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appendix 1

Context and process

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1.1 New Zealand: the country and its economy

New Zealand, also known by its Māori name of Aotearoa, is a social democracy with a diverse population, geographically remote from most of the world's population and major developed nations. These and other features affect the way in which New Zealanders respond to debate over genetic modification. To provide some context for the Report of the Commission and the analysis of its consultative process (Appendices 2 and 3), this section of Appendix 1 includes an outline of the country and its economy in terms of:

- geography
- population
- social history
- economic history
- current economic conditions
- major industries
- imports
- exports
- knowledge-based economy.

Geography

New Zealand comprises three large and many small islands in the South Pacific Ocean, southeast of Australia. Its land area is 268,680 km^2, about the size of Colorado or slightly larger than the United Kingdom. The country is long and narrow from north to south, and has a long coastline of 15,134 km, which makes it ninth in the world in terms of coastline length, ahead of China with 14,500 km, United Kingdom with 12,429 km and India with 7000 km. New Zealand's terrain is predominately mountainous with some large coastal plains. The climate is temperate with sharp regional contrasts. Natural resources include iron ore, sand, coal, gold, limestone timber, natural gas and hydropower, as well as the extensive marine environment. Current environmental issues include deforestation, soil erosion, climate change and the devastation of native flora and fauna by introduced species.

The official languages are English and Māori.

Population

At the beginning of 2001 the population of New Zealand was 3.849 million, about 85% as city dwellers. New Zealand has been ethnically and culturally connected to Polynesia for at least 1000 years. Less than 200 years ago, its population and cultural heritage was wholly Polynesian, but now New Zealand is dominated by cultural traditions that are mainly European, coming especially from Britain.

According to the 1996 Census, about 79% of New Zealanders are of European origin, predominantly from the British Isles. As the tāngata whenua, the indigenous population, Māori people occupy a unique place in New Zealand society. Māori make up the next largest group of the population, about 14.5% in 1996. The third main ethnic group, at 5.6% of the population, is the Pacific Islands people. In recent years, immigration from Asian countries has increased greatly.

In 1996, Māori were over-represented in the lowest two household income quartiles[1] and under-represented in the top two quartiles. In 1996, 38.5% of Māori were in the lowest income quartile. In contrast, 12.6% of all Māori were in the highest household income quartile compared with 26.9% of non-Māori.

In recent decades Māori culture has undergone a major renaissance involving culture, language, traditions and heritage. Over the past decade, education

[1] When a population is ranked in order of income, the 25 percent with the lowest income are the lowest quartile. Population data are adjusted for differing family size between the Maori and non-Maori populations.

initiatives have been developed by Māori, for Māori, in order to improve outcomes for Māori. The importance of the Māori language has stimulated the growth of Māori-medium education from pre-school to the end of secondary schooling. At the 1996 Census, approximately 25% of Māori reported that they could speak the Māori language.

Average family gross incomes for the year ended June 2000, including government benefits and other non-wage income, were: for a couple with children, $66,054[2]; for a couple without children, $59,051; for a sole parent, $25,171; and for a single person, $21,272.

Social history

Polynesian settlers are believed to have arrived in New Zealand about the 10th century, although Māori oral tradition and some research places the date some centuries earlier. By the 12th century, they had settled around the coastline. The Dutch navigator Abel Tasman was the first European visitor in 1642. In 1769, the British naval captain James Cook and his crew became the first Europeans to explore New Zealand's coastline thoroughly.

By the late 1830s, there were approximately 125,000 Māori and 2000 European settlers in New Zealand. Immigrants were arriving all the time and the British Crown sent Captain William Hobson to act in the negotiation of a treaty between the Crown and Māori.

On 6 February 1840, approximately 45 Māori rangatira (chiefs) and several English residents signed the Treaty of Waitangi at Waitangi in the Bay of Islands in the North Island of New Zealand. The Māori text of the Treaty was then taken around the rest of the country for signing, but the English text was signed only at two locations by 39 rangatira. By the end of that year, over 500 Māori had signed the Treaty. Of those 500, 13 were women.

