



Submission to the Vehicle Emissions Working Group

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1. Introduction

WWF-Australia welcomes the opportunity to make this submission in response to the Vehicle Emissions Discussion paper.

WWF-Australia is part of the WWF International Network, the world's largest and most experienced independent conservation organisation. We have over 300,000 active supporters in Australia and a global network active in more than 100 countries. WWF's mission is to stop the degradation of the planet's natural resources and to build a future in which humans live in harmony with nature.

WWF has been an advocate for national and international action to avoid dangerous climate change for more than two decades.

The recent Paris Agreement included the significant inclusion of the commitment to "holding the increase in the global average temperature to well below 2 degrees above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 degrees above pre-industrial levels...". The inclusion of 1.5 degrees goal in the Agreement recognises that this would significantly reduce the risks and impacts of climate change. This also mandates country's to take stronger, more immediate action to cut carbon pollution in-line with this commitment.

There have been considerable global advances in motor vehicle technologies and cleaner fuels. This will continue to be the case as the electricity sector decarbonises. However, in Australia a combination of measures will be necessary if we are to decouple transport sector growth from greenhouse gas emissions. This will include cleaner fuels, mandatory vehicle emissions standards, transitioning towards electric vehicle (supported by an electricity network powered by renewable energy), Governments taking a lead, and education to better inform consumer choice and behaviour.

This submission is set out according to the different questions raised in the discussion paper. In particular, the submission includes:

- Summary of Recommendations
- Options to Reduce Vehicle Emissions
 - Implementation of Euro 6/VI Noxious Emissions Standards for Light and Heavy Vehicles
 - Implementation of Fuel Efficiency (CO₂) Standards for Light Vehicles
- Other Complementary Measures to Reduce Emissions
 - Fuel Quality Standards
 - Information and Education
 - Fleet Purchasing Policy
 - Taxation Measures
 - Alternative Fuels and Electric Vehicles (EVs)
 - Intelligent Transport Systems
 - Vehicle Emission Testing

WWF-Australia would welcome the opportunity to discuss the details of our submission further as part of the process of stakeholder consultations.

2. Summary of Recommendations

1. For economic and air quality related reasons, introduce Euro 6 Standards as soon as is practically possible.
2. Introduce mandatory standards for fuel efficient vehicles including consideration for the introduction of a Top Runner Program for motor vehicles.
3. Expand information and education through the following:
 - a. Extend the labels beyond new cars to cover second-hand cars that are sold through dealerships;
 - b. Extend the labels to cover new and second-hand vans once the required information on CO2 emissions is published for all new vans;
 - c. Provide comparative information of 'best in class' for CO2 emissions and fuel economy on the label.
4. Fleet purchasing policy that encourages governments at local, state and federal levels to take a leadership role to set specific targets and timeframes for purchase low emission and electric vehicles.
5. Introduce taxation measures such as:
 - a. Remove the fuel tax rebate for non-agriculture industries
 - b. Remove the Fringe Benefit Tax (FBT) perverse incentive for greater car usage
 - c. Discounted car registration for more fuel efficient vehicles
6. To provide greater incentives for the uptake of EVs, a coordinated approach across government jurisdictions to drive an accelerated roll out of EVs including the following:
 - a. Set an EV target – e.g. 50 per cent of all new car sales in Australia to be EVs by 2026.
 - b. Set target for federal Government fleet purchase at 100% by 2026.
 - c. Coordinate efforts with State Governments, Councils, and the private sector to roll out infrastructure charge points in high traffic areas that are accessible to all, such as public transport park and rides, car parks, shopping centres, playgrounds and sporting venues.
 - d. Look at ways to provide low cost financial support to roll out infrastructure such as a loan pay back scheme for SMEs, extend the mandate of Clean Energy Finance Corporation and use of Green bonds.
 - e. Reduce barriers to electric vehicle charges in homes, including regulating connection fees, time of day rates, and requiring landlords to provide permission to a leaser to be able to install plug-in or electric vehicle chargers (unless special situation) where the leaser must pay for it and its maintenance.
 - f. Encourage acceleration of work being undertaken by Standards Australia to set standards to harmonise EV plugs and billing methods.
 - g. Build confidence in the EV market by resourcing a promotion and education campaign.

