

EMISSIONS, ROAD TRANSPORT, REGULATION AND TAX INCENTIVES IN AUSTRALIA AND NEW ZEALAND

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ABSTRACT

Emissions intensities per capita in Australia and New Zealand are among the highest of all developed countries. New Zealand and Australia have both been criticised for their lack of action on climate change issues. When compared to other OECD countries, both New Zealand and Australia have poor environmental performance across a range of sectors, including road transport, which is the focus of this study.

We examine the regulatory approaches, and the use of fiscal instruments, to influence vehicle purchasing behaviour in the European Union. We contrast this with action taken in Australia and New Zealand and question whether these two countries can make greater use of policy tools, such as those adopted in the European Union, to help address growing emissions from road transport.

The study uses secondary source data to illustrate the absence of action to address road transport emissions in Australia and New Zealand. We conclude that, in the absence of implementation of climate change policies directly targeted at improving environmental performance, both countries risk developing a reputation as environmental tax havens within the OECD.

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I INTRODUCTION

Climate change has consequences for 'all spheres of existence on our planet'.¹ Climate change impacts on a range of societal issues including poverty, population growth and economic development, among others. However, climate change is not inevitable, and sufficient actions undertaken on a timely basis may still mitigate some of the extreme damage predicted from climate change. As noted by the United Nations, 'at the very heart of the response to climate change ... lies the need to reduce emissions'.²

In terms of emissions intensity by population, Australia has the highest level of emissions per capita among developed countries and New Zealand is the fifth highest.³ However, New Zealand and Australia both face different challenges in addressing climate change and reducing greenhouse gas (GHG) emissions.

New Zealand has two sectors that make significant contributions to GHG emissions. These are agriculture and energy, at 48 per cent and 39 per cent of total emissions respectively. Within the energy sector, transport comprises 40.2 per cent of emissions, of which 90.1 per cent is from road transport emissions.⁴

In Australia, the energy sector was the highest source of GHG emissions, comprising 33 per cent of total annual emissions to September 2014.⁵ Coal remains the largest source of electricity generation in Australia at 61 per cent, followed by natural gas at 22 per cent and renewable generation at 15 per cent. Energy used for electricity generation and manufacturing, and by households, has fallen and now the transport sector is the largest energy user.⁶ Like New Zealand, road transport emissions are high, accounting for 85 per cent of transport emissions.⁷

New Zealand and Australia have both committed to ambitious GHG emission reduction targets under the 2015 Paris Climate Agreement. It will be challenging for the Australian government to meet pledges made due to continued reliance on coal, failure to put a freeze on new coal mines and increasing transport emissions. New Zealand's challenges result from the high proportion of agricultural emissions and, like Australia, increasing transport emissions.

This study uses Australia and New Zealand, as both countries report high levels of emissions per capita, have similar national targets to reduce GHG emissions, and have, to

¹ United Nations Framework Convention on Climate Change (UNFCCC), *Background on the UNFCCC: The International Response to Climate Change* (2015).

² Ibid.

³ Organisation for Economic Co-operation and Development (OECD), *Greenhouse Gas Emissions* (20 August 2017) <https://stats.oecd.org/Index.aspx?DataSetCode=AIR_GHG>.

⁴ Ministry for the Environment, New Zealand Government, *New Zealand's Greenhouse Gas Inventory 1990–2013* (2015).

⁵ Department of the Environment, Australian Government, *Australian National Greenhouse Accounts, National Inventory Report 2013, Volume 1, The Australian Government Submission to the United Nations Framework Convention on Climate Change Australian National Greenhouse Accounts* (2013) 40.

⁶ Ibid 6.

⁷ Australian Government, *Australia's Emissions Projections 2016* (2016).

date, made no improvement in emissions per capita since 1990.⁸ The road transport sector is used in this study as it is an area where: GHG emissions are increasing in both countries; no substantive action has been taken to address the issue; and there are multiple opportunities for action. Moreover, other countries have achieved success in reducing GHG emissions in the road transport sector. The European Union (EU) is an exemplar of this success. Therefore, our study looks to the EU for lessons that may be learned by Australia and New Zealand to achieve emissions reductions in road transport.

This study questions whether New Zealand and Australia can make greater use of regulation or fiscal instruments to help address growing GHG emissions from road transport. We address this question by comparing New Zealand and Australian progress on reducing emissions from road transport with progress made in the EU.

The greenhouse gas that is most relevant to the transport sector is carbon dioxide (CO₂). Therefore CO₂ emissions, rather than GHG emissions, informs the majority of the following discussion.⁹ The measure of emissions for transport is grams of CO₂ per kilometre (g/km), which captures how much CO₂ is emitted from a vehicle's exhaust pipe.

Section two of this article covers a range of the literature on regulation and taxes relevant to reducing road transport emissions. Section three provides more detail on Australian and New Zealand environmental performance in the road transport sector. Section three outlines the New Zealand and Australian environments separately, before undertaking comparisons with each other and the EU. Section four outlines recent activity in Australia and New Zealand relating to climate change. Section five concludes the study highlighting that New Zealand and Australia have much to learn from actions undertaken in the EU.

II BACKGROUND: REGULATION AND INCENTIVES

This section starts with a review of the literature on influencing consumer behaviour and demand for low emission vehicles through the tax system. This is followed with an examination of the regulatory approach adopted alongside fiscal instruments in the EU.

Transport is consistently deemed to be the most difficult and expensive sector to reduce emissions because it requires governments to increase energy efficiency by shifting consumer demand to fuel-efficient, low-emission vehicles through the introduction of effective climate policy.¹⁰ The difficulty is highlighted by Anable, Lane and Kelay who find

⁸ World Bank, *CO₂ Emissions (metric tons per capita)* (20 August 2017) <<http://data.worldbank.org/indicator/EN.ATM.CO2E.PC?locations=AU&view=map>>.

⁹ It is generally agreed that climate change is primarily driven by an excess of CO₂ in the atmosphere. Union of Concerned Scientists, *Why Does CO₂ Get Most of the Attention When There Are So Many Other Heat-Trapping Gases?* (3 August 2017) <http://www.ucsusa.org/global_warming/science_and_impacts/science/CO2-and-global-warming-faq.html#.WZdfFuQUm70>.

¹⁰ Christian Brand, Jillian Anable and Martino Tran, 'Accelerating the Transformation to a Low Carbon Passenger Transport System: The Role of Car Purchase Taxes, Feebates, Road Taxes and Scrappage Incentives in the UK' (2013) *Transportation Research Part A: Policy and Practice* 49.

that the level of support for government action against climate change diminishes significantly with respect to policies to tackle emissions from transport:¹¹

contrary to the apparent increasing willingness, as expressed in surveys, of people to make sacrifices for environmental goals *in general*, transport appears to be the least acceptable area of policy for the public to make sacrifices with respect to tackling climate change.¹²

By way of illustration, individuals may express a preference to protect the environment and be aware of the emissions produced by travelling in their car, but few consider emissions or fuel economy when they purchase a vehicle.¹³ Anable, Lane and Kelay suggest that achieving public consensus is likely to be the greatest barrier to policy delivery.¹⁴ Notwithstanding this research, the EU have achieved success in changing vehicle purchasing behaviour.

A Using the Tax System to Influence Vehicle Purchasing Decisions

Using the tax system to achieve environmental policy objectives results in adjusting relative prices 'with a view to influencing producer or consumer behaviour in favour of goods or services that are considered to be environmentally beneficial'.¹⁵ There are limitations with using the tax system for environmental policy purposes: they do not internalise negative externalities into prices; they may create windfall gains or free-riding behaviour; and they can be costly.¹⁶ Typically, cost is the primary barrier. Notwithstanding the issues relating to such taxes, many countries use tax preferences to achieve environmental policy objectives.¹⁷ While there are strong arguments for neutrality and simplicity within the tax system, when activities exist that can minimise harmful externalities, there are also strong arguments for providing financial assistance to encourage such activities.

Graham and Glaister's review of the literature suggests that as incomes increase, individuals will purchase more cars, which are likely to be larger and less fuel-efficient.¹⁸ In a country such as New Zealand where the vehicle fleet is relatively old, introducing a system that penalises owners of older, higher-emission vehicles is likely to have the greatest impact on lower-income earners. The introduction of incentives to purchase electric or low-emission vehicles is also likely to benefit higher-income earners, as this is the group most likely to purchase a newer, more efficient vehicle. The potentially regressive nature of regulation or taxes to control transport emissions is a common criticism of these tools.

¹¹ Jillian Anable, Ben Lane and Tanika Kelay, 'An Evidence Based Review of Public Attitudes to Climate Change and Transport Behaviour' (United Kingdom Department for Transport, 2006).

