of the National Accounts series (<http://www.stats.govt.nz/economy/economic-indicators/gdp.htm>).

For the purpose of international comparisons, GDP per capita is converted to a measure of purchasing power (adjusting for different price levels and exchange rates) to allow comparison across countries. The purchasing power values are labeled PPP (Purchasing Power Parity).

For further diagnoses of the causes of New Zealand's weak economic growth, and specific policy proposals, refer to the Institute website.

Figure 1: Real GDP PPP data retrieved 26th February 2010 from the Total Economy Database at <http://www.conference-board.org/>. Real GDP PPP expressed in 2009 US\$ was converted to 2009 NZ\$ using the exchange rate of 0.64.

Figure 2: Same as for Figure 1.

Figure 3: Same as for Figure 1.

Figure 4: All data Real GDP 2009 NZ\$ PPP as stated in title (labels abbreviated on individual charts) from Total Economy Database <http://www.conference-board.org/> and Statistics NZ <http://statisticsnz.govt.nz/>. Real GDP PPP per hour was calculated using the Total Economy GDP figures and Statistics New Zealand employee and hours worked data, taking the 4th quarter data as an annual value. Real GDP PPP expressed in 2009 US\$ was converted to 2009 NZ\$ using the exchange rate of 0.64.



Wealth per household: Latest = \$429,236 2015 target = \$575,000

Grade: **D** 'Not enough wealth; too concentrated in housing'

Trend: **X** Deteriorating Rank: Not available

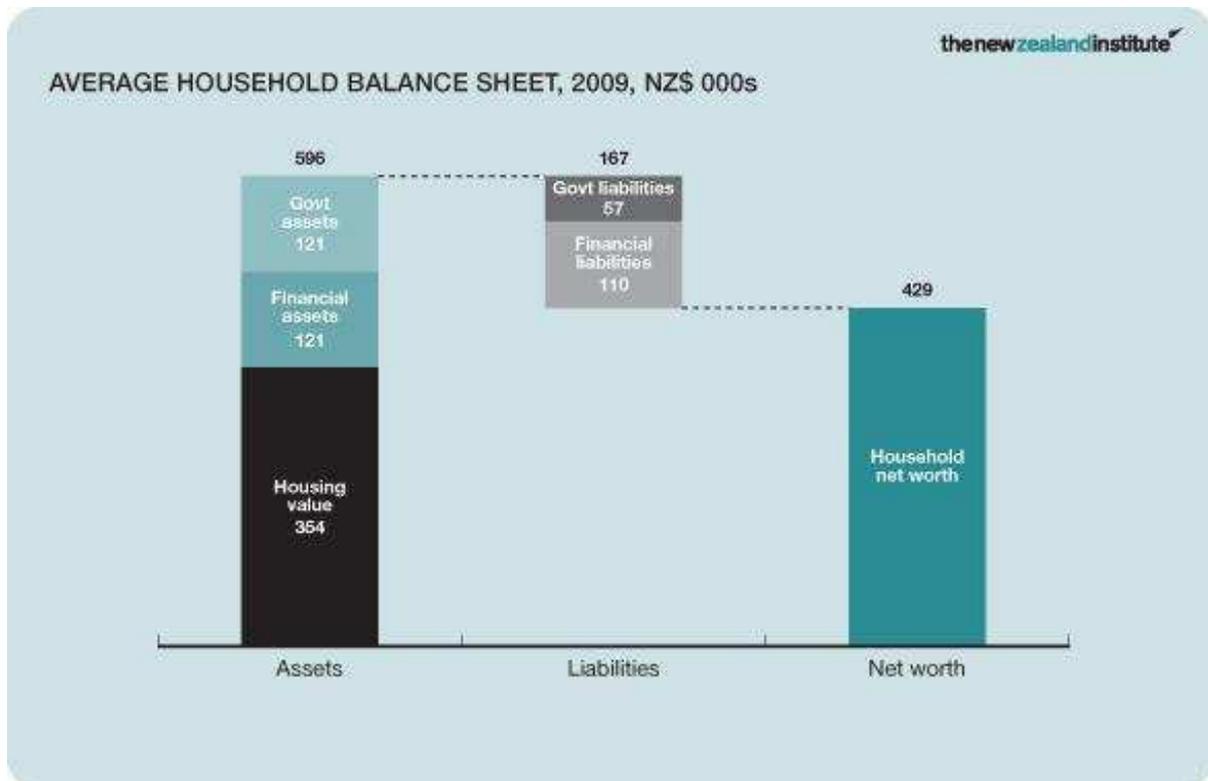


Figure 1

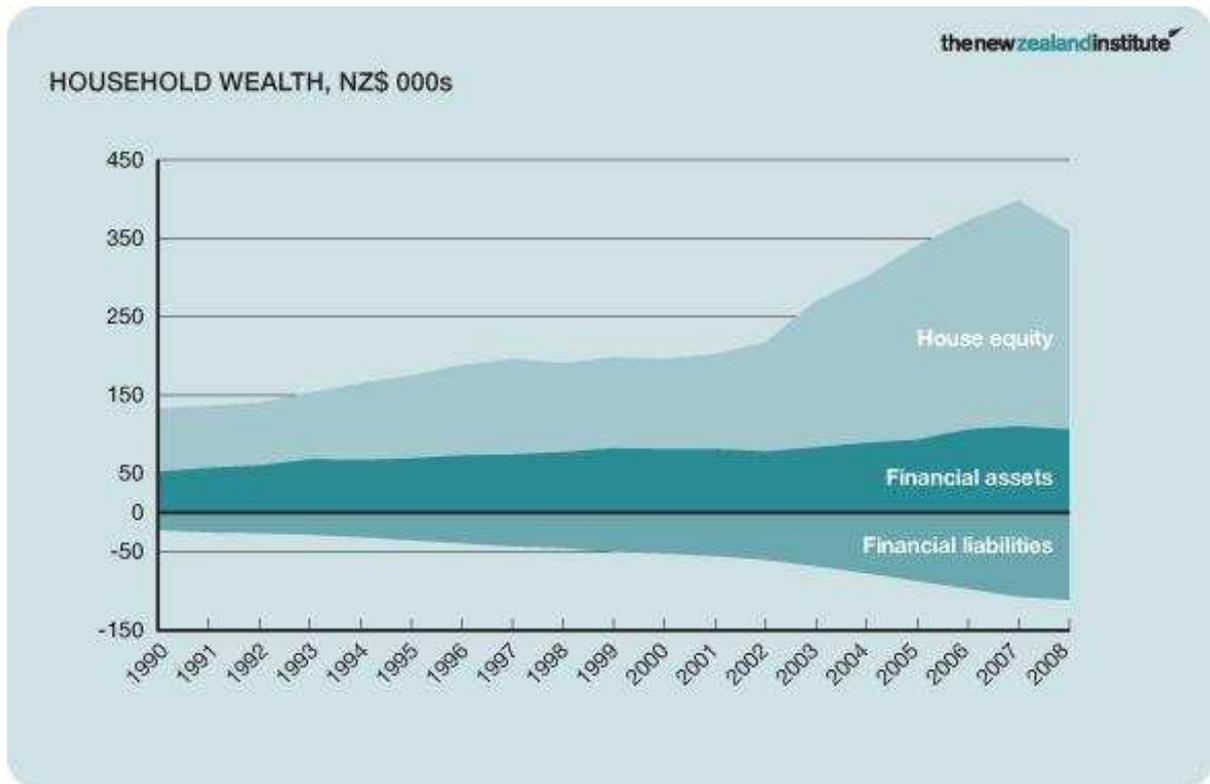


Figure 2

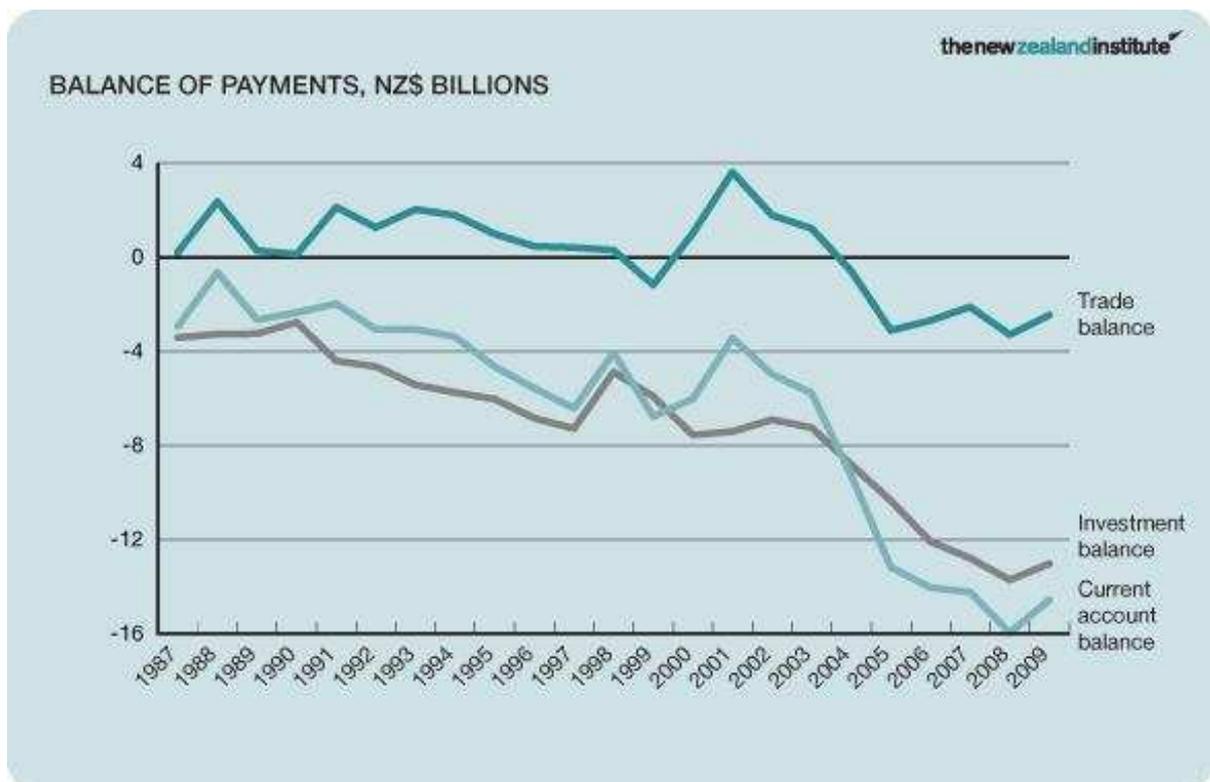


Figure 3

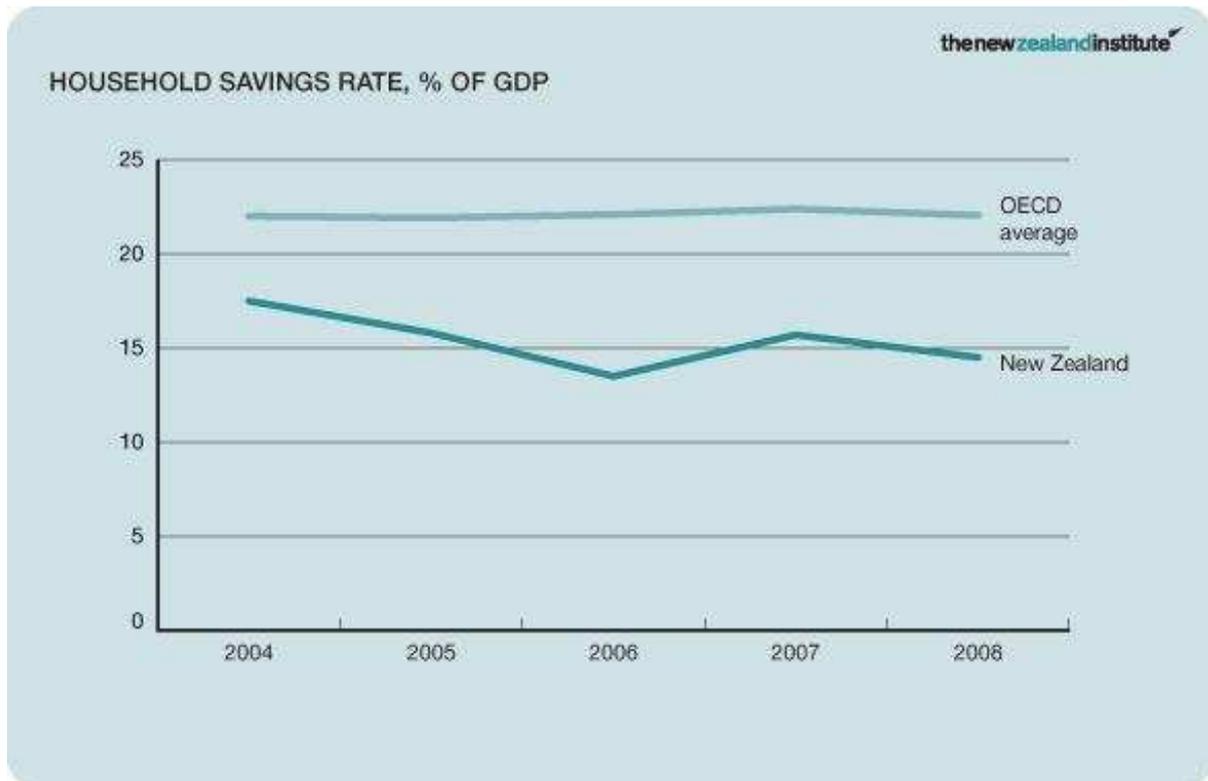


Figure 4

Why household wealth matters

Income and wealth are closely related because income is the flow that, when it accumulates as savings, forms the stock known as wealth.

People may often convert the savings into other forms of wealth, like boats and houses, or may invest wealth in productive assets. Wealth can create future income through investment. Sometimes people 'consume' wealth by spending it.

In technical terms, household wealth represents the claim that the average household has on the total capital in the country. As the first figure shows, household assets are made up of housing value and financial assets, plus the share of the assets the government holds. Wealth is reduced by any financial liabilities, like mortgages, and also by any liabilities the government holds.

Wealth is a reserve that can be drawn on in adverse times. The total wealth in a country represents a pool of funds that can be used for investment in infrastructure and productive assets. One reason to build wealth today is provide high incomes in the future.

New Zealand's performance

According to Treasury, New Zealanders' net wealth has increased, but not at the pace achieved in the rest of the OECD. To make matters worse, much of the increased wealth of New Zealanders has come from investment in housing, as shown in the second figure. Housing wealth is not as effective in generating future income for the country as investment in business or infrastructure. The same chart shows that households' net financial wealth has been declining since 1998.

Since 1990, New Zealand's current account has deteriorated because of a decline in the balance on the investment account, as shown in the third figure. The investment account balance represents the difference between what New Zealanders earn from overseas investments and what New Zealanders pay to foreign providers of capital. A large portion of the investment account outflow is interest on foreign borrowing used to fund housing investment. Low relative levels of wealth and concentration of investment in housing have led to relatively low investment in productive assets in New Zealand.

Government's fiscal position has switched from surplus to deficit so Government has been borrowing around \$250m per week recently and Government debt as a percent of GDP is rising. In 2008 Government debt was 25% of GDP and is projected to rise to 40% of GDP by 2013.

New Zealanders cannot increase wealth if they consume all of their income, so savings rates are an important indicator of the potential for wealth. As the last figure shows, New Zealanders save less than other OECD countries, and the household saving rate has been in decline since 2004.

What is being done

There are several efforts underway to lift productivity and incomes (refer to the measure Labour Productivity). If these efforts are successful, New Zealanders will have more income available which they can choose to spend or save.

Government's policies and the response to the recession have reduced savings potential. Unlike many other countries, New Zealand policy does not include tax incentives for saving and savings is not compulsory. Australia has 9% compulsory savings which is creating a pool of capital for productive investment and changing attitudes so that Australians are now much more engaged in wealth creation decisions and activities.

The reduction in the employer Kiwisaver contribution and the suspension of payments into the New Zealand Superannuation Fund has freed up cash to maintain current spending to reduce the impact of the recession, but it has reduced savings.

Tax policies are being reviewed. Shifting incentives so that productive investment is encouraged instead of residential housing investment would be a positive step, if taken.

Rationale for the grade of D

If New Zealand were to adopt policies sufficient to encourage greater wealth accumulation, in particular wealth accumulation in financial assets, then the grade would increase.

However, based on current policy New Zealand gets a D for wealth. New Zealand has not yet adopted the policies required to encourage more savings or investment in productive assets.

Target for 2015 of \$575,000

Grow household net worth by 5% per annum to \$575,000, which is just slightly under the growth rate achieved over the last 10 years.

Analytical description

Household net worth is calculated by taking total household assets and subtracting total household liabilities. Total household assets are made up of financial assets (e.g. foreign currency and deposits, securities, shares and pension funds), government assets per household (e.g. investments in buildings, property and government financial assets), and average household market values. Total household liabilities are made up of financial liabilities (e.g. loans) and government liabilities per household (e.g. government borrowings, insurance liabilities, retirement plan liabilities, and issued currency).

Individual household figures have been calculated by dividing the total figures by the number of households as at December of each year, estimated by Statistics New Zealand.

The trade account is used to mark the inflow and outflow of goods and services into a country. The current account is made up of the balance on investment income, which is earnings on public and private investments and receipts from income-generating assets such as stocks, and the balance on trade.

Savings is the difference between current disposable income and current consumption. It can be measured in different ways but for the wealth measure, savings is measured as a flow, occurring over time. It is also possible to consider savings as a stock measure, which is the difference between net wealth at the beginning and end of a given period.

- Figure 1:** Statistics New Zealand <http://www.stats.govt.nz>, household stock data retrieved on 20th January 2010; New Zealand Treasury <http://treasury.govt.nz/>, government data retrieved on 25th January 2010; Reserve Bank of New Zealand <http://www.rbnz.govt.nz/statistics/az/2989605.html>, household financial data retrieved on 25th January 2010. Note: data may not add due to rounding
- Figure 2:** Statistics New Zealand <http://www.stats.govt.nz>, household stock level data retrieved on 10th December 2009; Reserve Bank of New Zealand <http://www.rbnz.govt.nz/statistics/az/2989605.html>, household financial data retrieved on 10th December 2009. Note: data may not add due to rounding
- Figure 3:** Statistics New Zealand <http://www.stats.govt.nz>, balance of payment data retrieved on 10th January 2010
- Figure 4:** Total Economy Database <http://www.conference-board.org/> and Statistics NZ <http://statisticsnz.govt.nz/>. Data retrieved on 3rd December 2009.



Labour productivity GDP per hour: Latest = \$43 2015 target = \$50

Grade:

D

'Not improving fast enough'

Trend:

✓

Improving

Rank: 22nd out of 30 OECD countries



Figure 1

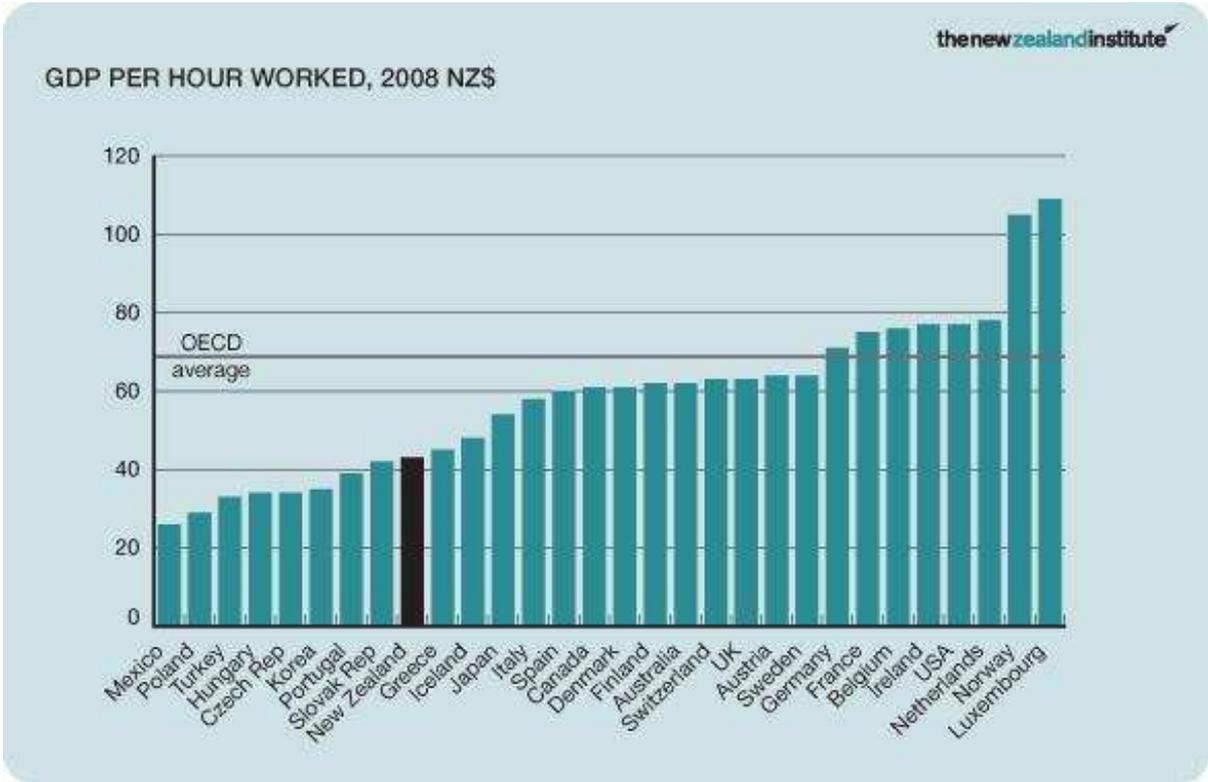


Figure 2

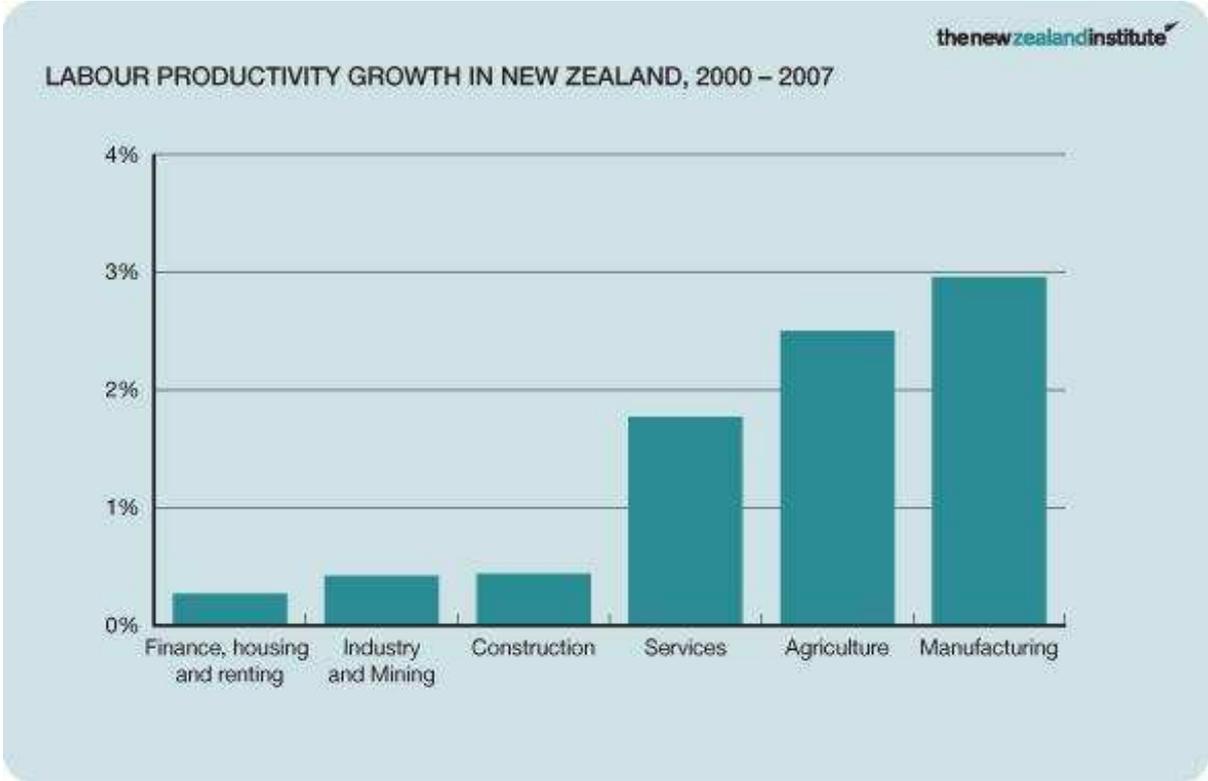


Figure 3

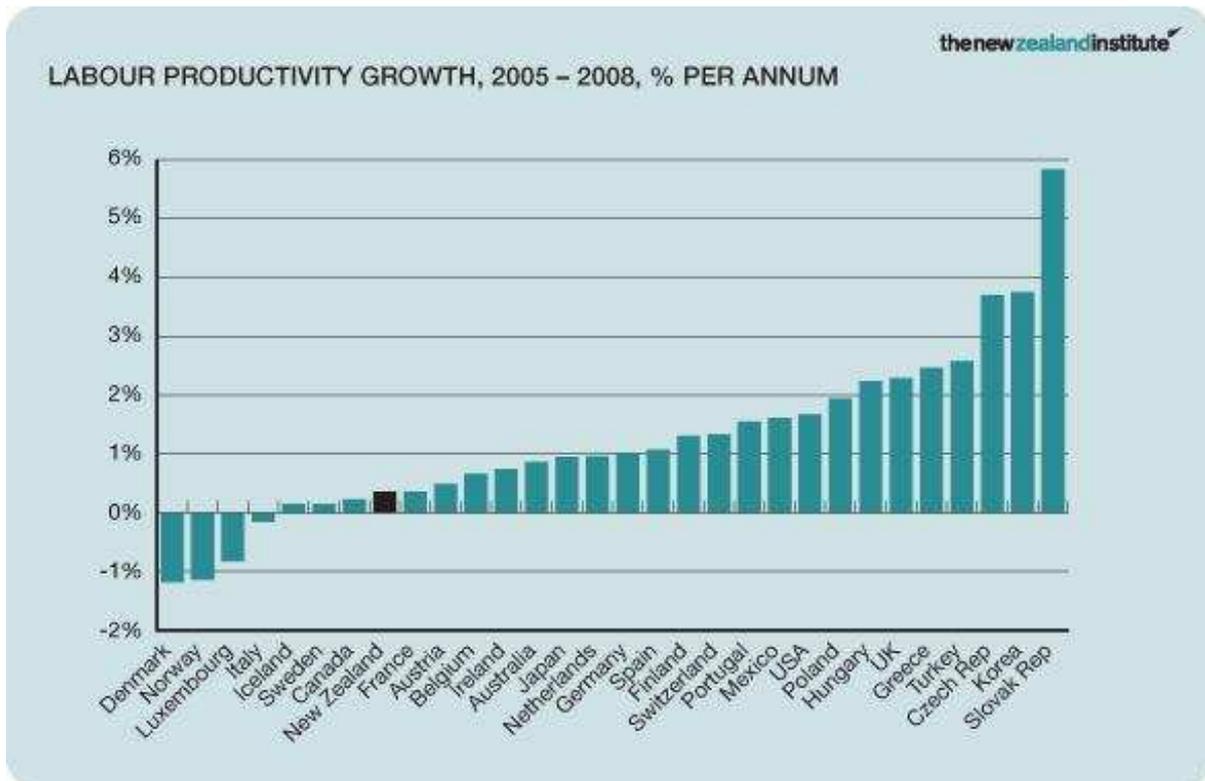


Figure 4

Why labour productivity matters

Labour productivity measures the value of output produced per worker; usually either per year or per hour worked. Labour productivity is an important measure because, combined with the number of hours worked per capita, it determines GDP per capita (see Figure 2 of the GDP per capita measure). New Zealand performs relatively well compared with other OECD countries on hours worked but is well behind in terms of labour productivity. Higher labour productivity would lift economic prosperity directly.

Labour productivity can be increased by lifting the value of goods and services produced or by lifting efficiency to increase the amount of output of goods and services per hour worked.

A relatively simple way to think about how labour productivity can be improved in an economy is to focus on innovations, capital and talent. Innovation contributes by making changes that lift value, and therefore prices of goods and services, or that improve efficiency, lifting output per hour. Increasing capital intensity contributes by providing the worker with more advanced equipment and other facilities so workers can make higher value outputs or make more per hour. Talent contributes by allowing managers and workers to make better choices about what to do, and by developing skills to work more effectively so the workers can produce more per hour worked. There are opportunities to improve all three in New Zealand.

However achieved, in the long run, higher labour productivity is necessary to provide higher incomes for workers, as employers are unable to pay more than they earn.

New Zealand’s performance

From 1990 to 2009, labour productivity increased steadily in New Zealand. That may seem good news but, as the first figure shows, the news is better in other OECD countries,

including Australia. The trend has been rated 'improving', putting aside the recent recessionary distortion of the figures.

The second figure shows that New Zealand's labour productivity places it in the bottom third of the OECD. Since 1990, New Zealand has not achieved a rank higher than 20th in the OECD. Greece's productivity passed New Zealand's in 2007 and workers in Italy produce \$15 more per hour than workers in New Zealand. Luxembourg's workers produce \$66 more per hour than New Zealand workers. That means they are about 1.5x more productive than New Zealand workers.

Figure 3 shows that productivity growth in New Zealand is highest in Manufacturing and lowest in Finance, Housing and Renting. In 2007, productivity growth in Manufacturing at 3% was almost 10 times the 0.3% achieved in Finance, Housing and Renting. As 15% of value added to the economy comes from Manufacturing, it is positive to see such growth in this sector. Finance, Housing and Renting is the largest sector, contributing more than a quarter of value, and it is worrying to see that the largest sector has such low productivity growth. Services is the second largest sector and its growth rate is just below 2%. For New Zealand to lift its productivity, stronger productivity growth must be achieved in these large sectors.

New Zealand's productivity growth from 2005 to 2008 is compared with other OECD countries in Figure 4. New Zealand is ranked 23rd, consistent with the poor ranking of the last two decades.

If data for 2006 to 2009 had been used for Figure 4, New Zealand would have performed a lot better but the data would be misleading. New Zealand's labour productivity dropped in 2009, as shown in Figure 1. However, the recession means that output has dropped further in OECD countries generally, so New Zealand has improved the labour productivity rank.

The labour productivity measure is designed to track the performance of management and workers at producing high value goods and services. However, New Zealand's out-performance in 2009 is largely due to having a less severe financial crisis (except for the finance company sector) and to having larger exposure to commodities (which have done relatively well recently). The recession makes underlying labour productivity performance harder to measure in 2009 so the 2005 – 2008 data are used give a better indication of recent labour productivity effectiveness.

What is being done

In *Investment, Productivity and the Cost of Capital: Understanding New Zealand's "Capital Shallowness*, Treasury has suggested five factors which could be drivers of productivity: enterprise, innovation, skills, investment and natural resources. However, there is not yet a clear explanation of why New Zealanders produce less output per hour than other OECD countries. Without a clear diagnosis it is hard to be confident that the root causes are being addressed, and without a simple, widely agreed and understood strategy there is reduced likelihood of success.

Business NZ in *Setting New Zealand Apart* has made 50 proposals to lift productivity. These include developing a national innovation strategy, establishing a New Zealand Productivity Commission, reducing regulation, and entrenching property rights in a Bill of Rights Act.

Recently taskforces have been initiated to review productivity and a Regulatory Responsibility bill will be considered by Cabinet in April. The 2025 Taskforce reported late in 2009, making numerous recommendations to lift productivity.

In 2010 government announced that a Productivity Commission will be established to look at ways to help boost New Zealand's economic performance across the public and private sectors. The Commission has wide support from political parties and will provide independent advice on ways to improve productivity in areas identified by the government.

Rationale for Grade of D

New Zealand gets a D for labour productivity because it starts below the OECD average and there is no convincing plan in place yet to improve performance. There has been much attention given to labour productivity over the last decade, with little result, so an improved grade will require a convincing plan and evidence that the plan is lifting New Zealand in the OECD rankings.

Target for 2015 of \$60

New Zealand's labour productivity real growth rate from 2004 to 2009 was 0.6%. New Zealand should first double this growth rate, then seek to maintain that level of growth. Straight line improvements to reach 1.2% by 2015 would result in GDP per hour worked of more than \$50 at current prices.

Analytical Description

Data for the OECD countries shown in the Institute charts are derived from the most recent editions of the OECD National Accounts by The Conference Board. GDP levels were measured in 2009 US Dollars, for which 2005 EKS purchasing power parities updated with aggregate deflators to 2009 were used. The 2005 PPPs were obtained from the OECD. Conversion to New Zealand dollars was based on the 2009 average exchange rate reported by the Reserve Bank of New Zealand.

National Government Announcement, 2010, retrieved from <http://www.national.org.nz/Article.aspx?articleId=32326> on 19 March 2010

- Figure 1:** 2008 GDP per hour worked is calculated by the OECD, retrieved 3rd of March from <http://stats.oecd.org/index.aspx> under the themes Productivity/Productivity levels/OECD estimates. The US\$ data is reported in current prices and was converted to NZ\$ with an exchange rate of 0.7146.
- Figure 2:** OECD. <http://stats.oecd.org/>. Data retrieved on 5th February 2010. The data was converted from US\$ to NZ\$ using the exchange rate of 0.7146. A GDP deflator of 1.028744 was used to restate 2008 NZ\$ to 2009 NZ\$.
- Figure 3:** Data has been retrieved from the OECD Structural Analysis Database. Growth rates are a 7 year CAGR based on 2000 and 2007 figures. The OECD figures are Gross Value Added by the sectors as opposed to GDP figures from each sector.
- Figure 4:** Data has been retrieved from the Total Economy Database. The New Zealand figure was calculated using Statistics New Zealand employment data.

Index value (higher is better):

Latest = 4.4

2015 target = 5.0

Grade:

D

'Inventive, but not innovative enough'

Trend:

✓

Improving

Rank: 21st out of 30 OECD countries

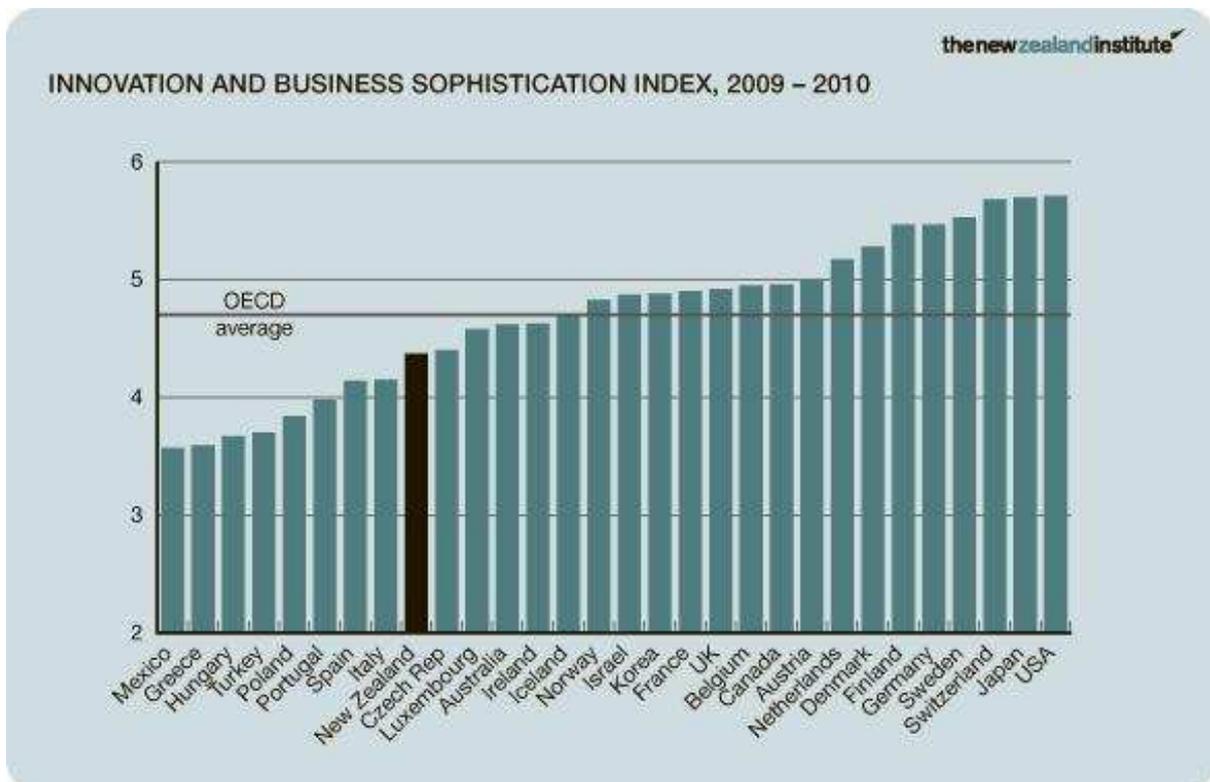


Figure 1

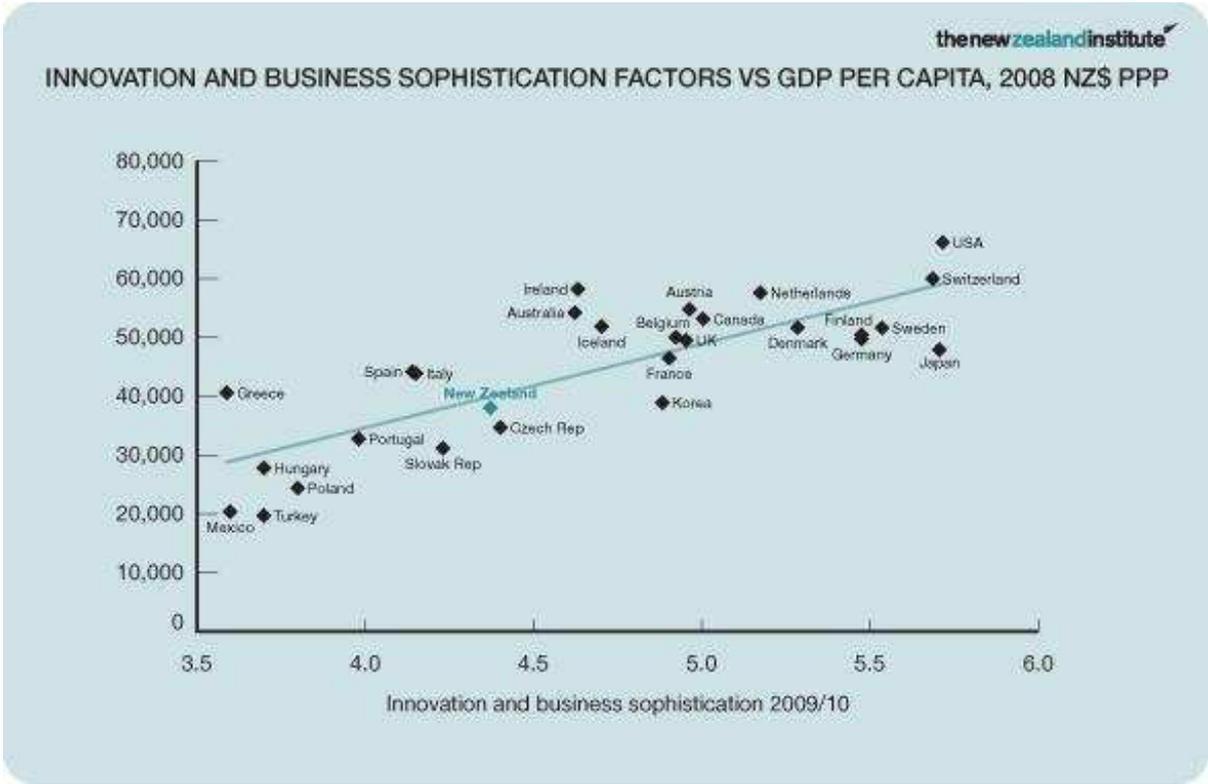


Figure 2

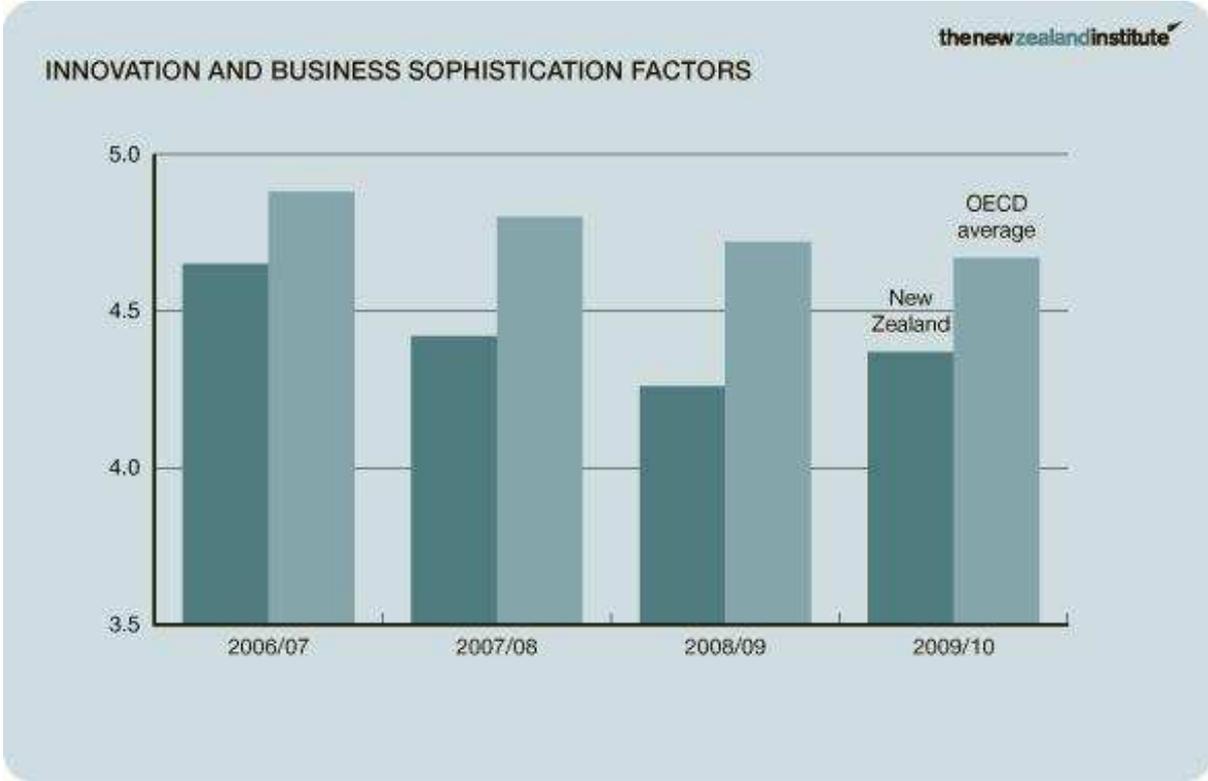


Figure 3

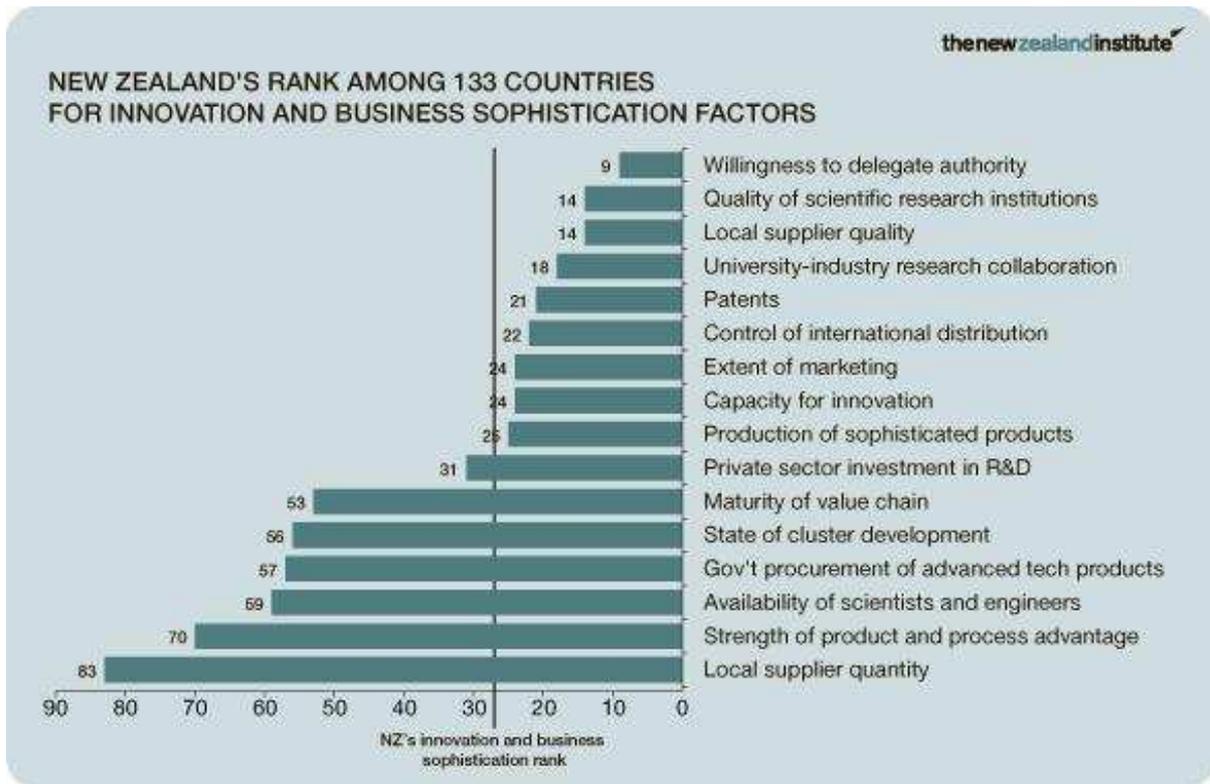


Figure 4

Why innovation matters

The World Economic Forum (WEF) has identified Innovation and Business Sophistication as the most important driver of the income of advanced economies. Countries are only able to sustain higher incomes and the associated standard of living if their businesses are able to compete by offering new and advantaged products and services. New Zealand's income level places it in the category of an advanced economy, so New Zealand must compete using innovation and sophisticated production processes.

