Fact sheet – Environmental-economic accounts: 2018 (corrected)

This fact sheet compiles the key facts and supporting graphics for each section of *Environmental-economic accounts: 2018*. It offers minimal explanation and context and is for reference only. Please refer to *Environmental-economic accounts: 2018* for full contextual value.
On 9 April 2018 we corrected a statement under environmental activity accounts.

Natural capital: physical estimates

Land cover

In 2012:

- Grassland accounted for 49.1 percent of New Zealand's land cover and tree-covered areas a further 33.9 percent.
- Shrub-covered areas accounted for 8 percent, and artificial surfaces a further 1 percent.

From 1996 to 2012:

- Tree-covered areas increased 199,547 hectares (2.2 percent). There were additions of 304,775 hectares of tree-covered areas but 105, 228 hectares of reductions.
- Of the net change in tree-covered areas, 162,968 (or 82 percent) were classed as grassland in 1996 while a further 38,901 (20 percent) hectares were classed as shrub-covered areas.
- Grassland cover fell 214,581 hectares (1.6 percent).
- Artificial surfaces increased 24,220 hectares (10.9 percent).

Table 1

Land cover, New Zealand, 1996–2012

Land cover	Opening area (1996)	Additions	Reductions	Net change	Closing area (2012)
			Hectares		
Artificial surfaces	221,419	25,078	858	24,220	245,640
Coastal water bodies and intertidal areas	94,271	79	59	20	94,291
Grassland	13,405,584	161,095	375,676	-214,581	13,191,003
Herbaceous crops	363,635	14,488	8,374	6,115	369,749
Inland water bodies	439,765	2,804	251	2,554	442,319
Mangroves	28,056	43	2	41	28,097
Permanent snow and glaciers	111,040	…	…	…	111,040
Shrub-covered areas	2,095,201	57,788	107,994	-50,206	2,044,995
Shrubs and/or herbaceous vegetation, aquatic or regularly flooded	166,600	221	1,705	-1,483	165,117
Terrestrial barren land	941,750	2,239	3,861	-1,622	940,128
Tree-covered areas	8,906,877	304,775	105,228	199,547	9,106,424
Woody crops	68,203	42,274	6,878	35,395	103,599
Total	26,842,401	610,885	610,885	0	26,842,401

Note: The SEEA land cover classification includes classes for 'multiple or layered crops' and 'sparsely natural vegetated areas'. These are, however, not relevant in New Zealand.

Symbol: … not available. Permanent snow and glaciers was measured in 1996 but has not been updated since.

Source: Stats NZ

Timber

In 2016:

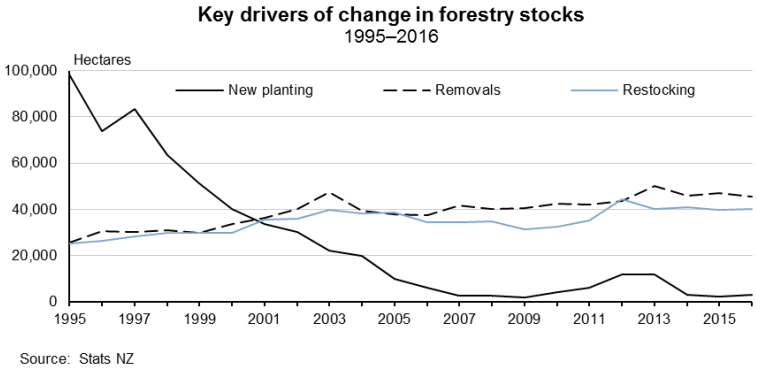
- Total timber stocks fell slightly, by 256,000 cubic metres as cultivated timber planted in the 1990s began reaching harvesting age.
- Land area harvested exceeded land area planted by 2,503 hectares.
- As cultivated timber reaches maturity over the next decade, GDP for the forestry and logging industry is expected to rise while carbon sequestration (change in forest biomass) services provided by forestry is expected to fall.

From 1995 to 2016:

- Total natural timber resources decreased slightly by 0.2 percent (10,546 hectares or 3,802 thousand cubic meters).
- Total cultivated timber resources increased 90 percent, driven by new planting in the 1990s and natural growth.
- Carbon stocks in cultivated forests increased 69 percent.
- Total timber available for wood supply increased 26 percent, resulting primarily from growth of existing cultivated timber stocks.