¹² Ibid 50.

¹³ Ibid 62.

¹⁴ Ibid 193.

¹⁵ J Greene and N A Braathen, 'Tax Preferences for Environmental Goals: Use, Limitations and Preferred Practices' (Environment Working Papers 71, OECD, 2012) 3.

¹⁶ Ibid 18.

¹⁷ OECD, *OECD Economic Surveys – New Zealand* (2013).

¹⁸ Daniel J Graham and Stephen Glaister, 'Road Traffic Demand Elasticity Estimates: A Review' (2004) 24 *Transport Reviews* 261.

A range of policy tools are used in EU countries to influence vehicle choice. Some of these are briefly outlined below:¹⁹

- Belgium: Allowable deductions for the use of company cars of 120 per cent for zero-emission vehicles and 100 per cent for low-emission vehicles (CO₂ emissions of 1–60g/km). Above this rate, deductibility decreases gradually to 50 per cent.
- France: Adoption of a Bonus-Malus scheme. A bonus of up to €5000 for the purchase of vehicles with CO₂ emissions below 20g/km. For vehicles emitting between 20 and 60g/km, the premium is €4000 and for those emitting CO₂ between 61 and 110g/km, it is a maximum of €2000. There is a cap relating to a proportion of the purchase price of the vehicle. The ‘Malus’ component of the scheme can contribute up to €8000 in additional taxes for vehicles emitting CO₂ at over 200g/km.
- Greece: Exemptions from registration tax, luxury car tax and luxury living tax. Vehicles with an engine capacity up to 1929cc are exempt from annual circulation tax.
- Sweden: Five-year exemption from annual circulation tax for vehicles classified as ‘green’; reduction of company car taxation (40 per cent reduction); and the presence of a ‘super green’ car premium on new cars – a scheme for low-emission vehicles (<50g/km CO₂ emissions) that provides a subsidy up to SEK40 000 per car (NZ\$7500).²⁰

Three European examples are worthy of highlighting: Ireland, the United Kingdom and Norway. In Ireland, vehicles are taxed based on their CO₂ emissions in the initial vehicle registration tax and the annual motor tax. There are 12 bands for these charges, ranging from a €214 (NZ\$336) annual charge with no initial registration tax for a zero-emission vehicle, through to a €2350 (NZ\$3700) annual charge and 36 per cent vehicle registration tax for a vehicle with CO₂ emissions in excess of 225g/km.²¹ Modelling of policy scenarios in Ireland for private vehicle transport suggests possible improvements of 32 per cent in car stock efficiency and a 22 per cent reduction in private vehicle CO₂ emissions (relative to 2009 levels).²² Other studies have also found that the use of fiscal instruments has resulted in behavioural change in Ireland.²³

In the United Kingdom, a ‘Plug-In Car Grant’ programme was introduced in 2011. This initially provided a 25 per cent grant towards the purchase of new all-electric and hybrid vehicles and was increased to 35 per cent in 2015. The grant is capped at £5000 (NZ\$8740),²⁴ and is available to corporate vehicles, as well as privately owned cars. This

¹⁹ For a comprehensive look at a range of policies, legislation and incentives adopted globally to encourage electric vehicle adoption, see: Scott Lemon and Allan Miller, ‘Electric Vehicles in New Zealand: From Passenger to Driver?’ (Discussion Paper, Electrical Power Engineering Centre, University of Canterbury, 2013). This article outlines policies in 40 countries.

²⁰ European Automobile Manufacturers Association, *Overview of Purchase and Tax Incentives for Electric Vehicles in the EU in 2015* (2015).

²¹ Environment, Community and Local Government, *Motor Taxation: Rates of Duty on Motor Vehicles (Effective 1 October 2013)* (2013); Irish Tax and Customs, *Guide to Vehicle Registration Tax* (2015).

²² Hannah E Daly and Brian P Ó Gallachóir, ‘Future Energy and Emissions Policy Scenarios in Ireland for Private Car Transport’ (2012) 51 *Energy Policy* 172.

²³ S Giblin and A McNabola, ‘Modelling the Impacts of a Carbon Emission-Differentiated Vehicle Tax System on CO₂ Emissions Intensity from New Vehicle Purchases in Ireland’ (2009) 37 *Energy Policy* 1404.

²⁴ Converted at 30 July 2017, using a rate of £1/NZ\$1.75.

initiative is in place until 50 000 grants have been given, or 2017, whichever is the earlier. Different initiatives exist for electric vans. For vehicles registered after 2001, the vehicle tax rate is determined by CO₂ emissions and fuel type.²⁵ There are 13 bands for petrol- and diesel-fuelled vehicles, ranked A to M, ranging from a cost of zero for band A (CO₂ emissions up to 100g/km) through to band M at £505 (NZ\$883) (CO₂ emissions over 255g/km).

The use of price signals has also been effective in Norway. Norway is notable for having the highest uptake per capita of plug-in electric cars in the world. Nearly 40 per cent of new car sales in 2016 were electric vehicles.²⁶ As part of the incentive to encourage electric car utilisation, vehicles that are completely electric (ie not hybrids) are exempt from all non-annual vehicle fees. This exemption extends to purchase taxes and the 25 per cent value-added-tax on initial vehicle registration. Further incentives exist in the form of exemptions for all-electric vehicles from public parking fees, toll payments, domestic ferries and the annual motor vehicle tax. Research by Ciccone shows that the tax reforms resulted in a reduction in average CO₂ intensity of new vehicles, with approximately half of this attributable to the tax reform.²⁷

A number of studies have investigated the impact of tax incentives on consumers' choice of new passenger car purchases. In general, these show that consumers do respond to upfront price signals, such as rebates, purchase taxes or other tax incentives.²⁸ For example, Kok finds that tax incentives in The Netherlands resulted in 11 per cent lower average CO₂ emissions in 2013.²⁹ The Netherlands adopted three vehicle taxes, all of which were introduced after 2007. These included a one-off vehicle purchase tax on initial registration of the vehicle at 45.2 per cent of the net list price. Low-emission vehicles were exempt from this tax and the tax was increased based on CO₂ emissions.³⁰ In addition, the annual road tax was reduced, and in some cases fully waived, based on CO₂ emissions, and the company car tax, paid by the employee, was increased to 20 per cent for high-emission vehicles and reduced to as low as zero for lower-emission vehicles.³¹

In Austria, there are three primary tax instruments that impact on the cost of vehicles: a fuel consumption tax paid upon initial registration; an engine related tax; and a fuel tax.³²

²⁵ United Kingdom Government, *Calculate Vehicle Tax Rates* (24 July 2017) <<https://www.gov.uk/calculate-vehicle-tax-rates>>.

²⁶ Paul Hockenos, 'Power to the EV: Norway Spearheads Europe's Electric Vehicle Surge', *The Guardian* (online), 7 February 2017, <<https://www.theguardian.com/environment/2017/feb/07/power-to-the-ev-norway-spearheads-europes-electric-vehicle-surge>>.

²⁷ Alice Ciccone, 'Is It All About CO₂ Emissions? The Environmental Effects of a Tax Reform for New Vehicles in Norway' (Memorandum No 19/2014, Department of Economics, University of Oslo, 2014).

²⁸ Robert Kok, 'Six Years of CO₂-Based Tax Incentives for New Passenger Cars in The Netherlands: Impacts on Purchasing Behaviour Trends and CO₂ Effectiveness' (2015) 77 *Transportation Research Part A* 137; Brand, Anable and Tran, above n 10; Sarah E West, 'Distributional Effects of Alternative Vehicle Pollution Control Policies' (2004) 88 *Journal of Public Economics* 735.

²⁹ Kok, above n 28.

³⁰ Kok, above n 28, 139.

³¹ Kok, above n 28, 140.

³² V Gass, J Schmidt and E Schmid, 'Analysis of Alternative Policy Instruments to Promote Electric Vehicles in Austria' (2014) 61 *Renewable Energy* 96.

Modelling undertaken in a study by Gass, Schmidt and Schmid found that electric vehicles will become cost-competitive with other electric vehicles in the short term, if production volumes increase to the point where economics of scale are reached. The authors conclude that an up-front price signal is likely to be of greatest impact in achieving this.³³

Research from Canada produces similar findings. Chandra, Gulati and Kandlikar report that tax rebates in Canadian provinces resulted in a large increase in the market share of hybrid vehicles.³⁴ The authors estimate that 26 per cent of hybrid vehicles sold during the period of tax rebates could be attributed to the rebate, and other higher-emission vehicles were crowded out as a result.³⁵

A further study in the United States examined different types of tax benefits, including state sales tax waivers, income tax credits, and non-tax incentives such as the ability to use carpool lanes when driving a hybrid vehicle.³⁶ The study finds that the type of tax is as important as the value of the tax benefit. Sales tax waivers were associated with a more than tenfold increase in hybrid sales, as compared to income tax credits. This finding concurs with studies outlined above. Results on carpool lane access are less consistent, with a positive correlation found in only one state.