3. Options to Reduce Vehicle Emissions

3.1. Implementation of Euro 6/VI Noxious Emissions Standards for Light and Heavy Vehicles (Discussion paper 4.1)

WWF-Australia supports higher standards for noxious emissions and strongly supports the introduction of Euro 6 standards as soon as is practically possible. The health impacts of air quality related diseases are well known and are a significant public health concern. In 2005, air pollution from cars alone resulted in health costs of some \$2billion.¹ In Australia, chronic lower respiratory diseases are a leading cause of death with 1 in 19 males and 1 in 21 females suffering from these diseases. The main factors influencing metropolitan air quality include motor vehicles and industry while air quality in regional areas is influenced by localised factors such as mining and domestic heating.²

Recommendation 1: For economic and air quality related reasons, introduce Euro 6 Standards as soon as is practically possible.

3.2. Implementation of Fuel Efficiency (CO₂) Standards for Light Vehicles (Discussion paper 4.2)

There is a strong case for tightening CO₂ standards for the light vehicle fleet in Australia and for making these standards mandatory. Mandatory standards are an essential tool in reducing greenhouse gas emissions and can deliver significant reductions in emissions with the least cost to the economy compared to other policy measures.³ These standards will also overtime deliver important cost savings associated with more fuel efficient vehicles to drivers.

A 2014 ClimateWorks Australia report showed that mandated fuel efficiency standards could deliver reductions of 4 Mt CO₂e in 2020 and 8.7 Mt CO₂e in 2024, equivalent to taking 2.2 million cars off the road in 2024.⁴ Figure 1 is taken from the same ClimateWorks report and shows the substantial gains to be made. We also understand ClimateWorks is updating its analysis on the vehicle sector as part of its submission process.

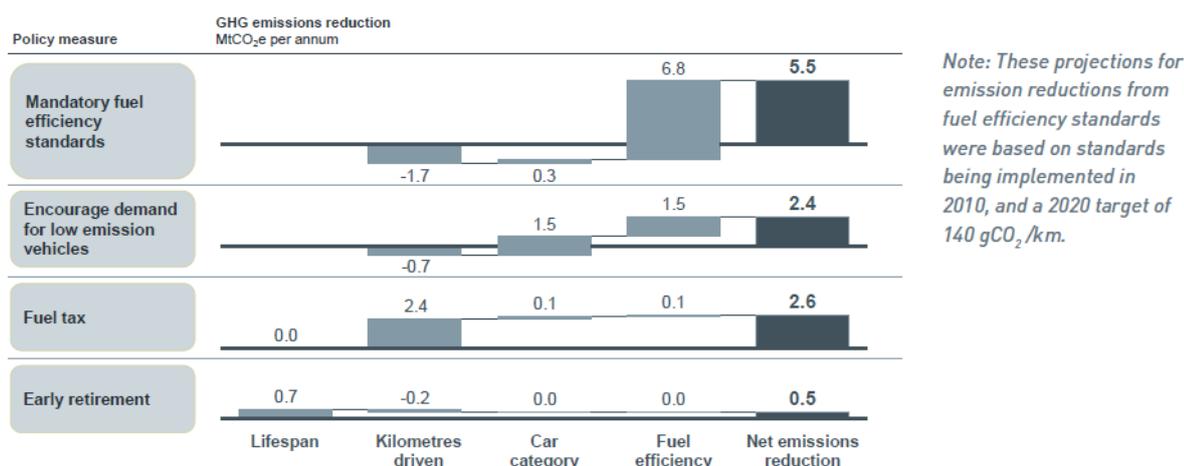
¹ Bureau of Infrastructure, Transport and Regional Economics, Working Paper: Health impacts of transport emissions in Australia (2005), at: www.bitre.gov.au/docs/workingpapers/wp63/wp63.pdf 17