Innovation increases the market value or reduces the costs of the products and services used domestically and exported. Higher value or lower costs mean New Zealanders can sell more and earn more. Business sophistication improves the ability to make use of inventions to gain productivity and profit benefits.

New Zealand's economic performance can be significantly improved by lifting the innovative capacity and sophistication of New Zealand businesses. New Zealand needs to grow successful businesses selling into international markets to lift exports, productivity and incomes.

Many countries are focusing on lifting innovation and business sophistication as an economic strategy. If New Zealand falls further behind as an innovator it will not keep up economically with other advanced nations.

New Zealand's performance

New Zealand's performance on the WEF index of innovation and business sophistication is below the average for the OECD, as shown in Figure 1. That is concerning given how important innovation and business sophistication are as determinants of GDP per capita.

Figure 2 demonstrates the importance of innovation and business sophistication as a driver of GDP per capita. The countries with the highest scores on innovation and business sophistication have incomes around twice as high as those with the lowest scores. OECD and WEF research concludes the relationship is causal; innovation influences incomes. New Zealand's position on Figure 2 shows

that its low innovation and business sophistication score is an important reason for low GDP per capita.

Figure 3 shows there has been a persistent gap in innovation performance between New Zealand and the OECD in recent years. The scores for the OECD and New Zealand between 2006/7 and 2008/9 are affected by changes in the criteria used to develop the index.

To better understand where New Zealand is disadvantaged, the fourth figure shows New Zealand's rankings among 133 countries on the components of the innovation and business sophistication measure.

Performance is worst on the components that are most influenced by government actions such as: state of development of clusters, availability of scientists and engineers, and government procurement of advanced technical products.

Performance is better but still poor on factors that are in the control of businesses, including company spending on R&D, production process sophistication, capacity for innovation, extent of marketing and control of international distribution.

New Zealand performs best on factors that reflect research capability: patent production, university-industry collaboration, and quality of scientific research institutions.

What is being done

Over the last decade New Zealand has established many of the institutions required to nurture the innovation ecosystem, such as incubators, venture funds and commercialisation units. There have been several efforts to develop entrepreneurs and entrepreneurship has increased, and the technology sector is growing as a result.

- Lloyd Morrison video:
http://www.nzinstitute.org/index.php/nzahead/measures/innovation_and_business_sophistication/

Innovation has been identified by government as one of the priority sources of economic improvement.

It is now recognised that performance at producing research and inventions is stronger than performance at converting those inventions into international business success. The most important challenge is to lift the innovation and business performance of new and established businesses.

Rationale for the grade of D

New Zealand is a relatively weak performer on innovation and business sophistication but the economic importance of innovation is now more widely recognised and improvement plans are being developed.

If, as a result of the current investigations, sufficient resources are committed in ways that will make a difference the grade could increase to a C. Fiscal constraints and other important priorities may mean Government does not do enough.

Target for 2015 of 5.0

The target is set based on rapidly improving innovation and business sophistication to join the high performers. A score of 5.0 would lift New Zealand to where Korea is today, but beyond a score of 5.0, further development of innovation does not correlate strongly with GDP per capita.

Analytical description

The innovation data used in this measure comes from the World Economic Forum Global Competitiveness Report 2009 – 2010
<http://www.weforum.org/en/initiatives/gcp/Global%20Competitiveness%20Report/index.htm>.

Each year the World Economic Forum conducts a Survey of over 13,000 individuals in over 133 countries. The survey is divided into 13 sections related to 12 pillars of the Global Competitiveness

Index. The data gathered is intended to provide insight and a qualitative snapshot of each nation's economic, business, and regulatory environment.

The importance of each pillar depends on the development level of the country: factor-driven, efficiency-driven, or innovation driven. As countries move into the innovation-driven stage, they are only able to sustain higher wages and the associated standard of living if their businesses are able to compete with new and unique products. New Zealand's income level places it in this category, so it must use innovation and the most sophisticated business production processes in order to compete effectively. For innovation-driven economies, these items determine 30% of the overall competitiveness score.

Note that the information in this survey can be skewed by perception and by small samples (e.g. New Zealand has a sample size less than 50) and therefore can have substantial error ranges, so any analysis should be checked with supporting logic and evidence.

Figure 1: World Economic Forum: The Global Competitiveness Report 2009-2010, <http://www.weforum.org/en/initiatives/gcp/Global%20Competitiveness%20Report/index.htm>, 11th and 12th pillar data. Note: Data is available in paperback version only.

Figure 2: World Economic Forum: The Global Competitiveness Report 2009-2010, <http://www.weforum.org/en/initiatives/gcp/Global%20Competitiveness%20Report/index.htm>, and OECD. <http://stats.oecd.org/>. Data retrieved on 5th February 2010. US\$ data converted to NZ\$ using the exchange rate of 0.7146.

Figure 3: World Economic Forum: The Global Competitiveness Report 2009-2010, <http://www.weforum.org/en/initiatives/gcp/Global%20Competitiveness%20Report/index.htm>, 11th and 12th pillar data. Note: Data is available in paperback version only.

Figure 4: World Economic Forum: The Global Competitiveness Report 2009-2010, <http://www.weforum.org/en/initiatives/gcp/Global%20Competitiveness%20Report/index.htm>, 11th and 12th pillar data. Note: Data is available in paperback version only.



Combined PISA score,
mathematics and reading:

Latest = 1043 2015 target = 1057

Grade: B

'World class quality but too many are disadvantaged'

Trend: ✓ Improving

Rank: 4th out of 24 OECD countries

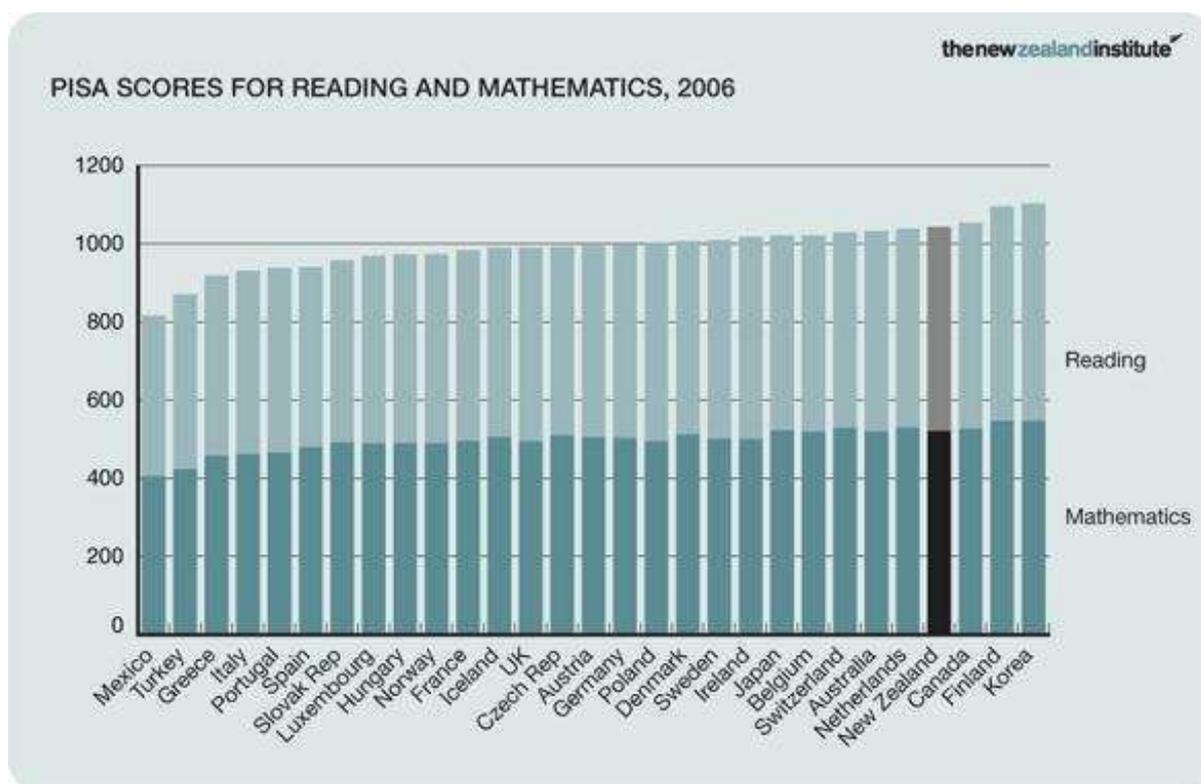


Figure 1

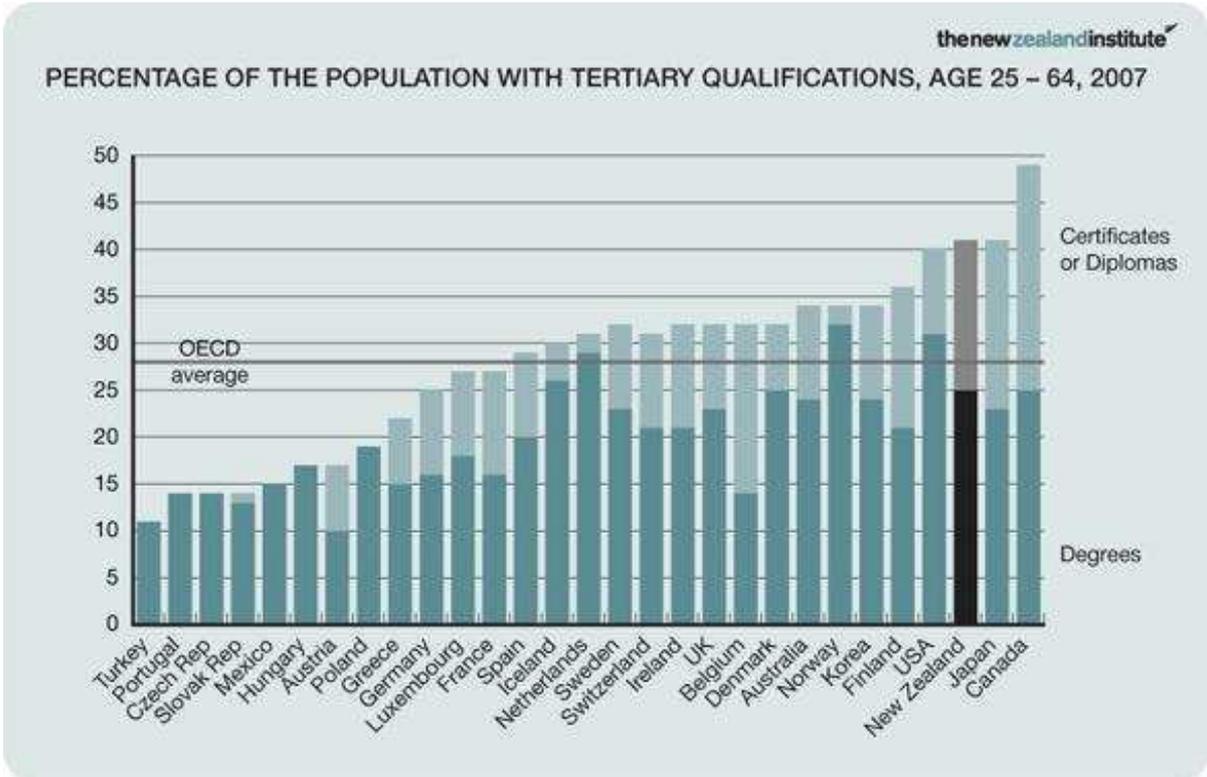


Figure 2

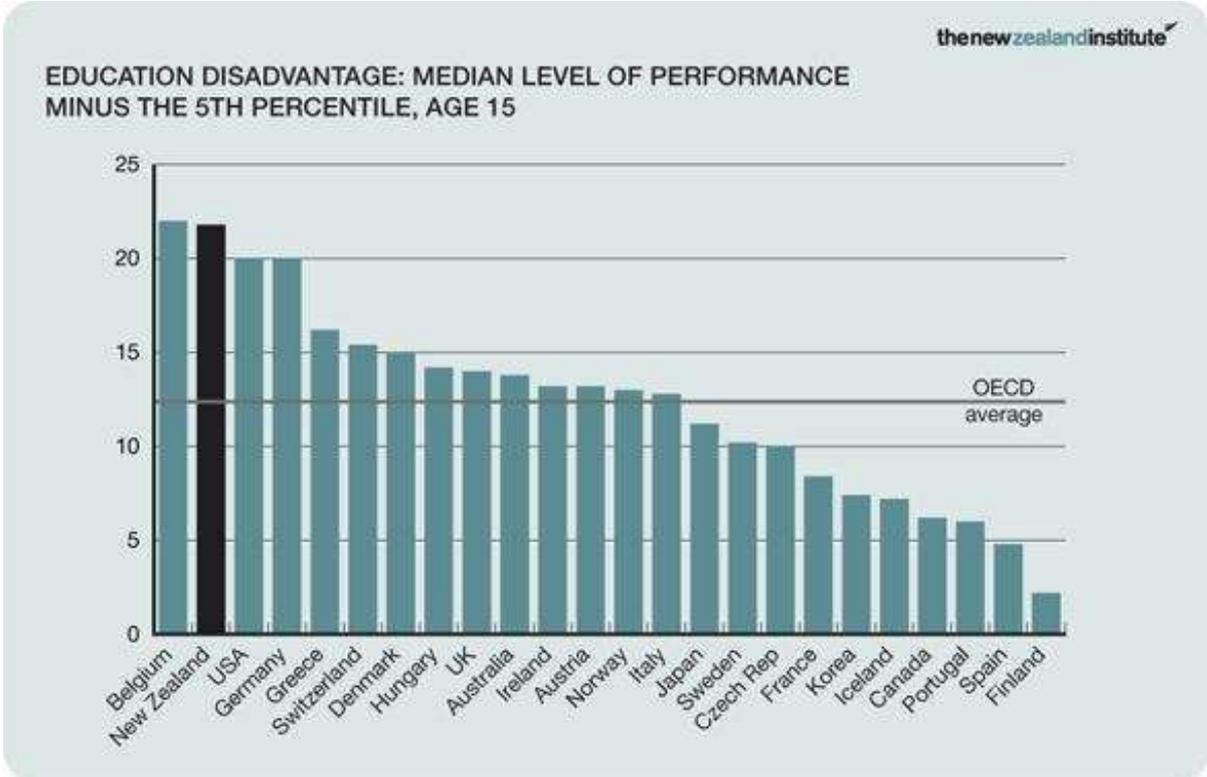


Figure 3

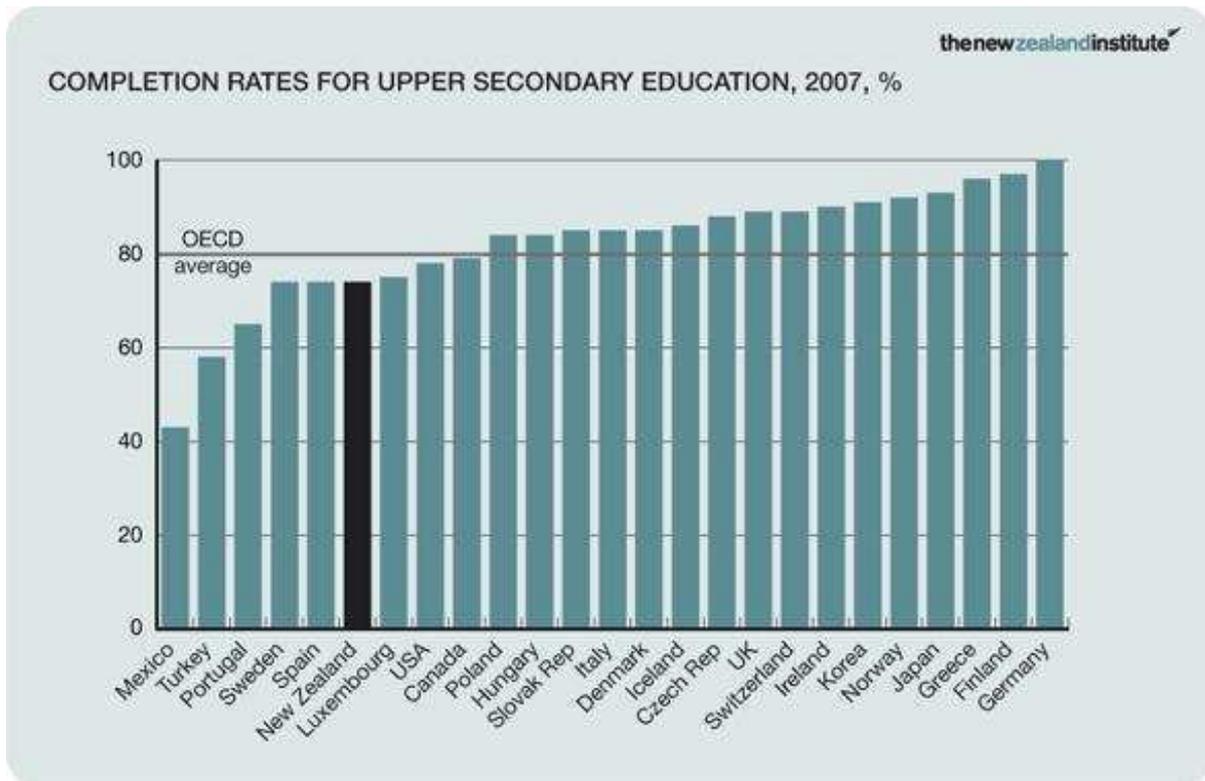


Figure 4

Why educational achievement matters

An important determinant of New Zealand’s prosperity is the skill level of the working population. Educational achievement indicates the extent to which the population has the literacy and numeracy skills required in the modern workplace. Education delivers a wide range of benefits to a society but is included here to focus on the economic benefits of an educated and skilled population.

Individual achievement at any level of the education process is a strong predictor of New Zealand’s future economic success. Research shows that success in education is highly correlated with improved economic outcomes including lower unemployment rates and poverty, higher productivity, and higher GDP per capita.

Furthermore, it is widely acknowledged that success in education contributes positively to improved social outcomes, including lower rates of incarceration and social disharmony, better health, improved equity, lower dependency on the state, higher life expectancy and improved quality of life.

Education is a critical investment in New Zealand’s future; for individuals, for the economy and for society as a whole.

New Zealand’s performance

New Zealand’s educational achievement at the primary and secondary level is among the best in the OECD. New Zealand students achieve near the top of the OECD Programme for International Student Assessment (PISA) in mathematics and reading, as shown in Figure 1. In 2006, 17% of New Zealand students achieved the highest levels assessed in PISA, compared with the OECD average of 9%.

New Zealand’s educational achievement at the tertiary level is also among the highest in the OECD, as shown in Figure 2.

However, New Zealand’s strong overall education achievement masks two important problems. Firstly, wide disparities in student achievement exist between average performers and bottom performers, as shown in Figure 3. Low education achievement is more common in the growing Maori

and Pacific Island communities. In PISA 2006, the combined average mathematics and reading scores for New Zealand's major ethnic groups were 1081 for Pakeha-European students, 1076 for Asians, 956 for Maori, and 924 for Pacific Island students.

Secondly, Figure 4 shows that too many young New Zealanders do not complete secondary school.

What is being done

There are a number of efforts underway to improve the retention rates and the achievement levels of youth, and particularly of Maori and Pacific Island students. These include efforts to improve the effect that parents have on their child's success; for example, Parent Mentoring Initiatives. There are efforts to target the at-risk students directly, such as Education Mentoring Schemes, Immersion and Bilingual Education Programmes, and tertiary support programmes.

The Tertiary Education Commission has signalled Maori achievement as a priority area through its Tertiary Education Strategy and several research centres of excellence exist throughout the country devoted to researching the achievement gap problem.

Government is now in the implementation phase of national standards for primary school literacy and numeracy skills. There is ongoing debate about whether implementation of national standards will improve the situation significantly. There is a concern that literacy and numeracy levels within the low-skilled workforce need to be improved.

Rationale for the grade of B

School performance up to age 15 along with high tertiary completion rates would justify an A. However, too many students are not completing secondary school; New Zealand has too many under-performing students; and Maori and Pacific Island groups remain seriously disadvantaged. The score would be a B if we could identify positive trends in the data resulting from the intervention programmes under way.

Target for 2015 of 1057

The target is based on the assumption that European and Asian combined PISA scores are held where they are but Maori and Pacific Island students have half of the disadvantage they have today. That would lift the combined average score to 1057 by improving Maori and Pacific Island combined average performance in reading and mathematics to 1000 and 984, respectively.

