VI. Some aspects of sustainable development

There is growing concern that long-run development may be compromised unless countries take measures to achieve balance between economic, environmental and social outcomes. This section looks at three issues of sustainable development that are of particular importance for New Zealand: containing greenhouse gas (GHG) emissions, reducing water pollution and improving living conditions in developing countries. In each case, indicators are presented to measure the progress and evolution of potential problems, and an assessment is made of government policies that affect the issue. The section also considers whether the institutional arrangements for integrating policymaking across the different elements of sustainable development are working well, taking the example of genetically modified organisms (GMOs) as a case study (see Box 4).

Climate change

Main issues

New Zealand is participating in international efforts to limit GHG emissions by means of the Kyoto Protocol. Ratified in December 2002, the treaty commits New Zealand to keeping its emissions in the period 2008-12 to their 1990 level, a generous target in comparison with an overall initial goal of reducing emissions from industrialised countries by 5 per cent. The main issue is to meet Kyoto requirements without excessively compromising growth outcomes.

Performance

GHG emission intensity is higher than in virtually all other OECD countries (Table 25). The biggest contributors are methane emissions from grass-fed ruminant farm animals (mainly sheep, beef and dairy cows) and nitrous oxide from agricultural soils. Together, these account for close to half of total gross GHG emissions, although CO_2 emissions from transport are also substantial. In 2000, GHG releases were already 5 per cent above their 1990 level. This increase has been mainly driven by the rising use of fossil fuels in energy supply, with a salient upward trend in the carbon content of electricity (Table 26) as additional power

Box 4. Policy integration across sustainable development areas[1]

The Resource Management Act (1991) aims at integrating the economic and environmental pillars of sustainable development. The Act subjects public and private projects to a prior review of their environmental and social consequences, which in most cases fall within the purview of local authorities, although the impacts often go beyond regional borders. Environmental impacts are in general not assessed in monetary terms, though road projects are an important exception. Since 1995, every policy proposal submitted to the Cabinet must be accompanied by a regulatory impact statement including a cost-benefit analysis (CBA). Furthermore, the economic consequences of changes in environmental law are carefully looked at, as is currently the case for the upcoming introduction of vehicle emission standards. CBAs are prepared by the department that sponsors the bill and are not subject to independent review,[2] although they must follow government-set guidelines. In January 2003, the government adopted a Sustainable Development Programme of Action to orient policy on four selected long-term issues: the quality and allocation of freshwater, energy, sustainable cities, and child and youth development. The programme mainly puts existing policies in perspective, yet opens the debate on possible new measures, such as the introduction of national minimum standards of freshwater quality.

The issue of genetically modified organisms (GMOs) has been testing the effectiveness of arrangements to ensure policy integration across different areas. GMOs represent a major business opportunity for the biotechnology industry and some promise productivity gains to the farm sector, while at the same time they raise environmental concerns and may harm agricultural trade because of consumer fears in destination markets. A Royal Commission was set up to conduct a public enquiry into issues surrounding the use of GMOs. This effort seems to have been successful. In particular, an in-depth study carried out by the government found that farmers could be better off if they had the choice to use GMOs. Indeed, the loss of customers concerned with GMOs is estimated to be far less costly than that of price-conscious customers if farmers cannot use GMOs while their competitors can. In addition, GMOs that reduce chemical inputs into agriculture can help to ease the trade-off between agricultural productivity and water quality, which is of particular importance to New Zealand (see below). The Royal Commission recommended that GMOs be authorised on a case-by-case basis, with conditions attached if necessary, after evaluating each proposal's merits and risks. The main policy objectives are to enable the development of the biotech sector and to allow farmers to remain competitive in comparison to foreign producers who use GMOs, while preserving opportunities for those who see market opportunities from using non-GMO technology. However, a recent official review recommended some operational changes in relation to the implementation of the regime by the Environmental Risk Management Authority (ERMA), which considers applications for GMO releases, and the Ministry of Agriculture and Forestry (MAF), which monitors compliance with rules and conditions. The review found that ERMA has the core competencies and capability to carry out its role, but recommended organisational and managerial changes, including increased human resources to properly assess

Box 4. **Policy integration across sustainable development areas**[1] (*cont.*)

many GMO proposals and improving current co-ordination arrangements between ERMA and MAF. The authorities are currently acting on the recommendations made by the reviewers. There was also legal uncertainty over whether local authorities, who are responsible for environmental consents in their areas, can overturn decisions by ERMA. This uncertainty has been resolved by the New Organisms and Other Matters Act, passed in October 2003.

1. The sections in this report dealing with greenhouse gas emissions, water pollution and improving living conditions in development countries are inputs into the Organisation's follow-up on Sustainable Development as mandated by the OECD Ministerial Council decision in May 2001.
2. Apart from the part of the analysis that assesses business compliance costs.

requirements were met by carbon-emitting combined cycle gas plants. On existing policies, official projections suggest that the 2008-12 Kyoto target will be met comfortably, with increases in emissions from 1990 levels being offset by carbon absorption in forests planted after 1990 (NZ Climate Change Programme, 2002).

Policies

The likely attainment of the Kyoto target does not imply, however, that no climate policy is required. Since there will be a price for carbon allowances on the international market, domestic emissions will have an opportunity cost. In recognition of this, the authorities have adopted a policy whereby, as from 2008, emissions will be taxed at a rate that reflects the price of permits on the international market. The tax will encourage the efficient level of carbon emission abatement, notably in electricity generation.[109] The *a priori* economic optimality of such an approach is diminished by several exemptions.

The main exemption concerns the farming sector. On-farm releases of methane and nitrous oxide will not face the carbon tax. Apart from their consumption of fuel for tractors and for buildings, farmers will have no incentive to reduce emissions. The decision to exempt this sector was made because the only known way to reduce emissions from extensive rearing is to cut down on herds, an option that the authorities do not want to encourage given the importance of farming to New Zealand's economy. By narrowing the tax base to less than half of total emissions, this choice creates a distortion that favours farming and will sustain activity in this sector above the level that would maximise New Zealand's net gains from

Table 25. **Main indicators: climate change**

Indicators of greenhouse gas (GHG) emission intensity, grams of CO_2 equivalent per $PPP of GDP, in 1995 prices

	Total GHG emissions	CO_2 emissions, electricity	CO_2 emissions, transport	Other GHG emissions	Total GHG emissions	CO_2 emissions, electricity	CO_2 emissions, transport	Other GHG emissions
	Level, 2000				Average annual percentage change 1990-2000			
Australia	1 061	360	159	542	–1.8	–0.5	–1.5	–2.7
Austria	403	66	96	241	–2.1	–3.2	–0.0	–2.4
Belgium	600	105	97	398	–1.5	–1.3	–0.2	–1.8
Canada	888	156	183	549	–0.9	0.2	–0.9	–1.3
Czech Republic	1 082	468	100	514	–2.8	2.5	6.3	–6.6
Denmark	501	171	88	242	–2.4	–2.7	–0.8	–2.6
Finland	597	178	99	321	–2.6	–0.2	–1.8	–3.8
France	402	30	102	271	–2.0	–2.6	–0.0	–2.6
Germany	519	168	91	260	–3.9	–3.6	–1.1	–5.0
Greece	819	275	122	422	–0.2	0.1	0.0	–0.3
Hungary	747	192	79	476	–2.6	–1.3	–0.2	–3.4
Iceland	398	0	84	314	–1.8	. .	–2.5	. .
Ireland	643	152	98	392	–4.6	–3.0	0.2	–6.0
Italy	432	108	89	235	–1.1	–0.4	0.0	–1.7
Japan	441	132	81	229	–0.3	0.1	0.9	–1.0
Luxembourg	314	6	249	59	–12.5	–27.1	0.6	–23.1
Netherlands	553	138	80	335	–2.5	–1.0	–1.1	–3.3
New Zealand	**1 078**	**82**	**179**	**817**	**–2.2**	**2.9**	**0.8**	**–3.1**
Norway	454	3	97	354	–2.9	–1.6	–2.9	–2.9
Poland	1 109	458	74	576	–7.1	–6.5	–1.4	–8.1
Portugal	516	129	111	276	–0.1	0.9	3.5	–1.5
Slovakia	846	249	70	526	–5.2	1.0	2.0	–7.6
Spain	536	130	127	278	0.4	1.2	1.0	–0.3
Sweden	340	35	110	195	–1.91	–1.5	–0.8	–2.6
Switzerland	267	2	78	187	–0.94	–3.8	–0.4	–1.1
United Kingdom	512	137	106	268	–3.58	–4.3	–1.4	–3.9
United States	779	273	192	315	–1.86	–0.7	–1.3	–3.0
OECD total	639	201	137	307	–1.88	–0.8	–0.6	–2.9
European Union	491	120	100	272	–2.43	–2.4	–0.4	–3.1

Source: Greenhouse gas emissions: national submissions to the UNFCCC and national publications. Carbon dioxide emissions for electricity and transport: IEA (2001). GDP: OECD, SNA database.

selling permits. However, this distortion is likely to be small because any tax in line with the international carbon price is unlikely to lead to large herd or emission cutbacks, so its impact would mainly be re-distributional.[110]

