

# Vehicle CO<sub>2</sub> emissions

## Why Australia must catch up on cutting down

While the average carbon dioxide (CO<sub>2</sub>) emissions intensity of light vehicles in the Australian fleet has been improving at rates of between one and four per cent in the 10 years from 2002 and 2012, since then, the rate of CO<sub>2</sub> emissions intensity reduction has been steadily decreasing. In 2017, there was a reduction of only 0.3 per cent. Furthermore, the average emissions intensity for passenger vehicles in Australia in 2017 was 171.5g/km. In Europe, it was 118.5g/km<sup>1</sup>.

Achieving this modest reduction is primarily a result of the flow-on effect of international regulation rather than emissions management within Australia. Despite this gradual decrease, according to the Australian Government, even with the current trend in vehicle efficiency improvement, the growth in transport sector emissions will still increase by 15 per cent or add approximately 14 million tonnes of greenhouse gas emissions by 2030<sup>2</sup>. Alarmingly, as it stands Australia is the only developed nation without a national standard regulating CO<sub>2</sub> emissions from new light vehicles for sale.

Vehicles emit oxides of nitrogen (NOx), hydrocarbon emissions (including methane, benzene, toluene, xylene, and benzo[a]pyrene), carbon monoxide (CO), oxides of sulfur (SOx), particulate matter (PM), ozone (O<sub>3</sub>) and CO<sub>2</sub> which collectively impact negatively on human health and the environment.

### Impact of CO<sub>2</sub> emissions

There is a broad consensus across the scientific community that global warming (which refers to the long-term warming of the planet since the early 20th century) is due to the growing "greenhouse effect". The greenhouse effect is warming that occurs

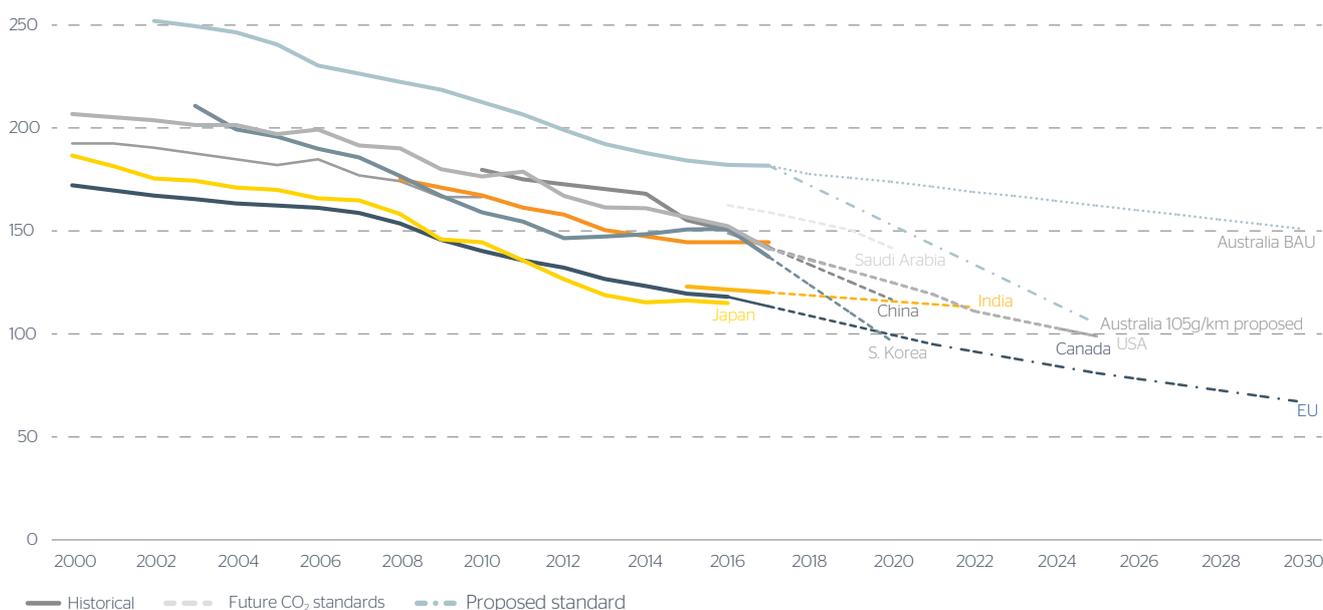
when increased gases trap heat in the earth's atmosphere. There are certain gases that prevent heat from escaping<sup>3</sup>. Among these is CO<sub>2</sub>, which is primarily released through human activities such as burning fossil fuels, deforestation and land use change, and also through natural sources such as volcanic eruptions and respiration.