Analytical description

Data comes from the Education at a Glance – OECD Indicators 2009, which provides a wealth of comparable data relating to the current state of education internationally, available at http://www.oecd.org/document/24/0,3343,en_2649_39263238_43586328_1_1_1_1,00.htm.

The OECD Programme for International Student Assessment (PISA) administers a two-hour examination of students every three years and can be accessed at

http://www.pisa.oecd.org/document/2/0,3343,en_32252351_32236191_39718850_1_1_1_1,00.html#ables_figures_dbase. The questions in the examination are designed to measure ability in reading literacy, scientific literacy, and mathematical literacy for 15-year-old students.

Around 400,000 15-year-old students from 57 countries, including the 30 OECD member countries, participated in PISA 2006. In New Zealand around 4,000 students took part. Performance in core education skills were of most relevance and so only PISA reading and mathematics scores were used in comparing New Zealand's performance.

A number of alternative standardised tests could have been used for this measure, such as the Trends in International Mathematics and Science Study (TIMSS) or the International Adult Literacy Survey (IALS), which tests students in a smaller number of OECD countries than PISA.

Classifying the levels of education is based on the revised International Standards Classification of Education (ISCED – 97). The ISCED classifies education into three broad categories: upper

secondary education, post-secondary non-tertiary education, and tertiary education. Tertiary education is further divided into Type A programmes such as certificates and diplomas, Type B programmes such as bachelor's degrees, and advanced degrees such as master's and PhD's.

The education disadvantage measure comes from a 2001 UNICEF report on educational disadvantage in rich nations and can be accessed at <http://www.unicef-irc.org/cgi-bin/unicef/Lunga.sql?ProductID=340>. Disadvantage in education has been calculated by comparing the difference in achievement between children at the bottom and at the middle of each country's achievement range. The specific measure shows the average rank in five measures of relative education disadvantage: the difference in test score between the 5th and 50th percentiles in each country for reading, mathematics, and science literacy of 15-year-olds in PISA, and of mathematics and science for 8th-grade achievement in TIMSS. Caution is advised with relying on a single measure of education inequality as different measures of education inequality yield different ranks for countries.

Upper secondary school completion rates are given as the sum of graduation rates for single year.

New Zealand PISA scores by ethnicity are from:

http://www.educationcounts.govt.nz/publications/series/2543/pisa_2006/29012/29013

- Figure 1:** OECD, PISA data 2006, Note: Analysis excludes USA OECD, PISA data 2006, data retrieved from <http://www.pisa.oecd.org> on January 25, 2010, USA excluded from analysis due to data not available.
- Figure 2:** OECD, PISA data 2006, data retrieved from <http://www.pisa.oecd.org> on January 25, 2010, table C2.2. See Annex 3 for notes.
- Figure 3:** Disadvantage in Rich Nations, UNICEF (2002) report retrieved from <http://www.unicef-irc.org/cgi-bin/unicef/Lunga.sql?ProductID=340>. Figure includes the OECD countries where data was available.
- Figure 4:** OECD Education at a Glance: OECD Indicators (2009), report retrieved from http://www.oecd.org/document/24/0,3343,en_2649_39263238_43586328_1_1_1_1,0_0.html. Figure includes the OECD countries where data was available.

Agriculture and forestry land per capita: Latest = 2.9 Ha 2015 target = 2.4 Ha

Grade: **B** 'Plenty of land but declining land per capita'

Trend: **X** Deteriorating Rank: 3rd out of 27 OECD countries

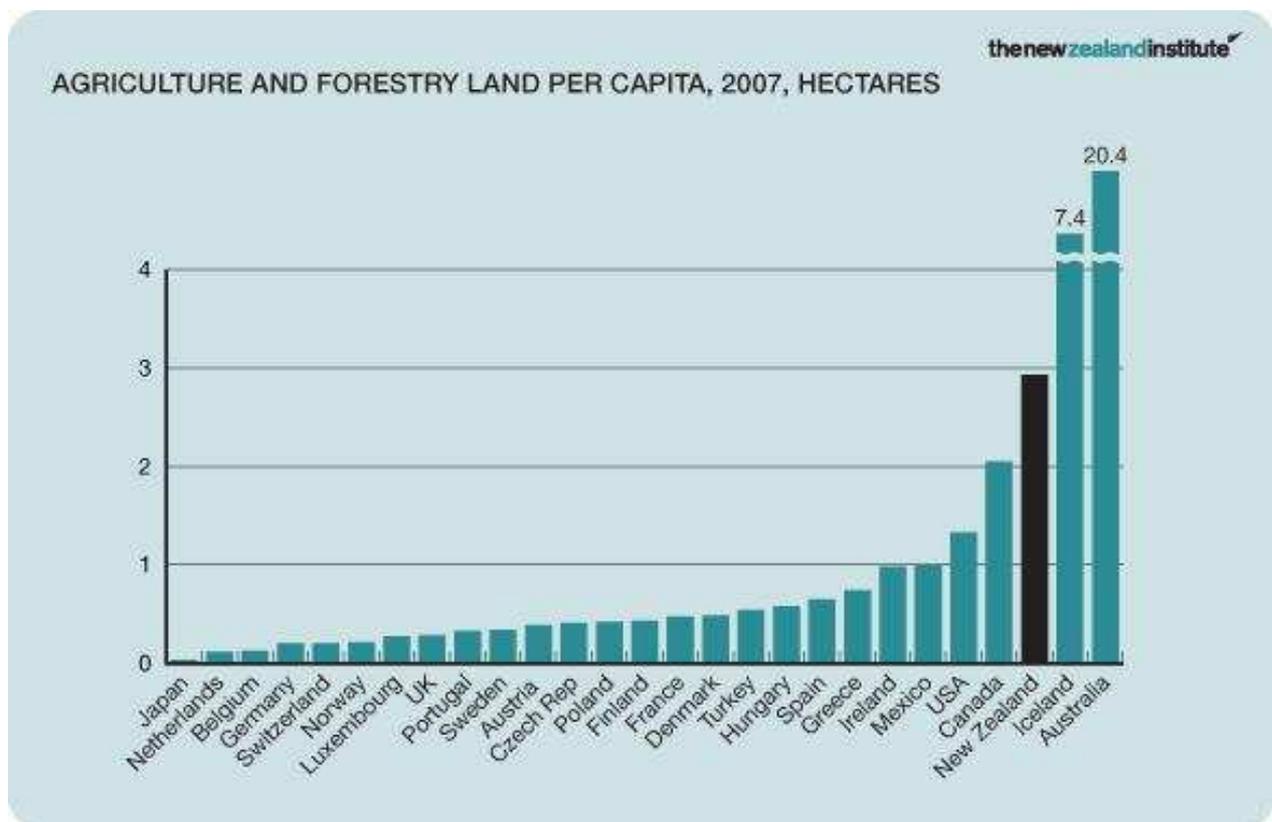


Figure 1

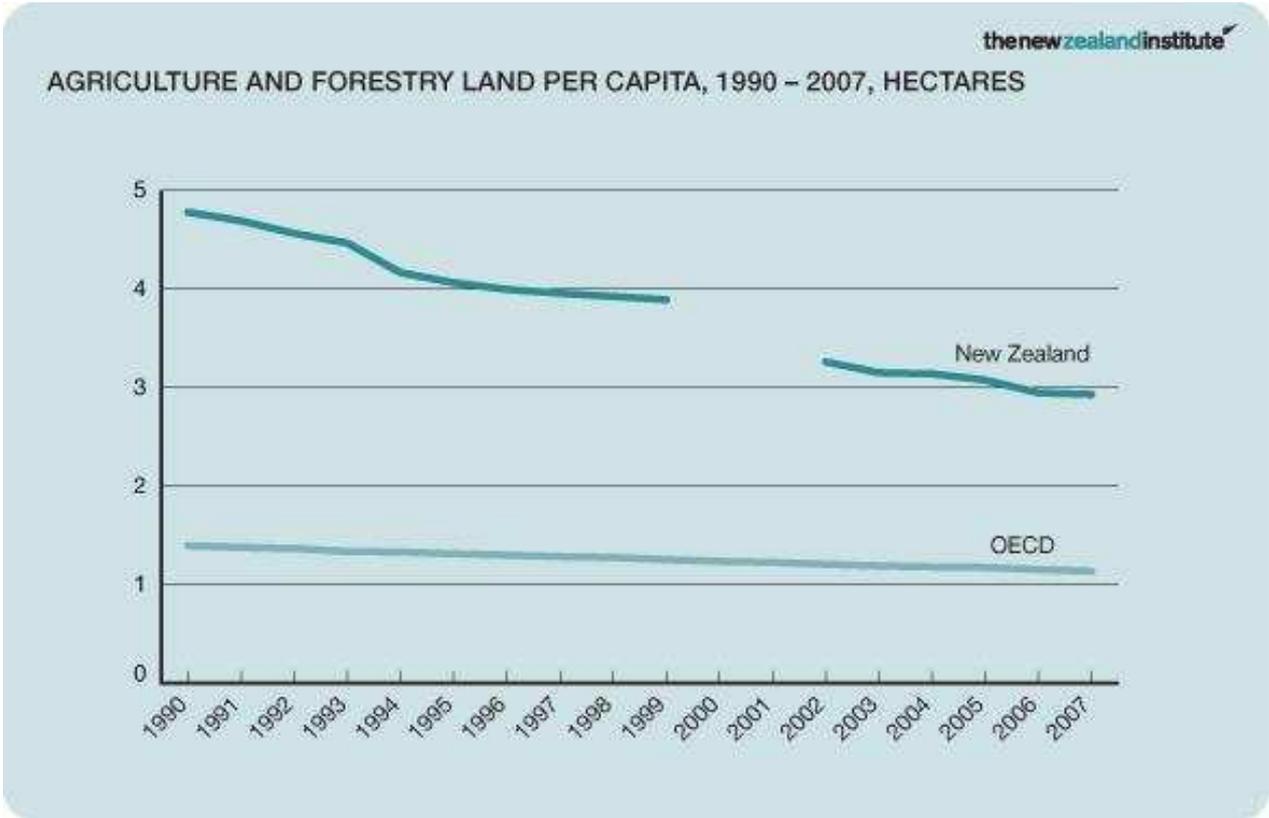


Figure 2

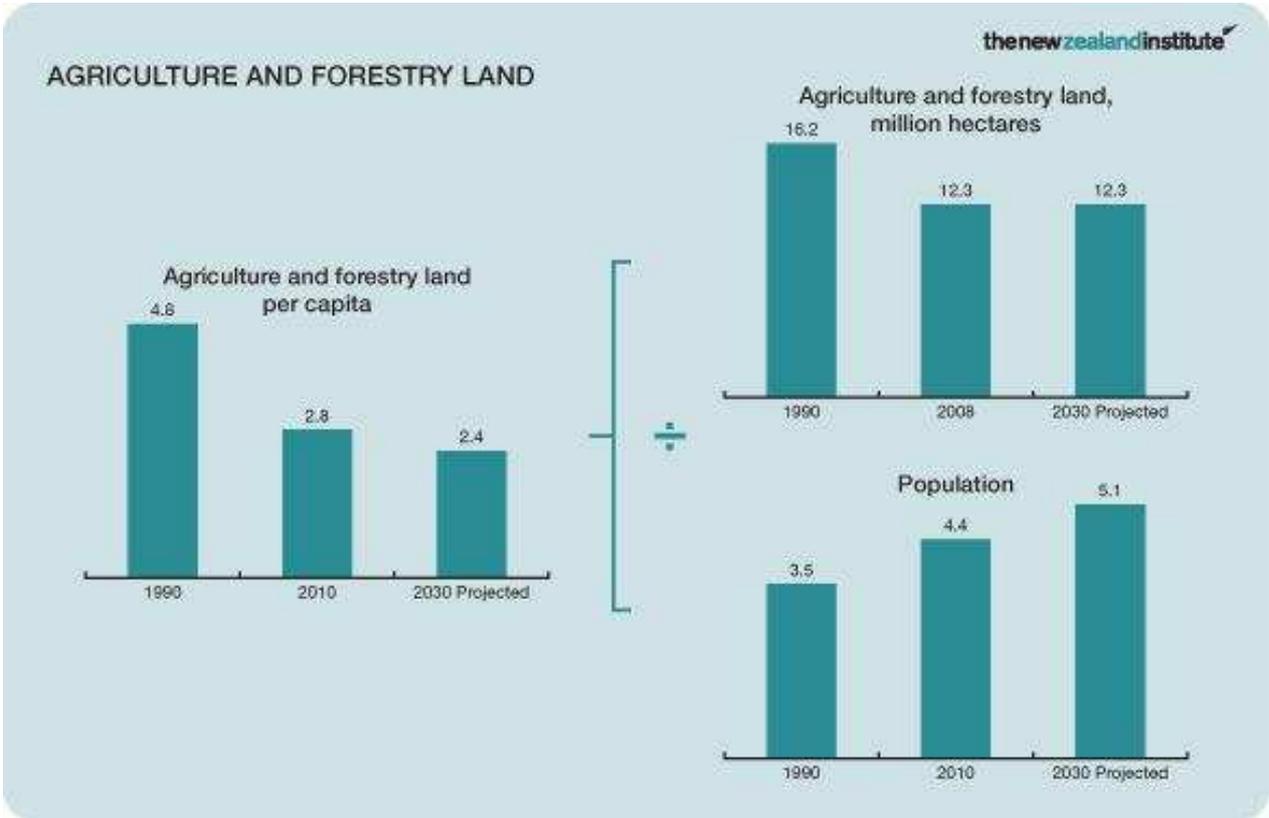


Figure3

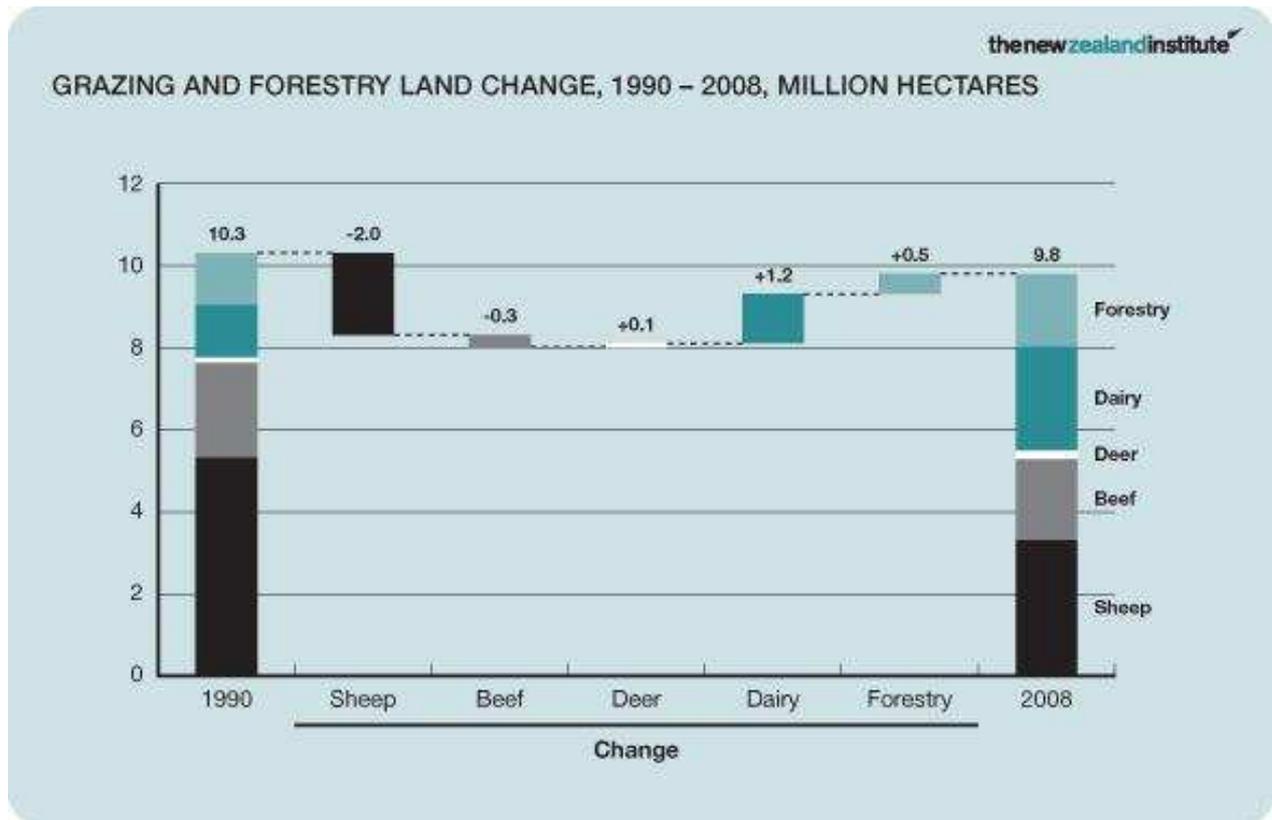


Figure 4

Why agriculture and forestry land per capita matters

Agriculture and forestry land provides food and timber to feed and house New Zealand’s population. The large amount of developed land per person combined with temperate climate, abundant and reliable rainfall, and advanced technology also provides a large surplus for export.

Agriculture has been the most important source of income to fund New Zealand’s economic development. Introduction of refrigeration at the end of the 19th century allowed shipment of meat to the United Kingdom and for nearly a century those exports provided sufficient income to make New Zealand a wealthy country. When the United Kingdom joined the European Union in 1973 New Zealand’s income fell. In response, export products were diversified and new markets were developed. Agriculture and forestry still make an important contribution, providing almost \$30b of exports and accounting for 64% of export earnings in 2009.

Growing global population and ongoing land degradation have led to increased food supply constraints recently. Globally, food prices have increased, and the number of undernourished people has increased from around 800 million to around 1 billion. Climate change is expected to further threaten food supplies creating four trends that are likely to be important for New Zealand’s future.

First, food prices are likely to continue to increase, providing a boost to New Zealand’s economy. Growing affluence in some developing countries is expected to increase demand for the protein products we export. The more land we have available for food production per person, the larger the benefit from growing incomes.

Increased concern for food security is changing the nature of globalisation. Governments in food constrained regions such as the Middle East and China are seeking agricultural investments in countries that have food surpluses. Already there is increased international interest in investing in New Zealand agriculture and this is likely to continue.

Growing food demand with constrained supply will drive ongoing intensification of agriculture. In New Zealand that is likely to lift output and incomes but it will increase the importance of emerging environmental pressures such as water use and pollution.

Finally, if population growth, industrialisation, and climate change progress as expected there is a risk of overshoot of the carrying capacity of the Earth. In that event, local availability of abundant agriculture and forestry land will provide an important protection for New Zealand's population.

New Zealand's performance

New Zealand is third in the OECD on the measure of Agriculture and Forestry land per person, as shown in Figure 1. Australia has the most Agriculture and Forestry land per capita in the OECD, but much of that land has very low productivity. The other leading countries, Iceland and Canada, have shorter productive seasons because of their exposure to cold winters.

New Zealand scores very well when the quality of agriculture and forestry land is taken into account. Two disadvantages for New Zealand that are not captured in the measure are that a small portion of our land endowment is suitable for cropping land and some New Zealand soils lack important nutrients.

Over the last 20 years, agriculture and forestry land per capita has reduced from almost five to just under three hectares per person, as shown in Figure 2. Figure 3 shows that the reduction has resulted from both losses of productive land and from population growth, with population having the larger effect.

Population growth and urban expansion is causing a decline in the productive capacity of land in the Auckland region. Between 2001 and 2006, urban development in the Auckland region replaced prime agriculture land at a rate of about 333 hectares per year, according to a recent report from the Auckland Regional Council.

Figure 3 also shows that, if population grows as projected, then agriculture and forestry land per person will reduce to 2.4 Ha per person. At that level there will still be abundant land to support New Zealand's population. However, the potential economic contribution of agriculture and forestry per person will be much reduced from the contribution in 1990, depending on price and intensification outcomes.

The sources of change in grazing and forestry land between 1990 and 2008 are shown in Figure 4. Land used for sheep farming has reduced the most as wool prices have fallen and more marginal land has been taken out of production. Dairy land has doubled, mainly from conversion of better quality sheep and beef farming land. Forestry land increased between 1990 and 2000 but has not increased since.

What is being done?

The Ministry of Agriculture and Forestry has had a sustainable agriculture facilitation programme running since 1995 which aims to encourage the adoption of sustainable resource management practices so that the agricultural and horticultural sectors make a long term contribution to New Zealand's social, economic and environmental well-being.

The Ministry for the Environment (MfE) has information available on their website regarding sustainable land management and biodiversity initiatives in rural committees. MfE's goals for New Zealand land are to ensure that New Zealand has healthy and productive soils, to mitigate areas contaminated and avoid further contamination, and to minimise hillside erosion caused by human activities.

Local action for sustainable land management is a positive aspect of New Zealand's land management. Over 250 land-care or community based groups have formed around New Zealand to address local land-management issues. These include land and water monitoring, pest and weed control, along with revegetation and research into alternative land management techniques.

Government has committed \$170 million between 2007 and 2012 to develop and deliver a plan of action relating to sustainable land management and climate change.

The Auckland Regional Council released a report on the State of the Auckland Region in March 2010. The report is a picture built up over decades from the ARC's monitoring and research programmes, and gives an overall assessment of the use of land, freshwater, and marine life in the Auckland region. Results from the report show that land and soil across the region are failing to sustain their maximum productivity levels, largely due to soil degradation caused by land use activities. The report, which is the third since 1999, will inform the new Auckland Council and help it prioritise future decisions.

Rationale for the grade of B

Relative to other OECD countries New Zealand is very well endowed with high quality agricultural land and low population density. Improvement of farming and forestry practices ensures that New Zealand's land is highly productive and land use is being intensified.

Emerging environmental constraints in New Zealand are placing pressure on agricultural development but there are emerging responses to the most pressing issues; pollution and water availability.

Changing land use and growing population are combining to rapidly reduce New Zealand's agricultural and forestry land per person. Despite this, there is still abundant land to provide for the population, even if threats from climate change combine with technological and other environmental challenges to reduce productivity.

Government and communities in New Zealand are taking an active interest in managing productive land, targeting productivity and sustainability, but there is little focus on protecting the size of the productive land resource. The reduction of agricultural land per person does not seem to be recognised as an important issue and there are few successful efforts to constrain ongoing expansion of urban and lifestyle areas onto our most productive land.