Beresteanu and Li also used the United States for their analysis, which examined increases in fuel prices and income tax incentives.³⁷ They conclude that income tax deductions prior to 2005 were less effective than the more generous income tax credits introduced in 2006. They estimate that the tax deductions explained less than 5 per cent of hybrid vehicle sales from 2001 to 2005, whereas the tax credits from 2006 accounted for approximately 20 per cent of hybrid vehicle sales.³⁸ The authors also suggest that a flat rebate scheme, rather than the income tax-based scheme, will be more cost-effective at promoting energy conservation, due to the high cost of the tax credit programme.

The above research is supported by research from the OECD, which suggests that the advantage of using the tax system to influence behaviour is effective where it provides support for positive externalities, ie where 'a subsidy would help to deliver more social benefits than would otherwise be the case'.³⁹ Thus, the literature shows a general agreement that tax incentives generate behavioural change.

B Regulatory CO₂ Emission Standards

Research has shown the potential benefits from increased regulation. Regulation circumvents market failure caused by consumers substantially undervaluing fuel savings

³³ Ibid.

³⁴ Ambarish Chandra, Sumeet Gulati and Milind Kandlikar, 'Green Drivers or Free Riders? An Analysis of Tax Rebates for Hybrid Vehicles' (2010) 60 *Journal of Environmental Economics and Management* 78.

³⁵ Ibid.

³⁶ Kelly Gallagher and Erich Muehlegger, 'Giving Green to get Green? Incentives and Consumer Adoption of Hybrid Vehicle Technology' (2011) 61 *Journal of Environmental Economics and Management* 1.

³⁷ Arie Beresteanu and Shanjin Li, 'Gasoline Prices, Government Support, and the Demand for Hybrid Vehicles in the United States' (2011) 52 *International Economic Review* 161.

³⁸ Ibid 181.

³⁹ Greene and Braathen, above n 15, 3.

and fuel economy when purchasing a new vehicle.⁴⁰ There are multiple reasons this may exist, including risk aversion by consumers, imperfect information, or what Small refers to as ‘consumer myopia’, an apparent short-sightedness compared to a fully rational and informed consumer.⁴¹ Moreover, consumers may demand powerful vehicles, with high emissions, which allow manufacturers to make higher profits.⁴² However, effective regulation may generate incentives for firms to invest in research and development in order to improve their competitive advantage.⁴³

While the literature demonstrates benefits from regulation, it also suggests that regulation alone will not necessarily change consumer attitudes. For example, Greene, Evans and Hiestand find that if fuel economy decisions were made by manufacturers, their technology and design decisions would be based on the loss-averse behaviour of consumers.⁴⁴ This would result in under-investment in research, and development of fuel economy technologies. Thus, it is important for policy-makers to introduce regulations to ensure manufacturers develop new vehicles that meet emission standards, supported by complementary measures such as tax instruments.

The European Commission has developed binding regulatory passenger car fleet emissions reduction targets to address vehicle emissions in the EU. Road transport contributes about 20 per cent of total CO₂ emissions in the EU.⁴⁵ Passenger vehicles are responsible for around 12 per cent of EU CO₂ emissions.⁴⁶

In 2009, the European Commission introduced regulation for passenger cars and CO₂ emissions as the primary measure of the EU strategy to reduce emissions from passenger vehicles. This regulation was the first legally binding measure of its kind in the European transport sector and was part of the EU’s ambitious plan to reach a goal of reducing GHG emissions by 20 per cent by 2020, and 80–95 per cent by 2050.⁴⁷ Alongside these targets, car manufacturers were required to improve motor vehicle technology to reduce average CO₂ emissions.⁴⁸

The standards introduced by the European Commission limited the average CO₂ emissions from new passenger vehicles to 130g/km by 2015, and to 95g/km by 2021.⁴⁹ A similar policy for light commercial vehicles also exists. These policies target vehicle manufacturers, whereby manufacturers have annual targets that have gradually

⁴⁰ David L Greene et al, ‘Feebates, Rebates and Gas-Guzzler Taxes: A Study of Incentives for Increased Fuel Economy’ (2005) 33 *Energy Policy* 757.

⁴¹ Kenneth Small, ‘Energy Policies for Passenger Motor Vehicles’ (2012) 46 *Transportation Research Part A: Policy and Practice* 874.

⁴² Lars Gulbrandsen and Anne Raaum Christensen, ‘EU Legislation to Reduce Carbon Emissions from Cars: Intergovernmental or Supranational Policy Making?’ (2014) 31 *Review of Policy Research* 503.

⁴³ Laurent Franckx, ‘Regulatory Emission Limits for Cars and the Porter Hypothesis: A Survey of the Literature’ (2015) 35 *Transport Reviews* 749.

⁴⁴ David L Greene, David H Evans and John Hiestand, ‘Survey Evidence on the Willingness of US Consumers to Pay for Automotive Fuel Economy’ (2013) 61 *Energy Policy* 1539.

⁴⁵ European Commission, *Questions and Answers on the Regulation to Reduce CO₂ Emissions from Cars* (2015).

⁴⁶ European Commission, *Reducing CO₂ Emissions from Passenger Cars 2021 Target* (2015).

⁴⁷ Gulbrandsen and Christensen, above n 42.

⁴⁸ *Ibid.*

⁴⁹ *Ibid.*

increased since 2012. In 2012, manufacturers needed to ensure that 65 per cent of new vehicles registered in the EU had average emissions below their target. This increased to 75 per cent in 2013, 80 per cent in 2014 and 100 per cent in 2015.⁵⁰ The standards have been described as the world's strictest and most far-reaching to curb CO₂ emissions from passenger vehicles.⁵¹

The EU have a number of additional policies in place to reduce GHG emissions across a range of transport modes. These policies include: a strategy for reducing heavy-duty vehicle fuel consumption; a target to reduce the GHG intensity of fuels; initiatives associated with tyre labelling and tyre pressure monitors; and requiring public authorities to take account of lifetime energy use and CO₂ emissions when purchasing vehicles.⁵²

Social equity issues were positive, as the overall impact of the regulations led to significant reductions in annual fuel costs for passenger vehicles. In terms of affordability, market data did not show increases in the average retail prices for relevant vehicle segments.

Ex-post evaluation of empirical evidence by the European Commission of the CO₂ regulations from light vehicles report that the introduction of the regulations in 2009 was likely to have 'accounted for 65–85 per cent of the reductions in tailpipe emissions.'⁵³ The estimated CO₂ reductions were equivalent to 3.4 to 4.8g/km per year.⁵⁴ The 2015 passenger vehicle average target of 130g/km was met two years earlier in 2013 (achieving 126g/km), and the largest manufacturers appear to be on track to meet their future targets.⁵⁵ The regulations were more successful than voluntary agreements from industry, which achieved improved CO₂ emissions by 1.1 to 1.9g/km.⁵⁶ Dineen, Ryan and Ó Gallachóir found that those EU member states that had above average emission reductions were generally those states that had reformed their vehicle taxes on the basis of CO₂ emissions.⁵⁷

At the time of writing, the most recent announcement on vehicle regulation came from Britain, with media reporting a ban on the sale of all diesel- and petrol-powered cars and vans from 2040.⁵⁸ France announced a similar policy.⁵⁹ These announcements follow that of the car manufacturer Volvo who have revealed that from 2019 their vehicles will all be

⁵⁰ Ibid.

⁵¹ Ibid.

⁵² Ibid.

⁵³ European Commission, *Evaluation of Regulations 443/2009 and 510/2011 on CO₂ Emissions from Light-Duty Vehicles: Final Report 8th April 2015* (2015) 10.

⁵⁴ Ibid 64.

⁵⁵ Ibid 32.

⁵⁶ Ibid 10.

⁵⁷ Denis Dineen, Lisa Ryan and Brian Ó Gallachóir, 'Vehicle Tax Policies and New Passenger Car CO₂ Performance in the EU Member States' (2017) *Climate Policy* 1752.

⁵⁸ Anushka Asthana and Matthew Taylor, 'Britain to Ban Sale of All Diesel and Petrol Cars and Vans From 2040', *The Guardian* (online), 25 July 2017, <<https://www.theguardian.com/politics/2017/jul/25/britain-to-ban-sale-of-all-diesel-and-petrol-cars-and-vans-from-2040>>.

