Environmental Sustainability Highlights for New Zealand

This document is intended to be a useful summary of the key environmental issues for New Zealand. It presents information on selected environmental indicators for each topic and is not an exhaustive summary of indicators and data related to environmental sustainability. For more detailed information, see *Environment New Zealand 2007* (Ministry for the Environment, 2007).

The information in this document is assessed from an **environmental perspective**, and impacts on social and economic well-being are not considered.

The 'benchmark' meters presented in the left column compare the latest information on each indicator against national standards, where possible. In the absence of a national standard to compare against, New Zealand's performance has been benchmarked internationally (eg, against our OECD peers). The 'trend' meters presented in the right column show whether that aspect of the environment is getting better or worse over time. There is no value judgement attached to the metering, eg, if New Zealand scores highly relative to other countries, it does not necessarily mean that we are performing to the standard to which we aspire.

Key

☺ Performing well against national or international benchmark data (for the latter, NZ is one of the top 10 ranked OECD countries, ie, it ranks 1-10).

😐 Mixed or performing averagely against national or international benchmark data (for the latter, NZ is in the middle ranking OECD countries, ie, it ranks 11–20).

☹ Performing poorly against national or international benchmark data (for the latter, NZ is one of the bottom 10 ranked OECD countries, ie, it ranks 21-30).

— No national or international benchmark against which we can compare the current state, not enough data to determine a national trend, not able to be measured, or no data available.

Elements of the environment

AIR QUALITY

BENCHMARK/STATE		TREND	
☹	NZ has good air quality in most locations for most of the time. However, air quality is affected in a number of locations around NZ. Problems stem from high winter concentrations of PM_{10} *particulates* from coal and wood used for home heating. Auckland also has high levels of PM_{10} from road transport. In 2007, 68% of airsheds monitored had maximum 24-hour average concentrations of PM_{10} above the national air quality standard of 50 µg/m³. 58% breached the standard by having more than one exceedence in the year. In 2007, 90% of airsheds for which data was reported met the annual mean PM_{10} ambient air quality guideline.	**Getting better**	In 2007, complying airsheds increased by 15% from 2006 with 17 out of 40 airsheds meeting the national standard for PM_{10}. In the decade to 2007, there were no clear nationwide trends in annual mean levels of PM_{10}. Levels have started increasing again at the Auckland and Wellington monitoring sites in 2006, been steady at the Hamilton site, fluctuated at the Dunedin site and decreased at the Christchurch sites. In the decade to 2007, annual mean PM_{10} levels at one selected monitoring site in Auckland, Hamilton and Wellington met the NZ ambient air quality guideline, while levels at the Christchurch and Dunedin sites commonly exceeded it. In 2007, annual mean levels for these five sites were all within the guideline for the first time.
☺	In 2005, *carbon monoxide* levels in four main centres met the national environmental standard for ambient air quality. In 2005, *ozone* levels in Auckland met the national environmental standard for ambient air quality.	**Getting better**	In general, levels of air pollutants *carbon monoxide*, *sulphur dioxide*, *nitrogen dioxide* and *benzene* have improved or stabilised over time in NZ, probably reflecting changes to transport fuels and improved controls on industrial emissions.
😐	*Sulphur oxide (SO_x)* emissions per unit of GDP: NZ ranked 19th out of 29 OECD countries in 2005, ie, we had the 11th highest SO_x emissions per unit of GDP. In 2005, *sulphur dioxide* levels in Auckland and Christchurch met the national environmental standard for ambient air quality.		
☹	*Nitrogen oxide (NO_x)* emissions per unit of GDP: NZ ranked 25th worst of 30 OECD countries in 2005, ie, we had the 5th highest NO_x emissions per unit of GDP. In 2005, *nitrogen dioxide* levels in Auckland breached the national environmental standard for ambient air quality, while levels in Wellington and Christchurch met the standard.		