Table 26. **GHG emissions and sectoral indicators**

	Total GHG emissions		CO_2 emissions per Kwh electricity	Manufacturing CO_2 emissions per unit of industrial production	Residential CO_2 emissions per unit of private consumption	Road transport CO_2 emissions per vehicle	Electricity use per unit of GDP	Industrial output per unit of GDP
	Level million tonnes CO_2 equivalent 2000	Annual average percentage change						
		1990-2000	1990-2000	1990-2000[1]	1990-2000[2]	1990-1999	1990-2000	1990-2000[1]
Australia	502	1.7	0.1	−0.8	−1.6	−0.6	−0.5	−1.6
Austria	80	0.3	−2.8	−2.8	−3.4	−1.0	−0.4	1.5
Belgium	152	0.7	−0.8	−0.7	−1.6	−0.1	−0.5	0.0
Canada	726	1.8	0.7	−2.4	−2.7	1.2	−0.5	0.9
Czech Republic	147	−2.7	1.1	−10.1	−11.5	2.6	1.4	1.3
Denmark	69	−0.1	−3.7	−3.4	−5.3	0.3	1.0	1.1
Finland	74	−0.4	−0.5	−7.2	−7.8	−0.6	0.3	3.2
France	550	−0.2	−3.2	−1.8	−2.3	−0.1	0.7	−0.2
Germany	991	−2.1	−2.1	−2.6	−5.1	−0.4	−1.5	−0.4
Greece	130	2.2	−1.9	−0.9	8.2	−1.5	2.0	−1.2
Hungary	84	−1.8	−2.6	−13.4	8.8	0.0	1.3	7.3
Iceland	3	0.7	. .	. .	−7.5	−1.9	2.9	. .
Ireland	67	2.2	−1.1	−11.4	−5.4	2.5	−1.8	5.5
Italy	547	0.5	−1.2	−2.0	−0.7	0.3	0.8	−0.3
Japan	1 386	1.1	−0.9	0.5	−2.2	0.1	1.0	−1.6
Luxembourg	6	−7.8	−20.3	−12.5	−2.4	1.2	−8.5	−2.8
Netherlands	218	0.4	−0.3	−1.6	−3.9	0.2	−0.7	−0.8
New Zealand	**77**	**0.5**	**3.7**	**1.8**	**−4.3**	**−1.2**	**−0.8**	**−0.8**
Norway	55	0.6	0.4	0.2	−9.4	0.3	−2.0	−2.1
Poland	386	−3.7	−3.7	−6.4	11.7	−0.7	−2.9	3.8
Portugal	85	2.7	−0.7	1.3	1.1	−2.2	1.5	−1.4
Slovakia	49	−4.0	−0.3	−9.1	−2.1	0.3	1.3	−1.3
Spain	386	3.0	0.0	−0.2	1.8	0.2	1.2	−0.4
Sweden	69	−0.2	0.2	−4.1	−3.7	0.2	−1.7	1.9
Switzerland	53	−0.1	−4.8	0.2	−3.1	−1.0	1.0	1.5
United Kingdom	649	−1.3	−3.6	−2.1	−1.2	−0.6	−0.7	−1.6

Table 26. **GHG emissions and sectoral indicators** (*cont.*)

	Total GHG emissions		CO_2 emissions per Kwh electricity	Manufacturing CO_2 emissions per unit of industrial production	Residential CO_2 emissions per unit of private consumption	Road transport CO_2 emissions per vehicle	Electricity use per unit of GDP	Industrial output per unit of GDP
	Level million tonnes CO_2 equivalent 2000	Annual average percentage change						
		1990-2000	1990-2000	1990-2000[1]	1990-2000[2]	1990-1999	1990-2000	1990-2000[1]
United States	7 001	1.3	0.2	–4.7	–1.9	0.9	–0.9	1.1
Total of above OECD countries	14 543	0.6	–0.7	–2.8	–1.8	0.2	–0.3	0.2
OECD excluding US	**7 542**	**–0.1**	**–1.6**	**–1.9**	**–1.8**	**–0.3**	**0.3**	**–0.4**
EU countries	4 073	–0.3	–2.1	–2.0	–2.4	–0.2	–0.3	–0.3

1. 1995-2000 for Czech Republic; 1991-2000 for Germany; 1992-2000 for Hungary and Slovakia; no data for Iceland.
2. 1991-1998 for Czech Republic; 1993-2000 for Slovakia.

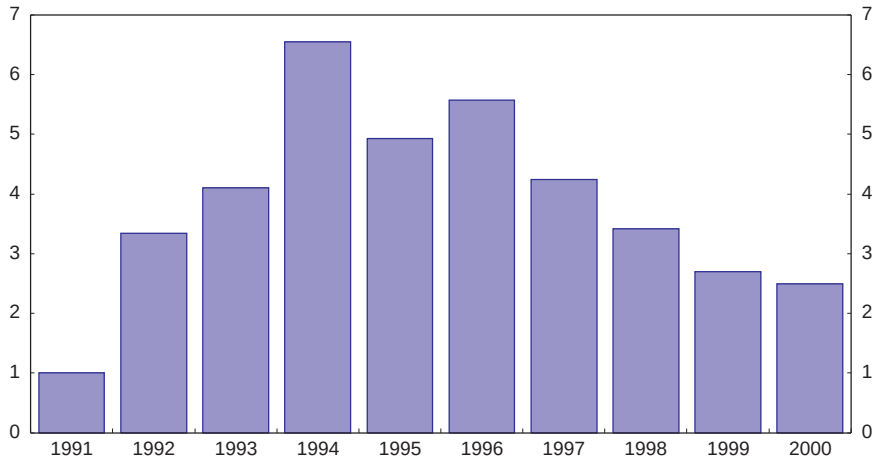
Source: GHG National submissions to UNFCCC, national sources and UNFCCC; carbon dioxide data, IEA; industrial production, private consumption, OECD.

A partial exemption from the tax is also available for industrial emitters that compete, either for the domestic market or for exports, with foreign suppliers who are not subject to a carbon constraint. Such companies can negotiate relief from the tax in exchange for a commitment to reduce emissions. If a firm then misses its target, it must pay the tax on excess emissions. Conversely, it can sell carbon credits for any emission reduction beyond its target. These two provisions maintain the incentive to lower emissions at the margin and thus the capacity of the economic instrument to induce a cost-effective allocation of abatement efforts. However, the case-by-case nature of the procedure leaves government regulators in a situation of asymmetric information where firms can exploit their informational advantage as to costs in order to obtain a generous target. Furthermore, exempting firms from part of the burden of the carbon tax cannot really protect their competitiveness, since the price of marginal emissions still adds to production costs. One agreement has been signed so far, with the New Zealand Refining Company, whereby the target is set in relation to the level of output on the basis of World's Best Practice (WBP). According to the company, the target is ambitious, as required reductions in emission intensity would reflect not only existing WBP but also expected technological progress.

Forests will play an important role in helping New Zealand to meet the Kyoto target. Afforestation accelerated from the late 1980s as a consequence of, amongst other factors, the withdrawal of agricultural subsidies and a rise in world timber prices (Figure 40) (Rhodes and Novis, 2002). As the elimination of subsidies was reflected in lower land prices, the planting of harvest forests became a more profitable activity than raising sheep or growing crops in many areas. However, the government plans to retain sink credits for itself, because it enables the government to manage the credits and liabilities to achieve wider climate change objectives including sheltering some sectors from the carbon charge. This implies that forestry businesses have no incentive to take carbon storage into account in their planting and harvesting decisions. The only possible exception to that situation could come from a provision in the climate change strategy that foresees granting carbon credits to businesses that plant trees specifically for permanent non-harvest forests. This provision is unlikely to have any discernible effect, since a price higher than NZ$ 40 per tonne of CO_2 would be needed to make it economic to plant non-harvest forests.[111] On the other hand, if temporary carbon credits were issued for rotation forests, the economic attractiveness of traditional commercial forestry would be improved, which would yield more carbon sequestration in the future. On the current policy of not crediting forest developers, it is uncertain what trend planting rates will follow in the next decade. The way the uncertainty is resolved will have a strong impact on New Zealand's capacity to comply with post-Kyoto emission targets.

Besides the emission charge, the government intends to implement a competitive tendering mechanism aimed at encouraging the abatement of greenhouse gas emissions as well as improved security of electricity supply, notably

Figure 40. **New planting of forests**
Percentage of total plantation area



Source: NZIER (2001b).

through the development of renewable sources in power generation. It plans to tender 4 million tonnes of CO_2 credits in the first year of the programme to projects that will meet the above objectives. Even though this policy deviates from economic efficiency, as credits add an extra incentive to the price differential created by the carbon tax, the resulting reduction in emissions should be achieved at least cost since credits will go to the lowest, most cost effective bidders.

Conclusions

New Zealand's choice of a price-based strategy represents in principle an economically efficient approach to reduce carbon emissions. However, sectors responsible for large amounts of the country's GHG emissions are sheltered from the projected carbon tax, namely farming, emission-intensive industry and forestry. In the long term, exempting on-farm GHG emissions will distort resource allocation in the economy. The way in which "competitiveness-at-risk" firms are being offered tax relief maintains a full incentive to cut emissions at the margin of the negotiated target. However, the case-by-case nature of the negotiation poses a risk that firms may use their informational advantage to obtain unduly generous targets. Tax relief should be offered only for a limited period, all the more so since effects on competitiveness will be quite limited. As regards forests, the abolition

of agricultural subsidies has been a "win-win" policy, improving economic efficiency while at the same time leading to higher planting rates and more carbon absorbed by trees. Nonetheless, the forestry part of the climate policy ought to be revised, inasmuch as the emission credits for sinks should be devolved to land owners instead of being retained by the government. This should go hand in hand with abolishing the farm exemption from the carbon tax, since half of forests that generate carbon sinks under the Kyoto Protocol (those planted after 1990) are on farm land. As for the energy sector, the specific measures planned in order to foster renewables are unnecessary and could be withdrawn, since price signals created by the emission charge provide electricity producers with an efficient level of incentive to avoid emissions.