Figure 4

Originally published February 2018, updated 9 April 2018



Source: Stats NZ

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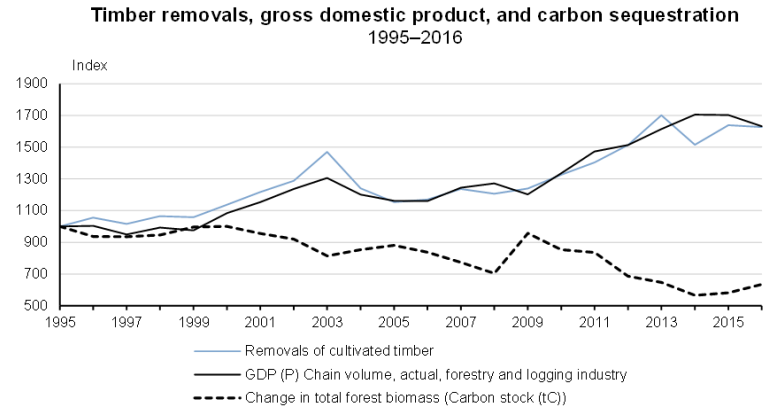
Figure 5



Note: Removals data is year ended 1 April, GDP data is year ended March, and carbon stock data is year ended December. The carbon stock data has been converted to the closest possible March year i.e. December 2010 becomes March 2011. GDP is provisional (P)

Source: Stats NZ

Water

In the year ended June 2014:

- The West Coast region received the highest precipitation.
- Abstraction for hydroelectricity generation amounted to an estimated 94 cubic metres per person per day, roughly equivalent to 627 full baths of water per person each day.

From 1995–2014:

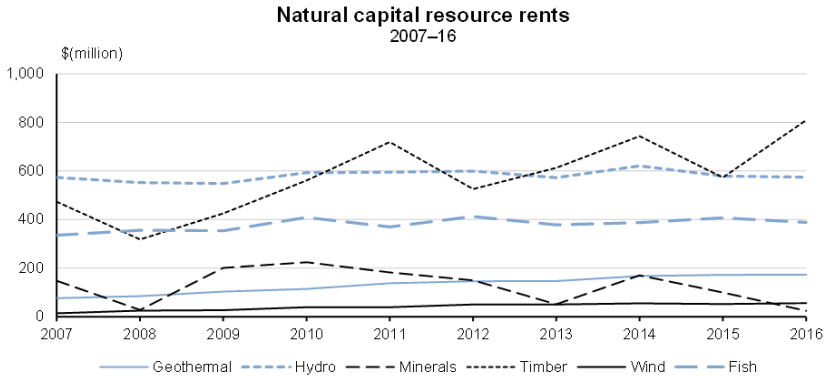
- The average volume of precipitation was enough to fill Lake Taupo just over nine times each year.
- The total volume of groundwater varied by less than 1 percent.

Between the years ended April, 1995-2014:

- New Zealand's estimated ice volume decreased by 35 percent.

Natural capital: monetary estimates

Figure 9



Source: Stats NZ

The value of fish, timber, and renewable energy stocks reached $38.9 billion in 2016, up 47 percent from 2007. Stock values for timber were consistently the highest of all measured assets from 2007 to 2016, and also showed the greatest absolute change (figure 10)

Our estimates of natural capital in monetary terms are partial as we have not measured the economic value of all environmental assets.

Total resource rents for fish, hydro, geothermal, metallic and non-metallic minerals, timber, and wind amounted to $2 billion (0.8 percent of GDP) in 2016, up 25 percent since 2007 (figure 9).

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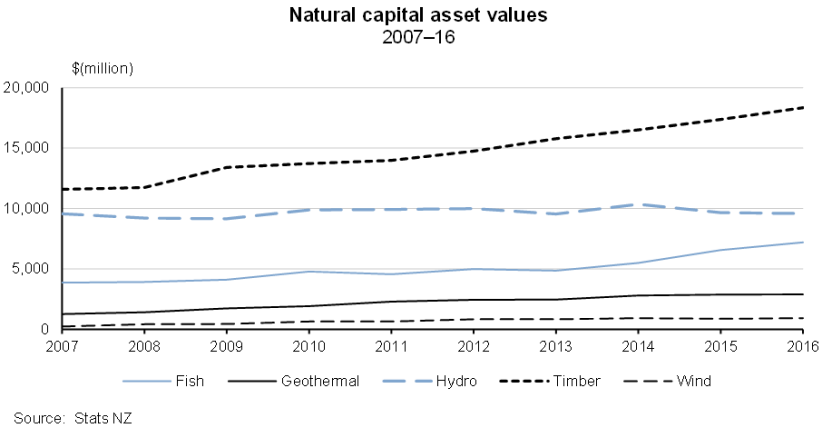
Figure 10