ATMOSPHERE

BENCHMARK/STATE		TREND	
☹	*Greenhouse gas emissions* per capita: Although NZ produces less than 1% of global greenhouse gas emissions, in 2000 we were the 12th highest emitter per capita in the world. In 2004, we were the 5th highest emitter per capita out of 36 Annex 1 (ie, developed) countries. In 2005, NZ ranked 25th out of 29 OECD countries, ie, we had the 5th highest greenhouse gas emissions per capita.	**Getting worse**	As our population, economy and energy use have grown, *greenhouse gas emissions* have also grown. Between 1990 and 2006, NZ's total greenhouse gas emissions increased by 26%. Between 1991 and 2006, greenhouse gas emissions per capita increased by 4%.
😐	Kilograms of *ozone-depleting substances* per capita: In 2003, NZ ranked 6th out of 14 OECD countries, ie, we had the 6th lowest level per capita. In 2006, the average yearly *stratospheric ozone* concentration over NZ was one of the five lowest, ie, worst, since records began. This was due to unusual stratospheric weather in that year.	**Getting better**	In general, *stratospheric ozone* levels over NZ have stabilised since the late 1990s, reversing decreases in the 1980s and early 1990s. Between 1995 and 2006, use of ozone-depleting HCFCs decreased by 50%.

LAND USE

BENCHMARK/STATE		TREND	
😐	*Livestock densities*: NZ ranks 20th out of 30 OECD countries, ie, we have the 11th highest livestock densities. *Nitrogen fertiliser* use per km² of agricultural land: NZ ranks 4th out of 29 OECD countries, ie, we had the 4th lowest intensity of nitrogen fertiliser use. *Phosphate fertiliser* use: In 2005, NZ ranked 22nd out of 29 OECD countries, ie, we had the 8th highest phosphate fertiliser use. *Pesticide* use per km² of agricultural land: NZ ranks 1st out of 28 OECD countries, ie, we have the lowest intensity of pesticide use. In 2004, *pastoral land use* was NZ's largest human land use at just over 37% of NZ's total area.	**Getting worse**	Between 1990 and 2005, NZ had the largest percentage increase in *agricultural production* in the OECD. Although the total area of pasture in NZ has been decreasing since 1972, the area of land in *dairy pasture* has increased. Between 1996 and 2006 the national *dairy herd* grew by 24% (see also Freshwater Demand). Between 1990 and 2005, NZ's percentage increase in *nitrogen fertiliser* use was the highest in the OECD. Between 1990 and 2005, NZ's percentage increase in *phosphate fertiliser* use was the 2nd highest in the OECD. Between 1997 and 2002: *Human settlements* increased by 2.5% *Horticultural land* area increased by 1% *Exotic forest cover* increased by 8%, although rates of new plantings are low and replanting rates have tailed off *Native forest and native vegetation* decreased by 0.15%.

SOIL HEALTH

BENCHMARK/STATE		TREND	
—	*Soils* under cropped (horticultural) land and agricultural land are generally in poorer condition than under other land uses, with higher levels of compaction, build up of nitrogen and phosphates, and lower levels of organic carbon.	**Getting worse**	Over the last decade, the *health of soils* under NZ's predominant land uses have shown: Widespread moderate *compaction* of soils under pastures and horticultural land A loss of *organic matter* and *soil structural stability* under cropping land *Nitrogen* build-up under some dairy pastures, coupled with high levels of available *phosphate*.

EROSION RISK

BENCHMARK/STATE		TREND	
—	10% of NZ is classed as severely *erodible* (ie, prone to erosion). Much of this land is on pasture in hill country.	**Getting better**	Between 1997 and 2002, there was a 36,400-hectare reduction in pasture on *erosion-prone* hill country at the national level. 36,300 hectares were converted to exotic forestry or retired and left to revert to scrub.