Reducing water pollution

Main issues

Clean drinking water is a vital commodity that depends in part on the supply of freshwater also being of good quality. In addition, New Zealand attaches great importance to preserving its "clean green image", which is partly based on the pristine condition of its water bodies. This is not only because the environment is highly valued but also because its favourable reputation contributes to attracting tourists and foreign customers for farm produce, a matter of significance given that agriculture accounts for more than half of merchandise exports and that tourism represents around 4½ per cent of economy-wide value added. Indeed freshwater is on the list of four key areas identified by the 2003 Sustainable Development Programme of Action. The Programme aims at three key outcomes: sustainable, efficient and equitable allocation and use of water; maintaining water quality to meet appropriate needs; and protecting water bodies with nationally significant natural, economic or cultural heritage values. The main issue is to preserve water quality from the growing pressure exerted by farming without imposing excessive costs on producers and households.

Performance

The quality of water bodies in New Zealand is high by international standards but deteriorating (Table 27). Nationwide trends are difficult to assess, but it appears that water quality has improved in cases where it was affected by discharges from towns and plants, thanks to better wastewater treatment.[112] However, it has deteriorated in areas where dairy farming has been expanding strongly (Statistics New Zealand, 2002b),[113] especially when it comes to contamination by faecal coliforms[114] and campylobacter.[115] The contamination of freshwater is thought to be one of the main causes of the rising prevalence of campylobacter infection in humans (Poore, 2003), which is now well above other industrialised countries (Figure 41).

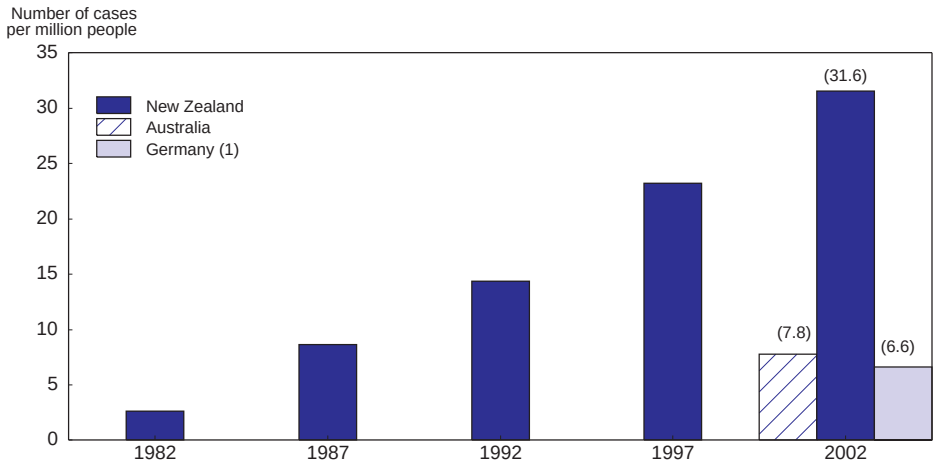
Table 27. **Performance indicators: water pollution**
Selected rivers

	Biochemical oxygen demand	Nitrates	Total Phosphorus	Ammonium
	mg O2/litre	mg N/litre	mg P/litre	mg N/litre
	Average last 3 years			
Australia	. .	. .	. .	. .
Austria	2.2	1.3	0.1	0.09
Belgium	. .	. .	. .	
Canada	. .	0.1	0.0	0.04
Czech Republic	4.6	3.5	0.3	0.5
Denmark	2.0	2.6	0.1	0.1
Finland	. .	0.3	0.0	0.04
France	3.2	3.1	0.4	0.15
Germany	2.4	3.3	0.2	0.12
Greece	. .	1.5	0.4	0.15
Hungary	2.9	1.6	0.3	0.08
Iceland	. .	. .	. .	
Ireland	1.8	2.9	0.1	0.05
Italy	. .	2.1	0.2	0.1
Japan	1.4	. .	. .	
Korea	2.8	2.6	0.1	0.76
Luxembourg	2.7	4.1	0.4	0.2
Mexico	15.9	0.6	0.1	0.04
Netherlands	3.1	3.3	0.2	0.14
New Zealand[1]	**0.5**[2]	**0.1**[2]	**0.1**[2]	**0.04**[2]
Norway	. .	0.3	0.0	0.02
Poland	4.3	1.9	0.3	0.22
Portugal	. .	. .	. .	
Slovak Republic	3.3	2.2	0.2	0.4
Spain	3.6	3.1	0.2	0.19
Sweden	. .	0.5	0.1	0.03
Switzerland	. .	1.5	0.1	
Turkey	2.7	1.0	0.2	0.21
United Kingdom	2.9	5.2	0.9	0.72
United States	1.6	. .	0.1	0.03

Note: Lower numbers indicate better water quality.
1. 1995-2001 average at 68 sites, in Statistics New Zealand (2002b).
2. 1995-2001 average at 624 monitoring stations.
Source: OECD, Statistics New Zealand and Ministry of the Environment.

Increasing dairying has also been identified as a cause of increased nitrogen pollution and high phosphorus concentrations (Hamill and McBride, 2003). The use of nitrogen fertilisers has increased fivefold since 1989. However, to put this into perspective, excess nitrogen per hectare of agricultural land is lower in New Zealand than in all other OECD countries except Hungary (OECD, 2000c).

Figure 41. **Prevalence of campylobacter infection**



1. Germany: 2001. Germany has been used to provide a European reference, in the absence of a Europe-wide indicator.
Source: Poore (2003) and EC (2001).

Policies

Under the Resource Management Act (RMA), water policy is devolved to local authorities who have full responsibility for setting and enforcing quality objectives. The Ministry of the Environment publishes non-binding guidelines for biochemical parameters in streams and has the ability to produce national environmental standards. As drinking water standards are not obligatory, about 6 per cent of the population is currently connected to non-compliant supply systems. A package of drinking water standards is being developed under the draft Health (Drinking Water) Amendment Bill, which will require suppliers to take all practical steps to comply with the standards. Regional-level plans and resource "consents"[116] (issued for a maximum of 35 years) for point discharges constitute the main instrument of water policy. Regional councils usually tighten consents at renewal time, and this has been the main driver in water pollution abatement, with considerable reductions in discharges from point sources claimed over the last decade (Statistics New Zealand, 2002b).[117] The command-and-control nature of resource consents mean that these reductions may not have been achieved at least cost. When considering measures to curb pollution, local authorities are required to evaluate the costs and merits of different policy levers by a provision of the RMA that explicitly calls for an assessment of the use of "economic instruments". Surprisingly, another stipulation in the RMA precludes the use of tradeable permits to control discharges to

water (Sharp, 2002). Two regional councils have indeed found themselves in the situation of identifying low-cost market-based solutions as desirable, only to reject them afterwards because of the legal impossibility.

In contrast to point sources, diffuse discharges from on-farm activities remain largely uncontrolled by the authorities with limited regulations in some regional councils (OECD, 2003j). A non-binding agreement aimed at reducing emissions to water bodies was signed in May 2003 between the government and Fonterra, a co-operative group that processes 87 per cent of New Zealand's milk. The thrust of the accord is that Fonterra should apply pressure on suppliers to gradually exclude cattle from streams and lakes and their banks, to building crossing points and to adopting nutrient input and output management systems at the farm level. Quantitative targets have been set for compliance with technical requirements, with two key deadlines in 2007 and 2012. Voluntary commitments in general raise issues of economic efficiency, as costs are hidden and marginal costs may differ widely amongst participants (OECD, 2003). However, the nitrogen accounts foreseen in the agreement could provide the basis for economic instruments such as emission taxes or discharges permits. In New Zealand's context of extensive agriculture, voluntary and regulatory measures may nonetheless remain helpful, because the ultimate impact of livestock output on water quality depends not only on the volume of excess nutrient but also on the location where it is released.

The combination of a rapid increase in the consumption of municipal water with the tightening of discharge permits puts considerable strain on the sewage collection and treatment infrastructure. The continuation of current trends appears unsustainable, since it would entail very high investment costs, as in the Auckland region where annual investments in water services are estimated to amount to an average of ¾ per cent of national GDP over the period 2001-05 (Parliamentary Commissioner for the Environment, 2000).[118] The key factor behind these developments is the very limited extent to which water supply and wastewater treatment are priced. Only one quarter of households are metered and, where they exist, volume charges cover only water supply, while wastewater collection and treatment costs are recovered through flat rates. Firms connected to public sewage collection networks are charged according to the volume and the pollution load of their discharges with the aim of recovering full costs.