It is estimated that humans have increased atmospheric CO<sub>2</sub> concentration by approximately 40 per cent since the 1700s<sup>4</sup>. Today, transport is responsible for 18 per cent of Australia's total greenhouse gas emissions and 25 per cent of total CO<sub>2</sub> emissions<sup>5</sup>.

If this situation continues, with a stronger greenhouse effect it is expected that regions will variably become hotter and dryer (and in other places, warmer and wetter), there will be more extreme weather events, the ocean's temperature and sea levels will continue to rise, and wildlife populations and habitats will shift for example (consequences of climate change - which encompasses global warming and the broader changes to the planet's weather and climate systems).

As part of a global response to climate change; the Australian Government has committed to reduce the nation's greenhouse gas emissions by 26 to 28 per cent below 2005 levels by 2030<sup>6</sup>.

Figure 1 » International passenger vehicle CO<sub>2</sub> emissions



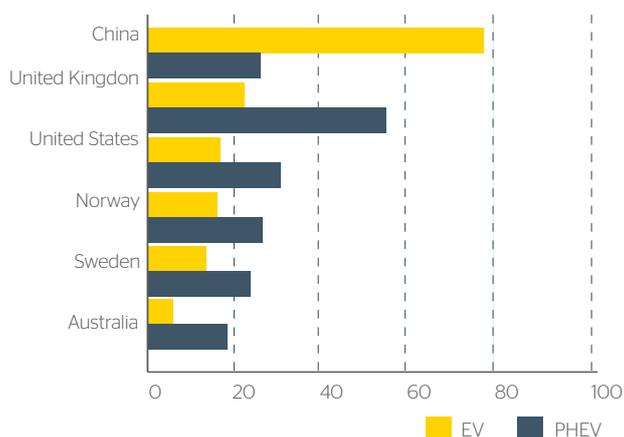
<sup>1</sup>National Transport Commission (NTC) (2018). Carbon Dioxide Emissions Intensity for New Australian Light Vehicles 2017. Accessed at [https://www.ntc.gov.au/Media/Reports/\(F4FA79EA-9A15-11F3-67D8-582BF9D39780\).pdf](https://www.ntc.gov.au/Media/Reports/(F4FA79EA-9A15-11F3-67D8-582BF9D39780).pdf)  
<sup>2</sup>Department of Environment and Energy (2017). Australia's emissions projections 2017. Accessed at <https://www.environment.gov.au/climate-change/publications/emissions-projections-2017>.  
<sup>3</sup>NASA. Global climate change. Accessed at <https://climate.nasa.gov/causes/>  
<sup>4</sup>Intergovernmental Panel on Climate Change (IPCC) (2013) Summary for Policymakers. In: Climate Change 2013. The Physical Science Basis. Accessed at [http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WGIAR5\\_SPM\\_FINAL.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WGIAR5_SPM_FINAL.pdf)  
<sup>5</sup>Department of Environment and Energy (2018). Australian Greenhouse Gas Emissions Information System - National Greenhouse Gas Inventory 2016. Accessed at <http://ageis.climatechange.gov.au/>  
<sup>6</sup>Department of Environment and Energy (2015). Australia's 2030 climate change target. Accessed at <http://www.environment.gov.au/system/files/resources/c-42c1a8-4df7-4d4f-bf92-4f14735c9baa/files/factsheet-australias-2030-climate-change-target.pdf>

## How Australia compares internationally

On a per capita basis, Australia's CO<sub>2</sub> emissions are the eighth highest in the world for road transport<sup>7</sup>. In 2017, Australia's average CO<sub>2</sub> emissions intensity for passenger vehicles was 171.5g/km, 45 per cent higher than Europe's average of 118.5g/km<sup>8</sup>. Europe, considered to be a world leader in emissions reduction policy, mandated a CO<sub>2</sub> emissions standard of 130g/km in 2015, reducing to 95g/km by 2021 (phased in from 2020). Further, the European Parliament have proposed a stricter standard of reducing emissions by a further 15 per cent from 2021 levels by 2025 and then a further 15 per cent further reduction by 2030<sup>9</sup> (see Figure 1).