The Treaty of Waitangi has two texts, one Māori and one English (these are included in the Report). The Māori text is not an exact translation of the English text. Despite the problems caused by the different versions, both represent an agreement in which Māori gave the Crown rights to govern and to develop British settlement, while the Crown guaranteed Māori full protection of their interests and status, and full citizenship rights.

[2] At March 2001, NZ$1 was equivalent to around US$0.41. Unless otherwise stated, all dollar amounts in this report refer to the New Zealand dollar.

The Treaty of Waitangi has been a significant document since its signing in 1840. However, it was not until the passing of the Treaty of Waitangi Act in 1975, which established the Waitangi Tribunal, that a forum was created with the sole purpose of investigating Treaty grievances held by Māori against the Crown. Before 1975, many Māori petitions and protests relating to the Treaty were ignored.

Waitangi Tribunal

The Waitangi Tribunal can examine any claim by individuals or groups of Māori that they have been prejudiced by laws and regulations or by acts, omissions, policies or practices of the Crown since 1840 that are inconsistent with the principles of the Treaty of Waitangi. The Tribunal makes findings on whether a claim is well founded, and outlines how the principles of the Treaty have been breached. It publishes its findings in an official report to the Minister of Māori Affairs, and may recommend to Government what could be done to compensate the claimant (or claimants) or to remove the harm that they have suffered. These recommendations must be practical.

The Tribunal has completed almost 70 reports on claims covering a range of issues. Many are about land loss and alienation while others range from the Māori language and the radio spectrum to the environment, geothermal resources and fisheries. Government has implemented many of the recommendations contained in those reports. The reports have also played an important role in many initiatives and new institutions, including Māori radio (reo irirangi), Māori Language Commission (Te Taura Whiri i te Reo Māori) and Māori Broadcasting Funding Agency (Te Mangai Paho).

Among claims not yet completed is the WAI 262 Indigenous Flora and Fauna Claim, which concerns, among other things, property and ownership rights over indigenous flora and fauna. These topics, and the slow progress of the claim, were raised in the discourse on genetic modification.

Economic history

In 2001, New Zealand has a mixed economy with sizable manufacturing and service sectors complementing a highly efficient export-oriented agricultural sector. This situation has evolved over the past 50 years since New Zealand's emergence from World War II with an expanding and successful agriculture-based economy. In the 1950s and 1960s, gross domestic product (GDP) grew at an average annual rate of 4% with agricultural prices remaining high. However, between 1949 and 1960, New Zealand's productivity growth was one of the lowest amongst the world's highest-earning economies.

In the 1970s, access into key world markets for agricultural commodities became increasingly difficult. The sharp rises in international oil prices in 1973 and 1974 coincided with falls in prices received for exports. As in many OECD countries, policies in New Zealand were aimed principally at maintaining a high level of economic activity and employment in the short term. High levels of protection of domestic industry had greatly undermined competitiveness and the economy's ability to adapt to the changing world environment. After the next major shift in oil and commodity prices in 1979 and 1980, New Zealand's position deteriorated further.

From around 1984 onwards, the direction of economic policy in New Zealand turned away from intervention toward the elimination of many forms of government assistance. On the macroeconomic level, policies have aimed at achieving low inflation and a sound fiscal position, while microeconomic reforms have been intended to open the economy to competitive pressures.

The reforms of the 1980s included: the floating of the exchange rate; abolition of controls on capital movements; the ending of industry assistance; the removal of price controls; deregulation across several sectors of the economy; corporatisation and privatisation of state-owned assets; and labour-market legislation aimed at facilitating more flexible patterns of wage bargaining.

The impact of this period of reform was widespread. The period 1981 to 1996 saw an increase in the inequality of income distribution in New Zealand, particularly in the 1980s. A study carried out for the Treasury in 2000 showed that income inequality has risen substantially relative to increases in inequality in other countries. This means that there have been general shifts into both higher and lower income brackets, with fewer New Zealanders in middle income brackets. Between 50% and 60% of the increase in inequality can be explained by an increase in sole-parent households, older households without children, and an increase in the proportion of workers in their prime earning years and with higher educational qualifications.