Source: Stats NZ

Renewable energy

In 2016:

- Returns to electricity operators from the use of all renewables (resource rent) was $818 million, $574 million of which was from hydroelectricity.
- Electricity generated from renewables accounted for 82 percent of total electricity generation.

From 2007 to 2016 (March year):

- The proportion of resource rent generated from renewables compared with total resource rent generated from electricity production increased steadily from 68 percent in 2007 to 82 percent in 2016.
- The resource rent from geothermal increased from $76 million in 2007 to $173 million in 2016 – a growth rate of 9.5 percent a year.
- The resource rent from wind was $14 million in 2007, up to $56 million (6.8 percent of resource rent from renewables) in 2016.

Fish

In the September 2016 year, under the QMS:

- The calculated asset value of New Zealand's commercial fish resource was $7.2 billion.
- The top 20 species of fish contributed 91 percent of the value of New Zealand's commercial fish resource.
- Rock lobster, with an asset value of $2.4 billion, contributed 34 percent of the total value of New Zealand's fish commercial resource.
- Hoki followed rock lobster, contributing $1.0 billion, or 14 percent of the total value.

Between the 1996 and 2016 September years:

- The asset value of the commercial fish resource increased $4.5 billion (annual average growth rate of 5 percent per year).
- The asset value for the original 26 QMS species increased 60 percent while the total allowable commercial catch for these species decreased 29 percent.
- Hoki had the highest asset value in almost every year until 2009; rock lobster had the highest asset value in 1998, 2008, and after 2010. These two species combined accounted for 37 percent of the total asset value in 1996, which increased to 48 percent in 2016.

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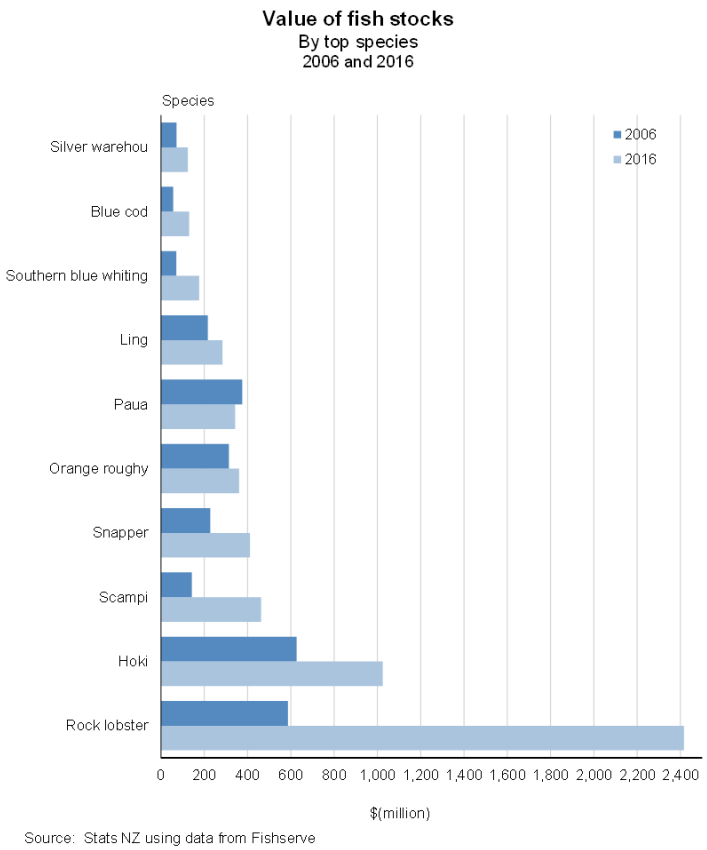
Figure 14



Source: Stats NZ using data from Fishserve

In 2016:

- The value of cultivated (exotic and commercially viable) timber stocks reached $18.3 billion. Timber stocks increased 6 percent or $961 million on the 2015 value.
- A decrease in timber stock volumes of 0.05 percent was offset by a 6 percent increase in price.