While some overseas markets offer a wide choice of plug-in hybrid electric vehicles (PHEVs) and electric vehicles (EVs), there are currently few pure EVs available to buy new in Australia (among them the Tesla Model S and Model X, BMW i3 and Renault Zoe), and a relatively small number of hybrids (Figure 2 below). Comparatively as many as 80 different pure EV models are available in Europe (across 20 different makes), almost 80 in China and 17 available in the United States.

**Figure 2 » International EV model availability**



## Where we stand

RAC is committed to ensuring mobility for Western Australians is safe, accessible and sustainable. A safe mobility system is measured through a reduction in the number of people killed and seriously injured on our roads, an accessible system through a reduction in the cost of both congestion and motoring and a sustainable system principally through a reduction in CO<sub>2</sub> emitted from cars.

In line with RAC's mobility agenda, the introduction of an efficient and appropriate mandatory CO<sub>2</sub> emissions standard for light vehicles is a long-standing RAC priority and we broadly support its

introduction as a pathway to enabling better access to 'clean' vehicles within the Australian market. Just as we continue to welcome new vehicles safety features and other technologies, we should accept that some incremental cost may come with bringing the Australian vehicle fleet into line with global emissions standards.

The Australian government has proposed, but not yet committed to, a standard that is based on achieving a new light vehicle fleet emissions average of three levels / options 105gCO<sub>2</sub>/km, 119gCO<sub>2</sub>/km or 135gCO<sub>2</sub>/km. The Government's proposal would require vehicle manufacturers to provide a compliance report from 2020, with a phased-in increase in compliance from 2022. Full compliance would be required by 2025, with penalties payable from 2028. The accrual of debits and credits is proposed for each gram of CO<sub>2</sub> over and under the compliance target for each new vehicle sold (determined by the weight of the vehicle and a limit curve). Credits offset debits and may be carried over; and to incentivise the release of very low and zero emissions vehicles, bonus credits would be allocated to manufacturer sales of vehicles emitting less than 60gCO<sub>2</sub>/km.

Globally, emissions standards have been successful in reducing vehicle emissions, and Australia should be able to springboard and benefit from emissions reductions already made elsewhere. With the introduction of targets, it is likely that manufacturers would increasingly supply and encourage buyers to purchase 'complying' low emissions vehicles. Similarly, buyers could be expected to steer away from 'non-complying' vehicles that might attract debits and potentially higher prices.

### RAC supports:

- › The accelerated introduction of an impactful CO<sub>2</sub> target for passenger and light vehicles;
- › Improved fuel quality standards which impact reductions in CO<sub>2</sub> as well as other pollutants emitted by motor vehicles including hydrocarbons, CO, NOx, SOx, and PM, and address both reduced sulfur content and increased octane;
- › Appropriate and attractive incentives for low and zero emissions vehicles supported by a well-planned transition to appropriate renewable electricity generation; and
- › An effective rating system to ensure consumers have access to vehicle emissions and fuel consumption information when making new car purchasing decisions.

<sup>7</sup>IEA (2017), CO<sub>2</sub> emissions from fuel combustion highlights 2017, Per capita emissions by sector, pg. 133. Accessed at <https://www.iea.org/publications/freepublications/publication/CO2EmissionsfromFuelCombustionHighlights2017.pdf>

<sup>8</sup>Op. Cit. NTC

<sup>9</sup>European Commission (2018), Proposal for post-2020 CO<sub>2</sub> targets for cars and vans. Accessed at [https://ec.europa.eu/clima/policies/transport/vehicles/proposal\\_en](https://ec.europa.eu/clima/policies/transport/vehicles/proposal_en)



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