In terms of GDP per capita, New Zealand ranks 21st out of the 29 OECD countries when GDP is calculated according to current exchange rates, and 20th when calculated according to purchasing power parities. GDP is the aggregate used most frequently to represent the economic size of countries and, on a per capita basis, the economic wellbeing of their residents. *World Competitiveness Yearbook* (May 2000) ranks New Zealand 21st out of 47 countries in terms of competitiveness and 26th out of 47 in terms of overall productivity measured using purchasing power parity.

Current economic conditions

The economy is strongly trade oriented, with exports of goods and services accounting for around 32% of total output. New Zealand's economic performance has improved significantly over the 1990s. Far-reaching structural reforms commenced in the mid-1980s aimed at improving the microeconomic efficiency of the economy while simultaneously bringing greater stability to the macroeconomy. After a prolonged period of poor economic performance, the mid-1990s saw output recover strongly.

As a small trading nation, New Zealand is more a commodity price-taker than a price-maker. New Zealand's economy is therefore inevitably linked to the fortunes of the world economy. Looking to the medium term, the New Zealand Treasury considers that the reforms of the past 15 years mean that New Zealand should be on a growth track that is more sustainable than in the past.

Fiscal policy: the Fiscal Responsibility Act

Enacted in 1994, partly to address New Zealand's history of poor fiscal performance, to reduce public debt and to improve fiscal management, the Fiscal Responsibility Act represents the culmination of a major reform to fiscal management in New Zealand. Like much of the reform of the public sector that took place during the late 1980s, the Fiscal Responsibility Act is founded on two key planks: increased transparency and greater accountability.

These requirements mean that the government of the day has to be transparent about both its intentions and the short- and long-term impact of its spending and taxation decisions. Such transparency is likely to lead governments to give more weight to the longer-term consequences of their decisions and, therefore, is likely to lead to more sustainable fiscal policy. This increases predictability and stability of fiscal policy settings, which helps promote economic growth and gives people a degree of certainty about the ongoing provision of government services and payments.

Increased transparency and greater accountability are achieved by: the requirement for governments to be explicit about their fiscal objectives and to assess them against principles of responsible fiscal management; for governments to report on a wide range of economic and fiscal information; and for parliamentary select committee review of a government's fiscal plans.

Monetary policy

The Reserve Bank of New Zealand, New Zealand's central and non-commercial bank, implements monetary policy to maintain price stability, defined as annual inflation of 0–3%. This is achieved through the Official Cash Rate (OCR), an interest rate set by the Reserve Bank to implement monetary policy. The Reserve Bank is prepared to lend overnight money to banks and borrow overnight from banks at around the level of the OCR in whatever volumes are needed to hold the interest rate at its OCR level.

If the Reserve Bank sees inflation rising, it increases short-term wholesale interest rates. The consequent increase in the interest rates charged by commercial banks discourages consumer borrowing and encourages saving, both of which reduce spending and help to curtail inflation. In addition, higher interest rates encourage foreign savers to invest in New Zealand, putting upward pressure on the New Zealand dollar. This reduces the prices of imports, and tends to make it more difficult for New Zealand producers to put up their prices.

Similarly, if the Reserve Bank expects inflation to fall to the point where deflation may occur, it reduces short-term interest rates to get the economy moving again. This then increases demand and price-setters sense that they do not need to cut prices to keep making sales.

The Reserve Bank also promotes the stability and efficiency of the financial system as a whole through its role of "prudential supervision" of the banking sector.

Taxation

As at January 2001, the average annual full-time earnings are $36,186. The personal income tax scale, including rebates for low-income earners, is

- 15c per $1 on income up to $9,500
- 21c per $1 on income between $9,500 and $38,000
- 33c per $1 on income between $38,000 and $60,000
- 39c per $1 on income over $60,000.

Besides income tax, a comprehensive consumption tax (similar to Britain's VAT) called the Goods and Services Tax (GST) is applied to virtually all goods and services at a single rate of 12.5%.

