

# Australia's road to zero transport emissions

**Australia's road to a clean transport future**



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## A clear case for change

Climate change is a major force shaping our common future. Consensus among governments, businesses and individuals is growing that we need to collectively cap the average increase in global temperatures to 1.5 °C. Going beyond this threshold, scientists believe, risks irreversible environmental change. Both the Australian 'Black Summer' bushfires and the COVID-19 global pandemic in 2019–20 have generated a groundswell of support for positive action on climate change. An area in which constructive action can be taken to achieve significant environmental, economic and social benefits is to accelerate the coordinated adoption of electric vehicles (EVs) across Australia.<sup>1</sup>

Awareness of climate change has been steadily growing in recent years, peaking in response to the 2019–20 bushfires – the worst in Australian recorded history. The Black Summer bushfires directly affected 80% of Australia's population, destroyed over 13 million hectares of land and killed more than a billion animals.<sup>2</sup> Perhaps unlike other environmental events, the devastation of these bushfires was highly visible and widespread across much of our country, inflicting significant human and financial costs.

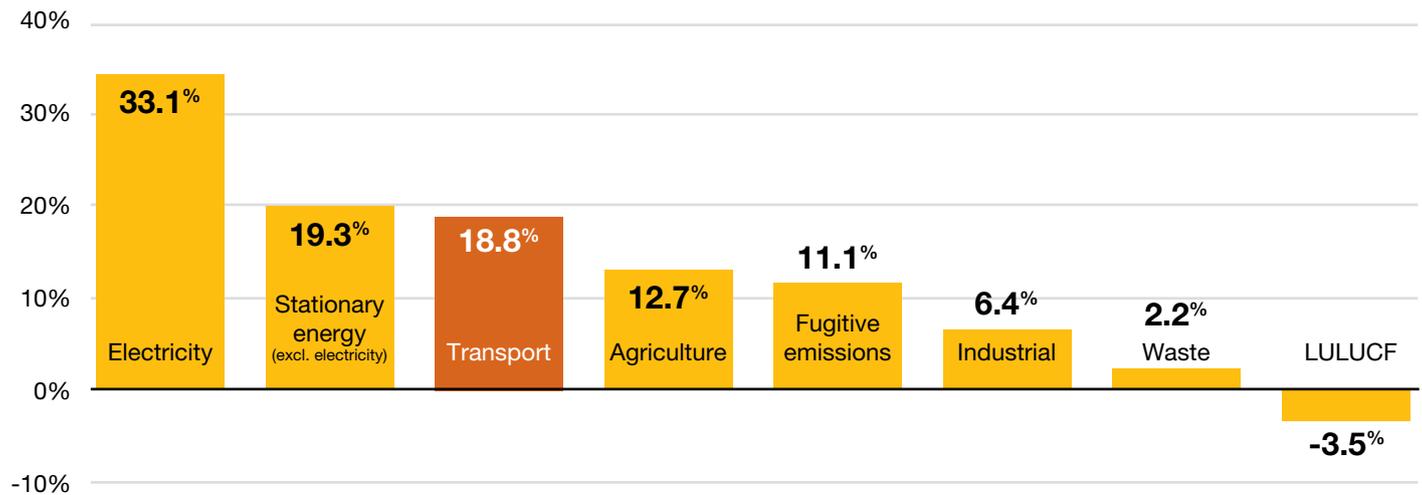
Recent polls suggest that the majority of Australians are now more concerned about climate change than ever before.<sup>3</sup> Further, the current bushfires across the Pacific in California serve to remind us that these events are only likely to increase in frequency in the near future.<sup>4</sup> Australians recognise a clear link between climate change and the bushfires and wish to see governments and businesses across all sectors take collective action to reduce Australia's absolute carbon footprint.<sup>5</sup>

However, another 2020 event to grip our nation, and indeed the world, has been the COVID-19 pandemic. As countries around the world implement restrictions on how we live, work and travel to contain the spread of COVID-19, unintended environmental benefits have ensued. Within a month of the restrictions being implemented, photographs began to emerge showing radical improvements in air quality and pollution. For the first time in 30 years, the Himalayas could be seen from north India.<sup>6</sup> The skies above Los Angeles turned blue; satellite data showed significantly lower pollution across metropolitan Brisbane and Sydney.<sup>7</sup> These observations are a stark reminder not only of the impact of our behaviours on this planet but of how mass collective action, taken today, is not too late.