RIVER, LAKE AND GROUND WATER QUALITY

BENCHMARK/STATE		TREND	
☺	In 2003, NZ's *freshwater quality* was rated first out of 149 countries. The water quality index consisted of five parameters: dissolved oxygen, electrical conductivity, pH, total phosphorus and total nitrogen.	**Mixed**	No overall trend in NZ's *freshwater quality* can be identified from monitoring data available. Some aspects are getting worse – *nutrient enrichment* has increased in some water bodies in catchments that are subject to intensive land use. Some aspects are getting better – *organic pollution* levels from point sources have improved.
☺	Nutrients in NZ's most polluted *rivers* are less than half the OECD average. Rivers in natural or near-natural catchments make up about half the total length of NZ rivers, and have good river water quality. Water quality is generally poorest in rivers and streams in urban areas, followed by farmed areas.	**Getting worse**	*Nutrients*: Average levels of total nitrogen and dissolved reactive phosphorus increased in NZ *rivers* by 0.5 to 1% per year during 1989–2003. For the same period, nitrate levels increased relatively quickly in NZ rivers that already had high levels of this nutrient.
		Getting better	*Biological oxygen demand* and *visual clarity*: Levels in NZ *rivers* have improved over the past two decades. This is consistent with reductions of organic pollution from point sources.
		—	*Other river pollutants* (eg, bacteria, dissolved oxygen) and macroinvertebrates: there is no significant national trend to report for these variables or the trend is unknown.
—	Two thirds of all *lakes* in NZ are estimated to have relatively low concentrations of nutrients and good to excellent water quality. This is because they are in natural, or only partially developed, catchments. The remaining third of all lakes in NZ are estimated to have high levels of nutrients and poor water quality.	**Mixed**	Between 1990 and 2006, there were no clear nationwide trends in *lake* water quality. Of the 49 lakes monitored for trends, 6 lakes improved, 33 lakes showed no signs of change, and 10 lakes showed possible or definite signs of deterioration.
—	Between 1995 and 2006, 39% of monitored *groundwaters* in NZ had nitrate levels indicating some degree of land use impact (including 5% with nitrate levels that make the water unsafe for an infant to drink). However, it is not known how many of these monitored groundwaters are used to supply human drinking water. Between 1995 and 2006, 22% of monitored groundwaters in NZ had bacteria levels that make the water unsafe to drink.	**Mixed**	Between 1995 and 2006, there were no clear nationwide trends in *groundwater nitrate* concentrations. 13% of sites had increasing nitrate concentrations, while 11% of sites had decreasing nitrate concentrations.

Source: Ministry for the Environment, Working Draft, 18 November, 2008. Based on data from *Environment New Zealand 2007* (Ministry for the Environment, 2007), updated where possible. International comparisons based on data from the OECD, UNEP, UNFCCC, Esty et al, the World Economic Forum, and the World Resources Institute.

FRESHWATER DEMAND

BENCHMARK/STATE		TREND	
😐	*Water withdrawals* as a percentage of gross annual availability: NZ ranked 6th out of 30 OECD countries, ie, we had the 6th lowest water withdrawals as a share of total water available. *Water abstractions* per capita: In 2005, NZ ranked 28th out of 30 OECD countries, ie, we had the 3rd highest water consumption per capita. *Irrigation* uses nearly 80% of all water allocated in NZ. In 2006, several eastern regions had highly allocated surface water catchments. Rivers in these catchments are likely to be under pressure during drier parts of the year.	Getting worse	*Demand* for freshwater is increasing, particularly in drier parts of the country, mainly as a result of increases in the area of irrigated land. Between 1999 and 2006, the *allocation* of water in NZ increased by 50%.

FRESHWATER RECREATIONAL WATER QUALITY

BENCHMARK/STATE		TREND	
—	Over the 2006/07 summer, water quality at 60% of the 230 monitored *freshwater swimming spots* met the NZ guidelines for contact recreation almost all the time.	—	*Bacteria levels* appear to have improved at swimming spots in our rivers and lakes in recent years. More swimming spots met the guidelines in the 2006/07 summer season than in previous summer seasons for which we have national data (2003/04, 2004/05 and 2005/06). While this is encouraging, only 4 years of monitoring data is available at the national scale. This is not long enough to show whether the improvements in recreational water quality are a trend, or merely annual variations.

COASTAL RECREATIONAL WATER QUALITY

BENCHMARK/STATE		TREND	
—	Over the 2006/07 summer, water quality at 80% of the 380 monitored *beaches* met the NZ guidelines for contact recreation almost all the time.	—	*Bacterial levels* at our beaches appear to have improved over recent years. More beaches met the guidelines in the 2006/07 summer season than in previous summer seasons for which we have national data (2003/04, 2004/05 and 2005/06). While this is encouraging, only 4 years of monitoring data is available at the national scale. This is not long enough to show whether the improvements in recreational water quality are a trend, or merely annual variations.