From 1995 to 2016:

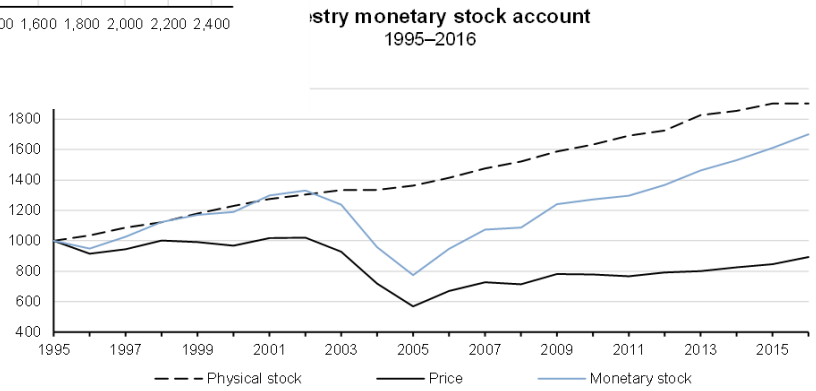
- Timber monetary stocks increased 70.0 percent, or $7.5 billion, driven by an increase in cultivated timber stock volumes.

Other species highlights

- From 2005 to 2016 the value of scampi increased 213 percent (scampi was introduced into the QMS on 1 October 2004).
- From 1996 to 2016 the value of snapper increased 42 percent while its total allowable commercial catch decreased 8 percent.
- Total allowable commercial catch for orange roughy decreased by 59 percent from 1996 to 2016. Over the same period the value increased 55 percent.
- Pāua is the only species in the top 10 at September 2016 to have decreased in value from 2006 (down 8 percent). However, pāua's value in 2016 is still 140 percent greater than its 1996 value.

Timber

Figure 15



Source: Stats NZ, Ministry of Primary Industries

Flows from the economy to the environment

Greenhouse gas emissions by industry and households

Primary industries include agriculture, forest, fishing, and mining. Excluded are emissions and removals from the land-use change and forestry sector within the Greenhouse Gas Inventory. Goods-producing industries include manufacturing, construction, and utilities. Service industries include multiple industries ranging from wholesale and retail trade, to communications and finance, to government, and transport and storage, among others.

Carbon dioxide equivalent is a measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

In 2015:

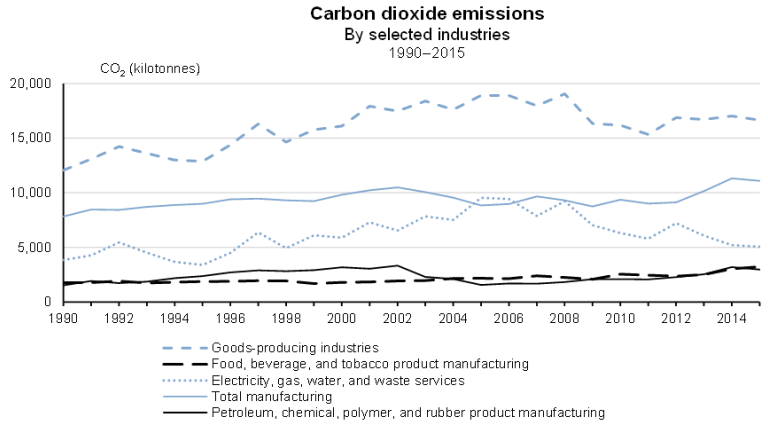
- Primary industries (excluding emissions and removals from land-use change and forestry sector) accounted for 57.1 percent of carbon dioxide equivalent emissions in 2015, goods-producing

industries 24.8 percent, and service industries 11.1 percent. Households accounted for 6.9 percent.
- Agriculture, transport and storage, and electricity, gas, water, and waste services accounted for 76.5 percent of industry emissions carbon dioxide equivalent emissions in 2015.