Conclusions

New Zealand's waters are in good condition, but trends are difficult to ascertain given the limited availability of nationally comparable data. The quality of water bodies ought to be regularly reported to the public. Current efforts in this direction by the Ministry of the Environment should be sped up. The intensification and expansion of agriculture (particularly dairying and deer farming) and

changes in land use pose a threat to water quality. The recent agreement with the dairy industry is a step in the direction of addressing diffuse nutrient pollution, and its implementation needs to be monitored closely so that the authorities can step in and rapidly introduce obligatory measures in case of insufficient progress. In addition, regional authorities could usefully introduce tradable permits based on the nitrogen accounts that the agreement has asked farmers to keep. Similarly, trading should be allowed between farmers and those who already hold allowances for point discharges. Regional councils are particularly well placed to design and implement water pollution cap-and-trade schemes because their boundaries broadly coincide with water catchment areas and they have the legal power to constrain discharges to waters. For regional councils to introduce tradable water pollution permits, the central government must lift the provision in the RMA that prevents them from doing so. Finally, the use of wastewater services should be charged to households on the basis of their consumption.

Improving living conditions in developing countries

Main issues

Reducing poverty in the non-OECD area is essential to achieving globally sustainable development. Although developing countries themselves have the major responsibility to improve their own living standards, OECD countries can assist them to do so by giving them access to markets and by providing them official development assistance (ODA). The main issues for New Zealand are the degree of openness of the domestic market to developing country producers and the volume and effectiveness of aid.

Performance

The share of developing countries (DCs) in New Zealand imports is above the OECD median and growing rapidly (Table 28). Soaring trade with China is the main driving force behind the high annualised growth for imports from low-income countries (LICs). On the other hand, New Zealand still has one of the lowest proportions of imports from least-developed countries (LDCs) in the OECD area, and it shows little sign of rising much. This may be related to the great geographical distance between the country and the main LDCs, and the associated transport costs which have a bigger impact on goods made in LDCs because of their typically lower ratio of value to weight.

New Zealand has one of the lowest ODA-to-national-income ratios amongst countries party to the Development Assistance Committee (DAC), and no intermediate target has been set to mark progress towards the agreed UN goal of 0.7 per cent (Figure 42). One quarter of aid is channelled through multilateral institutions, the rest being allocated bilaterally with a concentration on Pacific island

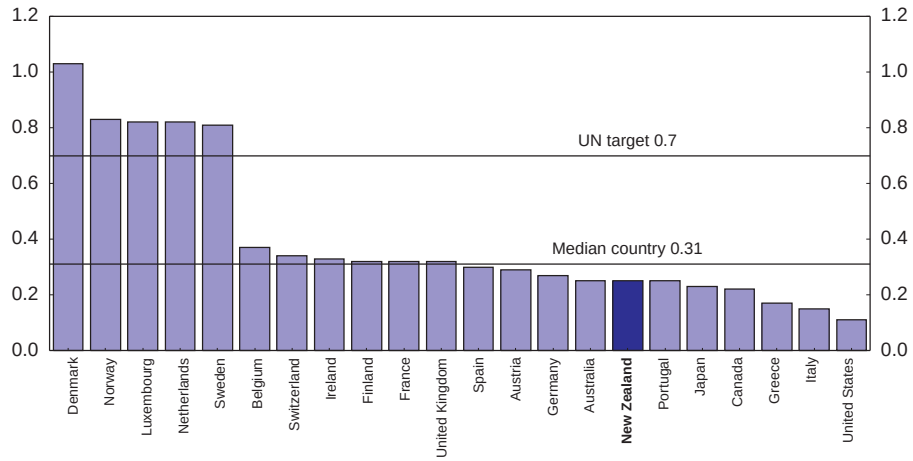
Table 28. **OECD non-energy imports from developing countries**

	Least-developed countries		Other low-income countries		All developing countries	
	Share in total imports, percentage	Average nominal growth (dollar terms), per cent	Share in total imports, percentage	Average nominal growth (dollar terms), per cent	Share in total imports, percentage	Average nominal growth (dollar terms), per cent
	2001	1990-2001	2001	1990-2001	2001	1990-2001
Australia	0.2	7.9	12.6	15.1	22.1	11.8
Austria	0.3	13.1	2.7	9.1	7.6	5.8
Belgium	1.6	5.7	4.5	9.9	11.7	8.8
Canada	0.1	5.1	4.8	17.0	11.9	13.0
Czech Republic	0.1	8.9	4.1	39.7	7.7	20.5
Denmark	0.3	0.9	4.3	9.6	7.4	5.9
Finland	0.5	16.6	4.5	13.7	9.2	8.4
France	0.6	1.0	5.4	11.2	13.0	6.3
Germany	0.5	5.6	5.5	9.2	11.3	4.6
Greece	0.7	7.0	5.1	13.4	13.4	7.9
Iceland	0.1	20.0	4.2	21.7	10.4	19.0
Ireland	0.3	5.6	2.9	17.9	7.6	18.1
Italy	0.4	–1.1	4.9	9.8	13.4	3.7
Japan	0.2	–4.7	24.6	14.0	39.0	9.9
Korea	0.1	–2.6	14.3	12.1	24.5	9.2
Luxembourg	0.1		0.7		1.5	
Mexico	0.0	–6.3	0.6	13.5	4.0	14.9
Netherlands	0.4	5.9	7.7	12.3	16.2	7.5
New Zealand	**0.1**	**4.2**	**10.2**	**18.6**	**17.2**	**12.6**
Norway	0.4	–17.5	4.3	14.4	8.9	–0.2
Poland	0.4	12.4	4.9	22.7	10.3	18.5
Spain	0.5	3.2	5.5	13.9	13.1	9.3
Sweden	0.2	7.3	2.7	6.8	5.7	3.1
Switzerland	0.1	–1.2	2.5	10.2	5.8	2.7
Turkey	0.2	–2.4	5.7	11.4	12.7	6.7
United Kingdom	0.4	6.8	4.7	9.6	12.8	8.3
United States	0.5	9.1	12.6	16.8	35.2	13.3

Note: Starting point is 1992 for Poland; 1993 for Belgium and Czech Republic.
Source: OECD.

states. (NZ$ 110 million of New Zealand's NZ$ 246 million total ODA goes to the Pacific, making New Zealand the fourth largest aid donor to that region.) The overall outcome of New Zealand's aid in terms of economic growth and poverty reduction is difficult to assess, as the economy-wide effects of ODA flows averaging NZ$ 2.8 million per recipient country cannot be readily discerned. Nonetheless, specific, focused parts of the aid programme may lend themselves to evaluation, such as New Zealand's assistance to the Solomon Islands, which amounted to NZ$ 9 million in 2000 (3.2 per cent of the archipelago's GDP). An assessment was

Figure 42. **Net ODA by DAC members in 2001**
Per cent of GNI



Source: OECD.

carried out by the DAC in January 2000, prior to the coup in that country in June 2000. The general conclusion was that New Zealand's assistance had helped the Solomons reduce poverty, thanks to an integrated programme combining aid to the health sector, investments in education and efforts to improve governance (OECD, 2000d).

Policies

At a simple average of 13.8 per cent across all lines,[119] New Zealand bound tariffs are sizeably above those of the Quad countries (4.2 per cent),[120] with a large standard deviation and quite a few high rates (Table 29). There are peaks in both MFN and applied tariffs for textiles, clothing and leather goods – products which are of particular importance to developing countries. In 2002, the simple average across tariff lines for textiles and clothing was 19.4 per cent, while the average applied rate was 9.5 per cent (WTO, 2003). The country's generalised system of preferences (GSP) offers preferences, up to 80 per cent of the MFN rate, to DCs with per capita income below 70 per cent of the New Zealand level but with significant exceptions for footwear, apparel and motor-vehicle parts. LDCs have been granted tariff-and-quota free access since 2001 on the condition that 50 per cent of the value is added in the exporting country (or other LDCs). In practice, only 0.7 per cent

Table 29. **Bound tariffs on industrial goods**
Post Uruguay Round

	Simple mean of bound tariffs, per cent	Standard deviation	Per cent of tariffs greater than 15 per cent	Maximum rate,[1] per cent
Australia	10.6	10.8	15.9	89.3
Canada	5.3	5.2	7.2	25.0
Czech Republic	4.5	3.3	1.0	31.5
European Union	4.1	3.6	0.6	22.0
Hungary	6.8	4.0	1.4	44.0
Iceland	10.0	12.1	30.0	107.0
Japan	3.6	3.8	0.6	49.0
Korea	11.4	9.0	18.9	110.8
Mexico	34.8	3.1	99.6	67.2
New Zealand	**13.8**	**14.7**	**33.9**	**313.5**
Norway	3.4	5.5	0.2	170.0
Poland	10.6	5.2	12.9	100.7
Switzerland	1.9	3.4	0.3	99.3
Turkey	40.7	34.2	77.3	360.0
United States	3.8	4.2	2.0	34.5

1. This is the maximum rate of tariffs aggregated at the 6-digit Harmonised System level. Tariff rates on individual products may be higher.
Source: OECD.