The recent rate of decline in agricultural and forestry land per person is so high that if it persists as expected then New Zealand will be closer to the OECD average. These changes merit further investigation but the data available on New Zealand's land use is not as good as we would expect for such an important resource.

New Zealand's endowment would be graded A, but the rate of decline means it is a B.

Target for 2015 of 2.4 Ha

The optimal rate of population growth in New Zealand is an important question but is beyond the scope of the target-setting effort here. Therefore the target is set by assuming the forecast population for New Zealand in 2015 and assuming the amount of agriculture and forestry land is held constant at the 2008 level.

If changes occur as currently expected, there will be increased planting of forests, increasing intensification of agricultural land, and ongoing urban sprawl. The result would be a reduction in the quality of our land, offset by more productivity from the land we have.

Analytical description

Agricultural and forestry per capita is the sum of arable land which is defined as land under temporary crop, temporary meadows and land temporarily fallow and permanent crops, along with land under tree and shrubs. This includes planted production forests along with land used permanently to grow cultivated or wild forage crop. The resulting value is then divided by New Zealand's population to obtain the Agriculture and Forestry per capita figures.

Auckland Regional Council, State of the Auckland Region (2010), retrieved from <http://www.arc.govt.nz/plans/reports/state-of-the-environment-report.cfm>

- Figure 1:** Data is from the Food and Agricultural Organisation (FAO) for the United Nations. Data retrieved on 21st December 2009 from <http://www.fao.org/>
- Figure 2:** Data is from the FAO, retrieved on 21st December 2009 from <http://www.fao.org/> A weighted average was used to calculate the OECD average line. Data from 1999 to 2002 has been excluded as FAO changed measurements techniques from manual estimates to official measurements during this period.
- Figure 3:** Data is from the FAO, retrieved on 21st December 2009. <http://www.fao.org/>
- Figure 4:** Land use data is from the Ministry of Agriculture and Forestry. Data retrieved on 17th February 2010 from <http://www.maf.govt.nz/> and through personal communication with MAF staff.



Nitrogen levels, worst 5% of rivers
mg/litre:

Latest = 0.99

2015 target = 1.00

Grade:

C

'Polluting our rivers to feed the world'

Trend:

X

Deteriorating

Rank: Not applicable

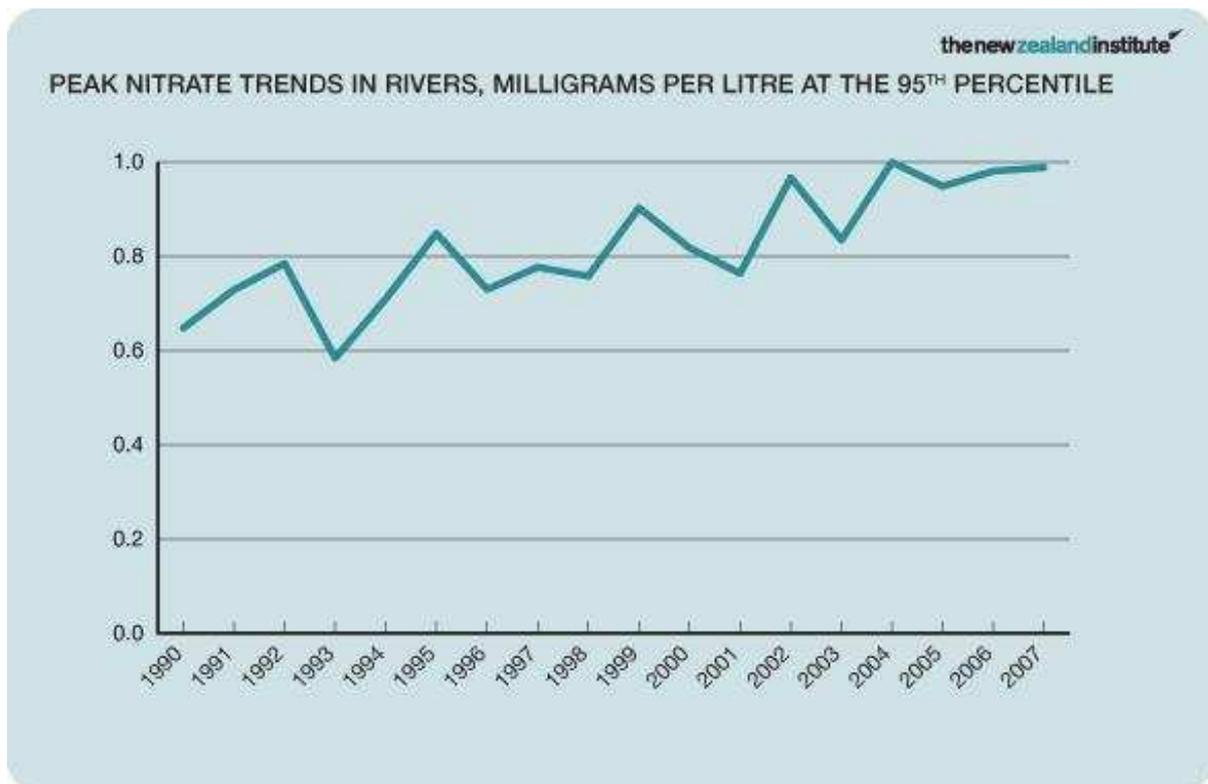


Figure 1

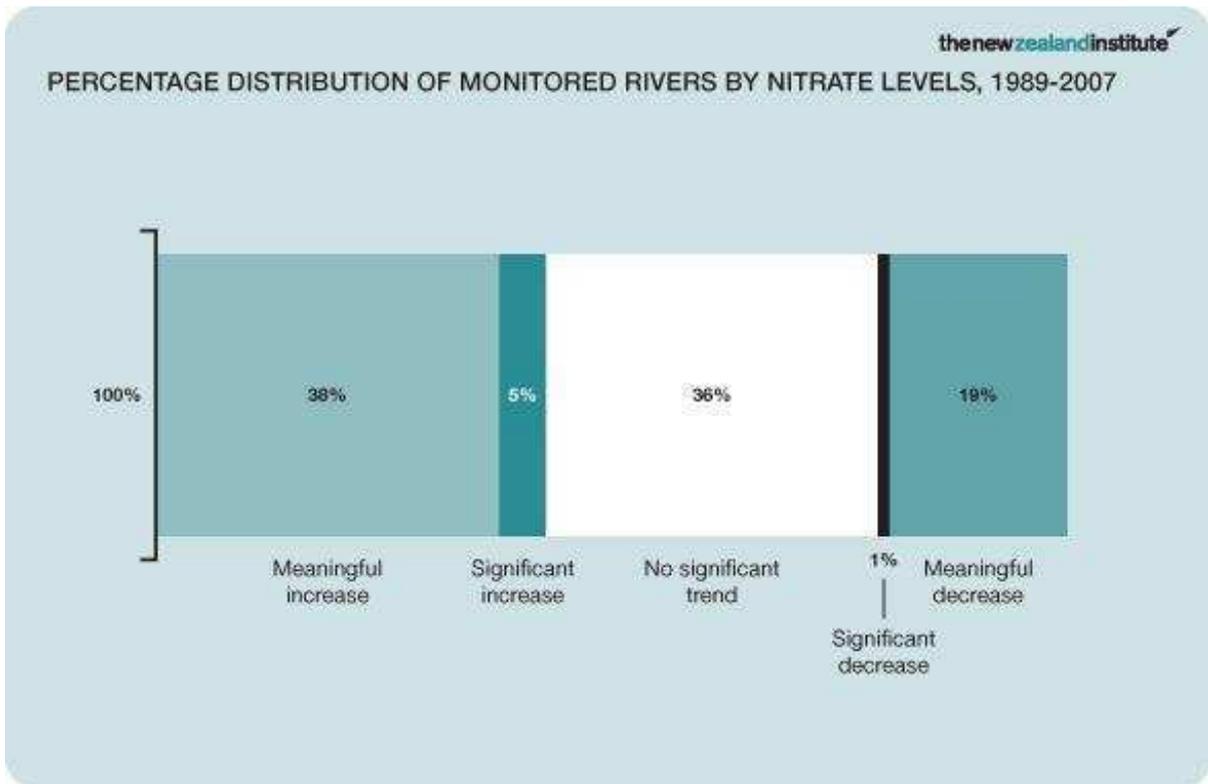


Figure 2

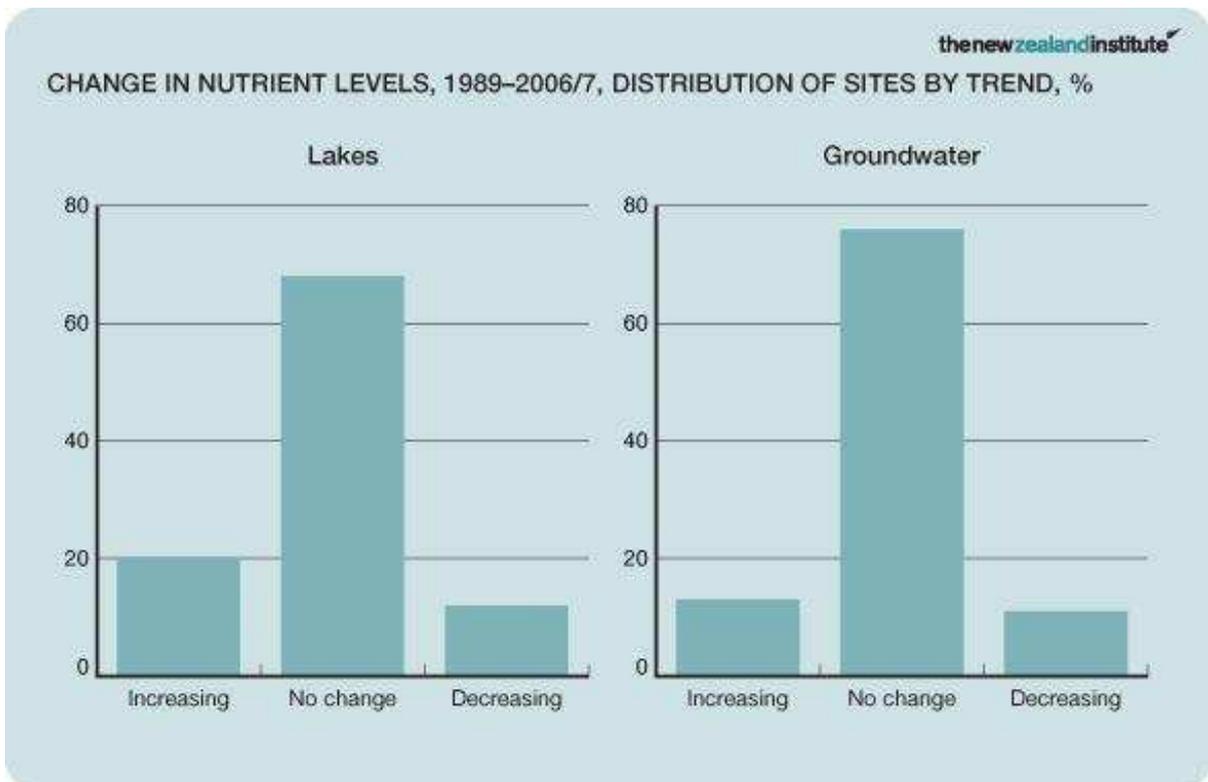


Figure 3

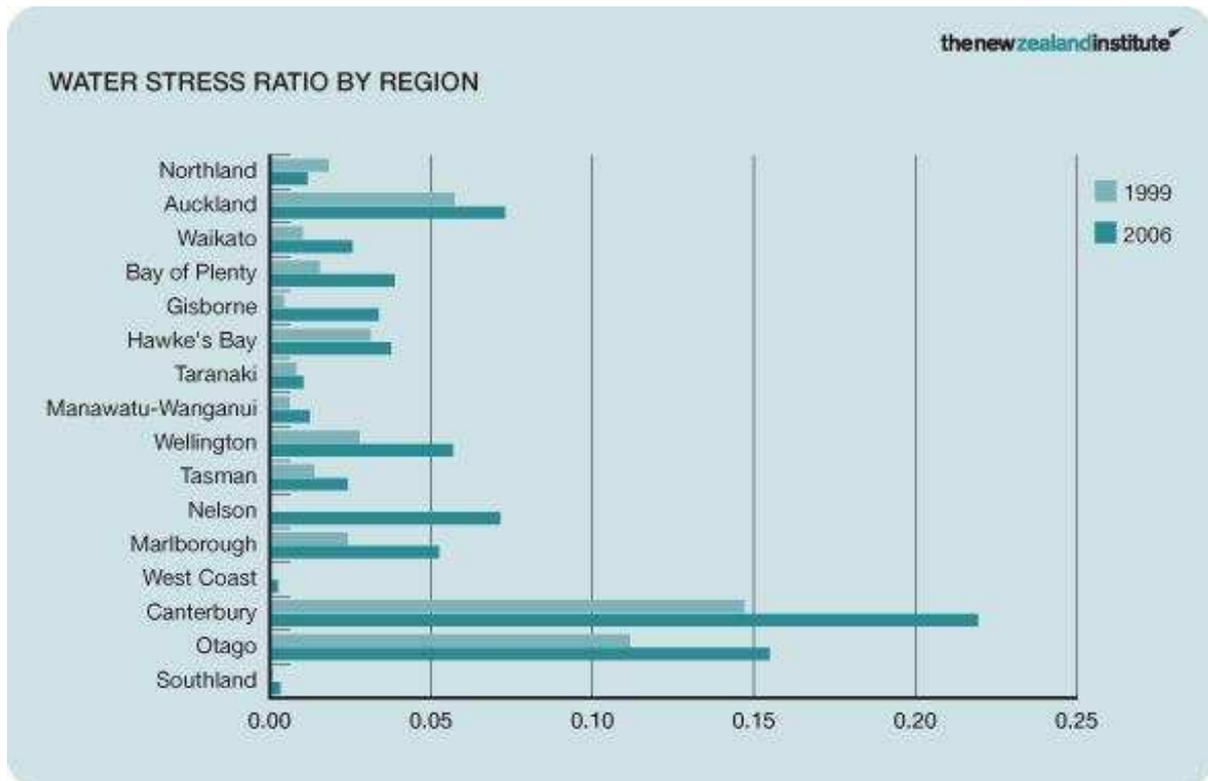


Figure 4

Why water quality matters

Access to clean fresh water is critical for New Zealanders. We need water to drink and wash, to grow the plants that sustain our agricultural economy and food supply, and for industry. Clean rivers and lakes are important for recreation and tourism.

Globally, water supplies are coming under increasing pressure as populations grow, countries industrialise, and water supplies deteriorate. Water is used locally so some places can be badly affected by scarcities or pollution while other places in the same country are not.

A number of indicators can be used to measure the quality of water, for example by looking at the water clarity, the bacterial content, the taste or odour, or the level of nitrate in water. The nitrate level in water is used as the overall measure of water quality because it assesses New Zealand's performance in addressing nonpoint source pollution from primarily agricultural activities: a major cause of water pollution in New Zealand. Nonpoint source pollution comes from sources such as polluted runoffs from agriculture land draining into rivers, growing and intensifying dairying activities, animal waste, septic tanks, fertilisers, and local council sewage treatment systems.

Nitrates are required within an ecosystem, but in excess amounts they can lead to population explosions, like algal blooms, where there is little oxygen available in the water and the ecosystem is compromised.

While no set standards for nitrate levels exist in New Zealand, the Ministry for the Environment (MfE) investigates any cases where water contains more than 0.33 milligrams of nitrate per litre.

New Zealand's performance

New Zealand is well endowed with a large supply of fresh water. There is relatively high and reliable rainfall and rivers flow throughout the year. Only around 5 percent of the water that falls in New Zealand is currently being used, compared with around 50 percent in most countries.

New Zealand's National River Water Quality Network (NRWQN), now in its third decade, monitors a panel of 77 sites on 35 rivers in New Zealand. The rivers monitored drain about half of New Zealand's

land area. Each river is surveyed monthly and several variables are measured including nitrate, pH, and dissolved oxygen levels.

The peak level of nitrate, measured at the 95th percentile, has increased during the 1990 – 2007 period, as shown in Figure 1. In 2007, the average peak level of nitrate was almost 1 milligram per litre compared to 0.6 milligrams per litre in 1990.

About one-third of the monitored river sites had no significant water quality trend between 1990 and 2006, as shown in Figure 2. Almost 40 percent of monitored sites had a meaningful increase (where the trend is both statistically significant and environmentally meaningful) in nitrate levels while almost 20 percent of monitored sites have had a meaningful decrease in nitrate levels since 1990.

Lakes and groundwater are also affected by the pollution that is transported via rivers. Trends in combined nitrate and phosphorus levels for lakes and groundwater are shown in Figure 3. Around 20 percent of lakes and 13 percent of groundwater sites tracked are showing deterioration. The majority of the deteriorating lakes were already moderately to highly polluted.

More than one-third (39 per cent) of groundwater monitoring sites in New Zealand have elevated levels of nitrate, with 10 percent exceeding trigger levels for ecosystem protection and 5 percent not safe for drinking.

The amount of water being used compared to water availability varies widely by region, as shown in Figure 4. In this figure the water stress ratio has been calculated for each region, expressed as the total water allocation divided by the total water resource, by region. The figure shows that Canterbury and Otago are most affected and that water stress levels are increasing, rapidly in some regions. However, water stress levels in New Zealand remain low compared with other countries.

The data shows that New Zealand retains many water sources that are not affected very much by pollution, and many that are affected. While improvements in water quality are observed in some places, the overall pattern is that polluted rivers, lakes and groundwater are continuing to deteriorate.

What is being done

Growth and intensification of dairying activities has been identified as a risk to water quality in some regions in New Zealand. In response to the risk, the Clean Streams Accord was agreed, with the aim to “minimise the impact of dairying on New Zealand’s streams, rivers, lakes and wetlands so that they are suitable, where appropriate, for fish, drinking by stock and swimming.” The Clean Streams Accord has been in place for several years now, and progress updates indicate most of the planned actions are being undertaken. However, the proportion of dairy farmers who fully comply with regional council dairy effluent rules and consent conditions has deteriorated in recent years. Nationally, only 60% of dairy farmers effluent was considered appropriately treated and discharged in 2008/2009, compared with 64% in 2007/2008. More needs to be done to reverse the adverse trend.

Much of the regulation and monitoring of water quality is the responsibility of local government. That has advantages because those conducting the assessments and establishing the guidelines have local knowledge. However, different regions may apply different standards, those charged with management may not have extensive scientific expertise, and decisions between economic and environmental objectives at the local level may affect outcomes at the national level. Most importantly, it is challenging to manage a system effectively when that system spans many jurisdictions, and there are no national standards or objectives defined.

A National Policy Statement for Freshwater Management has been proposed to provide guidance to local government. The policy will be implemented through the Resource Management Act, and aims to help local government ensure New Zealand’s freshwater resources are sustainably managed. Objectives will be addressing freshwater degradation issues and ensuring water remains at or above a swimmable standard.

In 2009 the Government announced its new strategy *New Start for Fresh Water*. It outlines the Government’s new direction for water management in New Zealand. A programme of work has been established to develop new guidelines on water quality limits and threshold levels which will be presented to Cabinet in September 2010.

A number of local councils have taken policy steps to ensure the quality of the water in lakes and groundwater, including reviewing and implementing tighter point source pollution standards and trigger values of nitrate in the water supply.

Rationale for the grade of C

New Zealand has a very large water resource and much of it remains high quality. There has been some progress made in addressing point source discharge, and some rivers, lakes and groundwater sources are improving.

However, deterioration of the quality of the worst affected rivers is continuing so the interventions to reduce pollution are not yet working. The quality of the resource is a B reflecting New Zealand's abundance of high quality water but the grade is a C because of the increasing nitrate pollution per litre of water and an inability to halt the adverse trend.

Implementing policy that is judged strong enough to reverse the adverse trend could improve the grade to a B.

Target for 2015 of 1.0 mg/litre

Hold the average nitrate level for the peak, measured at the 95th percentile, at 1.00 milligrams per litre, the current level.

Analytical description

Nitrate trends in rivers provide a national picture of river water quality in New Zealand. The 5th and 95th percentiles represent the lowest and highest 5 percent of results. The levels of nitrate are measured monthly at 77 sites on 35 rivers around New Zealand in the National River Water Quality Network. The network is operated by NIWA. The sites which are monitored provide information regarding specific sections of a river and not the whole river.

The Dairying and Clean Streams Accord: Snapshot of Progress (2008/2009), retrieved from <http://www.maf.govt.nz/mafnet/rural-nz/sustainable-resource-use/resource-management/dairy-clean-stream/dairycleanstream-08-09.pdf> on 19th March 2010

Figure 1: Statistics New Zealand, data retrieved from the Measuring New Zealand's Progress Using a Sustainable Development Approach <http://statisticsnz.govt.nz/> on 27th November 2009.

The percentage distribution of monitored rivers by nitrate levels shows the significant trends in nitrates between 1989 and 2007. The percentage distribution is calculated by expressing the respective changes in nitrates as a percentage of the 77 monitored sites. This figure shows that an increase in nitrates is a decline in water quality however a decrease in nitrates is an improvement in water quality.

According to the Ministry of Environment a meaningful trend is both environmentally meaningful and statistically significant. A significant trend may not be environmentally meaningful so the scale of the change could be quite minor.

Figure 2: Ministry of Environment retrieved on 16th February 2010
<http://www.mfe.govt.nz/index.html>

Change in nutrient levels for Lakes is measured using the trophic level index according to Statistics New Zealand and the Ministry of Environment. The Index includes measures of phosphorus and nitrogen levels, visual clarity of the lakes and algal biomass. The trends in the lakes data have been calculated using the Burns methodology (Burns, Bryers & Bowman, 2000)

Groundwater quality results represent areas where contamination is likely to occur instead of representing the overall ground water resource in New Zealand. The trend data between 1995 and 2006 is from 878 ground sites. The median data is based on 956 sampled sites.

Figure 3: Ministry of Environment retrieved on 16th February 2010
<http://www.mfe.govt.nz/index.html>

The water stress ratio indicates how much of the available water is being used. The total water resource for each region is calculated as an average annual value over the periods 1995-2005 using Statistics New Zealand water physical stock account. Water allocation is calculated as an inflow in the region subtracting off any water loss through evaporation, transpiration and flows to other regions. This becomes an indirect measure of the total volume of water available as not all water resources from the regions are exploitable.