From 1990 to 2015:

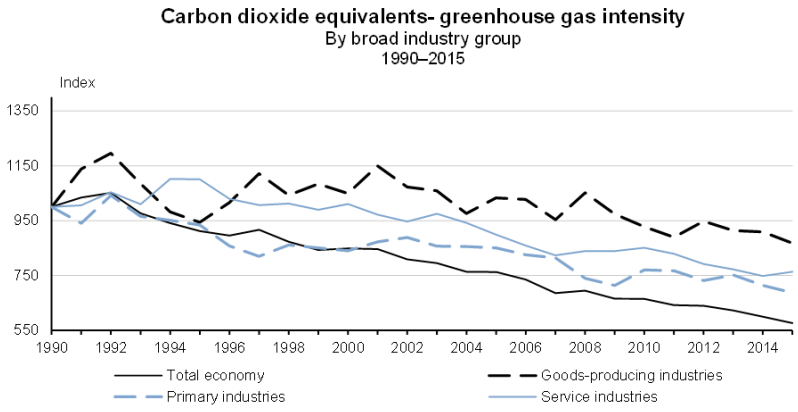
- Total economy real GDP increased at a rate of 3.1 percent a year while carbon dioxide equivalent emissions increased 0.9 percent a year, driving a decline in greenhouse gas intensity in the economy.
- Emissions growth was 0.5 percent a year for primary industries, 1.2 percent for goods-producing industries, and 2.2 percent a year for service industries.
- Emissions from agriculture; transport and storage; and electricity, gas, water, and waste services all increased but at a slower rate than their GDP, therefore showing relative decoupling.
- The agriculture industry's carbon dioxide equivalent emissions increased 0.6 percent a year, while it's GDP increased by 1.4 percent a year.
- Five industries recorded a decrease in emissions, three of which managed to do this while increasing GDP: fishing; mining; and transport equipment, machinery and equipment manufacturing.
- Emissions increased at a faster rate than GDP for forestry (processing and transportation of forestry products within New Zealand); food, beverage, and tobacco product manufacturing; petroleum, chemical, polymer, and rubber product manufacturing; metal product manufacturing; and total manufacturing.

Figure 16



Source: Stats NZ using data from Ministry for the Environment and Ministry for Business, Innovation and Employment

Figure 17



Source: Stats NZ using data from: Ministry for the Environment; Ministry for Business, Innovation and Employment

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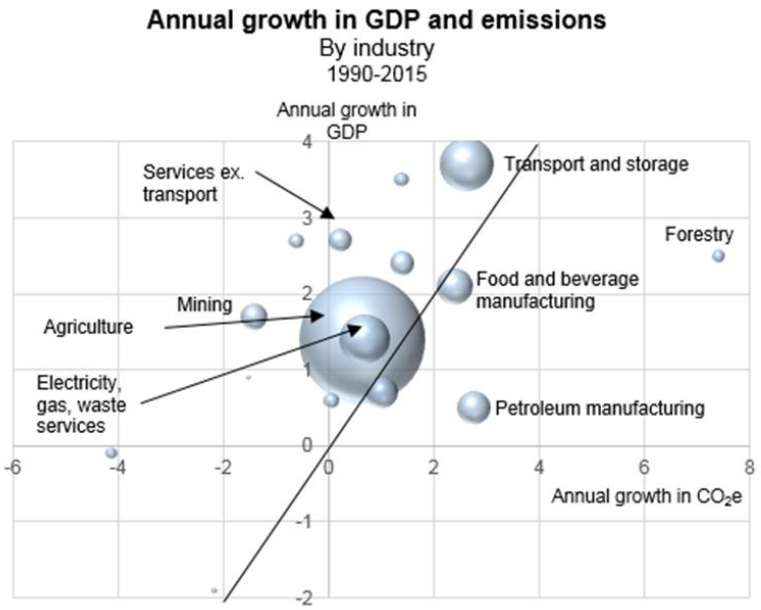
Figure 19



Source: Stats NZ using data from: Ministry for the Environment ; Ministry for Business, Innovation and Employment;

Figure 19 shows the annual changes in GDP and emissions by industry. The size of the bubble reflects the industry's proportion of total economy emissions in 2015. Industries whose centre is to the left of the 45-degree line increased their GDP faster than emissions (ie relative or absolute decoupling), while those to the right increased their GDP but emissions increased at a faster rate (ie greenhouse gas intensity increased).

The growth in emissions from the forestry industry reflects only energy and road transport emissions as air emissions accounts exclude emissions and removals from the land use and forestry sector including tree planting, harvesting, and land conversion.