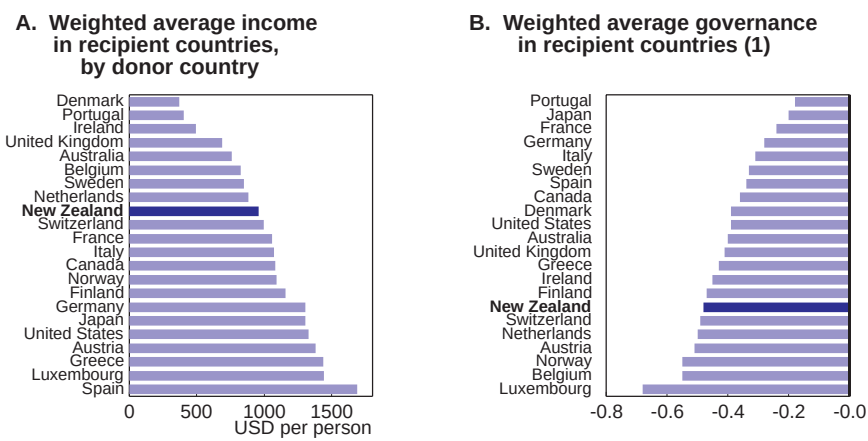
and 15.2 per cent of actual imports from LDCs and DCs, respectively, are subject to duty. However, the real degree of protection is higher than is suggested by the low figures. They give no account of the transactions that do not take place because of existing tariffs, of the complexity and limited predictability of the rules that determine the actual rate, and of other restrictions such as the rules of origin for the GSP. The plan to gradually bring every MFN rate to zero by 2006 would have eliminated these obstacles and made it considerably easier for prospective exporters in developing countries to gain access to New Zealand's market. However, the plan was shelved in 2000. Fortunately, tariff cuts will resume in 2006 for a three-year period but they will not bring rates to zero, in contrast to the initial plan.[121]

Having the possibility to sell into developed countries' agricultural markets on a level playing field is of particular importance to developing countries. In this regard, New Zealand offers much better opportunities to DCs than does any other OECD country. Producer support is almost non-existent in New Zealand, and there are no export subsidies depressing the prices given to farmers in the developing world. In addition, agricultural products enter quota-free with an average applied tariff of 2.1 per cent and a zero rate for LDCs. However, one difficulty

facing farmers in developing countries, especially LDCs, is the extent of sanitary and phyto-sanitary (SPS) regulations.[122] The authorities have been working since the early 1990s to help exporters in the Pacific area to meet SPS requirements. One example is the appointment of an officer in the Ministry of Agriculture to work full time on import applications emanating from LDCs. This is part of the 6 per cent of the ODA budget that goes to build trade capacity in DCs.

Aid-related activities, which had been undertaken directly by the Ministry of Foreign Affairs and Trade, were transferred to a newly created semi-autonomous body in 2002, the New Zealand Agency for International Development (NZAID). Two main reasons behind this reform were to shift the focus from foreign policy objectives towards development goals and to put in place better monitoring and assessment tools. Poverty reduction is the primary objective assigned to NZAID. In this regard, the current importance of education and governance activities, which together represent 43 per cent of bilateral aid, constitutes a sound basis, as does New Zealand's allocation pattern that is relatively well geared towards the poorest countries (Figure 43). On the other hand, the quality of governance in recipient countries is comparatively low, which diminishes the potential of New Zealand's aid to reduce poverty. Besides, bilateral assistance has become increasingly scattered,

Figure 43. **Average income and governance in recipient countries**



1. A value closer to zero indicates better governance. Indicators are taken from the World Bank Institute dataset as reported in Kaufmann *et al.* (2002). They rely on polls of experts and surveys of business people and citizens in general.

Source: OECD, DAC and World Bank.

from 49 recipient countries in 1990 to 94 in 2003 although a smaller group of 20 Pacific and Asian countries has been designated as core partners.

Conclusions

New Zealand offers better access to its market for farm goods than any other OECD country, and current efforts to help exporters in LDCs meet sanitary requirements can help reduce the only major impediment remaining in this area. Developing countries' exporters of industrial goods still need to comply with a complicated set of rules if they want to take advantage of the many possibilities to avoid MFN rates, which are higher than in OECD major trading blocks. These obstacles would be effectively eliminated by reinstating the plan to bring MFN rates down to zero. New Zealand's recent overhaul of its international development aid framework could also help improve the country's contribution to better living conditions in developing countries. In this reform, two elements are of particular importance. *First*, the planned monitoring and evaluation of aid should be implemented as soon as possible. *Second*, New Zealand's ODA should strengthen its focus on a core group of partner countries selected for the acuteness of poverty there and for their institutional capacity to make aid work. These improvements to the framework for providing aid should be supplemented by an increase in the volume of ODA so as to narrow the gap with the agreed UN target.

Notes

1. Unless otherwise noted, "average" in this *Survey* refers to unweighted averages of the relevant countries.
2. In 1991, output is estimated to have been 6 per cent below potential. Hence, at least 6 percentage points of the growth since then can be attributed to a cyclical bounce-back. However, if potential output fell more sharply than current estimates suggest, perhaps because a significant portion of the capital stock became obsolete, then more of the growth since 1991 could be attributable to a recovery in the sustainable growth rate rather than being cyclical.
3. Several studies using a variety of approaches also confirm that a pickup in the trend rate of productivity growth occurred around the middle of the 1990s. See Razzak (2002), Black *et al.* (2003a) and Buckle *et al.* (2002). Downing *et al.* (2002) provide a range of estimates of potential output growth that are broadly consistent with the Secretariat's estimates.
4. This projection assumes that the participation rate of each age group remains unchanged at its 2002 level, and implicitly also assumes either zero migration or that migrants have the same participation rates and age composition as the New Zealand-born.
5. In the OECD there are 18 agglomerations in 11 countries that are bigger than Sydney (population 4 million), and 30 that are larger than Melbourne (3.2 million) (*www.xist.org/charts/city_million.php*).
6. For example, see McCallum (1995).
7. For most of the 1990s, around one-third of school leavers left with no qualifications or with School Certificate only (Ministry of Education Briefing to the OECD, December 2001).
8. For example, the reading performance of 10 year-olds in the PIRLS (2001) study was equal to the average of the 17 OECD countries that took part, but had the largest variance.
9. For every ten new entrants to high-decile (most advantaged) schools who are competent or expert in maths, seven new entrants to low-decile schools meet the same standards. By senior secondary school, for every ten students from high-decile schools who qualify to enter university, only three from low-decile schools have comparable grades (Ministry of Education, 1999).
10. The inter-quartile range of PISA's school mean index of economic, social and cultural status is below the mean and median of the OECD. See Table 8.4 of OECD (2001a).
11. Children from the top 5 per cent of Maori and Pacific families as measured by the PISA *International Socio-economic Index of Occupational Status* scored around 500 on the PISA combined literacy scale. That is approximately the same score as children from the bottom 5 per cent of Pakeha families. See Figure 6.1B of Sturrock and May (2002).
12. In terms of gross flows, 1.35 million New Zealanders have left since 1970 with the intention of staying away for at least a year, while 0.7 million have returned (although a

small number of these would have been people who left before 1970). Around 1.1 million foreigners arrived over that period, and 0.5 million left. Note that these figures refer to NZ citizens rather than the New Zealand-born population. Therefore, some of the NZ citizens who emigrated over that period were people born overseas but who later gained NZ citizenship while they were there.

13. Fabling and Grimes (2003) use NZ firm-level questionnaire-based data and find that business performance is strongly correlated with the purchase of external technology and having fully up-to-date core equipment. IT-related factors were found to be considerably more important for small and medium-sized firms than for their larger counterparts.

14. As a rough approximation, road use expands at the same rate as income, so investment levels need to keep pace with GDP (Ingram and Zhi, 1997). In New Zealand, annual investment levels are currently insufficient to cover depreciation and growth in demand. Over the next ten years, expenditure on road building is budgeted to grow by an average 3.3 per cent per annum, well short of the forecast 5 per cent nominal GDP growth (NBNZ, 2003). That projected level of investment could be sufficient to reduce congestion only if those funds get channelled primarily to bottleneck areas by not fully maintaining the under-utilised parts of the road network.

15. The FDI β can be measured by regressing the (log) change of New Zealand's FDI on the (log) change of world FDI. The resulting β coefficient is 0.51 (with a t-value of 1.1) over the period 1980-2001.

16. See, for example, "Red tape worry as firms cut investment", INL Newspapers, 5 May 2003, and "New Zealand rules forcing investors overseas, say fish farmers", INL Newspapers, 30 June 2003.

17. This refers to the OBERAC, or operating balance of the Core Crown (central government) excluding revaluation effects and accounting changes.

18. By contrast, New Zealand has the highest proportion of graduates in life sciences among OECD countries.

19. A Design Industry Taskforce was also set up and has produced its report (2003), which however makes it clear that rather than an industry *per se*, design represents a capability, and design-led firms are present in a variety of different sectors.

20. The tax break resulted from a tax loophole that the government closed in 1998, but which could still be exploited by films which began production before that date. The film producers were allowed to claim an up-front tax deduction for the entire cost of the film trilogy.

21. The average bound tariff (simple average across all lines) is 13.8 per cent, compared with an average of 4.2 per cent in the Quad countries (United States, the European Union and Canada). However, the average applied MFN tariff is much lower, 4.1 per cent (WTO, 2003).

22. Thus, indicators of FDI restrictions that disregard screening requirements put New Zealand's FDI regime among the least restrictive in the OECD. On the other hand, given the difficulty of taking into account the way a screening system is actually implemented, if the very presence of a screening requirement is considered as a restrictive element, New Zealand's regime would be regarded as more restrictive than the OECD average (Golub, 2003).

23. For example, even though Ireland had a corporate tax rate of 10 per cent (12.5 per cent since 2003) against New Zealand's 33 per cent, in 2001 the average effective tax rate on an investment from the United States to Ireland was only 1 percentage point lower

than that of a comparable investment to New Zealand (Yoo, 2003).