## Transport is one of the largest contributors to our global environmental footprint

Being heavily reliant on fossil fuels, the transport industry is one of the biggest sources of air pollution, which can have severe impacts on the health of humans, animals and plants.<sup>8</sup> In Australia, the transport sector is our third biggest and fastest growing source of greenhouse gas (GHG) emissions.<sup>9</sup>

## Share of Australian carbon emissions by sector, for the year to March 2019



Source: Department of the Environment and Energy<sup>10</sup>  
LULUCF: Land use, land use change and forestry

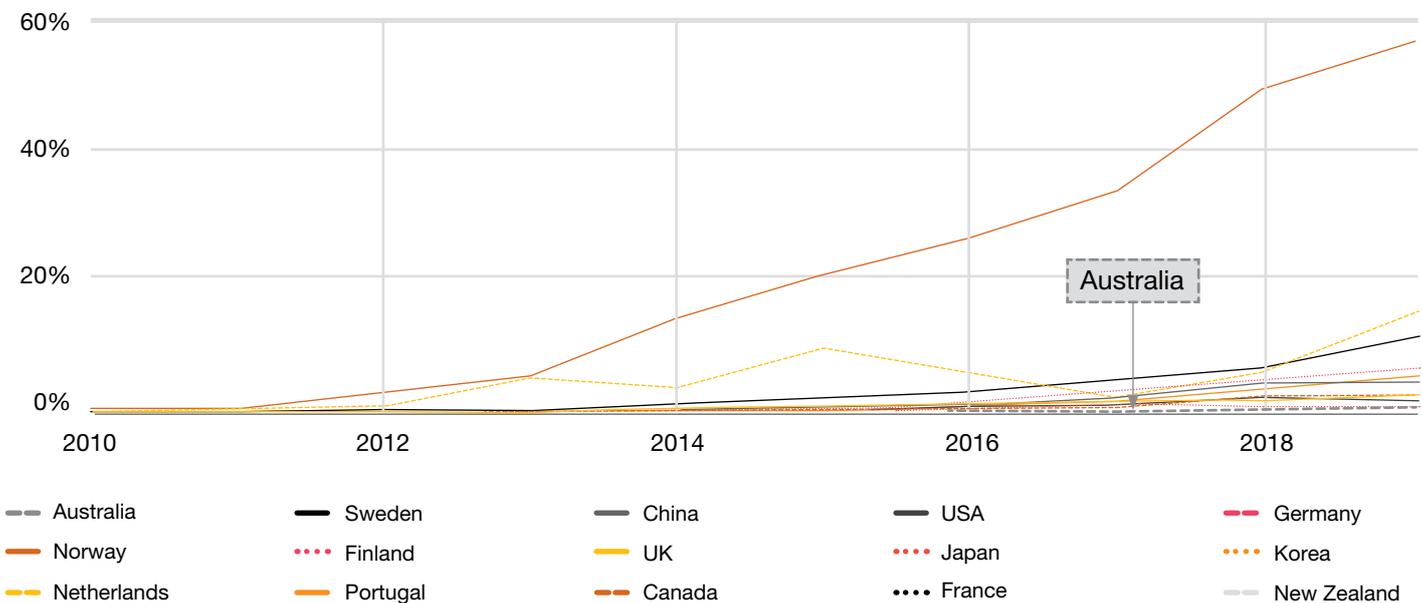
Light vehicles – the cars we drive – account for approximately half of the carbon emissions in the Australian transport sector.<sup>11</sup> Australia is ranked second last in the world for transport energy efficiency, according to a recent international study of the top 23 countries.<sup>12</sup> This performance is largely driven by our predisposition to buy carbon-intensive cars, to drive farther distances, as well as our comparatively low investment in and adoption of public transport.<sup>13</sup> As one of few developed nations without fuel efficiency or vehicle emissions

standards, Australia continues to be seen as a “dumping ground” for the heaviest polluting vehicles in the world.<sup>14</sup>

Australia is home to a growing and increasingly urban population. Large-scale investment in public transport infrastructure will be insufficient to address the crowding and congestion in our cities. A shift towards EVs is a key means to tackle continued car use and take meaningful steps towards a clean transport future.

## Australia lags behind in adoption of electric vehicles

### Electric cars market share by country, 2010–2019 (%)<sup>15</sup>



Source: International Energy Agency

EVs are cars or other vehicles that are powered by electricity. Types of EVs range from hybrids, which rely on a combination of electricity and fuel, through to all-electric (including battery and fuel cells) vehicles.