Environmental activity accounts

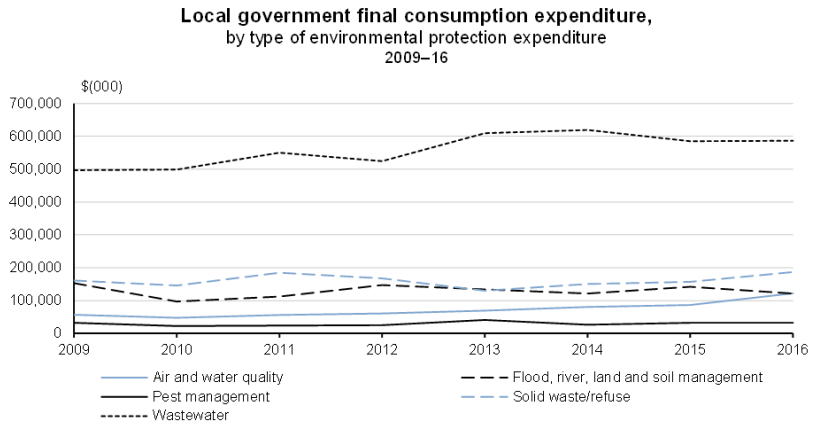
Environmental protection expenditure

Government final consumption expenditure represents government expenditure on goods and services that are used for the direct satisfaction of individuals and communities.

Investment expenditure is the net increase in physical assets (acquisitions less disposals).

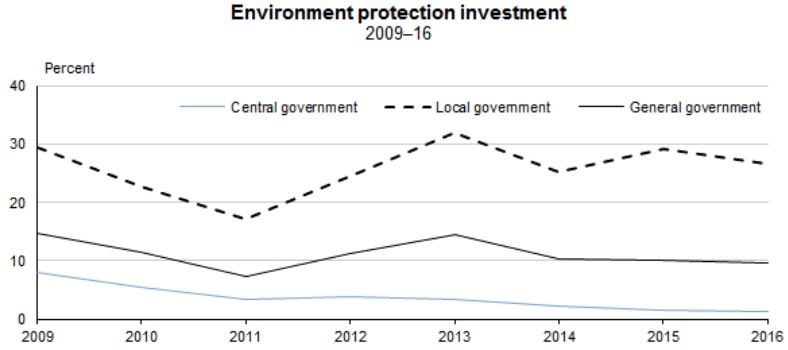
- Final consumption expenditure on environmental protection by general government reached $2.1 billion in 2016, amounting to 4.5 percent[i] of total government final consumption expenditure.
- Local government environmental protection final consumption expenditure reached $1.1 billion in 2016, up 17 percent from $901 million in 2009.
- Wastewater management accounted for 56 percent ($586 million) of local government environmental protection final consumption expenditure, while pest management account for 3 percent ($33 million) in 2016.
- Central government final consumption expenditure on environmental protection increased 18 percent from 2009 to 2016, reaching $1.0 billion in 2016.
- General government investment in environmental protection amounted to $970 million in 2016, with $880 million from local government and $91 million from central government.
- General government environmental protection investment to total investment declined from 14.8 percent in 2009 to 9.7 percent in 2016.