Figure 4: Statistics New Zealand gather from the Measuring New Zealand's Progress Using a Sustainable Development Approach <http://statisticsnz.govt.nz/> on 27th November 2009. Note: 1999 data for Nelson and the West Coast region was not available.



CO₂ ppm in atmosphere:

Latest = 387

2015 target = 395

Grade:

D

'Steady growth in CO₂ concentration'

Trend:

X

Deteriorating

Rank: 23rd out of 27 OECD countries

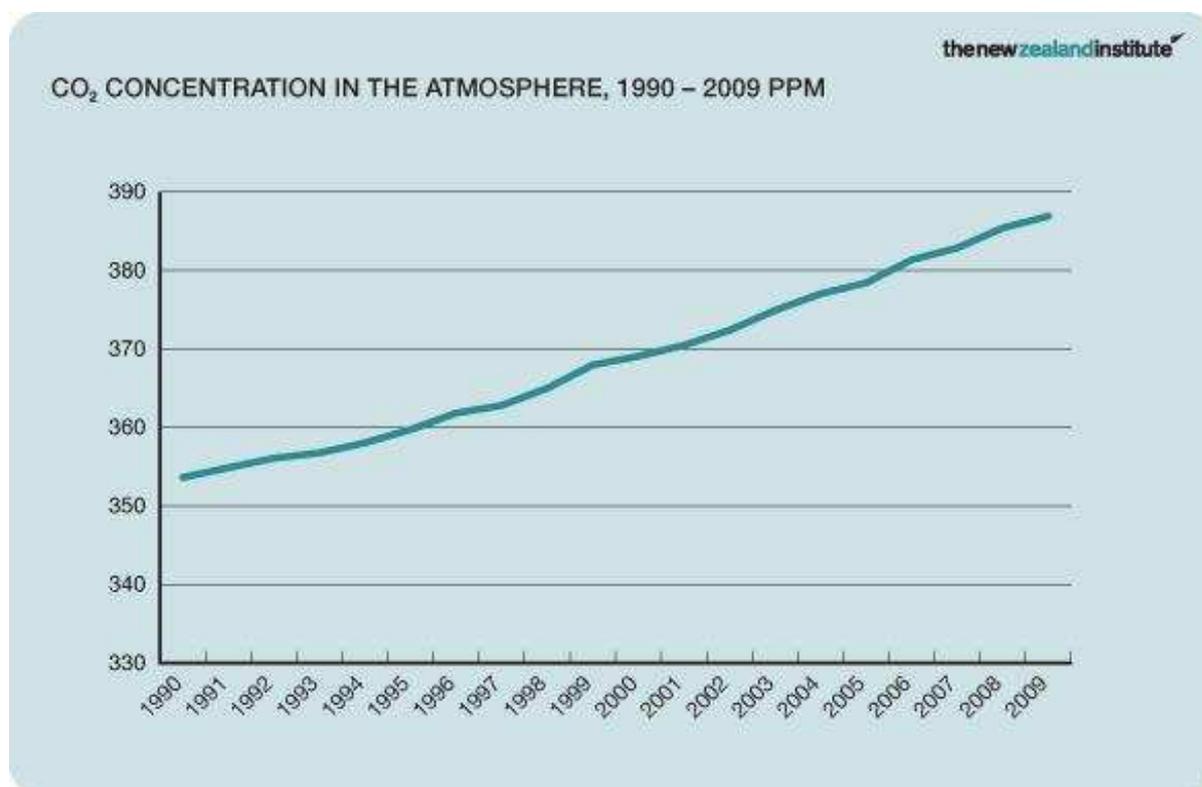


Figure 1

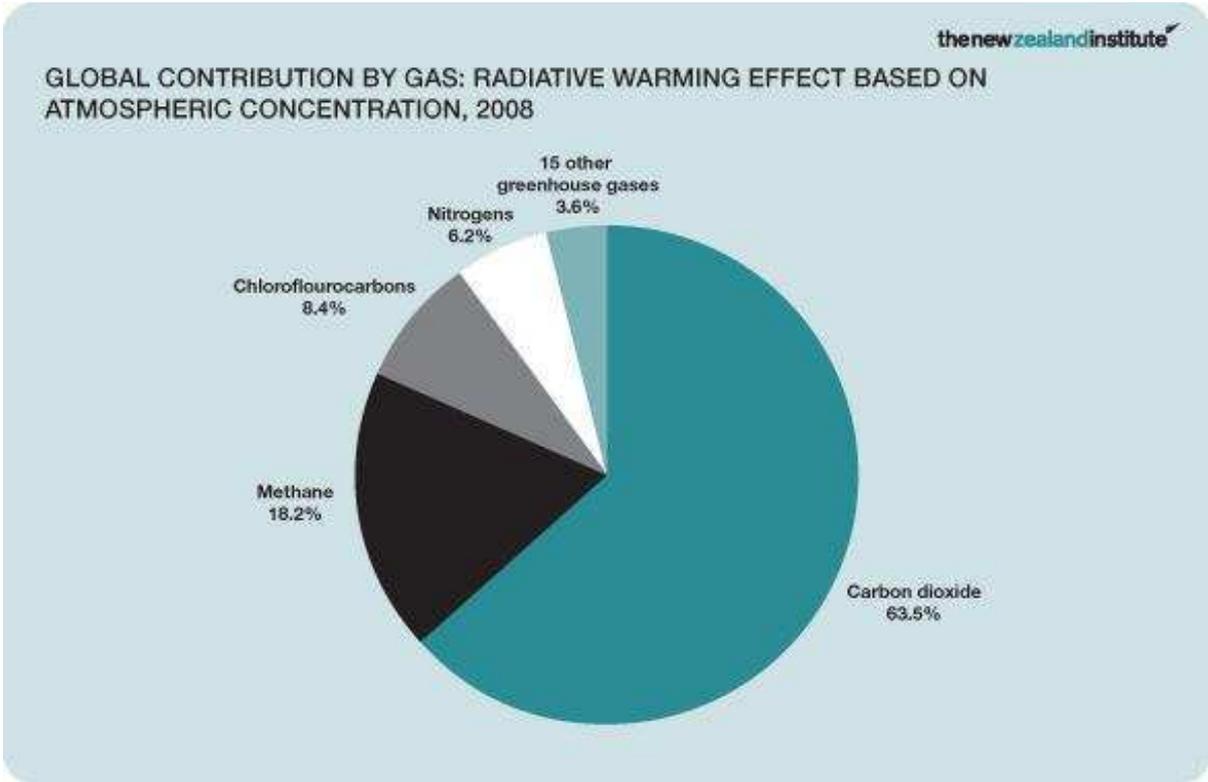


Figure 2

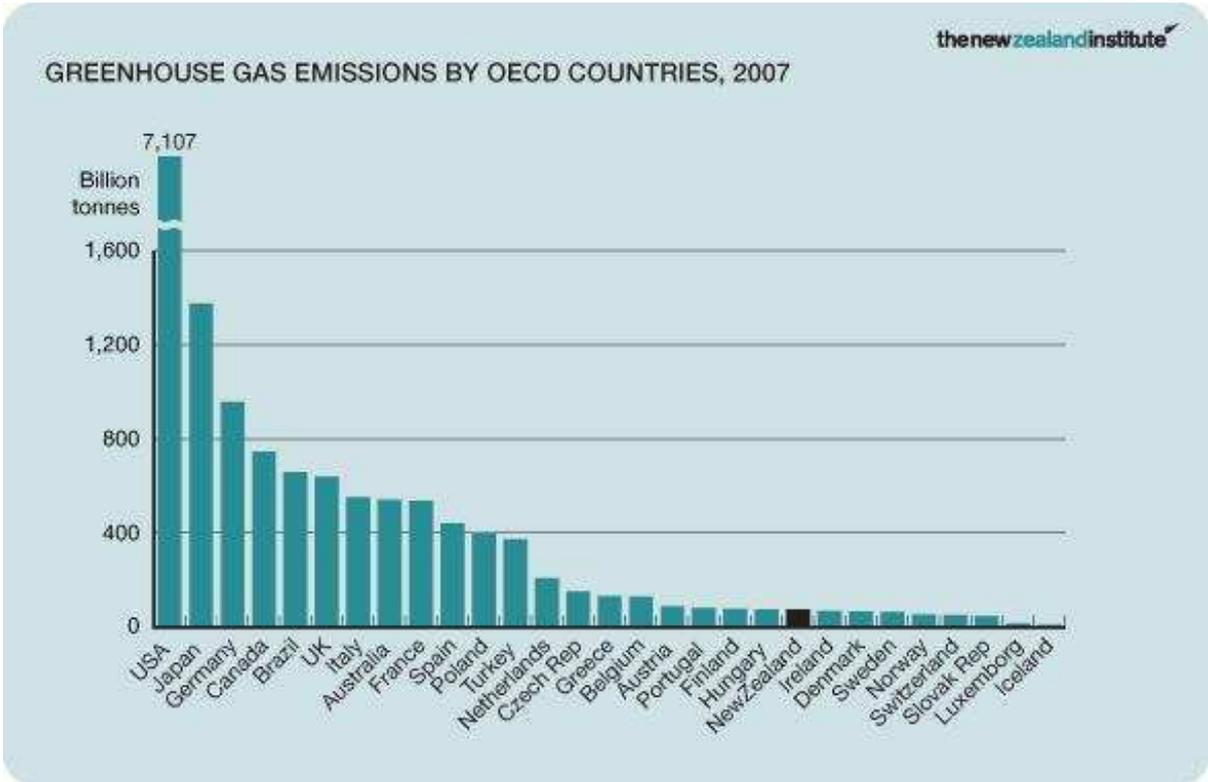


Figure 3

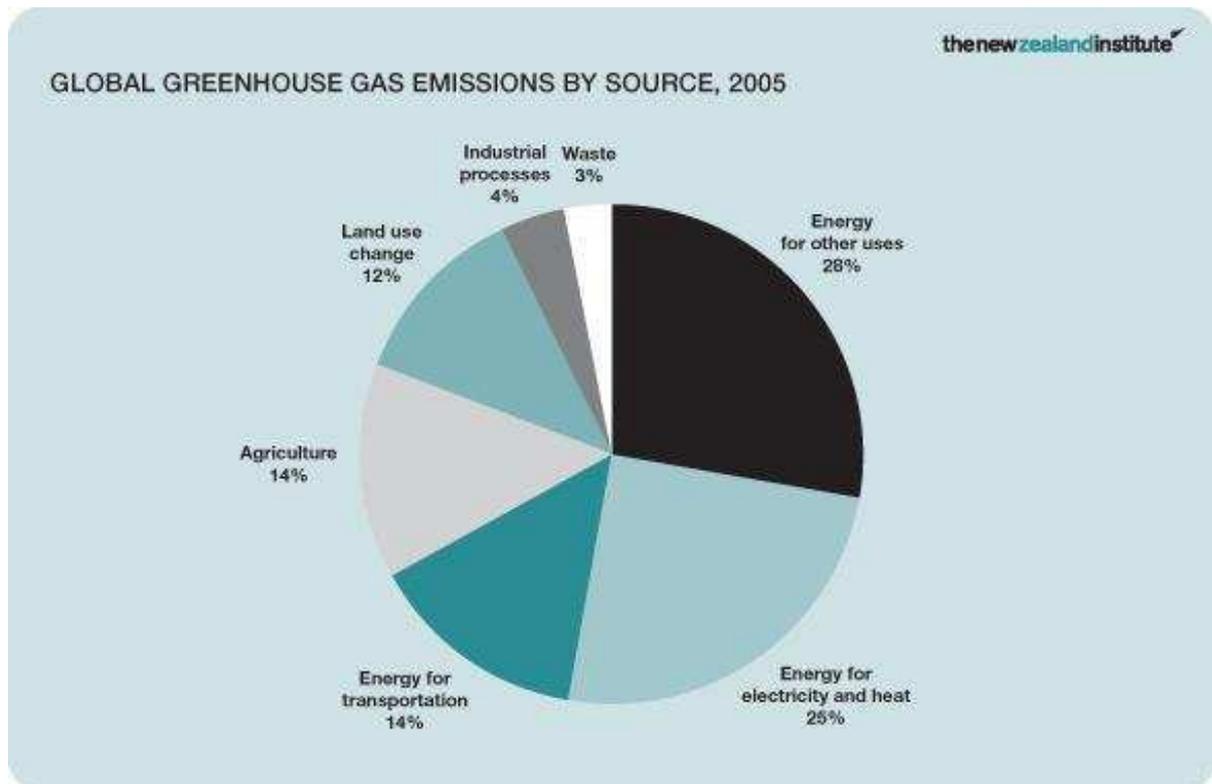


Figure 4

Why does CO₂ concentration in the atmosphere matter

The very small proportion of carbon dioxide in the atmosphere is responsible for the Earth's average temperature being being +12°C instead of -18°C. Burning fossil fuels, clearing forests, and other human activities are increasing the concentration of carbon dioxide and other greenhouse gases, notably methane and nitrous oxide, but also many others. There is a strong scientific consensus that increasing concentrations of these greenhouse gases leads to increased global temperatures and other climate changes.

CO₂ concentration is included as a measure because of the effect that climate change would have on New Zealand's future. Climate modeling indicates that New Zealand will be less affected than many countries by the direct effects of small amounts of climate change. The early effects expected in New Zealand are higher average temperatures, with increased rainfall in the West and more droughts in the East.

However, a temperature increase of more than 2°C would bring with it an unacceptable risk of abrupt climate change. The risk arises because once the warming process gains momentum it triggers other processes that accelerate the warming. Current estimates indicate that the warming so far plus the warming that is now inevitable because of past emissions will produce a temperature change of around 1.4°C.

Gradual and moderate climate change is expected to increase the incidence of storms, floods and droughts. There will be increased pressure on food supply, especially in developing countries, and sea level rises will threaten coastal settlements and coastal plains.

Abrupt climate change would be disastrous for New Zealand, along with the rest of the world. Climate change would not be gradual and stable; climate chaos is more likely.

Strong action is needed soon to avoid a temperature increase. The leading countries in the world have agreed a target of limiting the global temperature increase to 2°C above the level in pre-industrial times. The United Nations has concluded that annual emissions of greenhouse gases should be reduced by 25% to 40% relative to 1990 levels by 2020.

While there is consensus among the world's leaders that emission reductions are required, making the adjustments required will be expensive, and will require policies that are likely to be unpopular today. Therefore each country prefers that other countries make the adjustments, and the world's leaders are negotiating about who will do what.

The concentration of carbon dioxide in the atmosphere is an indicator of the world's success in reducing emissions and of the accumulated risk of damaging climate change. Carbon dioxide has increased from about 280 parts per million (ppm) in 1800 to 387ppm in 2009. The atmospheric concentration of carbon dioxide will have an important effect on the future lives of New Zealanders.

New Zealand's performance

As is frequently acknowledged, New Zealand is a very small country that directly contributes less than 0.5% of global GHG emissions. On the other hand, the world is made up of many populations of 4.4m people and New Zealand's 4.4m people are responsible for more emissions than most other groups of 4.4m people in the world.

New Zealand can make two kinds of contributions to reducing the risk from climate change; reducing its own emissions and contributing to the global response.

As a result of a limited response in developed countries, combined with ongoing population growth and industrialisation in developing countries, the concentration of CO₂ is increasing by over 2ppm per year (Figure 1). Turning that growth rate into a decline will be an immense challenge.

Figures 2, 3 and 4 show the contributions of each greenhouse gas to warming, the emissions from OECD countries, and the activities and processes that lead to emissions. Collectively, the figures reveal that there cannot be one single solution to reverse the trends, as there are many sources contributing large amounts of emissions, and that profile varies across countries.

New Zealand's effort to reduce its own emissions is covered in the measure CO₂e emissions per capita.

What is being done?

New Zealand is playing its part in efforts to form a global agreement to limit climate change. It was a participant in the Kyoto agreement and has offered to reduce emissions by 10 – 20% in the current negotiations.

New Zealand has set an example by establishing an Emissions Trading Scheme and is taking a leadership role in an international effort developing technologies to reduce emissions from agriculture.

The scale of the challenge for New Zealand is not yet being confronted. Either a major reduction in emissions will be required soon or New Zealand will need to adapt to a world that will be very different from today.

Rationale for the grade of D

A high grade cannot be awarded given the threat to New Zealand's future from climate change and the ongoing increase in atmospheric CO₂.

On the other hand, New Zealand is playing a part in international efforts to limit climate change.

There are signs that preparation to adapt to climate change is beginning but so far little has been done.

Target for 2015 of 395ppm

The target of 395 is based on restricting annual aggregate growth to an average of 1.6 ppm until 2015. The average annual growth was 1.74ppm over the last ten years and 1.97 over the last five years.

Achieving that target would represent progress but would still expose the world to risk of an increase of more than 2°C in global average temperature and so to substantial climate change.

Up to date information on CO₂ concentration in the atmosphere is shown below. The data is updated monthly from NOAA's Mauna Loa observatory in Hawaii.

Analytical description

Figure 1: Data retrieved from <http://cdiac.ornl.gov/ftp/trends/co2/maunaloa.co2> on March 18, 2010.

Figure 2: The Annual Greenhouse Gas Index from National Oceanic and Atmospheric Administration. Data retrieved from <file:///S:/Research/NZahead%20report%20card/Measures/Environment/radiative%20forcing%20data.htm> on March 10, 2010.

Figure 3: United Nations Framework Convention on Climate Change, report of emissions for Annex I Countries. Data retrieved from http://unfccc.int/ghg_data/ghg_data_unfccc/items/4146.php on December 18, 2009.

Figure 4: Data retrieved from World Resources Institute at <http://www.wri.org/chart/world-greenhouse-gas-emissions-2005> on March 18, 2010.



CO₂e emissions per capita:

Latest = 17.9 kt 2015 target = 15.0 kt

Grade:

D

'High emissions, but signs of progress'

Trend:

=

Stable

Rank: 23rd out of 27 OECD countries

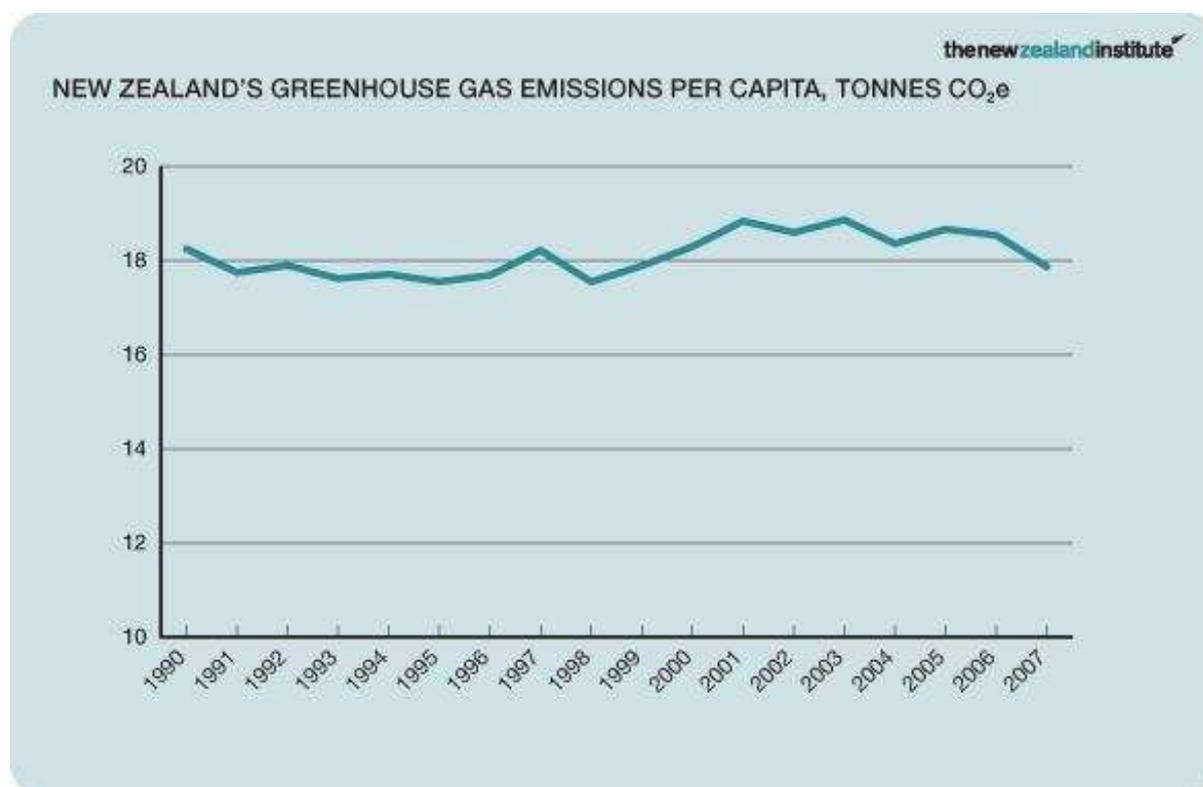


Figure 1

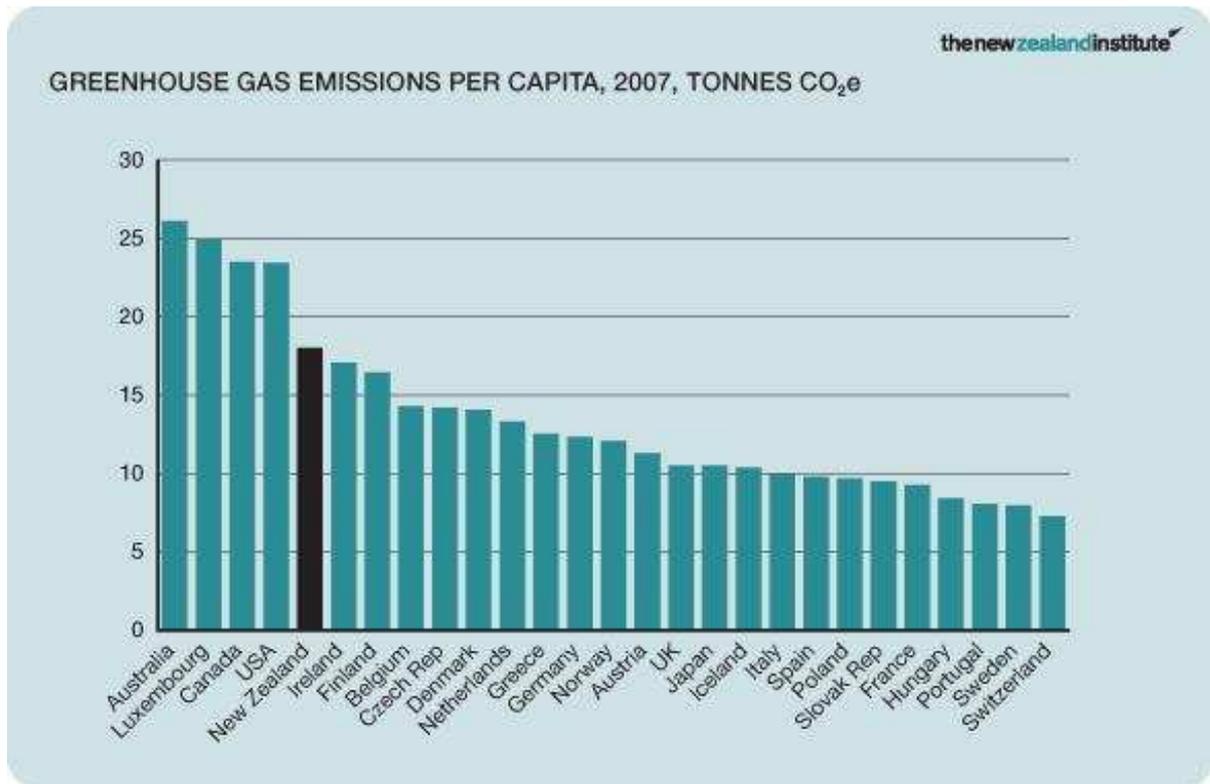


Figure 2

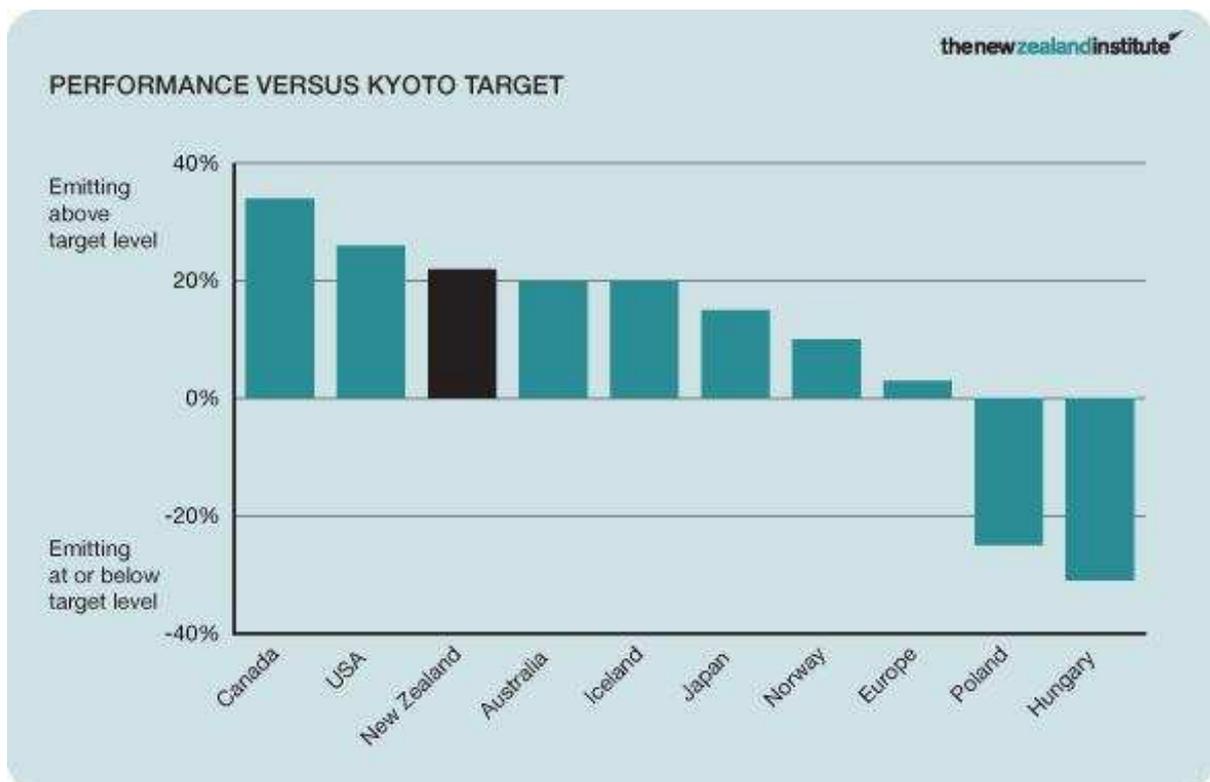


Figure 3

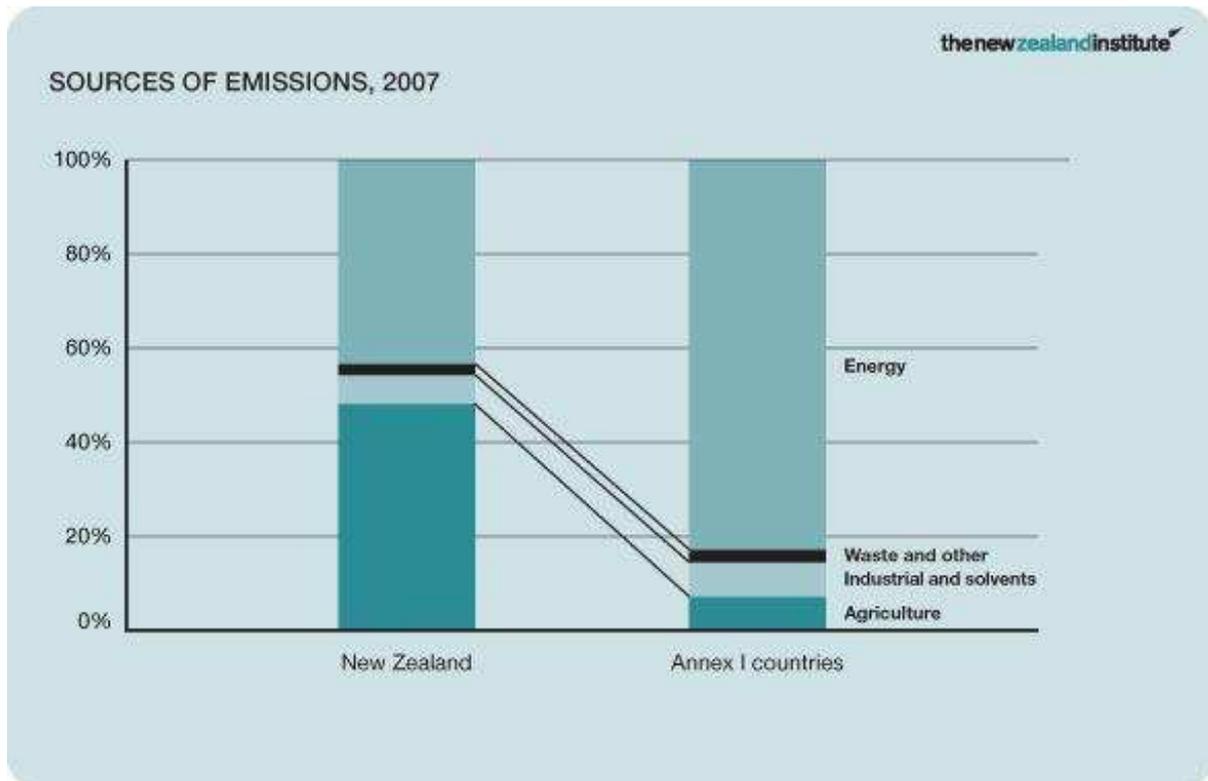


Figure 4

Why CO₂e emissions per capita matters

Climate change is being driven by greenhouse gases: carbon dioxide, methane, nitrous oxide and many other gases, being released into the atmosphere as by-products of human activity. Some of these gases have much more potent warming effects than others, so CO₂e (also referred to as greenhouse gas) adjusts for the different warming effects to estimate the total warming effect of all emissions.

The concentration of greenhouse gases in the atmosphere is increasing because of ongoing emissions. Reducing emissions is not the only way to reduce climate change; many other options are being considered, notably forest planting and carbon sequestration in caverns and soils.

However, the best way to respond to pollution problems is to not pollute in the first place and in 1997 the world's developed countries formed the Kyoto agreement to limit greenhouse gas emissions. The levels agreed differed by country. New Zealand agreed to hold overall greenhouse gas emissions for 2008-2012 at 1990 levels.

Emission reductions by New Zealanders are important to make a fair contribution to the global effort, to protect New Zealand's international reputation, to comply with treaty obligations, and to avoid the financial penalties that will be imposed if the target is not met.

The aggregate level of emissions is used for the Kyoto target but emissions per capita is the measure chosen to assess how well New Zealanders are performing. The per capita measure is an indicator of how much New Zealanders are changing behaviour to improve long term climate outcomes.

New Zealand's performance

In 1990, New Zealanders emitted 61.9 Mt of greenhouse gases, or 18.3 tonnes per person. The Kyoto Protocol set a target for New Zealand of zero emissions growth, meaning New Zealand had agreed to emit at 1990 levels over the period 2008-2012. Emissions above the permitted level require purchasing the right to emit from the allowance for some other country, or purchasing credits generated through projects that avoided emissions. Emissions below the permitted level mean New

Zealand would have rights to sell. Holding the level at 61.9 Mt as agreed and allocating the 61.9 Mt over today's population establishes a target of 14.4 thousand tonnes per capita for the Kyoto period.

Figure 1 shows the trend of emissions per capita in New Zealand, which is approximately flat for the last few years, with a recent decline resulting mainly from increased fuel prices and the effects of recession. Flat emissions per capita mean that New Zealand is not making any progress towards the target.

New Zealand's 2007 greenhouse gas emissions per capita are compared with data for other OECD countries in Figure 2. The data show that New Zealand has the fifth highest emissions per capita in the OECD, following Australia, Luxembourg, Canada and the USA. With the exception of Luxembourg, these high emitting developed countries have large primary production activities and relatively low population density.

New Zealand is not alone in missing the Kyoto target. Figure 3 shows the shortfall against target for selected developed countries. Note that the US and Australia did not agree to Kyoto targets when the agreement was formed, while Canada did agree but has withdrawn, refusing to pay the financial penalty. The figure shows OECD countries but many non-OECD countries with Kyoto targets are meeting their targets because economic changes have reduced their output.

New Zealand faces a unique challenge. As Figure 4 shows, in New Zealand agriculture comprises around half of all emissions, compared with around 5% in other countries that have agreed to Kyoto targets. Agricultural emissions in New Zealand are mainly produced by farm animal digestion processes. New Zealand's challenge is to find a way to reduce these agricultural emissions, or to make very large reductions in non-agricultural emissions.

What is being done

The 22% growth of total emissions since 1990 and the failure to reduce emissions per capita demonstrate that very little has been done so far to reduce New Zealanders' emissions.

Government has committed to taking a lead role in an international effort to develop technologies to reduce agricultural emissions. The Agricultural Greenhouse Gas Research Centre is meant to link national and international partners in research. New Zealand is leading the Global Research Alliance, which will have an initial meeting in April 2010 with representatives from more than 20 member countries.

New Zealand is very well endowed with renewable energy options that produce no carbon emissions. Long-established hydro-electric generation, growing wind and geothermal capacity, and potential photovoltaic and tidal generation provide many options to reduce greenhouse gas emissions from energy generation. In 2008, almost half of New Zealand's primary energy was supplied through renewable sources.

Little has been done so far to reduce transport emissions. New Zealand's car fleet is one of the highest emitters in the world, and standards lag behind European and some US restrictions.

An emissions trading scheme (ETS) has been established. The ETS allows Government to specify the aggregate amount of emissions that can be released and to reduce the allowable emissions over time. The ability to trade rights to emit means emitters who face high costs to reduce emissions can purchase a right to emit from emitters who can reduce their emissions at a low cost. That feature of the ETS reduces the economic cost of emission reductions.

New Zealand declared a willingness to commit to a 10 – 20% reduction relative to 1990 levels by 2020. If an international agreement strong enough to reduce the risk of abrupt climate change is formed, then much larger emission reductions will be required. Having an ETS in place means that Government can change the emissions allowed to comply with a future international agreement.

Several policy changes introduced recently have reduced New Zealanders' potential to reduce emissions per capita. The ETS entry dates for several industries have been delayed, and even once included in the ETS, emitters are given allowances to emit at a higher level and for longer than originally proposed.

Some New Zealand organisations are taking steps to reduce their emissions or offset emissions. Notably, Air New Zealand is exploring bio-fuel options; and the New Zealand Wine Company, Urgent

Couriers, and dozens of other New Zealand companies have become certified carbon neutral through purchase of offsets.

Despite these efforts from some organisations, there is no evidence of a material change in behaviour on the part of the population as a whole.

Rationale for the grade D

New Zealand has one of the highest greenhouse gas emissions per capita in the OECD. Aggregate emissions are not being reduced and policies have been weakened. New Zealand's target for 10-20% reduction versus 1990 levels is well below what scientific evidence indicates is required to avoid abrupt climate change. New Zealand's leadership continues to live high emission lifestyles, providing the example others will follow.

Target for 2015 of 15

Based on government commitment to 10-20% below 1990 levels, by 2020, the 2015 value on a straightline midpoint reduction from 2007 would be just under 15 tonnes per capita. This degree of reduction pursued by all countries would expose the world to considerable risk of extreme climate change. However, this target requires a substantial reduction to emission levels New Zealand has not achieved in the past two decades and represents a substantial step in the right direction.

Analytical description

Figure 1: New Zealand Ministry for the Environment. New Zealand's 2007 greenhouse gas emissions per capita are compared with that data for other OECD countries in Figure 2. The data show that New Zealand has the fifth highest emissions per capita in the OECD, following Australia, Luxembourg, Canada and the USA. With the exception of Luxembourg, these high emitting developed countries have large primary production activities and relatively low population density.

Data retrieved from <http://www.mfe.govt.nz/publications/climate/net-position-report-2009/html/index.html> on December 12, 2009.

Figure 2: United Nations Framework Convention on Climate Change, report of emissions for Annex I Countries. Data retrieved from http://unfccc.int/ghg_data/ghg_data_unfccc/items/4146.php on December 18, 2009. Population data from the Total Economy Database, the Conference Board.

Figure 3: United Nations Framework Convention on Climate Change, report of emissions for Annex I Countries. Data retrieved from http://unfccc.int/ghg_data/ghg_data_unfccc/items/4146.php on December 18, 2009.

Figure 4: Same as for Figure 3.



Annual cost of
Invasive species: Latest = 3.4 billion

2015 target = Reduced annual cost

Grade: **C**

'Special but vulnerable'

Trend: **?** Unknown

Rank: Not available

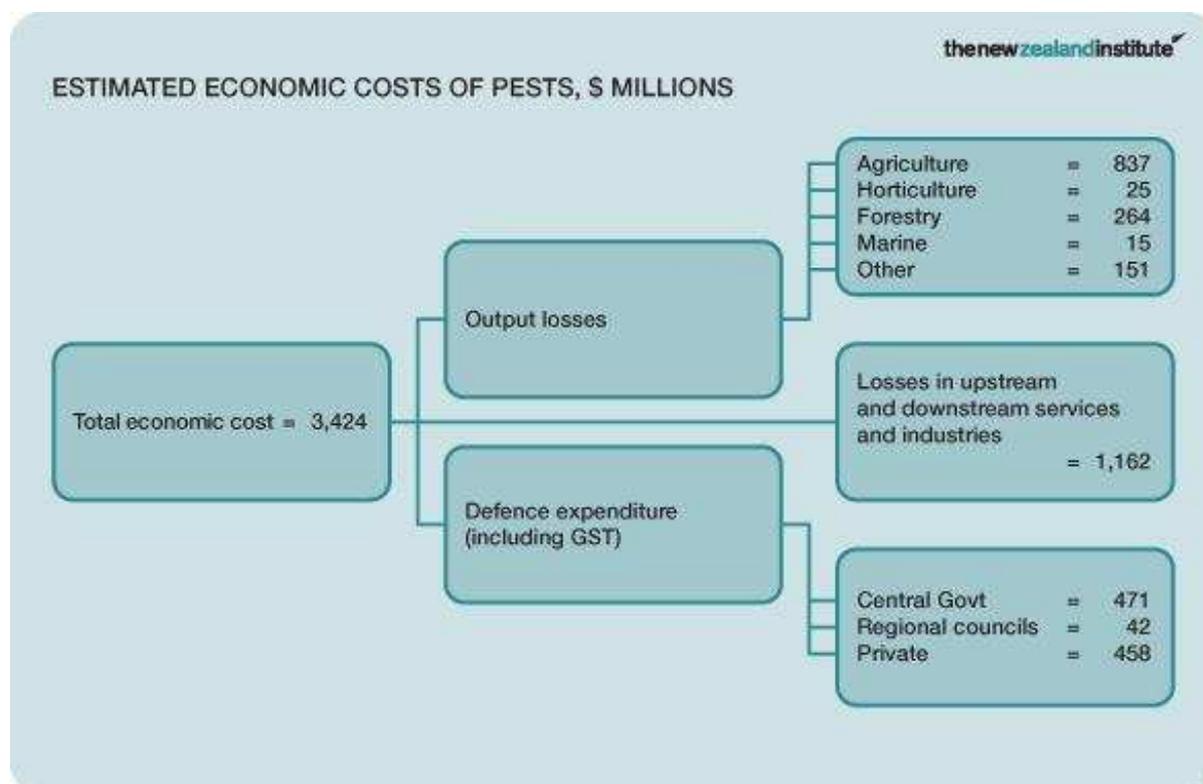


Figure 1

ESTIMATED ANNUAL COST OF IMPORTANT INVASIVE SPECIES, NZ\$ MILLION

Species	Annual Cost
Clover Root Weevil	312
Forestry Sector	214
Giant Buttercup	177
Argentine Stem Weevil	160
Possums	52
Rabbits	50
Bird Losses – Other crops	33
Gorse	31
Didymo	24
Californian Thistle	26
Sea squirt	15
Varroa	15
Bird Losses – Viticulture	10

Figure 2

ACUTELY THREATENED SPECIES

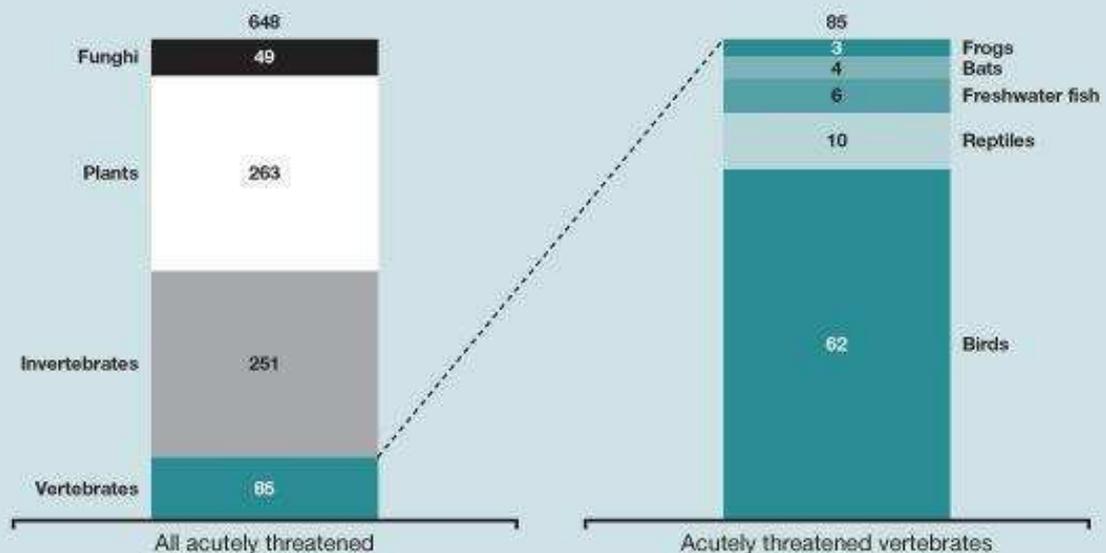


Figure 3

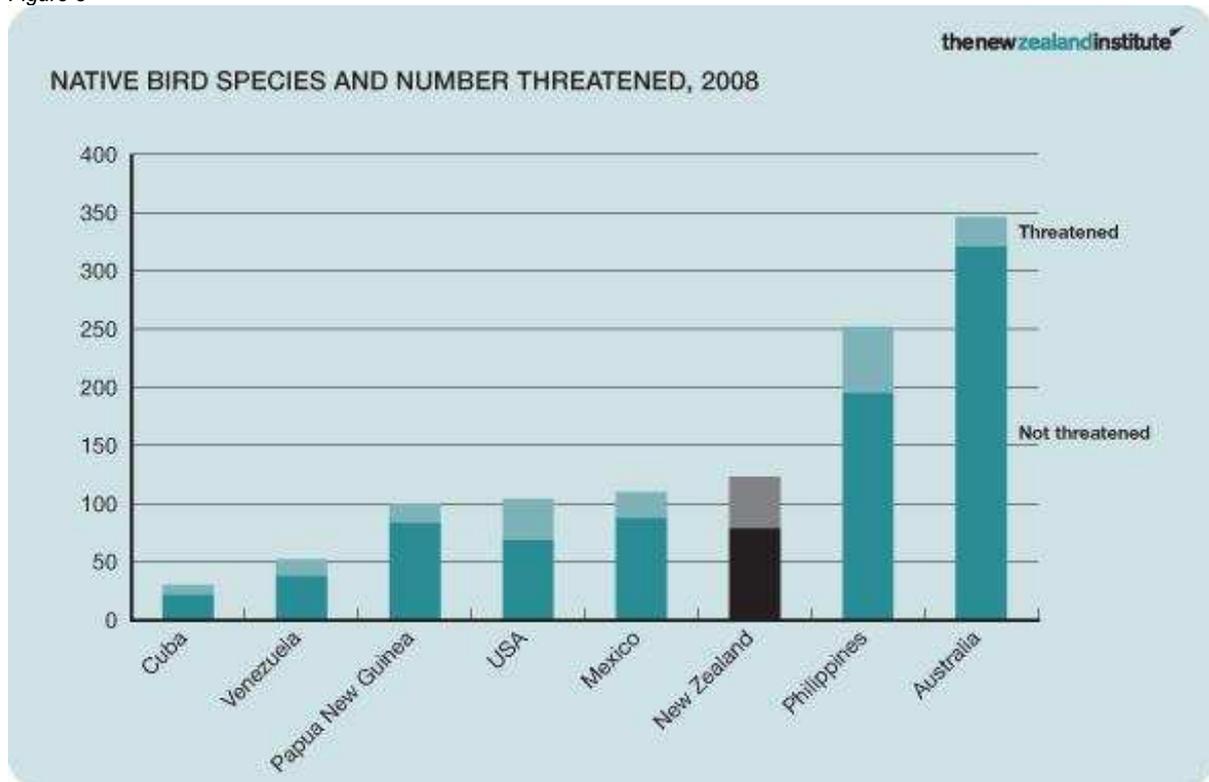


Figure 4

Why invasive species matters

New Zealand's islands have been isolated from the rest of the world for tens of millions of years and its flora and fauna have evolved with relatively little influence from the arrival of species from other places. Most of the rest of the world has been exposed to invasions of predators and parasites as climate changes have led to migrations and sea level falls have created land bridges.