24. It has even been suggested (Simmons, 2002) that New Zealand may be functioning as a "nursery economy", nurturing innovative ideas and small businesses that, however, can only be fully exploited by offshore firms.

25. For residential consumers, one additional factor is that the price of access to low-speed Internet access is maintained artificially low, because under its "kiwi share" agreement with the government, Telecom is obliged to provide a free (unmetered) local calling option, which includes both voice traffic and normal (low-speed) Internet access. Moreover, given that Telecom was offering only metered broadband access, many consumers were probably reluctant to move from unmetered to metered access.

26. There is no general capital gains taxation in New Zealand. Capital gains from equity participations arising in the context of certain arrangements are taxed, while others are not. The key factor is whether holding and trading securities are normal part of an entity's business: for example, a mutual fund is considered to hold its security portfolio on revenue account and is taxed on any resulting capital gains, while a small investor is not. However, this criterion leaves significant room for interpretation, particularly when new financial arrangements emerge.

27. A survey by the Auckland Chamber of Commerce found that the smallest firms (those with 1-5 employees) devote up to 30 times as much of their resources per employee to compliance as those with 100 employees or more.

28. The Environment Court already has the power to award costs against frivolous objectors.

29. In addition to financing for research projects on a contestable basis, each CRI receives from the FRST a "non-specific" funding top-up equal to 10 per cent of the previous year's total allocation, whose purpose is to support longer-term capability enhancement. In some cases, CRIs can also bid for government funding for large capital expenditures that they cannot finance out of their own budget.

30. The CRI Act states that each CRI "shall, in fulfilling its purpose, operate in a financially responsible manner so that it maintains financial viability". This is interpreted to mean that it should recover the full cost of the research performed, including the cost of capital employed (see CCMAU, 2002).

31. Comparable data on tertiary education expenditure exist only for 2001, and for New Zealand they refer only to the public sector component, which is 0.9 per cent of GDP, against an OECD average of 1 per cent of GDP (OECD, 2003d). However, public spending on tertiary education has risen by over 30 per cent between 2001 and 2003, and is probably now above the OECD average.

32. In order to have access to public funding a tertiary education organisation must submit a charter and an annual profile indicating strategic plans, proposed activities and performance targets, which are then assessed by the TEC and have to be found consistent with the objectives of the TES.

33. A review of the course classification system used to set funding categories has been recently undertaken to address some distortions in funding rates that may affect the behaviour of providers and students. However, the government has not taken up the suggestion made by the Tertiary Education Advisory Commission in its fourth report (TEAC, 2001) to differentiate the proportion of public funding across courses and disciplines according to national strategic goals.

34. In addition to this financing managed by the TEC universities, as already mentioned earlier in this chapter, are also eligible for funding allocated by the FRST for specific research projects on a contestable basis.

35. In 2001, foreign students represented 6.2 per cent of all tertiary students enrolled in New Zealand, a proportion above the OECD average, with students from Asia and Oceania representing 80 per cent of the total. The number of NZ tertiary students enrolled abroad was equivalent to 3.5 per cent of domestic enrolment, below the OECD average of 4 per cent; three-fourths of them were studying in Australia and most of the remainder in the United States and the United Kingdom (OECD, 2003d).

36. Another dry weather episode occurred in 1992.

37. In a recent study (Energy Link, 2002), the elasticity of demand for electricity was found to be virtually nil at relatively low prices, and to start rising (in absolute terms) gradually only above a price of 10 cents/kWh (which is about twice the historical average price). Even then, demand would fall by only 2 per cent at 20 cents/kWh and by 6 per cent at 40 cents/kWh.

38. The net cost of contracting for and operating the reserve has been estimated at about NZ$ 60 million a year, which represents a little over 2 per cent of what New Zealanders spend annually on electricity (at retail prices). Thus, the amount of the levy would not need to be very large.

39. According to the government's recently released *Energy Outlook to* 2025 (Ministry of Economic Development, 2003*b*), new generating capacity for a total of 3 350 MW (relative to a present capacity of 8 700 MW) will be needed by 2025, partly to replace old plants (especially in the years 2006-10) and partly to meet increasing demand. The latter is projected to grow at an annual rate of 1.2 per cent, assuming GDP growth of 2.5 per cent (rather modest relative to both recent experience and official objectives) and gains in energy efficiency exceeding those realised in the recent past. Thus, investment needs could be significantly larger if economic growth is higher and/or the government's National Energy and Conservation Strategy is less successful than projected.

40. Passenger transport was discontinued in the 1990s, except for commuter train services in Wellington and Auckland.

41. Some of this fall is likely to be explained by the change in Australia's welfare policies for NZ citizens in early 2001. Another factor may have been the increased insecurity worldwide following the terrorist attacks of September 2001.

42. The main data on net migration flows concern so-called "Permanent and long-term" migrants. These are people who, on arrival in or departure from New Zealand, declare their intention to remain in their country of destination for more than one year. Such inflows thus include many people with temporary work permits and returning New Zealanders, in addition to those who have obtained a settlement visa, while it is only the latter who are included in the planning totals. Outflows include people emigrating definitively or for "overseas experience" as well as people who have been in New Zealand temporarily.

43. Resident spouses of NZ citizens can apply for citizenship after two years of residence.

44. About 30 000 intended to stay longer than one year, but not permanently (this distinction – that between "permanent" and "long-term temporary" – can be made in the Australian statistics, but not in New Zealand's) and around 17 per cent of these were not NZ-born, In this three-year period, China, Hong Kong, Taiwan and South Korea together provided one in four of the non-NZ-born settlers, one in six of the long-term

temporary; Pacific Islanders constituted about 20 per cent of the non-NZ-born total flow, and the United Kingdom some 13 per cent.

45. Furthermore, since the changes in Australian welfare arrangements for NZ citizens, arrivals in Australia of NZ citizens born in Asia have fallen much more that those of NZ-born. But no obvious fall in applications to enter New Zealand from Asia has occurred, as would be expected if this were a significant factor.

46. See L.E.K. Consulting (2001). Although the sample was quite large (1 500 people), it may not be representative of New Zealanders abroad. Little other concrete information is available, however.

47. International English Language Testing System. This rates English language ability on a scale of 1 to 9 with 1 being a non-user and 9 being an expert user. Principal applicants under the General Skills or business categories are required to take the test if they cannot demonstrate that they have an English-speaking background (*e.g.* by coming from an English-speaking country or having an academic or professional qualification from an English-speaking country); since November 2002 General Skills applicants are required to score a minimum of 6.5 (between "competent" and "good" user), whereas 5 ("modest" user) is required of Business skills applicants, increased from 5 and 4, respectively. Average scores in 2001-02 for successful applicants from various countries were: South Africa 7.0; Philippines 6.6; India 6.4; Romania 6.2; Russia 5.8; China 5.7; Japan 5.6; South Korea 5.5.

48. Parents, children and adult siblings are admitted subject to various additional conditions. These include requiring the "centre of gravity" of the family to be in New Zealand or, for adult children and siblings, a suitable job offer. NZ residents can also "sponsor" family members not otherwise eligible for entry, guaranteeing them accommodation and financial support for the first two years; this is subject to an annual quota, currently set at 250.

49. The Pacific Access Category (PAC) includes a quota of 1 100 Samoans a year, allowed entry if they have a job offer and are aged 18-45. Smaller quotas exist for Tonga (250 people), Tuvalu (75) and Kiribati (50, increased to 75 in July 2003); in July 2003, a quota of 250 was introduced for Fiji nationals, not previously eligible under the PAC. Apart from asylum seekers decided on a case-by-case basis, there is a quota of up to 750 people per year for refugees nominated by the United Nations High Commission for Refugees.

50. This total is the sum of the three streams, but the government intends to treat each stream independently and not compensate for over- or under-runs in one stream by varying admittances under other streams.

51. The NZ government fears that moves to restrict entry to well-qualified applicants will have an adverse effect on the quality of future applicants, though it is not clear whether empirical evidence supports this. Some research shows that rapid processing times for applications can have an impact on choice of destination country for some migrants. Oliver (2000) finds that Chinese emigrants tend to be indifferent *ex ante* between Canada, Australia and New Zealand, looking basically for physically and politically congenial destinations. New Zealand's rapidity in processing applications was taken by many as meaning that the country was keen to admit people because it needed them; hence, potential migrants assumed, jobs would be easy to get.

52. Onshore applicants already working in New Zealand may be exempted from this requirement if they pre-pay for English language tuition, on a scale that varies inversely with their IELTS test score. The partners and adult children of skilled and

business migrants must also meet English language requirement, a little less strict than for the principal applicant, or else pre-purchase English language tuition.

53. According to Stuart (2000), (Asian) business migrants found that the business plan they submit to the New Zealand Immigration Service is irrelevant and is ignored in New Zealand.

54. A thorough investigation of applicants' qualifications and work experience will be undertaken only when they apply from the pool.

55. Larsen and Vincent-Laurin (2002) estimate that revenues due to foreign students were around US$ 200 million in the year 2000, 4.7 per cent of total NZ services exports. Australia earned ten times as much, almost 12 per cent of services exports, and the United Kingdom and the United States were even bigger earners in absolute terms, but in terms of the importance of such revenue in exports of services, New Zealand was thought to be second only to Australia.

56. One of the growing areas in education exports is distance learning, the modern version of correspondence courses, where students do not actually leave their home country; direct familiarity with the exporting country is obviously not a by-product in this case.