In 2018, although 2.1 million EVs were sold globally, EV sales in Australia peaked at 2,216 vehicles.<sup>16</sup>

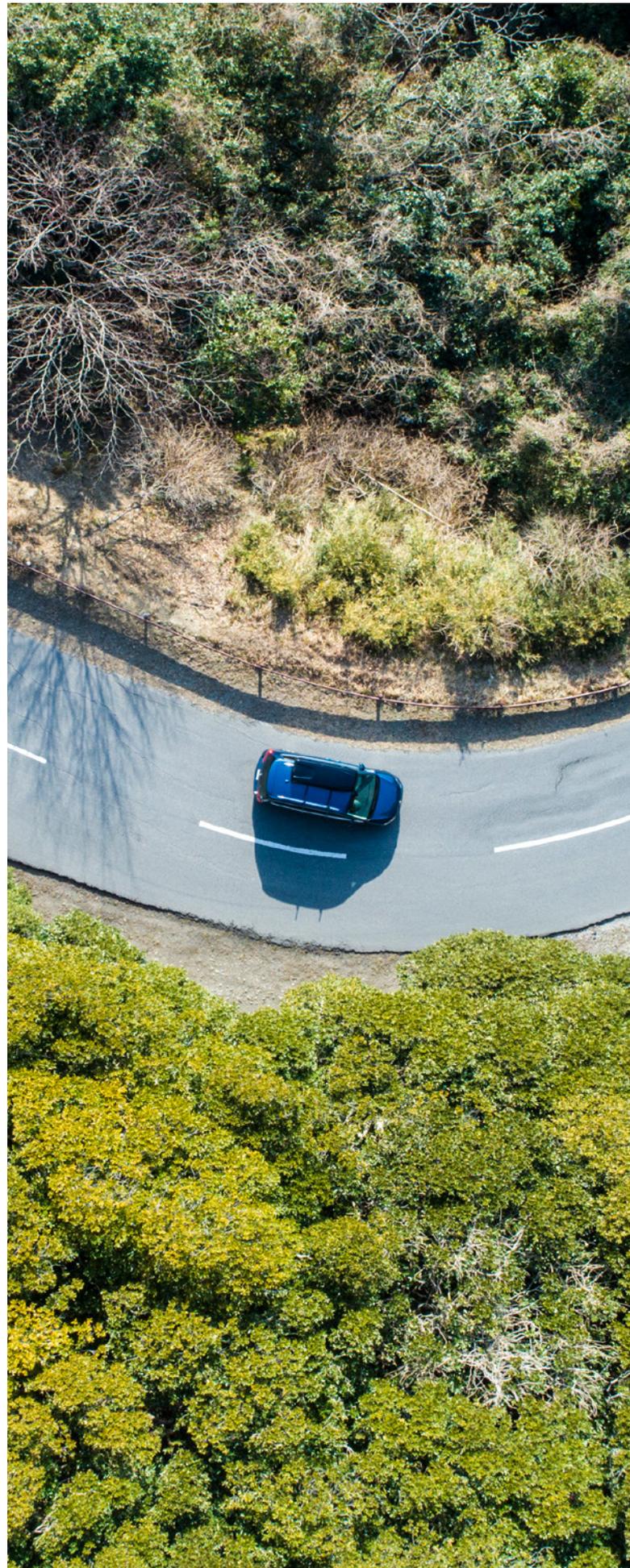
Due to a number of factors that will be explored throughout this series, EVs accounted for only 0.6% of new car sales in Australia in 2019.<sup>17</sup>

## Change is critical to achieving global goals

Australia has signed up to the United Nations Sustainable Development Goals (SDGs). The SDGs include targets for clean and efficient energy (SDG 7) and taking urgent action to tackle climate change and its impacts (SDG 13). In 2016 Australia joined 170 other countries in signing the Paris Agreement, a commitment to reduce our carbon emissions by 26–28% of our 2005 levels by 2030.

To deliver on our commitments and be seen as a global leader, we need to accelerate the pace of change.

The Black Summer bushfires and COVID-19 remind us that we each have a responsibility to make informed, environmentally conscious choices. We need collective action from governments, businesses and all Australians, to limit the environmental impact of the transport industry and realise the benefits of a transition to EVs.



# The benefits of clean transport

**Increasing our use of EVs will help us to meet our global commitments, achieve positive change and show leadership in climate action. But beyond that, there are a number of economic and social reasons why Australia should make the shift to EVs.**

## Economic growth and creation of new jobs

More EVs on the road will require more batteries to power them with. Australia is one of the leading global lithium producers and is therefore well positioned to capitalise on this market growth. The current \$165 billion global lithium value chain is conservatively forecasted to grow to \$2 trillion by 2025.<sup>18</sup> Over the next decade, increased global demand for lithium-ion batteries will create new jobs and export opportunities for Australia.<sup>19</sup> Further, more and higher value jobs can be created onshore that expand our lithium workforce beyond the areas of mining, such as in research and development, processing, manufacturing and services.