MARINE PROTECTED AREAS

BENCHMARK/STATE		TREND	
🙂	NZ has high levels of *marine protected areas* by international standards. Marine reserves now cover just over 7% of NZ's territorial sea. In 2008, NZ has 33 gazetted marine reserves, 17 of which have been established since 2000.	Getting better	Between 1997 and 2007, the area designated as *marine reserve* increased from 7,602 to 12,764 square kilometres (an increase of 68%). However, 97% of the total area protected by marine reserve is found in two offshore marine reserves, and some key habitats remain unprotected.

FISHERIES

BENCHMARK/STATE		TREND	
😐	*Fisheries production*: In 2006, NZ had the 13th highest fisheries production in the OECD. In 2006, the commercial fishing industry caught 525,000 tonnes of fish in NZ waters. 65% of this catch was from assessed fish species. Of these assessed species, 85% were sustainably fished and 15% were overfished.	Getting worse	Between 1979–81 and 2005, NZ had the highest percentage increase in total *fish catches*, approximately 3 times the OECD average. In 1997, 10% of assessed *fish stocks* were overfished. While not directly comparable with the 1997 figure, in 2006, 15% of assessed *fish stocks* were overfished.
😐	*Fisheries production*: In 2006, NZ had the 13th highest fisheries production in the OECD. Between 1990 and 2005, large commercial vessels conducted about 970,000 *seabed trawls*. The *area trawled* in 2005 was around 50,000 km².	Mixed	Between 1979–81 and 2005, NZ had the highest percentage increase in total *fish catches*, approximately 3 times the OECD average. Between 1998 and 2005, the *area trawled* by large commercial vessels reduced from about 68,000 to about 50,000 square kilometres.

BIODIVERSITY

BENCHMARK/STATE		TREND	
—	In 2002, *native land cover* was NZ's largest land cover at 50% of NZ's total area. In 2002, *native vegetation cover* accounted for 44% of NZ's land area, most of which is in hill country and alpine areas.	Little or no change	Between 1997 and 2002 , an estimated 16,500 hectares equating to 0.12% of *native land cover* (including vegetative and non-vegetative native cover, such as sand and gravel) have been either converted to other uses or changed as the result of natural processes.
🙂	*Major protected areas*: NZ ranks 1st out of 30 OECD countries, ie, we have the highest proportion of protected areas as a percentage of total area. By international standards, a very high proportion of NZ is *legally protected* for conservation purposes (32%).	Getting better	Between 2004 and 2007, the area of *public conservation land* increased by 4.6%, to 8.43 million hectares. Between 2004 and 2006, *private land under legal protection* increased by 51% to 221,473 hectares.
☹	Threatened birds as a percentage of *species* known: NZ ranks 20th out of 30 OECD countries, ie, we have the 11th highest percentage of threatened birds: 21% of NZ's known bird species are threatened). NZ ranked worst out of 130 countries as having the highest percentage of threatened *species* as a percentage of total mammal, bird and amphibian species. NZ's native biodiversity is unique. With an estimated 80,000 *species* of native animals, plants, and fungi, NZ makes an important contribution to global biodiversity.	Getting worse	The seven monitored *native species* (the lesser short-tailed bat, kiwi, kākāko, kaka, mōhua, wrybill, and dactylanthus) have all decreased in range since the 1970s, probably due to pest activity rather than habitat loss.

HOUSEHOLD CONSUMPTION

BENCHMARK/STATE		TREND	
🙂	The consumption of goods and services can affect the environment. As consumption increases, so does natural resource use, energy use, waste generation (from manufacturing/production and packaging), transport (eg, in moving goods), and greenhouse gas emissions associated with increases in transport and energy use. In 2006, NZ had the 8th lowest *household consumption expenditure* per capita out of 29 OECD countries. Since 1997, housing (which excludes mortgage repayments and house purchases), transport, and food and beverages have consistently appeared as the top three consumption categories for households.	Getting worse	Between 1997 and 2007, NZ's household consumption expenditure increased by 43%. On average, each New Zealander spent 28% more on consumer goods and services in 2007 than they did a decade before, and each household spent 22% more.