⁵⁹ Angelique Chrisafis and Adam Vaughan, 'France to Ban Sales of Petrol and Diesel Cars by 2040', *The Guardian* (online), 6 July 2017, <<https://www.theguardian.com/business/2017/jul/06/france-ban-petrol-diesel-cars-2040-emmanuel-macron-volvo>>.

electric or hybrid models.⁶⁰ In 2016, Norway announced even more ambitious plans, with a ban on the sale of fossil fuel-based cars by 2025.⁶¹

III NEW ZEALAND AND AUSTRALIA IN CONTEXT

New Zealand and Australia have similar climate change policies, as shown in Table 1. Both countries have agreed to similar national targets to 2020 under the Kyoto Protocol and the post-2020 target to 2030 under the 2015 Paris Climate Agreement.

Table 1: Australia and New Zealand climate change targets and emissions

	Australia	New Zealand
National target to 2020	5% below 2000 levels by 2020	5% below 1990 levels by 2020 ⁶²
National target to 2030	26–28% below 2005 levels by 2030 ⁶³	30% below 2005 levels by 2030 ⁶⁴
GHG emissions kg/capita – thousands (33 countries: 2012) ⁶⁵	Highest in OECD 23.97kg	Fifth highest in OECD 17.16kg
Emissions increase since 1990	26.5% ⁶⁶	21% ⁶⁷
Energy sector – GHG increased: 1990 to 2012. ⁶⁸	44%	36%

As shown in Table 1, both countries have experienced significant increases in energy sector emissions since 1990: 44 per cent for Australia and 36 per cent for New Zealand. In terms of each of the country's international ranking, both countries are among the worst performing of 33 OECD countries with GHG emissions per capita, with Australia ranked the worst, and New Zealand in fifth place. The 2016 Climate Change Performance Index, released at the Paris climate summit, ranked Australia third last in an annual

⁶⁰ Adam Vaughan, 'All Volvo Cars to be Electric or Hybrid from 2019', *The Guardian* (online), 5 July 2017, <<https://www.theguardian.com/business/2017/jul/05/volvo-cars-electric-hybrid-2019>>.

⁶¹ Jess Staufenberg, 'Norway to Completely Ban Petrol Powered Cars by 2025', *The Independent* (online), 4 June 2016, <<http://www.independent.co.uk/environment/climate-change/norway-to-ban-the-sale-of-all-fossil-fuel-based-cars-by-2025-and-replace-with-electric-vehicles-a7065616.html>>.

⁶² Ministry for the Environment, New Zealand Government, *About New Zealand's Greenhouse Gas Emissions Reduction Targets* (2017).

⁶³ Australian Government, *Australia's Intended Nationally Determined Contribution to a New Climate Change Agreement* (2015).

⁶⁴ Ministry for the Environment, above n 62.

⁶⁵ OECD, *Greenhouse Gas Emissions by Source* (20 August 2017) <<http://dx.doi.org/10.1787/data-00594-en>>.

⁶⁶ Department of the Environment, Australian Government, *National Inventory Report 2, The Australian Government Submission to the United Nations Framework Convention on Climate Change Australian National Greenhouse Accounts, Volume 1* (2015).

⁶⁷ Ministry for the Environment, above n 4.

⁶⁸ Ministry of Business Innovation and Employment, New Zealand Government, *Energy GHG Emissions Webtables* (20 December 2016) <<http://www.mbie.govt.nz/info-services/sectors-industries/energy/energy-data-modelling/statistics/greenhouse-gas-emissions>>; Department of the Environment, above n 66.

assessment of 58 nations' climate policies, ahead of only oil-rich Kazakhstan and Saudi Arabia.⁶⁹ New Zealand's climate policy ranks 39 out of the 58 countries.

A The Transport Sector

In both New Zealand and Australia, the transport sector contributes 17 per cent of GHG emissions. In New Zealand, 90.1 per cent of the transport sector emissions are attributable to road transport, of which 65.5 per cent are due to light passenger vehicles.⁷⁰ GHG emissions from transport in New Zealand increased by 60 per cent in the period from 1990 to 2013.⁷¹ Transport emissions is one of the strongest contributors to emissions growth in Australia, increasing by 50.9 per cent in the period 1990 to 2013.⁷²

Neither New Zealand nor Australia has joined the international effort to improve fuel efficiency technology, known as the Global Fuel Economy Initiative. The aim of this initiative is for all light-duty vehicles to be 50 per cent more fuel-efficient by 2050, with an interim OECD target of 30 per cent by 2030. Instead, continued growth of road transport emissions in New Zealand and Australia undermines the reduction of GHG in other sectors.

Unlike EU transport emissions, Table 2 shows increasing transport emissions in Australia and New Zealand. As also shown in Table 2, transport emissions made a higher contribution to energy emissions in New Zealand (40.2 per cent) than in Australia (22.5 per cent) and transport emissions was predominately from road transport in both countries (Australia 85 per cent and New Zealand 90.1 per cent). Transport emissions are noticeably higher than 1990 levels: 50.9 per cent in Australia and 60 per cent in New Zealand.

Table 2: Australia and New Zealand transport sector CO₂ emissions, 2013

Transport sector CO₂ emissions⁷³	Australia (%)	New Zealand (%)
As a percentage of total emissions	17	17.2
As a percentage of total energy emissions	22.5	40.2
Increases since 1990	50.9	60
Road transport as a percentage of sector	85	90.1

⁶⁹ Lenore Taylor, 'Australia Ranked Third-Last in Climate Change Performance of 58 Countries', *The Guardian* (online), 8 December 2015, <<http://www.theguardian.com/environment/2015/dec/08/australia-ranked-third-last-in-climate-change-performance-of-58-countries>>.

⁷⁰ Lemon and Miller, above n 19. A passenger vehicle is a motor vehicle that is primarily for the carriage of passengers and has at least four wheels, or three wheels and a gross vehicle mass in excess of 1 tonne. A goods vehicle is similar, but is primarily for the carriage of goods. Definitions from the New Zealand Transport Agency, *Vehicle Classes* (20 August 2017) <<http://www.nzta.govt.nz/vehicles/vehicle-types/vehicle-classes-and-standards/vehicle-classes>>.

⁷¹ Ministry of Business, Innovation and Employment, New Zealand Government, *Energy Sector Greenhouse Gas Emissions* (2017).

⁷² Department of Industry and Science, Australian Government, *Australian Energy Update* (2015).

⁷³ Ministry for the Environment, New Zealand Government, *Reducing Our Emissions* (1 February 2016) <<https://www.climatechange.govt.nz/reducing-our-emissions/our-responsibility.html>>; Department of the Environment, above n 66, 1-363, x.

Australia and New Zealand have similar trends in increasing road transport emissions since 1990. In terms of climate policy to reduce transport emissions, Australia proposes to develop a range of policies under a National Energy Production Plan (discussed below) to improve fuel efficiency and reduce road transport emissions in the period between 2015 and 2030. New Zealand proposes no significant improvement in transport emissions until after 2030.

B The New Zealand Context

New Zealand has a high proportion of electricity generated from renewable sources – around 80 per cent.⁷⁴ New Zealand benefits from large river flows, enabling hydro power, access to geothermal energy and among the best access in the world to wind resources.⁷⁵ While there is considerable scope to reduce GHG emissions with increased uptake of hybrid or electric vehicles, there are also a number of barriers.

New Zealand has the highest rate of car ownership in the OECD.⁷⁶ Compounding the transport issue is a relatively old passenger vehicle fleet in the country,⁷⁷ high use of trucks rather than trains for freight, and a population that is widely spread.⁷⁸ The widespread and relatively small population means that greater provision of public transport is not a viable option outside the main cities. New Zealand is highly reliant on road transport: 70 per cent of freight is moved by road and 84 per cent of individual travel is made by motor vehicle.⁷⁹ Freight is expected to double over the next 30 years.⁸⁰

The transport sector in New Zealand is highly reliant on fossil fuels, with 84 per cent of light vehicles powered by petrol and 16 per cent powered by diesel.⁸¹ The problem is exacerbated by what the OECD term as 'lax standards' that 'have favoured the import of used vehicles. As a result, the fleet is old and polluting'.⁸²

While CO₂ emissions (g/km) for new vehicles entering the light fleet have been declining over the past decade,⁸³ the measure of tonnes of CO₂ equivalent emitted from domestic transport per vehicle continues to increase, as vehicle numbers increase.⁸⁴ Tonnes of CO₂

⁷⁴ OECD, *Environmental Performance Reviews: New Zealand* (2017).