57. Seven per cent of all foreign tertiary students in OECD countries in 1999 were from China, and 5 per cent were from Korea. Concerning China, the latest "wave" of student movement from there, and inflows of business oriented migration, contrast with a previous significant movement in the late 19th century, when inflows of unskilled Chinese labour were important in a number of countries – this was the origin of a long-established community of Chinese in New Zealand whose ancestors were involved in New Zealand's gold rush.

58. In the past, students would often have had to return to their home country and apply from there; this restriction now applies only to students benefiting from scholarships offered under New Zealand's development aid programme.

59. This instruction may not have been sufficiently clear. There are suggestions that in some cases schools took account only of current operating costs in calculating fees to be charged overseas students and may therefore have overburdened their investment budgets. This practice does not seem to be widespread, however.

60. One might also compare immigrant arrivals with turnover in the labour force, but it is hard to know what measure is appropriate. For example, in 2001, an average of about 85 000 people obtained jobs in each quarter who had not been working in the previous quarter, compared with an average of 10 to 15 000 immigrants arriving each quarter. This still takes no account of those who change jobs or of higher frequency movements into and out of employment.

61. A pilot project has been undertaken to set up a longitudinal survey of immigrants ("LisNZ") similar to that which already exists in Australia. Useful results will not be available for several years, although some preliminary results are discussed below. For research purposes it would be helpful to have a parallel longitudinal survey of the NZ-born – one of the limitations of the otherwise extremely valuable Longitudinal Survey of Immigrants in Australia is the lack of directly comparable information on the Australian-born.

62. As indicators of how well New Zealand integrates its immigrants, these figures do not take into account variations in the characteristics of successive cohorts of immigrants and natives, nor of how each cohort changes through time (notably, it gets older and gains experience on the job relative to the population average), however.

63. Note that these data concern employed people. Since the Pacific Islanders also have relatively high unemployment early on, as discussed in later sections, the relative income of the average recent Pacific Island immigrant will be even lower.

64. In 1991, only 28 per cent of Pacific Island origin people had an upper secondary qualification (62 per cent overall), and the Household Labour Force Survey was not able to report a figure for tertiary education since it was too small compared with the sampling error (see Ministry of Social Policy, 2001).

65. This is consistent with the finding (discussed in Chapter I) that differences in proficiency at school are related to a large extent to ethnic background. Pacific Island immigrants and their NZ-born descendents, who with Maori are the most disadvantaged groups, probably represent a larger percentage of the non-English speaking children than of total immigrant children of NZ-born children of immigrant parents.

66. This survey interviewed a sample of immigrants who arrived or whose application was approved in late 2000 or early 2001; they were interviewed 6 and 18 months after arrival (or after approval in the case of on-shore applications).

67. Information from the Australian longitudinal survey shows that while 63 per cent of immigrants arriving in 1993-95 (principal applicants only) were unemployed or out of the labour force 4-5 months after arrival, this figure falls to 48 and 42 per cent after 1½ and 3½ years, respectively. These figures for Australia varied enormously according to the immigrant category. For skilled migrants the figures were 33, 15 and 11 per cent, respectively, for preferential family migrants (which would include many spouses) they were 69, 56 and 51 per cent.

68. These data have been produced from a LisNZ pilot test and are restricted to a small sample of migrants settling in specific areas, speaking a given set of languages and arriving in New Zealand over a particular two month period (December 2000 and January 2001). Wave 1 of the pilot consisted of 690 migrants and Wave 2 of 540 migrants. Data from this test are indicative only, as they are derived from a sample designed to evaluate the LisNZ methodology, not to produce reliable statistics. The data should therefore be treated with caution.

69. Again, as these are not longitudinal data, the improvements with length of stay are a function of time but also of other possible differences in the characteristics of the different cohorts of immigrants.

70. BERL (2003) uses data from the 2001 census to look at fiscal receipts and public expenditures accounted for by immigrants, distinguishing them principally by length of residence and region of origin, and compares their contribution with that of the NZ-born. Being based on census data, it is not able to look at immigrants according to the programme under which they were admitted, unlike recent work for Australia (Access Economics, 2002). It cannot take direct account of how the contribution varies through time, notably as immigrants age and become likely recipients of greater amounts of pension and health expenditure, and some expenditure estimates for migrants are based on the assumption that they have similar behaviour to NZ-born with similar age and incomes. The authors further note that the results cannot necessarily be seen as the fiscal *impact* of immigrants, since some of these impacts would show up through the effects on revenues and expenditures accounted for by enterprises and by NZ-born people whose position had been affected by migration. Other aspects of the methodology include the assumption that expenditure items not mentioned in Table 14 are invariant with respect to population size. Many items are calculated by applying, for example, statutory tax rates applicable to people as a function of their incomes, in the absence of census data on actual tax payments. For each kind of tax and expenditure item, the

amounts calculated in this way for each population group identified are grossed up in equal proportions so that the overall totals match actual budgetary expenditures and revenues.

71. This view is shared in other traditional "settlement" countries – Australia and Canada, for example – and is based partly on the fact that these populations and societies would not exist in anything like their current form without the substantial and consistent (albeit fluctuating) immigration flows that have continued for more than a century. It is also partly based on the observation that certain "agglomerations" tend to have higher productivity growth rates, with this growth appearing to be associated with high research and development activity. If successful research and development activity itself depends on geographical concentrations – or "critical masses" – of researchers in particular fields, then larger populations are likely to generate higher per capita income growth.

72. For example, a recent empirical study on economies of scale at the whole economy level (Ades and Glaeser, 1999) restricted itself "to the poorer economies where increasing returns seem to operate".

73. Eaton and Eckstein (1997) suggest little relation between city size and growth in a study of France and Japan. Wheeler (2002) showed a similar result for city data in the United States, but found a U-shaped relationship between population and growth using data on counties.

74. Many immigrants – recent policy measures are likely to make this an increasing proportion – arrive with jobs already set up for them, and thus add to supply almost immediately; the share with jobs of course increases with time since arrival. Once people have jobs, however, they become more creditworthy. If they were credit-constrained before finding employment, they could potentially do even more dis-saving than before, and add more to demand than to supply, even as output rises as immigrants move into employment.

75. The study does not specify precisely what is meant by the short term, though it is less than one year.

76. Some of these inflows were probably accounted for by business immigrants who subsequently placed their "investment" funds on deposit, rather than adding directly to demand. These inflows may also contribute to a rise in the exchange rate, which occurred in the mid-1990s and signs of which have recurred of late. The close link between the fluctuations in these inflows and in migration flows is partly artificial, since the data are estimated on the basis of a link between migration flows and transfers; the transfers are not observed directly. Estimates of current account transfers due to migrants ("workers' remittances") are not separately available in the balance of payments data, as the methodology is thought insufficiently reliable to allow their separation from other current flows. They seem to be much less important than the capital flows, however.

77. The differences in share between the two populations are negligible except for construction and agriculture. A survey by NZIS of migrants who arrived in 2000-01 shows larger, but still small, differences for nearly all industries, with the same exceptions of construction and agriculture.

78. See, for example, the 2003 OECD Economic Surveys of Spain and Luxembourg. NZ agriculture employs a number of working holiday makers for seasonal jobs, however. These would not show up in the labour force survey data quoted in the text.

79. New Zealanders abroad are well-known for their use of networks for information; it is unlikely that many of them who move abroad and remain there did not have fairly good information about what to expect when they left. They can therefore be expected to have made a "rational" decision.
80. Or at least their welfare is increased. Many abroad may choose low-skilled or part-time work to benefit from greater leisure but perhaps lower incomes, for part of their stay.
81. This was a non-representative sample of some 1 600 expatriates, contacted, for example, through university alumni associations, employers organisations or New Zealand consulates.
82. The research covered a group of people who graduated from Irish universities in 1992 and were resident in Ireland in 1998. Males who had worked abroad between the two dates had incomes some 10 per cent higher than those who had not. No difference was found for females.
83. The study by Winkelmann and Winkelmann (1998) was commissioned by the government in 1997 to investigate this issue.
84. This includes the planned longitudinal survey of immigrants mentioned earlier.
85. See *e.g.* Chiswick *et al.* (2002), and, for similar results for the United Kingdom, Shields and Wheatley Price (2001).
86. Since this survey did not cover employers who had the ability to take on immigrants but did not, it will be biased towards favourable outcomes if employers select successfully. It was based on a study of 387 employers in 2000-01.
87. See *www.newkiwis.co.nz* and *www.hi-q.org.nz/main/index.html*
88. The Auckland Chamber of Commerce believes that as many of 70 per cent of vacancies are not normally advertised but filled through word of mouth, an obvious disadvantage for newly arrived immigrants.
89. Of those who received the unemployment benefit continuously for the two years from October 1997 to September 1999, half stayed on the benefit for the following 12 months, while a little over a quarter left and remained independent. Gobbi and Rea (2002) looked at a cohort of both short-term and long-term unemployed who left the unemployment register in 1993. Half were back on the benefit within a year and 70 per cent were back within four years.
90. In 2003, 83 per cent of long-term (more than one year) unemployment benefit recipients had no dependent children. The proportion is roughly the same for the sickness benefit.
91. See Tables 3.2 and 3.5 of OECD (2002f). The paragraph refers to net (after tax) replacement rates relative to a job paying two-thirds of the average wage (as the majority of beneficiaries who are able to find work are likely to be in a low-paying job).
92. See OECD (2003f) and Blundell (2002) for a more thorough discussion.
93. See OECD (2001d) and Fredriksson and Holmlund (2003) for reviews of the theory and evidence.
94. In June 2003, 4.1 per cent of the population aged 15-64 receiving either a Sickness or an Invalids benefit. This is similar to levels in Germany and Canada, but is well below the OECD average of 5.8 per cent (in 1999). Some countries, such as Poland, Norway, the Netherlands and Sweden have disability rates above 8 per cent of the working-age population. See OECD (2003h).
95. This is based on a University of Auckland Business School survey released in June 2003.