² <http://www.abs.gov.au/ausstats/abs@.nsf/0/8F1A0BEA81C1D6EECA256DEA00053A5E?opendocument> and <http://www.abs.gov.au/ausstats/abs@.nsf/mf/3303.0>

³ Climateworks (2014) Improving Australia's Light Vehicle Fuel Efficiency,

⁴ http://www.climateworksaustralia.org/sites/default/files/documents/publications/climateworks_vehicle_efficiency_standards_briefing_paper_feb2014.pdf

Figure 1: Comparison of policy measures to reduce emissions in cars and light commercial vehicles



Source: Climateworks (2014) Improving Australia's Light Vehicle Fuel Efficiency

To be effective, mandated targets must be reviewed and tightened regularly, and when combined with other measures, will counter any potential behavioural (rebound) effects where consumers purchase larger vehicles.

WWF-Australia believes mandatory standards are necessary as voluntary standards have so far failed to achieve desired outcomes. The Federal Government had a voluntary agreement with the car industry for Australian manufactured vehicles to achieve an average fuel efficiency of 6.8L/100km by 2010. This voluntary target failed to attract significant participation and each subsequent target was not met. In 2006 only one Australian manufactured car model had an efficiency of less than 10L/100km. The Australian auto industry has failed to meet similarly non-binding voluntary efficiency targets in 1983, 1987 and 2000. But while Australia's car industry stagnates, the rest of the world is implementing mandatory standards to ensure vehicle efficiency.

The United States, Japan, Taiwan and South Korea⁵ all have mandatory fuel efficiency standards for new cars. The Chinese government has also set mandatory standards, which are tougher than the current Australian voluntary standards.⁶

Notably Germany and Japan seem to have had the best success so far in decoupling economic growth from transport sector emissions. Japan is considered to have the best scheme with a modest reduction in transport emissions between 2001 and 2006, and further reductions predicted.⁷ This has been achieved through a mandatory fuel efficiency standard and a combination of other measures including increased public transport use, modal shift of freight, improved driving conditions and driving practices.⁸

As shown in Table 1, the OECD region has both the most and least efficient markets. It contains two main clusters, either well below (Europe, Japan) or well above (North America, Australia) the regional average.⁹

⁵ ITF (2008), International Transport Forum (2008), Greenhouse Gas Reduction Strategies in the Transport Sector: preliminary report, OECD, p.68

⁶ Diesendorf, M, Lamb, D, Mathews, J & Pearman (2008), G, A Roadmap for Alternative Fuels in Australia: Ending our Dependence on Oil, A report to the NMRA Motoring & Services, The Jamison Group p.27

⁷ See Japan case-study in ITF (2008), p.73

⁸ ITF (2008), op.cit. p.73

⁹ <http://www.fiafoundation.org/media/45112/wp11-iea-report-update-2014.pdf>

Table 1 • Market evolution between 2012 and 2013 - average fuel economy and market size

	Average fuel economy lge/100 km		Vehicle sales thousands		Fuel economy improvement rate	Market growth
	2012	2013	2012	2013	2012 - 2013	2012 - 2013
Japan	5.2	4.9	4,572	4,562	-4.7%	-0.2%
France	5.2	5.0	1,861	1,756	-4.8%	-5.6%
Italy	5.5	5.3	1,396	1,287	-3.6%	-7.8%
Turkey	5.5	5.3	556	665	-3.4%	19.5%
United Kingdom	5.6	5.4	2,045	2,265	-3.3%	10.8%
Germany	5.9	5.7	3,082	2,952	-3.8%	-4.2%
Mexico	7.3	7.4	645	690	0.2%	7.1%
South Korea	6.2	6.3	1,255	1,242	0.0%	-1.1%
Chile	7.1	7.1	255	288	-1.0%	13.0%
Australia	8.3	8.0	1,053	1,079	-2.8%	2.5%
USA	9.2	9.0	14,051	15,094	-2.3%	7.4%
Canada	8.7	8.6	1,555	1,638	-1.4%	5.3%
OECD Average	7.1	6.9	32,326	33,518	-2.5%	3.7%