⁷⁵ Ministry of Economic Development, New Zealand Government, *New Zealand Energy Strategy 2011–2021 and the New Zealand Energy Efficiency and Conservation Strategy 2011–2016* (2011).

⁷⁶ OECD, above n 74.

⁷⁷ The average age of light passenger vehicles in New Zealand in 2014 was 14.3 years. This increased from the average age of 11.8 years in 2000. Ministry of Transport, New Zealand Government, *Transport Volume, Dataset TV 006: Average of Fleet (Road, Rail, Maritime, Aviation)* (2016).

⁷⁸ Ministry for the Environment, above n 4, 43.

⁷⁹ New Zealand Government, *Connecting New Zealand: A Summary of the Government's Policy Direction for Transport* (2015).

⁸⁰ *Ibid.*

⁸¹ Ministry for the Environment, above n 4, 34–35.

⁸² OECD, above n 74, 10.

⁸³ Ministry of Transport, New Zealand Government, *Environmental Impact of Transport: Climate Change, EI002* (2016).

⁸⁴ Ministry of Transport, New Zealand Government, *Environmental Impact of Transport: Climate Change, EI003* (2016).

equivalent emitted from domestic transport per capita have increased 32 per cent since 1990.

Vehicle kilometres travelled in New Zealand have been steadily increasing. In 2000/01 34.8 billion vehicle kilometres were travelled. This had increased to 42 billion by 2013/14 – an increase of 21 per cent.⁸⁵ Moreover, growth in vehicle kilometres travelled has been in vehicles with larger engines. Vehicle kilometres travelled in vehicles with engine sizes less than 1300cc reduced by 20 per cent since 2001, while light fleet road vehicles with larger engine sizes (from 2000cc to 3000cc) increased by 47 per cent and increases of 38 per cent were visible in vehicles with engine sizes in excess of 3000cc.⁸⁶

Vehicle numbers continue to increase: from 0.7 per capita in 2000 to 0.81 per capita in 2014.⁸⁷ Over this period, light passenger vehicle numbers increased by 33 per cent, light commercial vehicles increased by 35 per cent, and heavy trucks increased by 36 per cent. At the same time, the average engine size of the light passenger and commercial road fleet has increased: light passenger average engine sizes increased from 2027cc to 2213cc (9 per cent); and the light commercial average engine sizes increased from 2394cc to 2750cc (15 per cent).⁸⁸ In New Zealand, consumers' preferences are for higher-emission vehicles, as 68.5 per cent of new light passenger vehicle sales have CO₂ emissions between 130g and 200g/km and 18.5 per cent of consumers choose vehicles with CO₂ emissions of more than 200g/km.⁸⁹

The New Zealand government adopts no effective regulatory standards or environmental taxes with the aim of reducing road transport emissions. This is despite the significant, and increasing, contribution to emissions made by road transport in the country. The principal mechanism adopted to reduce road emissions is New Zealand's Emissions Trading Scheme introduced in 2008. However, the carbon price is generally accepted to be too low to make any noticeable reduction in road transport emissions.

C The Australian Context

Australia, like New Zealand, has one of the highest rates of vehicle ownership in the OECD member countries, with vehicle ownership of 0.76 per capita in 2015.⁹⁰ Also like New Zealand, the vehicle fleet is old with an average age of all registered vehicles of 10.1 years. Of the total vehicle fleet 77.7 per cent (14 million vehicles) are powered by petrol, and 19.7 per cent (3.6 million vehicles) are powered by diesel.⁹¹

⁸⁵ Ministry of Transport, New Zealand Government, *Transport Volume, Dataset TV 001: Vehicle Kilometres Travelled* (2016).

⁸⁶ Ministry of Transport, New Zealand Government, *Transport Volume, Dataset TV 033: Light Fleet Road Vehicle Kilometres Travelled by Engine Size* (2016).

⁸⁷ Ministry of Transport, New Zealand Government, *Transport Volume, Dataset TV 004: Road Vehicle Fleet Numbers* (2016).

⁸⁸ Ministry of Transport, New Zealand Government, *Transport Volume, Dataset TV 007: Average Engine Size of the Light Passenger and Commercial Road Fleet* (2016).

⁸⁹ *Official Information Act 1982* request from Lisa Marriott to the Ministry of Transport, New Zealand Government, 1 February 2016.

⁹⁰ Australian Bureau of Statistics, *Motor Vehicle Census* (2015).

⁹¹ *Ibid.*

Table 3: Consumer trends for passenger and light commercial vehicles in Australia, 2013–15⁹²

	2013		2014		2015	
	Volume (number)	%	Volume (number)	%	Volume (number)	%
Passenger						
- light (incl micro)	130 757	12	124 374	11	122 671	11
- small	266 222	24	250 536	23	232 122	21
- medium	77 981	7	71 405	7	78 123	7
- large	52 482	5	47 387	4	43 940	4
- upper large	4238	0	3869	0	2976	0.3
- people movers	9242	1	10 220	1	11 946	1
- sports	25 337	2	23 805	2	22 905	2
<i>Total passenger</i>	<i>566 259</i>	<i>51</i>	<i>531 596</i>	<i>49</i>	<i>514 683</i>	<i>46</i>
SUVs						
- compact	74 809	7	87 237	8	111 275	10
- medium	119 464	11	125 222	12	144 937	13
- large	126 530	11	127 820	12	139 734	12
- luxury	12 707	1	12 068	1	12 525	1
<i>Total SUV</i>	<i>333 510</i>	<i>30</i>	<i>352 347</i>	<i>33</i>	<i>408 471</i>	<i>36</i>
<i>Total passenger and SUV</i>	<i>899 769</i>	<i>82</i>	<i>883 943</i>	<i>82</i>	<i>923 154</i>	<i>82</i>
Light commercial vehicles	203 729	18	197 956	18	198 338	18
Total passenger, SUV and commercial	1 103 498		1 081 899		1 121 492	

As is visible in Table 3, preference for SUVs and light commercial vehicles continues to increase, accounting for more than 50 per cent of new vehicle sales. The nation's top-selling vehicle in 2016 was the dual cab utility vehicle,⁹³ the Hilux (CO₂ emissions of 249g/km).⁹⁴ The Federal Chamber of Automotive Industries (FCAI) Chief Executive Tony Weber stated that 'there is little doubt we are observing a significant and dynamic transition in consumer preference'.⁹⁵ Thus, any reduction in the nations' average CO₂ emissions per kilometre is being offset by consumers' growing preference for larger vehicles that have higher CO₂ emissions. The behaviour seen in Australia supports the literature previously outlined, which suggests that in the absence of regulatory emission standards, car manufacturers will supply high-emission, low fuel-efficient vehicles, as consumers undervalue fuel efficiency.

⁹² 2013 and 2014 data: National Transport Commission, *Carbon Dioxide Emissions Intensity for New Australian Light Vehicles 2014, Information Paper: April 2015* (2015); 2015 data: Centre for International Economics, 'Reducing Greenhouse Emissions from Light Vehicles' (Prepared for the Australian Automobile Association, 2017).

⁹³ Federal Chamber of Automotive Industries, *Record Sales Year for 2016 Dramatic Shift in Buyer Preferences* (6 January 2017) <<https://www.fcai.com.au/news/index/index/year/all/month/all/article/476>>.

⁹⁴ National Transport Commission, Australian Government, *Carbon Dioxide Intensity for New Australian Light Vehicles 2015* (2016) 49.

⁹⁵ Federal Chamber of Automotive Industries, above n 93.

D Comparing Australia and New Zealand

Table 4 shows the national average CO₂ emissions per kilometre for light vehicles in New Zealand and Australia. What is evident is that in 2005 the average CO₂ emission intensity per kilometre for new light vehicles was considerably higher in Australia than in New Zealand. However, over the next decade emissions reduced at a faster pace in Australia than they did in New Zealand. By 2015, Australia's emissions had reduced by 23.4 per cent while New Zealand's had reduced by 12.3 per cent, resulting in almost equivalent levels of emissions per kilometre in each country by 2015.