TRANSPORT

BENCHMARK/STATE		TREND	
☹	*Road traffic volumes* per capita (vehicle kilometres/capita): In 2002, NZ ranked 29th out of 30 OECD countries, ie, we had the 2nd highest road traffic volumes per capita. In 2007, New Zealanders travelled 40.2 billion *vehicle kilometres* on NZ roads. The car was the largest contributor, accounting for 78% of the vehicle kilometres travelled.	Getting worse	New Zealanders' use of transport is intensifying. On average, we are driving further, we own more cars, they are getting older and their engines are getting bigger. Between 1980 and 2000, annual vehicle kilometres travelled in NZ more than doubled. Between 2001 and 2007, annual vehicle kilometres travelled increased by 12% and travel per person increased by 3%. However, use of public transport increased by 32% increase nationwide between 2000/01 and 2006/07.

ENERGY

BENCHMARK/STATE		TREND	
😐	*Primary energy supply* per capita: In 2006, NZ ranked 17th out of 30 OECD countries. In 2007, NZ's *primary energy supply* was 752 petajoules and NZ's *consumer energy demand* was 508 petajoules.	Getting worse	As our population and economy have grown, NZ's energy supply has grown to meet consumer demand. Between 1995 and 2007: NZ's *primary energy supply* increased by 11.5% NZ's *consumer energy demand* increased by 25%.
🙂	Share of *primary energy supply from fossil fuels*: In 2005, NZ ranked 7th best out of 30 OECD countries, ie, we had the 7th least fossil-fuel intensive energy supply. In 2007, 69% of our primary energy supply came from fossil-fuel-based oil, gas, and coal. Contribution of *renewables* to electricity production: In 2004, NZ ranked 2nd best out of a sample of 13 OECD countries. In 2007, 67% of our electricity was generated from *renewable* resources. This is high by international standards.	Getting worse	Between 1995 and 2007, the contribution of *renewables* to electricity production fell from 85% to 67%.
😐	*Energy intensity* (primary energy supply per unit of GDP): In 2006, NZ ranked 19th equal out of 30 OECD countries.	Getting better	From 1990 to 2005, NZ's economic growth exceeded energy demand. GDP increased by 56% while energy demand increased by 37%. This indicates that the economy has reduced its reliance on energy to some degree, ie, relative decoupling has occurred.

SOLID WASTE

BENCHMARK/STATE		TREND	
🙂	*Municipal waste* generated per capita: NZ ranked 7th best out of 30 OECD countries. Waste management in NZ has continued to improve through strengthened controls on landfills. Good progress has been made in minimising the amount of waste we throw away.	Little or no change	The amount of *solid waste* disposed of to NZ landfills annually has stabilised: it was estimated that 3.18 million tonnes of waste was disposed of to landfill in 1995 and 3.16 million tonnes in 2006.
		Getting better	When expressed in terms of thousands of tonnes per real dollar of GDP, this represents a 29% decrease. On average, each New Zealander disposed of 13% less *solid waste* to landfill in 2006 than they did a decade before. *Recycling rates* are increasing. In 2006, 73% of New Zealanders had access to kerbside recycling, up from 20% in 1996, and 97% had access to either kerbside recycling or drop-off centres.

Key

- 🙂 Performing well against national or international benchmark data (for the latter, NZ is one of the top 10 ranked OECD countries, ie, it ranks 1-10).
- 😐 Mixed or performing averagely against national or international benchmark data (for the latter, NZ is in the middle ranking OECD countries, ie, it ranks 11–20).
- ☹ Performing poorly against national or international benchmark data (for the latter, NZ is one of the bottom 10 ranked OECD countries, ie, it ranks 21-30).
- — No national or international benchmark against which we can compare the current state, not enough data to determine a national trend, not able to be measured, or no data available.