Source: <http://www.fiafoundation.org/media/45112/wp11-iea-report-update-2014.pdf>

Top Runner Program – taking a leaf from Japan’s approach

In 1998, Japan initiated a Top Runner Program to improve energy efficiency of end-use products including a variety of appliances, equipment and automobiles; and to develop “the world’s best energy efficient products.” It included both passenger vehicles and freight vehicles. The penetration rate of the Top Runner comparable vehicles into the new vehicle market increased rapidly, from 11 per cent in 1997 to 90 per cent in 2008, and the Top Runner standard of 15.1km/l by 2010 was achieved five years ahead of time.¹⁰

Australia could introduce a Top Runner Program whereby the importation of vehicles will only be allowed for cars that are considered green under the Climate Bonds Standard. This standard requires vehicles to be at or below a maximum emissions level of 85-90 grams of CO₂ per passenger kilometre travelled (g CO₂ p/km). If introduced in Australia, this threshold could decrease over time in-line with a trajectory to achieve zero net emissions by 2050.

Given the contraction of the Australian car manufacturing industry it is conceivable that Australia could adopt a Top Runner program to help drive higher and faster uptake of the best vehicles available in the market.

Such a program could have important spin-off benefits for the second-hand car market. In particular, because new car buyers essentially determine the range of options available to those purchasing in the second-hand market incentives targeted at cleaner new vehicle stock will eventually flow-on to second hand car purchasers. This is particularly important for low-income earners and younger drivers who are more likely to purchase used vehicles and will reap larger comparative cost savings from more efficient vehicles.

Recommendation 2: Introduce mandatory standards for fuel efficient vehicles including consideration for the introduction of a Top Runner Program for motor vehicles.

¹⁰ <http://www.climatepolicy.jp/thesis/pdf/09035dp.pdf>

4. Other Complementary Measures to Reduce Emissions

4.1. Fuel Quality Standards (Discussion paper 5.1)

No comment

4.2. Information and Education (Discussion paper 5.2)

Behaviour change is equally as important as technological changes to the motor vehicle fleet. There is a clear role for Government to provide the necessary education tools to help consumers make the shift towards a better understanding and choice about the vehicles they purchase. The introduction of fuel consumption labelling on motor vehicles has had a positive effect on consumer behaviour.

Education could take several forms, including motor vehicle labelling, more prominent promotion of energy efficiency in vehicle advertising, and driver behaviour education¹¹ provided in take home information upon the purchase of new cars.

Improvements in vehicle efficiency and driver efficiency can deliver financial savings from motoring costs as well as CO2 reductions.

Recommendation 3:

- a) Extend the labels beyond new cars to cover second-hand cars that are sold through dealerships;
- b) Extend the labels to cover new and second-hand vans once the required information on CO2 emissions is published for all new vans;
- c) Provide comparative information of 'best in class' for CO2 emissions and fuel economy on the label.

4.3. Fleet Purchasing Policy (Discussion paper 5.3)

There is a case for requiring Government fleet vehicles to be far more fuel efficient and to make sure that fleet purchases move quickly towards international best practice. Traditionally Australian governments (at federal, state and local levels) have bought 18.5 per cent of cars manufactured in Australia for their fleets. Some governments, such as the Victorian government, have historically had a preference for purchasing all their vehicles from domestic sources.¹² However, times have changed with the closing down of local manufacturers. There are only upsides to making the purchasing policies more competitive and as fuel efficient as possible.

¹¹ According to a UK report (http://www.unep.org/transport/gfei/autotool/approaches/information/2008_King_L.pdf), simple aspects of driver efficiency such as, keeping tyres pumped up, not accelerating too fast, moderating motorway speed and minimising weight, can make a real difference to fuel consumption and CO2 emissions.