Major industries

Many major industries are land based and export oriented, including meat and dairying, wool, fruit and forestry. The extensive agricultural sector is commodity based and is dominated by many small crops. New Zealand also has extensive fisheries. Tourism has become a major industry and one that is growing and developing rapidly.

Land-based industries

Traditionally, farming in New Zealand has centred on sheep and cattle to produce sheepmeat, beef, wool, dairy produce and hides, although recently new types of livestock have included deer (for venison and velvet), goats, ostriches and llamas. Since the 1970s, horticultural produce has also become an important export earner.

New Zealand has successfully developed an international marketing strategy of being "clean and green" which brings benefits across a wide range of industries. It has enabled the targeting, maintenance and growth of market share. This "clean and green" image was a major discussion point in the representations on genetic modification.

Uniquely among the developed countries, New Zealand farmers are almost totally exposed to world market forces. They receive no subsidies from government and have to compete with subsidised production from other producing countries. However, the General Agreement on Tariffs and Trade (GATT) Uruguay Round Agriculture Agreement, which began to take effect in 1995, imposes progressive reductions on the subsidies that other countries can give to agricultural production and exports, thus increasing access opportunities for New Zealand exports into overseas markets.

On New Zealand farms, stock are grazed in paddocks, often with movable electric fencing, which allows rotation of grazing around the farm. Grass growth is seasonal, largely dependent on location and climatic fluctuations, but normally occurs for between eight and 12 months of the year. Many farmers supplement grass feed with hay and silage, particularly in winter. Phosphoric fertilisers are used extensively on the predominantly grass/clover pasture. Nitrogen fertilisers are used to a small degree.

Probably New Zealand's best-known statistic is that it has close to 13 times as many sheep as people (one or two decades ago the figure was as high as 20 times). Grasslands have been developed to the extent that the best sheep farms can carry up to 25 sheep per hectare throughout the year. The best dairy farms carry 3.5 cows per hectare throughout the year.

Trends in livestock numbers are largely determined by world market prices for farm products, including meat, wool, dairy products and, more recently, venison and goat fibre. Over the past 14 years the sheep population has declined from over 70 million at June 1982 to around 46 million at June 1998. The beef cattle population fell to 4.4 million at June 1998, whereas the total number of dairy cattle at June 1998 is estimated to have risen to 4.4 million. In 1996, there were around 1.2 million deer in New Zealand.

Meat

New Zealand accounts for about 54% of the world export trade in sheepmeat. It is a smaller player in the global market for beef, accounting for about 6.4% of all world beef exports. About 80% of the lamb, mutton and beef produced in New Zealand is exported. The domestic market absorbs over 99% of the pigmeat and poultry produced in New Zealand.

New Zealand's major meat markets include: United Kingdom, Germany, France, Saudi Arabia and United States for lamb; United Kingdom, Germany, South Korea and France for mutton; and United States, Canada, Japan, South Korea and Taiwan for beef. The largest markets for New Zealand venison exports in 1997 were Germany, United States and France. Most of the venison produced in New Zealand is exported.

Wool

New Zealand sheep are largely dual-purpose, wool/meat animals and their wool is predominantly strong. New Zealand is the world's largest producer of crossbred (strong) wool. This type of wool is used mainly in interior textiles such as carpets, upholstery, furnishings, bedding and rugs. It is also used for handknitting yarn, in knitwear and in blankets.

It is estimated that 34% of New Zealand wool is used in machine-made carpets, 12% in hand-knotted and hand-tufted carpets, 44% in apparel and 10% in other uses, primarily upholstery and bedding. Net domestic consumption of wool in New Zealand is among the highest in the world on a per capita basis.

Around 90% of the New Zealand wool clip leaves the country in a greasy, scoured, or slipe form. Seventy-five percent of exports are scoured. Of the 10% of the clip processed in New Zealand, roughly half is exported in product form, mainly as carpet yarn, carpets or knitted jerseys. During 1997–98, the largest importers of New Zealand wool were China, United Kingdom, India, Germany and Belgium.