96. In a sample of around 1000 collective agreements struck under the ERA, the Department of Labour (2003) reports that three-quarters of agreements covering two-thirds of employees contained clauses dealing with the sale or transfer of all or part of the business (by law it should be 100 per cent, but there are no penalties for non-compliance). The vast majority of these say that workers that remain employed with the new owner on the same terms and conditions will have no entitlement to redundancy compensation.

97. Germany is the only OECD country where a worker who voluntarily quits in such circumstances would be entitled to redundancy compensation. An EU Directive specifies that staff will continue to be employed on the same terms and conditions, but leaves it up to member states to decide what should happen when someone voluntarily decides not to work for the new owner. In Denmark, severance payments can be received if a worker quits because the change in ownership results in a serious deterioration of his position. See Blanpain and Engels (1998), IPD (1995) and Watson Wyatt (1997) for details on labour law at the EU level and in its member states. The EU Directive referred to is number 77/187 as amended by Directive 98/50. Practice in Australia varies across states, with some providing neither continuity of employment nor the automatic transfer of accrued benefits.

98. Unless otherwise noted, GDP refers to the production-based measure which is regarded as more reliable than the expenditure-based measure.

99. In raw form the surplus was only NZ$ 2.0 billion (1.5 per cent of GDP), which was slightly below both the previous year's outcome and the Budget forecast, despite much higher revenue growth than expected: a reduction in the assumed discount rate led to a large reduction in the balance because of its effect on the valuation of the government's unfunded pension liability for its employees (NZ$ 10.7 billion) and of outstanding accident insurance claims (NZ$ 9.2 billion in gross terms and NZ$ 4.3 billion in net terms). Higher estimates of long-term labour-cost increases also contributed to the rise in estimated accident insurance claims, as did investment losses and asset devaluations in defence and electricity. Full funding of the accident claims liability is targeted for 2014.

100. Statistics New Zealand has not published any accounts for general government since those for 1997. All such statistics in the text below are OECD estimates.

101. The full government contribution is nearly NZ$ 1½ billion per year. The Fund is expected to start investing in the final quarter of this calendar year. At mid-year it had assets of NZ$ 1.9 billion.

102. This figure differs from the government's published net debt estimate as it subtracts off the financial assets of the NZ Superannuation fund.

103. Indeed, if the analysis went further out into the 21st century, the estimated gap would get much larger as the operating balance would deteriorate at an accelerating rate and net debt would rise explosively. Some other countries (such as Denmark) are trying to ensure that their public finances are balanced over a much longer horizon than 50 years.

104. This would go so far as including demographically driven changes, settlements of legal claims and estimated student loan losses. Some pre-specified volatile items will be excluded and covered only in end-of-year assessments. While capital spending will of course be included, it is to be hoped that the revised approach will allow a clearer trade-off between current and capital initiatives.

105. The impact of the latter will need to be limited and largely net out over time, or else the credibility of the process will be at risk.

106. The priority areas for change identified by that review were: "*i*) Achieving better integrated, people focused, service delivery;… *ii*) Addressing fragmentation and improving alignment;… [and] *iii*) Enhancing the people and culture of the state sector…" (Briefing for Parliament, Public Finance (State Sector Management, Bill, p. 4).

107. Crown entities number around 2 780 of which some 2 600 are School Boards of Trustees. The remainder have various forms: some are statutory bodies (the ACC, for example), others are companies (such as the nine Crown Research Institutes) and a few are single-member entities, like the Commissioner for Children.

108. Such a proposal was also made by the State Services Commission (2003).

109. On current prices, without the emission charge, coal-fired plants have a slight economic advantage and would make up 31 per cent of the new 2 200MW to be installed, against 14 per cent for combined cycle gas turbines (Ministry of Commerce, 2000). Even at low levels, the emissions charge could substantially change that balance, as a tax of NZ$ 13 per tonne (about US$ 8) of CO_2 would lift the price of coal relative to gas by 9 per cent. This could encourage further exploration efforts as gas fields run out.

110. Leaving the farm sector aside indeed means less emission reductions than what a first-best tax would bring. New Zealand will hence have fewer permits to sell on the international market, which generates negative effects on the terms of trade and on national income. The estimated economic loss is very small, however, at 0.1 per cent of household consumption, because the forecast for the price of permits (NZ$ 13 per tonne of CO2) is very low, in line with the current consensus (see IEA, 2002 and NZIER, 2001a).

111. OECD calculation based on data reported in NZIER (2001b). The NZ$ 40 figure is drawn from the equalisation of net present values at a discount rate of 10 per cent as indicated in NZIER (2001b). Though NZIER (2001b) mentions a 10 per cent discount rate, it finds a different figure for the threshold because it equalises the respective internal rates of return, a methodology which is not appropriate.

112. Recent national data are not comparable with the previous report on the subject (Ministry of the Environment, 1997). A national update on water quality, which should identify trends over time, is due for public release in early 2004. Such a long interval since 1997 hinders the public from being able to follow the evolution of water quality nationwide. Regional councils, however, issue public reports with comparable data more regularly, which allow some trends to be identified.

113. Having increased by 51 per cent to 3.9 million cows between 1990 and 2002, the dairy herd generates effluent equivalent to that from 52 million people (Poore, 2003).

114. An average of 7 839 such bacteria per litre was found in surface water samples taken at 465 stations in the period 1995-2001, a level suitable for livestock watering but well above the swimmability threshold of 2 000 per litre.

115. Campylobacter was found in 60 per cent of water samples taken at 25 sites in a study carried out for the Ministry of Health (2002).

116. Under the RMA of 1991, all discharges of contaminants must have a resource consent from the relevant regional council or be authorised by a rule in a regional plan.

117. This remark is based on conclusions in Statistics New Zealand (2002b), but no data have been reported to the OECD to substantiate it.

118. This estimate includes capital expenditure on sewage collection and treatment but also on drinking water supply and stormwater collection.

119. At the 6-digit Harmonised System level.

120. The Quad countries comprise the United States, the European Union, Japan and Canada.

121. Tariff rates now in the range 17-19 per cent, such as those on textile, footwear and clothing, will decrease to 10 per cent by July 2009. Other rates will fall to 5 per cent by July 2008.

122. New Zealand imports no fresh eggs or poultry and bans all non-pasteurised cheese apart from a closed list of specific cheeses made in Switzerland. Some WTO members have officially expressed their criticism of the requirements that New Zealand imposes on the import of dairy products (WTO, 2003).

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Figures

BASIC STATISTICS OF NEW ZEALAND

THE LAND

Area (1 000 sq. km)	268.0	Urban population,[1] percentage of total (June 2003)	78.6
Percentage of total pasture and arable land, 1996	49.5	Population of major urban areas (June 2003, 1 000 persons):	
		Auckland	1 199.3
		Wellington	363.4
		Christchurch	358.0

THE PEOPLE

Resident population, June 2003 (1 000)	4 009.5	Civilian employment, 2002 (1 000)	1 876.8
Inhabitant per sq. km	15.0	*of which*:	
		Agriculture, forestry and fishing	159.8
		Manufacturing	289.9
		Trade (wholesale and retail)	420.5
		Education, health and community services	310.5

PARLIAMENT AND GOVERNMENT

Present composition of Parliament:			
Labour Party	52	Present Government : Labour Party	
National Party	27	Next general election: July 2005	
New Zealand First	13		
ACT New Zealand	9		
Green Party	9		
United Future	8		
Progressive Coalition	2		

PRODUCTION (2002)

Gross Domestic Product (NZ$ millions)	125 428	GDP per capita (NZ$)	31 842

FOREIGN TRADE (2002)

Main exports (percentage of total):		Main imports (percentage of total):	
Fish and seafood	22.1	Machinery and transport equipment	40.6
Manufactures	20.0	Manufactures	18.7
Dairy produce	16.7	Mineral, chemicals, plastic materials	25.6
Meat	13.8	*of which*:	
Wood and wood products	11.5	Mineral fuels, lubricants, etc.	9.3

THE CURRENCY

Monetary unit: New Zealand dollar	Currency unit per US dollar, average of daily figures:	
	Year 2002	2.1633
	November 2003	1.5915

1. Defined as the population in the 30 main and secondary urban areas.

This Survey is published on the responsibility of the Economic and Development Review Committee of the OECD, which is charged with the examination of the economic situation of member countries.

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The economic situation and policies of New Zealand were reviewed by the Committee on 17 November 2003. The draft report was then revised in the light of the discussions and given final approval as the agreed report of the whole Committee on 26 November 2003.

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The Secretariat's draft report was prepared for the Committee by Pietro Catte, David Rae, Paul O'Brien and Boris Cournede under the supervision of Peter Jarrett.

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The previous Survey of New Zealand was issued in June 2002.