¹² Bracks, Steve (2008a), Review of Australia's Automotive Industry 2008: Background Paper, for the Australian Government, p.1

In 2015, an estimated 46% of new vehicle purchases in Australia came from fleets¹³. There is an opportunity for governments to leverage their market power and help to accelerate the shift towards low emission and electric vehicles for the whole of the vehicle fleet by setting specific targets and timeframes, just as they have done with building energy efficiency standards and other procurement policies. This may also provide a flow-on benefit in terms of promoting a larger volume of interest from international suppliers of electric vehicles in Australia. Currently, a major barrier for EV suppliers is the limited demand coming from Australia for these vehicles. Stimulating demand through government fleet vehicles may therefore help to generate greater competition of supply among producers.

A key success factor is the ability of fleet cars to hold their value in the second hand car market and therefore the government has a role to play in giving confidence to this second hand car market through providing a clear policy platform that supports low emission vehicles for the long term.¹⁴

Given that many government fleet vehicles end up in the second hand car market, and that in 2015, the average age of all vehicles registered in Australia was 10.1 years,¹⁵ this would be a substantial contributor to accelerating change in the fleet in Australia. Furthermore a more fuel efficient fleet could have potential budgetary savings potential, something that should interest all governments.

As about half of new car purchases in Australia are for fleets, replacement with more fuel efficient models has the capacity to make a big difference— see Figure 1.

Recommendation 4:

Encourage Governments at local, state and federal level to take a leadership role to set specific targets and timeframes for purchases of low emission and electric vehicles.

4.4. Taxation Measures (Discussion paper 5.4)

Car Registration Fees to be linked to fuel efficiency or emission levels of car model

An important taxation lever concerns stamp duty and registration charges for motor vehicles, which could be geared towards supporting low/zero-greenhouse gas emissions vehicles. This would require intervention at the State and Territory levels.

For example, currently a suite of different registration fee types exist across the jurisdictions which are linked to the power of the motor vehicle and car weights. Instead registration fees could be directly linked to the fuel efficiency or emission levels of the car model, with significant differences between the most efficient and the least efficient.

Consideration should be given to whether there would need to be put in place measures to protect low-income earners who may be discriminated under this policy given that there is likely to be a higher correlation between low-income households and older, more inefficient cars.

Luxury vehicle taxes which currently apply to EVs could also be removed in Australia to promote the greater

¹³ Federal Chamber of Automotive Industries (2015)

¹⁴ Anthony Joseph (2016). Former Better Place Employee per comms.

¹⁵ <http://www.abs.gov.au/ausstats/abs@.nsf/mf/9309.0>

uptake of EVs.

International experience also points to examples of how similar measures have been put in place. For example, the Netherlands, Greece, Ireland, Portugal and Japan all provide incentives for EV uptake through either full or partial registration cost exemptions and waiving various associated taxes¹⁶.

WWF-Australia recommends the Federal Government work with State and Territory Government's to require all registration fees to be directly linked to the fuel efficiency or emission levels of the car model, with significant differences between the most efficient and the least efficient. Special provisions need to be considered so as not to penalise low-income earners.

As part of any behavioural change program, governments should promote this incentive to enable purchasing of cleaner, more efficient vehicles.

Subsidies for Fossil Fuels

Current funding, taxation and subsidy arrangements for transport in Australia are weighted in favour of fossil fuel-based transport. The vast majority (74%) of these subsidies go towards fossil-fuel based transport in the form of fuel tax rebates for off road vehicle uses. This is projected to grow as a wider range of activities and fuels are eligible for rebates under the Fuel Tax Credits Scheme. The fuel tax rebate is a perverse subsidy incentivising the use of fossil fuels and discouraging the development and switch to cleaner alternatives.

Another large subsidy that should be adjusted is the Fringe Benefits Tax (FBT) on employer-provided cars which subsidise private and business car usage for company employee's worth over \$1.2 billion to tax payers. The way the FBT is currently structured creates a perverse incentive for motorists to drive more, and favours private motor vehicle use over investment in public transport or cleaner vehicle options.