Dairy produce

The dairy industry is geared primarily towards overseas markets, which account for between 90% and 95% of all milk produced. The major product groups manufactured by New Zealand dairy factories are: milk powders; cream products such as butter, anhydrous milkfat and ghee; cheese; and protein products such as casein and caseinates.

New Zealand is one of the top five dairy exporters in the world, which collectively supply around 90% of dairy products traded on the international market. The New Zealand dairy industry's major markets vary for different products. Britain and the European Union (EU) are New Zealand's most valuable market for butter.

The primary markets for casein and cheese are United States, Japan and EU. New Zealand is the world's largest exporter of casein and caseinate products. New Zealand's most important milk powder markets are in Central and South America and Southeast Asia.

Poultry meat

The poultry meat industry is relatively new in New Zealand and is expanding rapidly. It is now the major intensive livestock industry in the country. The industry earns around $500 million in retail sales and provides about 3000 jobs.

Poultry consumption continues to increase as a result of declining prices in real terms, changes in lifestyle and consumer perceptions. Annual consumption has increased from 14 kg per capita 10 years ago to over 25 kg in 1997. The proportion of poultry meat consumed has increased from 15% to 25% of total meat consumption. This increase has been largely at the expense of sheepmeat.

Eggs

In 1997, New Zealand's estimated 2.55 million laying hens produced close to 756 million eggs. Over 85% of eggs are sold as table eggs within the domestic market, with the remainder used in the baking and catering industries. Retail sales of eggs are worth more than $160 million.

Total egg production has remained relatively static for the past decade, with slight drops in per capita consumption (now around 200 eggs per person annually). Most eggs produced in New Zealand are from caged hens, with free-range and barn egg production accounting for 5% of the total. The past decade has seen a wider choice of egg types available, including "wholegrain" and "omega-enriched" eggs.

Bees

The rich pasture lands of New Zealand and some of its forest and bush areas are suited to apiculture and produce high-grade honey, of which clover honey (from *Trifolium repens*) is still the principal type. Some New Zealand native honeys are also popular nationally and internationally. In addition to honey production, bees are also commonly used for commercial horticultural pollination, particularly in the kiwifruit industry, besides playing a major role in unpaid pollination.

In 1992 researchers confirmed that manuka honey (from *Leptospermum scoparium*) is very effective as an antiseptic dressing. Because of this, both the demand and the price for manuka honey have risen dramatically. The industry's other products include beeswax, pollen, propolis (an antibiotic gum or resin collected from plants), royal jelly and live bees. The total crop of honey for 2000 was 9609 tonnes, about 23% of which was exported, fetching $10 million. Export of bees and bee products earned another $1.9 million.

Field crops

Although pastoral farming is the major land use in New Zealand, field crops for feed and food processing and seed crops for resowing are also important.

New Zealand wheat is primarily grown for domestic human consumption and is milled for flour. Some wheat grain and the by-products of flour milling, bran and pollard, are used for stock feed. Most wheat is grown in the South Island in the Canterbury region.

Most barley grown in New Zealand is used for the manufacture of stock feed and for malting. Exports of malting and feed barley fluctuate in response to price changes, reflecting international supply and demand. Primarily grown in the eastern North Island, maize is used as poultry feed and increasingly as a supplementary feed for pigs and other livestock. Grown mainly for threshing and green feed, oats are also used to produce milled rolled oats, oatmeal and oaten foods.

Hay and silage crops are grown for supplementary animal feed and are almost exclusively grown on the farms where they are consumed. Considerable quantities of grass seed are required annually for renewal and extension of pastures. There is an appreciable export trade in some species of grass seeds.

Horticultural crops

In recent years there have been significant increases in the area planted in horticultural crops. Major crops for the export market include kiwifruit, pipfruit, stonefruit, onions, squash, flowers and berryfruit. Almost 70% of the New Zealand pipfruit industry's export income is derived from the apple varieties Braeburn, Gala and Royal Gala, which were all developed in New Zealand. In 1998, ENZA, the marketing arm of the New Zealand Apple and Pear Marketing Board, exported 13.9 million, 18-kg cartons of apples and pears on behalf of New Zealand's 1500 pipfruit growers.