Table 4: Average CO₂ emissions in New Zealand compared with Australia, 2005–15

Year	New Zealand		Australia	
	Average CO ₂ emissions (g/km)	Annual improvement (g/km)	Average CO ₂ emissions (g/km)	Annual improvement (g/km)
2005	207.8	n/a	240.5	n/a
2006	205.1	-2.7	230.3	-10.2
2007	206.2	1.1	226.4	-3.9
2008	203.2	-3.0	222.4	-4.0
2009	196.5	-6.7	218.6	-3.8
2010	196.0	-0.5	212.6	-6.0
2011	194.7	-1.3	206.6	-6.0
2012	185.8	-8.9	199.0	-7.6
2013	182.5	-3.3	192.2	-6.8
2014	182.9	0.4	187.8	-4.4
2015	182.3	-0.6	184.2	-3.6

The reduction in average CO₂ emissions shown in Table 4 is likely to be the result of imported light vehicles becoming more efficient over the last 10 years. While Australians have shifted from large passenger vehicles to SUVs over this period, the weighted average efficiency of SUVs sold in 2015 was 15 per cent more efficient than the average large vehicle.⁹⁶ The figures in Table 4 support the literature that suggests that reduction of emissions in road transport is unlikely to occur in the absence of regulation and fiscal instruments.

E Australia, New Zealand and the European Union

While Australia and New Zealand's national average CO₂ emissions per kilometre have been declining in recent years, Table 5 shows that both countries' average CO₂ emissions intensity from new vehicles continue to widen when compared to the EU, which introduced regulatory CO₂ emission standards in 2009.⁹⁷

⁹⁶ Department of Infrastructure and Regional Development, Australian Government, *Improving the Efficiency of New Light Vehicles Draft Regulation Impact Statement Ministerial Forum on Vehicle Emissions* (2016) 15.

⁹⁷ European Union, *Regulation (EC) No 443/2009 of the European Parliament and of the Council 23 April 2009* (2009).

Table 5: Average CO₂ emissions for new vehicles between Australia, New Zealand and the EU, 2010–15⁹⁸

Year	Australia passenger vehicle emissions (g/km)	New Zealand passenger vehicle emissions (g/km)	EU passenger vehicle emissions (g/km)	Difference: EU and Australia (%)	Difference: EU and New Zealand (%)
2010	205	196	146	-40	-34
2011	198	194.7	136	-46	-43
2012	190	185.8	132	-44	-41
2013	182	182.5	127	-43	-44
2014	177	182.9	123	-44	-49
2015	175	182.3	119	-47	-53

As noted earlier in this article, the EU's regulatory standards set the fleet average CO₂ emissions target for new cars registered in the EU at emissions of no more than 130g/km by 2015.⁹⁹ In 2014, the average level of emissions for new vehicles sold was 123.4g/km, well below the 2015 target.

The gap in average CO₂ emissions between Australia/New Zealand and the EU, as shown in Table 5, increased from 40 per cent (in Australia) and 34 per cent (in New Zealand) in 2010 to 47 per cent (in Australia) and 53 per cent (in New Zealand) in 2015. This shows the improved emissions output in vehicles in the EU. This gap is likely to widen when the EU's regulatory average CO₂ emission target reduces to 95g/km in 2021.¹⁰⁰ These figures are, at least in part, likely to reflect the EU's imposition of regulatory CO₂ emission standards in 2009 and member states' introduction of climate policy measures to influence consumers into choosing fuel-efficient vehicles.

Table 6 shows the different consumer choices made when purchasing new vehicles in the United Kingdom, compared to Australia and New Zealand.

⁹⁸ National Transport Commission, Australian Government, 'Carbon Dioxide Emissions Intensity for New Australian Light Vehicles' (2010–15); *Official Information Act 1982* request from Lisa Marriott to the Ministry of Transport, New Zealand Government, 1 February 2016.

⁹⁹ European Commission, *Reducing CO₂ Emissions from Passenger Cars* (2017) <https://ec.europa.eu/clima/policies/transport/vehicles/cars_en#tab-0-0>.

¹⁰⁰ European Commission, above n 46.

Table 6: Vehicle model variants by CO₂ emission bands in the United Kingdom, Australia and New Zealand, 2013

CO ₂ band (g/km)	United Kingdom (%)	Australia (%) ¹⁰¹	New Zealand (%) ¹⁰²
0-75	0.3	0.1	0.84
76-130	39.5	6.7	7.5
131-200	52.9	51.4	66.7
Over 200	7.3	41.7	21.5

Table 6 shows Australian and New Zealand consumer preferences are for higher CO₂ emitting vehicles. A higher proportion of new vehicles in the CO₂ emission bands of over 200g/km is evident (41.7 per cent in Australia and 21.5 per cent in New Zealand, as compared to 7.3 per cent in the United Kingdom). A lower proportion of low-emission vehicles in the CO₂ emission band of 0–130g/km is visible, at 6.8 per cent in Australia and 8.3 per cent in New Zealand as compared to 39.8 per cent in the United Kingdom. The data shown in Tables 5 and 6 suggests that the combination of CO₂ emission standards and economic instruments are effective climate policy instruments to influence purchases of vehicles with lower CO₂ emissions.

F Summary

What is evident from the above discussion is that both New Zealand and Australia have poor emission profiles. In the road transport sector they are clear laggards in reducing emissions. The next section outlines action undertaken in Australia and New Zealand to date to address emissions from road transport.

IV CLIMATE CHANGE ACTION

This section outlines the climate change policies introduced to date and the emission reduction measures that Australia and New Zealand are proposing to apply from 2020 under the 2015 Paris Climate Agreement to reduce road transport emissions. Each country is required to communicate their intended actions to address climate change (known as Nationally Determined Contributions) every five years, the first of which will apply from 2020.¹⁰³

A Australia's Policy on Road Emissions

The Australian government has no effective climate change policy to reduce road transport emissions and encourage consumers to purchase low-emission vehicles.

¹⁰¹ United Kingdom and Australian data: National Transport Commission, Australian Government, *Carbon Dioxide Emissions from New Australian Vehicles 2013: Information Paper* (May 2014) <[https://www.ntc.gov.au/Media/Reports/\(6B1DD6CF-FB2C-B934-74A8-47971CB09050\).pdf](https://www.ntc.gov.au/Media/Reports/(6B1DD6CF-FB2C-B934-74A8-47971CB09050).pdf)> 39.

¹⁰² New Zealand data reports 0–95g/km and 95–130g/km. These figures are 0.9 per cent and 7.5 per cent respectively. *Official Information Act 1982* request from Lisa Marriott to the Ministry of Transport, New Zealand Government, 1 February 2016.

¹⁰³ Department of Infrastructure and Regional Development, above n 96, 17.

Measures do exist to 'help consumers assess the relative efficiency of new vehicles'.¹⁰⁴ The measures referred to are: consumption labelling for new vehicles under the Green Vehicle Guide; the Emission Reduction Fund; the Luxury Car Tax concessions for fuel-efficient vehicles; and the Australian Capital Territory's reformed stamp duty. To date, these measures appear to have had little effect, given the increase in differences in light vehicle efficiency between Australia and the EU, as discussed in the previous section.

The failure to introduce effective environmental policy measures has allowed global car manufacturers to offer only those vehicles that are most cost effective to supply to the Australian market. Research has shown that even the best performing variants sold in Australia were about 27 per cent worse on average than the most efficient model variants offered in the United Kingdom.¹⁰⁵ Australia's approach may be contrasted with that of the EU, outlined earlier in this article, whereby regulation requiring car manufacturers in the EU to improve vehicle technology to achieve reductions in CO₂ emissions has assisted with vehicle emission reduction.

B Proposed Regulatory Emission Standards in Australia

In response to Australia's target for GHG emissions to be 26–28 per cent below 2005 levels by 2030, the government announced the National Energy Production Plan. The National Energy Production Plan will be developed by the Council of Australian Governments Energy Council and is aimed at improving Australia's energy productivity by 40 per cent between 2015 and 2030.¹⁰⁶ The plan includes improving fuel efficiency of vehicles and working with the G20 Transportation Task Group 'to identify further opportunities to achieve greater energy efficiency'.¹⁰⁷

In October 2015, the Australian government announced a whole-of-government review of vehicle emissions by a Ministerial Forum to be responsible for climate policy options in improving fuel efficiency (CO₂) for new light vehicles. A discussion paper was subsequently released in February 2016,¹⁰⁸ followed by three further consultation papers in 2016.

One of the consultation papers is a draft Regulatory Impact Statement on improving the efficiency of new light vehicles. This consultation paper acknowledges that Australia's light vehicle fleet is less efficient than many countries' and that the differences in efficiency 'are influenced by a variety of factors'.¹⁰⁹ A key factor was that approximately 80 per cent of the global new car market is subject to 'mandatory fuel efficiency standards'.¹¹⁰ The Ministerial Forum acknowledged the importance of regulation of CO₂ emission standards as a measure that 'require[s] manufacturers to deliver improvements in vehicle efficiency beyond those that could reasonably be expected under market forces

¹⁰⁴ Ibid 19.

¹⁰⁵ Ibid 23.