Recommendation 5:

- a) Remove the fuel tax rebate for non-agriculture industries
- b) Remove the FBT perverse incentive for greater car usage
- c) Consider a reduced car registration for more fuel efficient vehicles and EVs akin to international examples

4.5. Alternative Fuels and Electric Vehicles (Discussion paper 5.5)

Globally the transport sector is set to fundamentally change forever with the accelerated uptake of electric vehicles (EVs) along with the integration of 'smart' network-connected technologies in distributed generation, battery storage, and appliances. This transition has already begun, as shown in Figure 2. How Australia responds to this opportunity will depend on government, industry and consumer responses to both EVs and advances in, and roll out of, battery storage technologies.

In February 2016 Bloomberg New Energy Finance (BNEF) released new analysis of the electric vehicle sector, confidently predicting that the market for clean vehicles will start to take off by 2022, reaching 35% of new

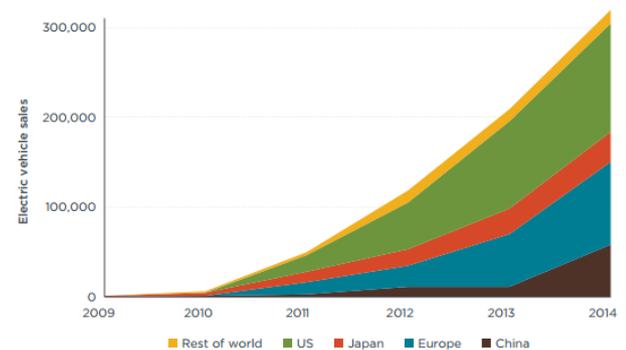
¹⁶ <http://reneweconomy.com.au/2016/greens-call-for-electric-vehicle-discount-on-stamp-duty-registrations-33780>

car sales globally by 2040.¹⁷ With continued reductions in battery prices expected over the next few years, the report says that even if petrol or diesel driven cars improve their fuel efficiency over the coming years, the cost of owning an electric car – buying it and running it – will be below that of conventional vehicles by 2022 (about \$22,000). The determining factor seems to be the extent and ambition of policies and incentives introduced. In the next few years Tesla, Chevy and Nissan plan to start selling long-range electric cars in the US\$30,000 and other carmakers and tech companies in China and Europe are investing billion on dozens of new models.

A number of governments have set ambitious targets on the roll out of EVs for multiple reasons including the need to meet their carbon reduction standards, vehicle manufacturing industry policy as well as concerns with air quality and health impacts from conventional vehicles. Jurisdictions including Norway, the Netherlands, California and China are dominating the EV market because of the policies and incentives on offer which enables the sector to overcome barriers such as higher cost, low consumer awareness, limited public charging infrastructure, and less availability of EV cars on the market.¹⁸ These include financial incentives, investment in R&D, changes in infrastructure, and government commitments to set and deliver on long term targets.

Many studies have been undertaken on the effectiveness of these kinds of policy and incentives. Key findings are that it takes both incentives and stricter regulations to drive the market towards EVs. Generally studies that assumed greater technical advancement, such as in battery technology, and increased policy support in areas such as R&D, infrastructure, and regulation, found 20% to more than 50% electric vehicle shares were possible in leading electric vehicle markets in the 2025-2030 time frame. However, studies that considered lesser policy support and lesser technical advancement generally found that the electric vehicle market, in various countries and globally, could remain as low as 5%-10% in the 2025-2030 time frame.¹⁹

Figure 2: Sales of EVs 2009-14



In our region, China is leading the way for the uptake of EVs. The government has spent US\$1 billion since 2001 towards R&D for EV cars and another \$1 billion has been invested by local governments. By the end of 2014, there were 28,000 charge points and 700 charging stations in China. The chart above shows the growth in EV sales since 2009 and the key regions driving the uptake.

Figure 3 shows the 15 highest selling EV manufacturers and their sales in the four major regions representing 96% of global electric vehicle sales, and each sold at least 2,000 electric vehicles in 2014. In particular, companies like Renault-Nissan (26% of world 2014 EV market), Mitsubishi (12%), and Tesla (10%) are especially showing market development, each with plug-in EV sales of more than 30,000 per year and launches in multiple regions. General Motors, Ford, and Toyota are next, with 6%-8% each of global electric vehicle sales, mostly from sales of plug-in hybrid electric vehicles (PHEV) in the U.S. market. After the top six, five of the next eight companies are focused almost exclusively on the Chinese market.²⁰

¹⁷ http://about.bnef.com/press-releases/electric-vehicles-to-be-35-of-global-new-car-sales-by-2040/?utm_medium=email&utm_source=nefoundation&utm_content=3+-+new+analysis+of+the+electric+vehicle+sec&utm_campaign=EC-04-03-16&source=EC-04-03-16

¹⁸ <http://www.evnorway.no/>.