At 30 June 1998, the total area planted in summerfruits was around 3000 ha. This was mainly peaches, nectarines, apricots, plums and cherries.

Kiwifruit is one of New Zealand's most important horticultural export earners. New Zealand is a major supplier of kiwifruit globally and has led the development of the industry internationally. ZESPRI International, the global marketing subsidiary of Kiwifruit New Zealand, is the world's largest marketer of kiwifruit and the sole marketer of the ZESPRI brand of kiwifruit, exporting around 60 million trays of kiwifruit annually to about 70 countries.

Grape growing and wine production

Marlborough, Gisborne and Hawke's Bay are the major grape-producing areas. In 1998, an estimated 7356 ha were planted in producing grape vines. Grapes are grown mainly for the domestic market and for wine production.

Exports of wine increased from around 13 million litres in 1997 to over 15 million litres in 1998. The United Kingdom, which imported nearly eight million litres of wine from New Zealand in the year to 30 June 1998, is New Zealand's major export market for wine. Australia is the second-largest export market.

The 1998 season was New Zealand's largest wine vintage, producing 78,300 tonnes of grapes. Chardonnay, Muller Thurgau and Sauvignon Blanc were the most popular grapes of the season.

The organic economy

Organic agriculture has recently expanded in New Zealand. The 2000 harvest resulted in $60 million of organic exports (approximately 0.26% of total merchandise exports), mainly in fruit, fresh and processed vegetables. When all forms of "environmentally enhanced" agriculture are combined, exports in 2000 totalled almost $1 billion. Given that such exports did not exist in 1990, this represents a significant shift in the export strategy of the horticulture sector. Such a shift has not occurred in the pastoral sectors. From 1997, the entire kiwifruit crop has been grown under 'Kiwigreen' or organic methods. Kiwigreen is a system of integrated pest management designed to minimise chemical residues on kiwifruit.

Managed marketing channels

Many significant New Zealand export industries have managed marketing channels, which operate on a commercial basis or are funded by a levy on producers. These organisations are involved in activities such as international marketing and promotion, assuring market access, and product classification and compliance.

They include the New Zealand Meat Board, New Zealand Dairy Board, ENZA (the primary marketer of New Zealand pipfruit), ZESPRI International (which is focused on international marketing and which is the world's largest marketer of kiwifruit) and New Zealand Game Industry Board (which markets venison, under the Cervena brand, and deer velvet).

The forestry industry

New Zealand has a well-established forestry industry with log production and wood processing sectors. These sectors are almost entirely dependent on radiata pine wood from New Zealand's planted production forests.

The volume of roundwood harvested from New Zealand's forests has increased significantly over the past eight years, from 10 million m^3 to 17 million m^3. New planting rates suggest that the supply of logs will increase dramatically again, growing from 16.4 million m^3 in 1998 to almost 30 million m^3 by 2010.

About one-third of the national harvest is exported as logs, one-third is supplied to sawmills and plywood mills, with the remaining third supplying the pulp, paper and reconstituted panel industries.

New Zealand's wood processing industry includes four pulp and paper companies, five panelboard companies, more than 400 sawmillers and 80 remanufacturers. It currently consumes around 11 million m^3 of wood annually, with the balance of the harvest exported as logs.

By 2010, there will be another 19 million m^3 of wood available for industry to further process or to export in log form. If the surplus is processed a substantial investment of up to $6.5 billion would need to be invested in new wood-processing facilities. This could equate to an additional 134 medium-sized sawmills, 87 remanufacturing plants and either 20 panelboard mills or six pulp and paper plants added to the existing capacity. Much of this increase in wood available for harvest is concentrated in areas of the country where infrastructure is markedly inadequate and skilled, high-quality labour is in short supply. Government agencies are planning to address these issues.