Figure 21



Source: Stats NZ

Figure 22

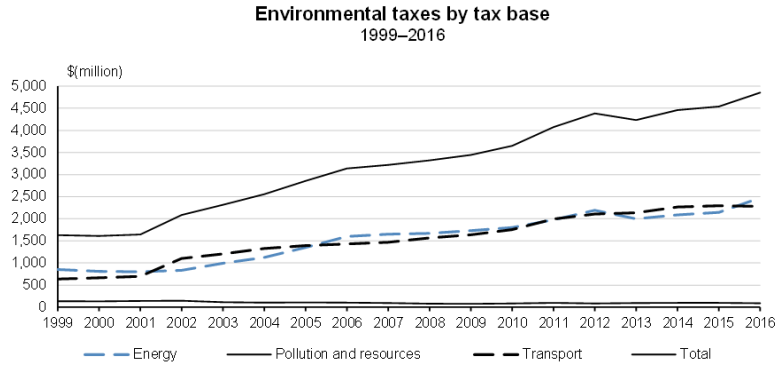


Source: Stats NZ

Environmental taxes

- In 2016 the total amount of environmental taxes was $4.9 billion, an increase of $3.2 billion from $1.6 billion in 1999.
- This was 6.2 percent of all taxation received by general government (central and local) up from 4.8 percent in 1999.
- In 2016, most environment taxes were energy (51 percent) and transport (47 percent) taxes. Combined pollution and resources taxes made up only 2 percent of the total.
- This is reflected in the breakdown of taxes by industry (where available) with most taxes paid by the petroleum, chemical, polymer, and rubber product manufacturing industries (27 percent) and the transport and storage industries (16 percent).
- Resources taxes declined from $138 million (8 percent) in 1999 to $60 million (1 percent) in 2016.
- The average household paid $380 in environmental taxes in 2016. The share of environment taxes paid by households increased relative to industry. In 2016, households paid 13 percent of environment taxes, up from 7 percent in 1999. Over the same period industry contribution dropped from 93 percent to 87 percent.
- Almost all environment taxes paid by households are transport environment taxes.

Figure 23



Source: Stats NZ

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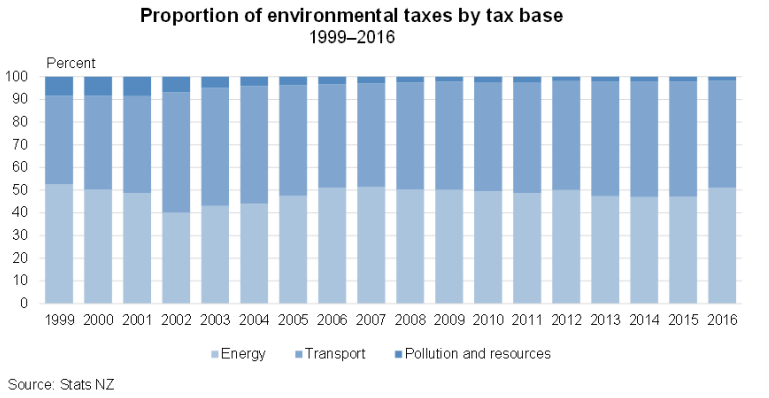
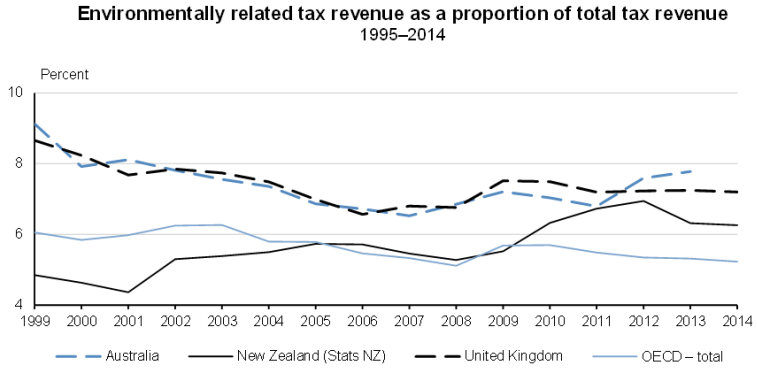
Figure 24



Source: Stats NZ

International comparisons

Figure 25



Note: Australia data for 2014 is not available. Estimates for New Zealand are provided by Stats NZ, other estimates are from the Organisation for Economic Co-operation and Development (OECD).

Source: OECD; Stats NZ

Marine economy

- In 2016, New Zealand's marine economy contributed $3.6 billion (1.4 percent) to the national economy as measured by GDP ($254.7 billion).
- A further $3.1 billion was generated indirectly, bringing the total marine economy value added to $6.8 billion in 2016, or 2.7 percent of GDP.
- From 2008 to 2015, offshore minerals was the largest contributor to the marine economy but was surpassed by shipping in 2016, which accounted for 33.6 percent of marine economy GDP.
- Contributions to the marine economy by fisheries and aquaculture increased from 26.3 percent in 2007 to 31.3 percent in 2016.
- In 2016, 29,986 wage or salary earners worked in the marine economy. These people held 101,860 filled jobs with total earnings of $1.7 billion.
- Over 2007–16, total earnings increased 27 percent ($365 million) while the number of filled jobs decreased 13 percent (15,040 jobs).

[i] The previous version of this fact sheet incorrectly said that final consumption expenditure on environmental protection by general government amounted to 22.5 percent of total government final consumption expenditure.

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