The arrival of humans in New Zealand has led to importation of predators such as rats and stoats, parasites such as the varroa mite, and other species that harm our natural environment such as possums and didymo. New Zealand's history of relative isolation means that invasive species that become established in New Zealand may have few natural predators, and local ecologies may not be well-equipped to adapt to the invasions.

One important consequence of invasive species is the potential extinction and decline of native species, given their experience of only a limited range of predators. For example, if left unmanaged, possums would eventually eat their way through our natural forests and stoats would consume most of our native birds. Extinctions and declines reduce ecological resilience and preclude future benefits from products and services that might be derived from the species. Most of these native species losses and declines have limited short term impact on environmental productivity, though they have large detrimental effects on environmental quality.

Invasive pests also have negative impacts on economic productivity. Pests cause economic damage when they become established with material costs for surveillance, prevention and response.

The long term outcomes from these invasions will depend on how well they are managed. Efforts to contain possums and stoats are ongoing with technological advances likely to improve outcomes provided the effort is sustained. It is expected that many weeds are becoming established in the wild but are not yet widespread. These weeds will have important future environmental costs. Climate change will help many of these weeds to flourish.

New Zealand's performance

The output loss in 2008 from invasive species is estimated at almost \$1.3 billion per annum, mostly in agriculture and forestry. Further, in 2008, \$970 million was being spent on pest management with more than half of that spent by government. The majority of the government spending was for responses to biosecurity issues with around 10% on each of prevention and surveillance.

Combining these costs and taking account of consequential losses to the economy, Figure 1 shows that the estimated total economic cost of pests in 2008 was \$3.4 billion, or almost 2% of GDP. Without effective biosecurity these costs could be much higher. The cost estimates do not include non-economic costs of environment degradation such as loss of habitat and the decline and extinction of native species.

The table in Figure 2 shows that some individual invasive species can impose significant costs.

Outside of the economic costs, New Zealanders manage the country's native species and endemic species (those found only in New Zealand and uniquely ours) endowment. The estimated number of threatened native species in New Zealand was 2,420 in 2005, with 648 classified as acutely threatened. Figure 3 shows the types of acutely threatened species. Most acutely threatened species are plants and invertebrates, but there are many acutely threatened birds too.

Birds are associated in special ways with New Zealand. Based on 2008 data, quite a large number of New Zealand's native bird species are threatened, Figure 4 compares New Zealand's native bird populations to that of several other countries, and shows how many of these species are threatened in each country. New Zealand has quite a high percentage of native birds in the threatened category,

What is being done

The Ministry for Environment reported in 2007 that New Zealand's efforts to halt the decline in native species are regarded as world-leading. New Zealand is recognised as one of a handful of countries that have invested in coordinated policies to manage invasive species, notably with the Biosecurity Act of 1993.

There are many activities that impact the introduction and management of invasive species, which means that there are many organizations which influence how successful New Zealand is in protecting native species. The Ministry of Agriculture and Forestry (MAF) is responsible for implementing the Biosecurity Strategy published in 2003, and has a division dedicated to delivering on this responsibility. One of the tasks of the MAF Biosecurity is coordinated efforts across various government agencies including the Department of Conservation, Ministry of Fisheries, Ministry of Science, Research and Technology, and more, through the Biosecurity Council.

The 2003 Strategy identified many issues that were to be addressed in order to improve processes and manage risks. A comprehensive review of this strategy has not yet taken place, but is due in 2010. Focus on the potential economic impact of invasive species is relevant, but effort and investment are also required to understand the state of native species. Only sporadic funding of research to assess the level of threat and endangerment of New Zealand's native species, and annual updates of statistics are not available.

Over the past decade there has been significant progress and participation in protection activities, establishing protected regions free of unnatural predators to enable populations of kiwi and other native species to re-establish. Many of these programs depend on local action, but are supported by government funding as well.

Rationale for the grade of C

New Zealand faces a unique challenge to protect its environment because it does not have many of the species that cause harm in other countries and because local ecosystems are especially vulnerable to invasive species. Past decisions to deliberately import damaging species and international connectedness mean the challenge is large.

Assigning a grade is difficult because international comparisons are not meaningful and objective trend data is not available for important metrics. New Zealand scores poorly on established invasive species, with high economic and environmental quality costs, and continuing adverse trends. New Zealand scores well for vigorous and largely effective efforts on biosecurity together with effort and

progress to protect habitats and threatened species, and to eradicate established invasive species. On balance a C.

Target for 2015 of reduced costs

Assessing progress in this measure is likely to involve substantial judgment. The data that is gathered to estimate annual costs due to invasive species is collected over several years and not comprehensively updated each year. Unpredictable events like new introductions can radically change the expected cost of invasive species.

Successful performance in this measure would be reducing the ongoing costs of species already introduced, while making reasonable investments to avoid further introductions. An unfortunate introduction might affect the target and assessment in two ways – unfavourable assessment for investment to avoid introductions, and then a revision of future targets based on the fact that an introduction has occurred. The recognition of additional, previously unknown threats or drivers of introduction may also call for a revised target.

Assuming no serious events, the target is to reduce the cost of invasive species, through efficient investment in avoiding further introductions and effectiveness of management.

Analytical Description

Figure 1: Economic costs of pests to New Zealand. A report prepared by Nimmo-Bell for MAF Biosecurity. Retrieved on January 21st, 2010 from <http://www.biosecurity.govt.nz/pests/surv-mgmt/mgmt/economic-impact-of-pests> The cost estimates are based on research conducted over a ten year period.

Figure 2: Same as for Figure 1.

Figure 3: Hitchmough, R., Bull, L., & Cromarty, Pam. (2005). New Zealand Threat Classification Systems List. Retrieved on March 22nd 2010 from www.doc.govt.nz

Figure 4: International Union for Conservation of Nature and Natural Resources. Data retrieved on February 16th 2010 from <http://www.iucnredlist.org/about/summary-statistics>

New Zealand Citizens:

Latest = -15,474 2015 target = -15,000

Grade:

C

'Leaving for OE or opportunity'

Trend:

✓

Improving

Rank: Not available

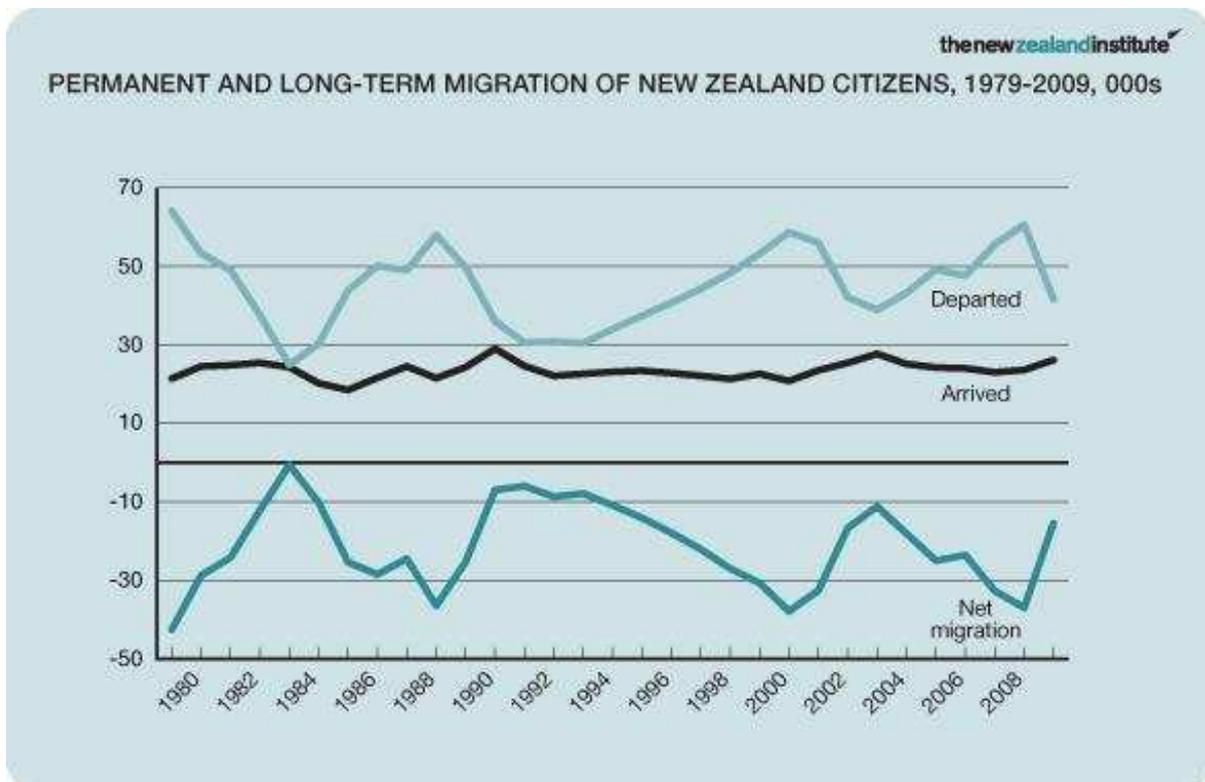


Figure 1

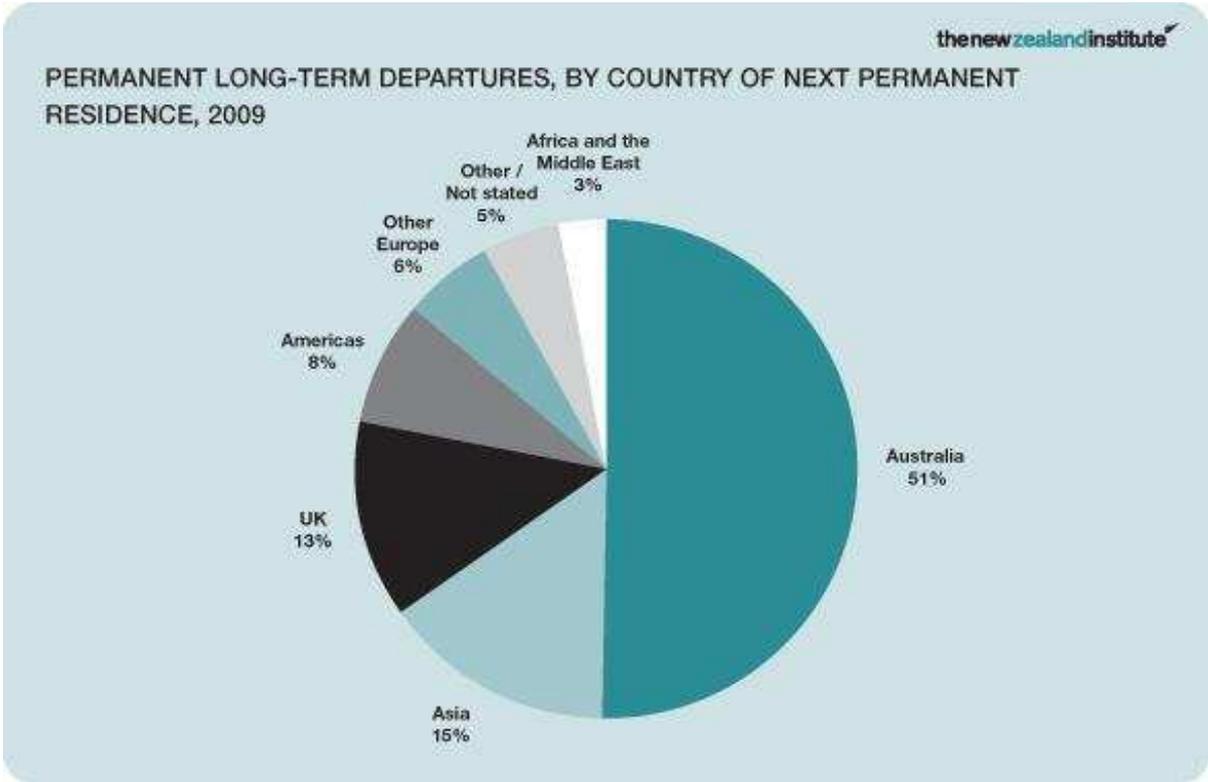


Figure 2



Figure 3

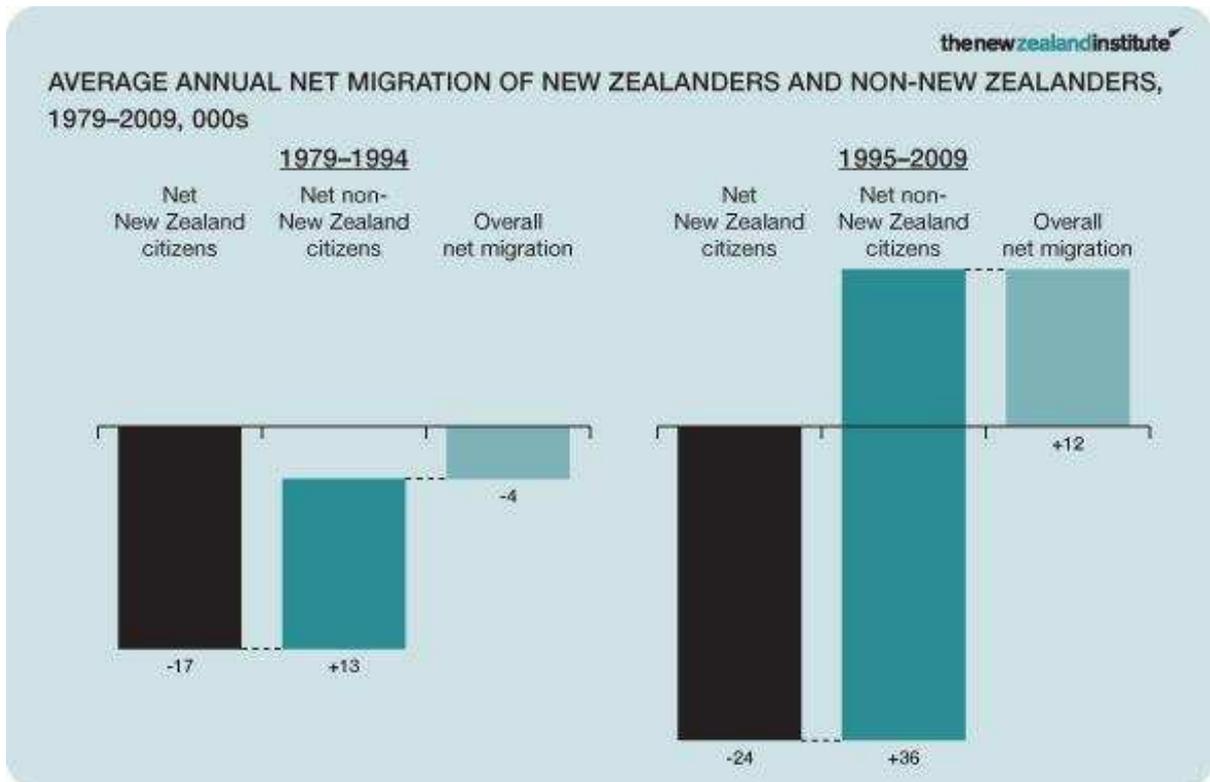


Figure 4

Why net migration matters

The net migration of citizens reveals how New Zealanders assess New Zealand as a place to live. A range of factors might make a citizen move abroad or stay in New Zealand. A citizen's decision to move abroad or to return home indicates that the net effect of all of these factors is negative, or positive.

The most important reason to include net migration of New Zealand citizens as an overall measure is because changes in migration of citizens indicate how satisfied people are with their country, and how it compares with other places they could live.

The focus is on New Zealand citizens because they are generally free to leave and return to New Zealand without restriction, whereas migrants who are not citizens may not have the same range of options available, and changes in immigration policies affect overall migration rates.

Citizens usually start their migration in New Zealand. Of those who leave, only some will return so even a country that is performing well may have more citizens leaving than returning.

New Zealand invests public resources to develop productive citizens. If those citizens then leave to contribute to other countries then those other countries will gain the benefit from New Zealand's investment. It does not follow that citizens should be discouraged from leaving, because citizens who have international experience are especially valuable. The skills citizens learn overseas and the connections they establish allow them to make important contributions to businesses and their communities.

If large numbers of citizens are leaving and New Zealand does not have sufficient workers then immigration can fill the gap. Immigrants bring important skills and connections too, and they increase the diversity of New Zealanders. If too many citizens are leaving then large numbers of immigrants are required to replace them. There are costs as well as benefits from immigration, because of the need for migrants to get established in their new country.

New Zealand's performance

Long-term net migration of New Zealand citizens has been outwards over the past 3 decades, as shown in Figure 1. Departures of New Zealand citizens are more volatile than arrivals.

The net outward migration for 2009 was only 15,474, which is low relative to recent averages. Departures tend to grow when the global economy is performing well so the low figure is explained by the recession.

Over half of the New Zealanders who leave go to Australia, as shown in Figure 2. Asia and the United Kingdom are the next largest destinations for New Zealand citizens with 15 percent and 13 percent share of the departures in 2009, respectively. The skills distribution of New Zealanders who cross the Tasman is very similar to that of the population as a whole, according to a 2001 Treasury report on migration flows to Australia.

New Zealand has a relatively high proportion of its tertiary qualified citizens living abroad, as shown in Figure 3. Over 8 percent of tertiary qualified New Zealand citizens live abroad compared to the OECD average of 6 percent. Other estimates from the OECD indicate that almost a quarter of all highly skilled New Zealand citizens are living abroad. These statistics provide evidence of a 'brain drain' in New Zealand; loss of a disproportionate number of highly skilled New Zealand citizens. However, a recent Treasury report found that New Zealand has a 'brain exchange' with the rest of the world, replacing departing highly skilled New Zealand citizens with highly skilled citizens from other countries.

Growing departures have been driving net migration of citizens most recently. There was an average of 24,000 long-term departures per annum in the 1995-2009 period compared to 17,000 in the period 1979-1994, as shown in Figure 4. New Zealand has largely offset the outflow of New Zealanders by attracting more skilled citizens from other countries, particularly from Asia and the United Kingdom.

What is being done

Survey research shows that most people who leave New Zealand go for new experiences or for economic opportunities. Therefore the policies that will improve net migration of citizens are those that will make New Zealand a more attractive place to live and will improve economic performance.

With more than half of the people who depart going to Australia, progress towards the goal of closing the GDP per capita gap with Australia would improve the migration outcome. If worthwhile progress is made.

Efforts by the Kiwi Ex-patriots Association (KEA) to connect with people living overseas strengthen the links with New Zealand and may make it more likely that New Zealanders will return. Those links are valuable even if New Zealanders do not return because of the value for New Zealand of international connectedness.

Rationale for the grade of C

New Zealand's current performance on net migration of citizens is broadly comparable with past performance, when population growth is taken into account. The number of New Zealanders returning is roughly constant, indicating that New Zealand retains its appeal.

However, New Zealand has a relatively high proportion of tertiary qualified citizen living overseas, and there is a steady flow to Australia where wages are higher.

Evidence of a trend for more New Zealanders to return, for fewer to leave for Australia, or of policies that are likely to be effective in reducing net outflows would justify a B.

Target for 2015 of -15,000

With a relatively constant 20,000 returning each year and an average of around 50,000 departing, the average net loss in recent years has been around 30,000 citizens. Improving the returns to 25,000 and reducing departures to 40,000 would result in a target of 15,000 net outward migration for 2015.

Analytical description

Overall net migration is defined as the total number of permanent immigrant nationals and foreigners minus the total number of permanent emigrant foreigners and nationals. New Zealand citizen net migration is used for this measure and includes citizens arriving from abroad for an intended period of 12 months or more, minus citizens departing for an intended period of 12 months or more.

The main sources of information on migration vary across countries, which poses problems for the comparability of available data on inflows and outflows. However, as the comparability problems generally relate to the extent to which short-term movements are covered, taking the difference between arrivals and departures tends to eliminate the movements that are the main source of non-comparability. The net migration data, however, are subject to caution, because unauthorised movements are not taken into account in the inflows and these are significant in some OECD countries. In addition the data on outflows are of uneven quality, with departures being only partially recorded in many countries or having to be estimated in others.

Treasury Working Paper (2001), *Brain Drain or Brain Exchange?*, by Hayden Glass and Wai Kni Choy, <http://www.treasury.govt.nz/publications/research-policy/wp/2001/01-22>

Figure 1: Statistics New Zealand website, Infoshare International Travel and Migration Database, data retrieved from <http://www.stats.govt.nz/infoshare/> on March 15, 2010.

Figure 2: Statistics New Zealand website, Infoshare International Travel and Migration Database, data retrieved from <http://www.stats.govt.nz/infoshare/> on March 15, 2010. Note: figures for non-New Zealand citizens have been calculated by subtracting New Zealand citizens from the total

Figure 3: Statistics New Zealand website, international migration data, data retrieved from <http://www.stats.govt.nz> on March 15, 2010. Note: 'Other' includes 2% of respondents not indicating next country of permanent residence.

Figure 4: A Profile of Immigrant Populations in the 21st Century: Data from OECD countries (2008), data retrieved from <http://lysander.sourceoecd.org/vl=2308070/cl=47/nw=1/rpsv/cw/vhosts/oecdthemes/99980142/v2008n1/contp1-1.htm> on March 12 2010. Note: measure calculated for OECD countries where data was available.