Fisheries and aquaculture

New Zealand's Exclusive Economic Zone is one of the largest in the world at 1.3 million square nautical miles. This is an area 15 times New Zealand's land mass. The waters contain about 100 species of commercially significant marine fish.

In less than 30 years the commercial fishing industry has expanded from a small domestic industry to a significant export business. Approximately 650,000 tonnes are sustainably harvested from wild fisheries and aquaculture each year. The value of this harvest ranges from $1.2 to $1.5 billion annually.

Aquaculture involves mainly greenshell mussels, salmon and pacific oysters. In 1998, greenshell mussel exports were $118.2 million and salmon $35.6 million. Quantities produced and the range of species farmed have substantially increased in recent times. The aquaculture industry is researching extension of the range of species and technologies involved. Species under consideration include turbot and brill, oysters, sponges for chemical production, kingfish and rock lobster, as well as further enhancement prospects for several species such as paua (similar to abalone), scallops and snapper.

Fishing is also a popular leisure activity enjoyed by one in five New Zealanders. Popular targets are finfish (fresh water and marine), rock lobsters and shellfish. Māori cultural ties with fisheries are strong and their fishing rights are recognised in law.

The main method used to manage fisheries is a system in which catch limits are set for each fish stock. Rights to harvest fish for sale are acquired by purchasing or leasing quota. There are 31 fish species or species groups currently managed under this system, consisting of 182 different fish stocks.

For several years there has been some foreign fishing involvement in New Zealand waters, limited to the tuna fisheries. The foreign fleet dominates the high-volume, deepwater fisheries (such as hoki and southern blue whiting) and the seasonal squid fishery. However, even in these fisheries, New Zealand domestic vessels have increased their share of the catch because of significant investment by the seafood industry in new vessels.

Tourism

New Zealand has an international image as one of the world's most beautiful countries. Many tourists visit scenic places such as Milford Sound, the glaciers on the West Coast of the South Island, the glow-worm caves at Waitomo and the geysers and hot springs of the geothermal areas in the central North Island. Many international visitors also take part in adventure tourism activities such as bungy-jumping, mountain biking, white-water rafting and jet boating, as well as more traditional activities like walking and fishing.

Tourism is New Zealand's largest foreign exchange earner and an above-average contributor to total export earnings, ahead of the traditional income earners of dairy, meat, forestry and wool exports. (To place this in context, one international visitor is worth the equivalent of the fleece of 150 sheep, 1000 kg beef, 1.5 ha plantation forest or 880 kg butter.) With the growth in the global economy, especially in the Asian region, New Zealand is enjoying steady increases in visitor numbers. The Office of Tourism and Sport estimates that in the year to June 1999 international tourism contributed $3.67 billion to the economy (about 3.7% of GDP), plus international airfare revenue of $1.3 billion. A 1995 study showed that tourism, including domestic tourism, accounted for 10.3% of GDP and sustained 118,000 jobs (8.4% of the workforce).

Tourism is a growth sector and a major driver of economic opportunity for regional areas, Māori and small business. It plays a major role in enhancing international awareness and understanding of New Zealand.

About 1.75 million overseas visitors arrived in New Zealand in the year to December 2000. The forecast average annual growth rate in international visitor numbers until 2005 is 5.7%. The countries of origin of most visitors during 2000 were United States (at 11.3% of the total for 2000), followed by United Kingdom, Japan, Republic of Korea and Germany. During the 1990s, expenditure by international visitors has grown at an average annual rate of 13.1%.

Tourism markets are becoming increasingly competitive. The global branding campaign adopted by the New Zealand Tourism Board carries the tag line "100% Pure New Zealand" and relies heavily on the clean, green image of New Zealand. In order for this campaign to have integrity over time, it will be important to ensure that New Zealand's tourism industry is employing environmentally sustainable development and operational practices. In recent years, an international environmental accreditation scheme for tourism practices called "Green Globe 21" has been developed. This voluntary scheme has been operating in New Zealand for one year with support from the New Zealand Government and further expansion is likely.