¹⁰⁶ Council of Australian Governments Energy Council, Australian Government, *National Energy Productivity Plan 2015–2030, Annual Report* (2016).

¹⁰⁷ Department of the Environment, above n 66, 239.

¹⁰⁸ Australian Government, *Vehicle Emissions Discussion Paper* (2016) 2.

¹⁰⁹ Department of Infrastructure and Regional Development, above n 96, 5.

¹¹⁰ Ibid.

alone.’¹¹¹ Non-regulatory and regulatory options were proposed to increase the supply of more fuel-efficient vehicles.

The possible new light vehicle targets to be phased in from 2020 to 2025 (proposed by the Climate Change Authority in 2014), are based on ‘strong’, ‘medium’ and ‘mild’ standards, as shown in Table 7.¹¹²

Table 7: Proposed fleet average CO₂ emission targets in Australia by 2025

Proposed targets ¹¹³	Target A: strong	Target B: medium	Target C: mild
Fleet average CO ₂ emissions target (g/km) by 2025 (to be phased in from 2020)	105	119	135
Reduction in average CO ₂ emissions (g/km) required by 2025	72	58	42
Annual reduction in average CO ₂ emission (g/km) required 2020 to 2025 ¹¹⁴	12	9.6	7
Average CO ₂ emission reduction required to meet 2025 target (%)	40.6%	32.7%	23.7%
Average CO ₂ emission reduction per annum from 2020 to 2025 (%)	6.7%	5.4%	3.9%

The Australian government proposes to phase in the above standards from 2020 to 2025, which will require an annual fall in emissions intensity of around: 12g/km (6.7 per cent) for Target A; 9.6g/km (5.4 per cent) for Target B; and 7g/km (3.9 per cent) for Target C. Given the current rate of improvement in average CO₂ emissions, which according to the Bureau of Infrastructure, Transport and Regional Economics is projected to fall to around 1 per cent per annum, suggests that the above emission reductions are not possible under the current policy settings.¹¹⁵ This will be particularly challenging when Australia is starting from a position with average g/km CO₂ emissions that are 47 per cent higher than the EU in 2015 (as shown in Table 5), and will not introduce regulatory standards until 2020.

The Vehicle Emissions Working Group proposed the non-regulatory options: to ‘maintain existing policy settings’ and ‘rely on existing arrangements and market forces to increase the supply of more efficient vehicles; and adopt minimum efficiency requirements for government fleet purposes.’¹¹⁶ The Working Group did not acknowledge that regulatory CO₂ emission standards address the supply side of new vehicles, and effective demand-side complementary measures are required to support regulatory standards by influencing the demand for fuel-efficient vehicles.

¹¹¹ Ibid 20.

¹¹² Department of Infrastructure and Regional Development, above n 96, 27. Light vehicles are new passenger and commercial vehicles up to 3.5 tonnes.

¹¹³ Ibid 27.

¹¹⁴ It is proposed that regulations will be introduced in 2020. The Australian average of 184g/km in 2015 reduced by an average 1.9 per cent per annum, equates to around an average of 177g/km by 2020.

¹¹⁵ Department of Infrastructure and Regional Development, above n 96, 23.

¹¹⁶ Ibid 23.

Many markets have separate targets for passenger and light commercial vehicles. In Australia, passenger vehicles (cars and SUVs) account for 82 per cent of new light vehicles sold in Australia and also account for the majority of CO₂ emissions produced by light vehicles.¹¹⁷ The Vehicle Emission Working Group to the Ministerial Forum claim that Target A of 105g/km would 'broadly align Australia with the EU targets for 2021 and the overall US target for 2025.'¹¹⁸ However, the EU adopts separate targets for passenger and light commercial vehicles: 95g/km for 2020–21 and 149g/km target for light commercial vehicles in 2025.¹¹⁹ There is an argument to separate the targets because manufacturers may restrict the availability of popular light commercial vehicles to meet the regulated target.¹²⁰

C Climate Change Action in New Zealand

New Zealand has not set any form of carbon budget or any plan for reaching proposed emission reduction targets.¹²¹ For 20 years, New Zealand's environmental policy has been accused of being weak¹²² and 'turbulent, lacking in certainty and risk averse'.¹²³

New Zealand's post-2020 target is to reduce GHG emissions to 11 per cent below 1990 levels by 2030.¹²⁴ However, in terms of transport emissions, the New Zealand government claims that accelerated emission reduction will occur post 2030, once the 'uptake of low-emission transport technology increases'.¹²⁵ In the meantime, the government aims to meet its commitments through domestic emission reductions, removing carbon by forests, participation in international carbon markets and the surplus achieved during the first Kyoto Protocol commitment period.¹²⁶

New Zealand's most recent energy strategy runs from 2011–2021.¹²⁷ The market-focused approach is evident. Effective and efficient energy markets are intended to 'encourage efficient energy use, the development of resources where it is economic to do so, the

¹¹⁷ Ibid 53.

¹¹⁸ Ibid 6.

¹¹⁹ Ibid 32.

¹²⁰ Ibid.

¹²¹ Rebecca Macfie, 'The Wright Stuff', *New Zealand Listener*, 5 August 2017, 28–29.

¹²² Ton Bührs and Robert V Bartlett, 'Strategic Thinking and the Environment: Planning the Future in New Zealand?' (1997) 6 *Environmental Politics* 72.

¹²³ Alison Greenaway and Fiona Carswell, 'Climate Change Policy and Practice in Regional New Zealand: How are Actors Negotiating Science and Policy?' (2009) 65 *New Zealand Geographer* 107, 109.

¹²⁴ Ministry for the Environment, New Zealand Government, *New Zealand's 2030 climate change target* (2015).

¹²⁵ New Zealand Government, *Submission to the ADP, New Zealand's Intended Nationally Determined Contribution* (2015).

¹²⁶ Ministry for the Environment, New Zealand Government, *Report of the Ministry for the Environment for the year ended 30 June 2015* (2015). Recently, New Zealand has been accused of dealing in fraudulent carbon credits, manufactured in Ukraine and Russia. Proportional to emissions, New Zealand has been the largest purchaser of these credits through the New Zealand Emissions Trading Scheme. It is these historically purchased credits that will help New Zealand meet its 2020 emissions reduction pledge. (Geoff Simmons and Paul Young, *Climate Cheats: How New Zealand is Cheating on Our Climate Change Commitments and What We Can Do to Set It Right*, The Morgan Foundation (April 2016) <http://morganfoundation.org.nz/wp-content/uploads/2016/04/ClimateCheat_Report8.pdf>.

¹²⁷ Ministry of Economic Development, above n 75.

minimisation of the environmental impacts of energy supply and use, and the meeting of our international responsibilities on addressing greenhouse gas emissions'.¹²⁸

New Zealand has an excise tax charged on fuels. However, the excise tax is at a lower rate than many other OECD countries.¹²⁹ The OECD observes that this tax does 'not consider environmental and social impacts such as GHG emissions, air pollution, noise and congestion. The car's weight or engine size does not affect the road charges.'¹³⁰ Therefore, with the exception of the fuel excise tax, there are no price signals to encourage purchases of low- or no-emission vehicles. This is also noted by the OECD, who suggests that the transport system is 'in need of coherent taxes' and 'current vehicle standards and taxes do not sufficiently encourage a shift towards cleaner, more efficient technologies'.¹³¹

1 *New Zealand Emissions Trading Scheme and Regulation*

The main government policy tools to achieve environmental targets are the Emissions Trading Scheme (ETS) and greater investment in renewable energy, energy efficiency and conservation. The ETS is 'the primary means to reduce emissions in the energy sector, and all other sectors across the economy'.¹³² The adoption of the ETS as the primary policy tool is justified on the basis that it is the lowest-cost option.¹³³

It is acknowledged that the ETS is not necessarily intended to influence consumers' purchasing choices of new vehicles. However, to date there is no evidence that the New Zealand ETS is having a significant behavioural impact on the transport, or any other, sector. Indeed, the Ministry of Transport acknowledges that the ETS will have a 'very minor impact on transport emissions'.¹³⁴ There have been few reports on this. However, one external report prepared for the government in 2011 suggested there should be increased prices on gas, coal, transport fuel and electricity resulting from the ETS. However, with the exception of an observable increase in the liquid fuel price of 4c per litre, no other observable impacts were reported on these activities.¹³⁵ As noted by Chapman:

If the New Zealand emission trading scheme and other price influences are not likely to be enough to significantly deflect the rising trend of vehicle emissions, transport

¹²⁸ Ibid 4.

¹²⁹ OECD, above n 74.