¹⁹ http://www.theicct.org/sites/default/files/publications/ICCT_GlobalZEVAAlliance_201509.pdf pages 4-5

²⁰ http://www.theicct.org/sites/default/files/publications/ICCT_GlobalZEVAAlliance_201509.pdf

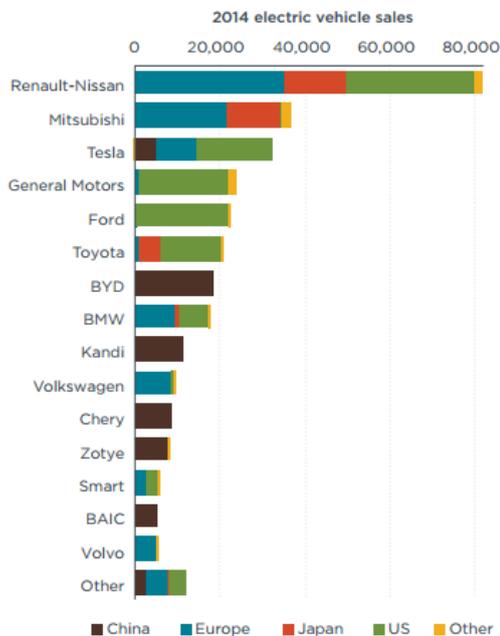


Figure 3: Top 15 selling EV manufacturers and sales

Learning lessons from overseas - harmonising plugs and billing methods

There is a lack of harmonisation of EV plugs and billing methods in Australia and these consumer related issues will need to be promptly addressed to build confidence. Currently there are several different EV plugs for different vehicle models as well as different billing methods for EV customers so that it forces companies to become members of an exclusive network rather than supporting credit card usage for charging. California enacted legislation to overcome these barriers and Australia should consider doing the same. Apparently Standards Australia is undertaking some research into this and it could be accelerated.²¹

Promoting EVs to Consumers

The evidence also shows that there is a need to build confidence and provide education for consumers to better understand how EVs work through for example increasing the availability of EV charge points at home, workplaces, and in places of high activities including shopping centres and tourist attractions as this will give confidence to consumers. Promoting the co-benefits of less particulate matter that causes respiratory and other illnesses would also help the uptake.

Recommendation 6:

A strong coordinated approach across government jurisdictions to drive an accelerated roll out of EVs including the following:

- a. Set a target that sees for example 50 per cent of all new car sales in Australia to be EVs by 2026.
- b. Set target for federal Government fleet purchase at 100% by 2026.
- c. Coordinate efforts with State Governments, Councils, and the private sector to roll out infrastructure charge points in high traffic areas that are accessible to all, such as public transport park and rides, car parks, shopping centres, playgrounds and sporting venues.
- d. Look at ways to provide low cost financial support to roll out infrastructure such as a loan pay back scheme for SMEs, extend the mandate of Clean Energy Finance Corporation and use of Green bonds.

²¹ <https://legiscan.com/CA/comments/SB454/2013>

- e. Reduce barriers to electric vehicle charges in homes, including regulating connection fees, time of day rates, and requiring landlords to provide permission to a leaser to be able to install plug-in or electric vehicle chargers (unless special situation) where the leaser must pay for it and its maintenance.
- f. Encourage acceleration of work being undertaken by Standards Australia to set standards to harmonise EVs plugs and billing methods.
- g. Build confidence in the EV market by resourcing a promotion and education campaign.

4.6. Intelligent Transport Systems (Discussion paper 5.6)

No comment

4.7. Vehicle Emission Testing (Discussion paper 5.7)

No comment