Imports

The main three categories of imports into New Zealand are mechanical machinery and equipment, vehicles, parts and accessories, and electrical machinery and equipment, which together accounted for 36% of the total value of imports in the year to December 2000. The country from which New Zealand imports the most is Australia, followed by United States, Japan, People's Republic of China, Germany, United Kingdom, Malaysia, Saudi Arabia, Taiwan and Republic of Korea.

Foodstuffs figure prominently amongst New Zealand's imports, although even cumulatively they represent only about 9% of all imports in a typical year. The largest categories are beverages, fruit, sugar, cereals and processed foods.

Exports

New Zealand has a strong economic reliance on food exports. The highest two categories of merchandise exports are milk powder, butter and cheese, and meat and edible offal. Together these two categories account for almost 30% of merchandise export earnings, a proportion that has been characteristic for many years. The remaining eight of the top 10 export categories are logs, wood and wood articles (7.5% of merchandise export earnings), fish, crustaceans and molluscs (4.4%), aluminium and articles thereof (4.3%), mechanical machinery and equipment (4.3%), fruit and nuts (3.8%), electrical machinery and equipment (3.5%), casein and caseinates (3.4%) and wool (3.0%).

Knowledge-based economy

New Zealand ranked seventh in the world for internet hosts per 1000 people according to *2000 World Development Indicators* (July 1999), and 10th in the world according to *World Competitiveness Yearbook* (May 2000). New Zealand has much of the technological infrastructure needed to become a knowledge economy and has a culture of innovation. The nucleus of a knowledge economy already exists, with 40% of households having a computer (1999), and with New Zealand leading the world in per capita expenditure on information and communications technology for five of the six years before 1999.

In 1992, in a restructuring of government research entities, Government established several Crown Research Institutes to service the technology and innovation needs of the community. The institutes undertake a wide range of research, technology development and consulting for private companies within New Zealand and overseas. They also undertake strategic public good science research for Government to complement the more applied research undertaken for the private sector.

Future policies for the knowledge economy

For New Zealand, an important aspect of the "Information Age" is that distance no longer determines the cost of communication. Patterns of international trade, concepts of national borders and the basis of decisions about where people live and work are being altered in unforeseen ways. The Labour-Alliance Coalition Government (elected in November 1999) sees New Zealand's future in the development of a knowledge-based economy. It views its task as stimulating the innovation, infrastructure and skills development needed to underpin this. (Further detail on the political spectrum of New Zealand is provided below: see "New Zealand: political framework".)

Knowledge economy policies are to include focusing on removal of any obstacles in the way of market progress (including barriers to investment in research and development (R&D)), education as the mechanism for advancing the knowledge economy and support for industry in terms of competitively awarded grants and expert advice.

Software industry

The technology sector in New Zealand already provides a significant contribution to GDP through both local and international contracts. New Zealand is renowned for its new media content industries, including animation and similar techniques.

Taxation of research and development

New Zealand's reported private-sector R&D is very low by international standards (less than a quarter of the OECD average), but this is now increasing at a faster rate than the OECD average.

In the 2000 Budget the Government announced support for private-sector R&D in the form of a grants programme, which it considered better, safer and fairer than tax concessions. However, there is currently uncertainty over the taxation of R&D, relating to whether R&D costs are classified as revenue or capital. It is not currently clear in tax law when R&D expenditure will be immediately deductible and when it will not be. The Inland Revenue Department has received submissions from the public on a new proposal which clarifies the capital/revenue boundary by permitting taxpayers to follow accounting practice to the extent that when R&D expenditure is immediately written off for accounting purposes, it will be immediately deductible for tax purposes. A decision on the proposal is forthcoming.

Education industry

International education is rapidly becoming a major earner of foreign exchange for New Zealand. In 2000, 35,169 foreign students came to New Zealand to study at secondary and tertiary institutes and at English-language schools, an increase of 24% over 1999, mainly because of growth in student numbers from China as a result of New Zealand policy changes. These students were estimated to have spent $568 million in fees and living expenses in the year to June 2000, and to have added a total of $710 million to the economy after multiplier effects are calculated. The international education sector is aiming to grow to $1 billion by 2004.

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