¹³⁰ Ministry for the Environment, New Zealand Government, *New Zealand's 2050 Target* (15 May 2016) <<http://www.mfe.govt.nz/climate-change/reducing-greenhouse-gas-emissions/new-zealands-greenhouse-gas-emissions-reduction-1>> 10.

¹³¹ OECD, above n 74.

¹³² Ministry of Economic Development, above n 75, 9.

¹³³ Ministry for the Environment, above n 126.

¹³⁴ Ministry of Transport, New Zealand Government, *Briefing to the Incoming Associate Minister of Transport: Part Two: Introduction to the New Zealand Transport System and Related Issues, January 2013* (2013) 33.

¹³⁵ Covec, *Impacts of the NZ ETS: Actual vs Expected Effects, Report Prepared for the Ministry for the Environment* (1 February 2016) <<https://www.climatechange.govt.nz/emissions-trading-scheme/ets-review-2011/supporting-info/impacts-of-actual-vs-expected-effects.pdf>>.

emissions will have to be explicitly targeted with a strong mix of measures in order to achieve meaningful cuts.¹³⁶

The New Zealand Energy Strategy 2011–2021 notes that the ‘means by which the Government proposes to achieve this strategy’s objective and targets for the transport sector include a mix of information, incentives, capability building, and codes and standards’.¹³⁷ The primary focus appears to be on improving the transport network, through roading and public transport. It is noted that the government will ‘consider cost effective options’ for improving the energy efficiency of the New Zealand vehicle fleet.¹³⁸ Recognition is made of the potential contributions from alternative transport fuels, actions from industry, or encouraging the entry of electric vehicles in the New Zealand market. However, no specific action is outlined relating to any role that the government may adopt in assisting with any of these outcomes. The OECD recommend the implementation of ‘a comprehensive package of GHG emission mitigation measures to complement the ETS’.¹³⁹ To date, no further measures have been progressed.

Commentators suggest that the claims made by the New Zealand government to sustainability and climate change have not been translated into a cohesive strategy.¹⁴⁰ Perhaps the New Zealand situation is best captured by Bührs and Bartlett, who observe:

New Zealand’s approach to climate change is in fact embedded in an economic policy framework that prescribes a narrow, technological, managerial and economic interpretation of ‘the climate problem’ and ignores wider issues and factors that underlie climate change as well as other environmental problems.¹⁴¹

The focus on market-based initiatives to drive behavioural change is yet to show tangible benefits in New Zealand.

2 *Policy Direction in New Zealand*

A fuel economy standard was proposed prior to the current National government taking office in 2008. Under the proposed scheme, importers of less fuel-efficient vehicles would purchase credits, while importers of more fuel-efficient vehicles would be awarded credits. The financial implication was estimated to be around NZ\$1500 when purchasing a large vehicle.¹⁴² The scheme was not pursued, despite the recognition that ‘with the exception of Australia, which has a voluntary agreement, virtually all developed countries have schemes in place to regulate and improve the average fuel economy of vehicles entering their fleets’.¹⁴³ No subsequent scheme has been proposed.

¹³⁶ Ralph Chapman, ‘Transitioning to Low-Carbon Urban Form and Transport in New Zealand’ (2008) 60 *Political Science* 89.

¹³⁷ *Ibid* 19.

¹³⁸ *Ibid* 19.

¹³⁹ *Ibid* 74.

¹⁴⁰ Bührs and Bartlett, above n 122.

¹⁴¹ *Ibid* 68.

¹⁴² Steven Joyce ‘Govt Won’t Proceed with Fuel Economy Standard’ (Press Release, 28 August 2009).

¹⁴³ Office of the Minister of Transport, Cabinet Economic Growth and Infrastructure Committee, New Zealand Government, *Vehicle Fuel Economy Standard – Report Back* (August 2009)

Information provided to consumers is minimal in New Zealand. Fuel economy labels must be provided when light vehicles (under 3.5 tonnes) are purchased from registered motor vehicle traders. These labels must provide a star rating (up to six stars for the most fuel-efficient vehicles), estimated running costs per annum, fuel economy, and average fuel price.¹⁴⁴

In 2015, the New Zealand government released a report outlining the government's policy direction for the transport sector over the next decade.¹⁴⁵ Three priorities for transport are outlined: economic growth and productivity; value for money; and road safety.¹⁴⁶ The document acknowledges that the transport sector is likely to need to respond to demands to reduce transport GHG emissions. No detail is provided on this response, with the exception that '[t]he government will continue to respond to these issues carefully and proactively'.¹⁴⁷ The policy direction, outlined as a 'key government action', is 'continued reduction in emissions of carbon dioxide from land transport over time'.¹⁴⁸ It is difficult to see how this will be achieved with policies that include investment in land transport infrastructure.

The behaviour of individuals' transport decisions are noted as having an important role in shaping the transport system. The report notes the importance of transparent price signals: 'the government wants the costs associated with transport choices to be as clear as possible, and for the price of using each mode to match actual cost as much as possible'.¹⁴⁹ Reductions in GHG claimed in this strategy will be achieved by: improving vehicle efficiency; greater adoption of public transport; encouraging the adoption of more efficient vehicles and low-carbon fuels and technologies; and improving the efficiency of freight movements and passenger networks. Perhaps what is most notable from this report is the aspirational claims without the policy detail to establish how these claims might be met.

D Summary

Australia has proposed reviews and plans, and produced discussion papers, to improve vehicle fuel efficiency. While targets have been set for reductions in emissions intensity, it is difficult to see how these will be achieved. New Zealand's primary tool to achieve emissions reductions is the Emissions Trading Scheme, which is not expected to result in any behavioural change in relation to choice or use of vehicle.

The literature strongly demonstrates that policy tools are effective in changing both the supply of, and demand for, vehicles with lower emissions. However, Australia and New

<<http://www.transport.govt.nz/assets/Uploads/Our-Work/Vehicle-Fuel-Economy-Standard-Cabinet-Paper-Aug-09.pdf>>.

¹⁴⁴ Energy Efficiency and Conservation Authority, New Zealand Government, *Vehicle Fuel Economy Labels* (2016).

¹⁴⁵ New Zealand Government, above n 79.

¹⁴⁶ *Ibid* 2.

¹⁴⁷ New Zealand Government, above n 79145.

¹⁴⁸ New Zealand Government, above, n 79.

¹⁴⁹ New Zealand Government, above, n 79.

Zealand have yet to introduce regulation or fiscal instruments that are likely to change behaviour.

V CONCLUSION

New Zealand and Australia face different problems in addressing their environmental impact and in meeting their national targets under the 2015 Paris Climate Agreement. New Zealand's primary problem is created by its agricultural industry. However, at the present time, there is little that can be done to address emissions from this sector. The second largest problem exists in the energy sector, of which road transport is a significant, and increasing, contributor. This is a sector where the literature has demonstrated that regulation and fiscal instruments influence decisions of both consumers and manufacturers.

Like New Zealand, Australia's road transport contributes significantly to overall emissions. Also like New Zealand, Australia has been slow to adopt any policy instruments that are likely to reduce these emissions.

This study set out to highlight the lack of commitment of Australia and New Zealand to reducing emissions from road transport. It has long been observed that when compared to EU countries, many components of climate change have received little attention in New Zealand and Australia.¹⁵⁰ This situation remains unchanged. There is ample rhetoric, but little action. When compared to action taken in Australia, New Zealand is lagging even further in adopting policy tools to change consumer behaviour relating to vehicle adoption. There is no Green Vehicle Guide, there have been no government discussion papers and there are no financial incentives or disincentives associated with low- or high-emission vehicles. Instead, there is the continuation of non-intervention by the government with the expectation of a market-based solution. New Zealand's climate change action may be described as climate change policy proposals without climate change policy commitment.

To meet proposed long-term CO₂ reduction targets requires lower emissions from road vehicles. Prior studies, and the examples of New Zealand and Australia outlined herein, have shown that without regulatory CO₂ emission standards and complementary economic measures, there is no pressure or incentive for governments and consumers, manufacturers and importers to lower their CO₂ emissions. There can no longer be any doubt about the effectiveness of such tools in achieving behavioural change. New Zealand and Australia have both demonstrated an ability to set ambitious targets. However, this is not sufficient. These targets need to be accompanied by an appropriate strategy and set of tools that demonstrates willingness to meet these targets.

The article commenced by showing that measures adopted in the EU have been successful at reducing road transport emissions. It concludes by suggesting that the absence of measures has been a significant contributor to increased road transport emissions in New Zealand and Australia. Both countries now risk becoming environmental tax havens

¹⁵⁰ Bührs and Bartlett, above n 122.

if they do not undertake action to address their emissions profiles in areas demonstrated as amenable to regulation and fiscal instruments.

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