## Reduced carbon emissions

EVs produce significantly lower GHG emissions than their traditional counterparts. EVs powered from renewable sources of energy produce very low emissions (from 6 gCO<sub>2</sub>/km) compared to an average new car (184 gCO<sub>2</sub>/km).<sup>20</sup> EVs are a cleaner transport option that will enable us to significantly reduce our overall carbon footprint.

## Improved air quality and health outcomes

Cleaner cars on the road will have a remarkable impact on the quality of air we breathe. Vehicle air pollution has been estimated to be the cause of over 1,700 deaths per year in Australia.<sup>21</sup> Choosing to use EVs would significantly contribute to the avoidance of such deaths.

## Improved energy security

Energy security, the uninterrupted availability of energy sources at an affordable price, is fundamental to our way of life.<sup>22</sup> Australia currently imports approximately 90% of all liquid fuels from overseas.<sup>23</sup> Greater adoption of EVs will reduce our reliance on overseas petroleum imports, including and mitigate the risk of fluctuations in price or disruptions to supply.<sup>24</sup>

## New opportunities for automotive and manufacturing industries

Local automotive and manufacturing industries stand to gain significant competitive advantage if they adapt quickly to an emerging Australian EV market. Norway, Sweden and France are discussing bans on petrol and diesel vehicle sales to begin as early as 2030. Vehicle manufacturers are setting targets for zero-emissions vehicle models and have invested US\$300 billion in the electrification of global vehicle models.<sup>25</sup> Companies that make early moves to reposition their businesses can get ahead of the curve with regulatory changes, as well as set their sights on EV technology and innovation. There is significant scope for automotive businesses to increase their domestic market share and play a greater role in international markets through EV adoption.

## Consumer benefits

EVs are cheaper to operate than traditional vehicles. Because of lower servicing and fuel costs, EVs offer an estimated \$8,500 in savings over a vehicle's lifetime.<sup>26</sup> Combined with financial incentives from state and territory governments, these savings can offset the higher upfront cost of an EV.

In addition, EVs tend to offer better driver experience. A recent survey found that lower running costs and quieter, smoother operation were identified as key benefits of EV ownership.<sup>27</sup> Research completed in 2020 found that more than half of all Australian consumers surveyed would now consider purchasing an EV as their next car.<sup>28</sup>

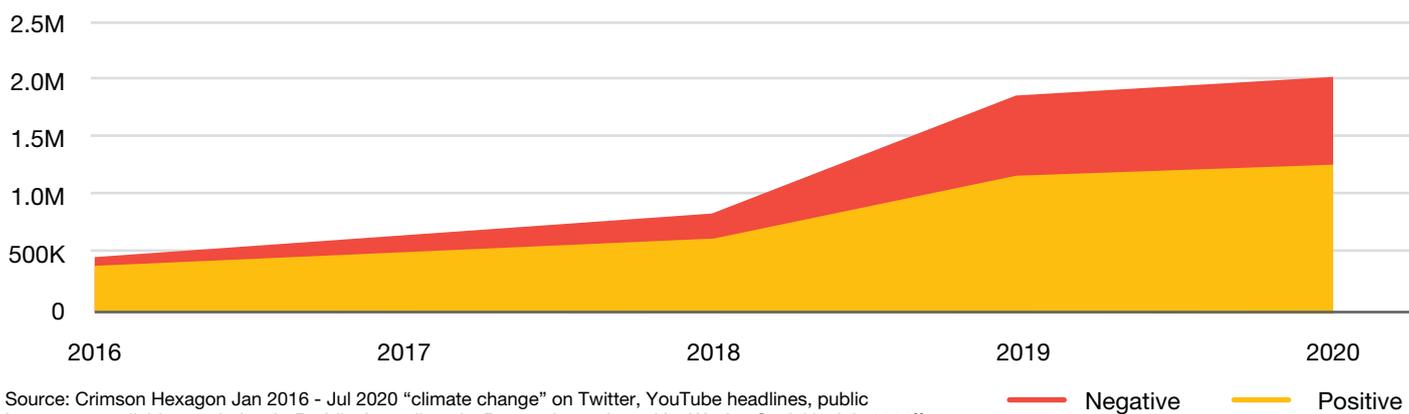
**So, what's holding Australia back from the electric vehicle phenomenon?**

# Brakes on electric vehicle adoption

**Despite the clear and compelling economic and environmental benefits to be realised, Australia's progress is stalling when it comes to transitioning to EVs. A number of factors are inhibiting our adoption of EVs and moving towards a clean transport future.**

Australians have shown increasing interest in EVs over the last five years, if upswings in online discussion of this topic is anything to go by. However, not all publicity is good publicity. While there is more talk of EVs, much of it is negative and references the lack of consistent government policy, lack of consumer incentives, prohibitive purchase costs and perceived weaknesses of EV cars relative to other cars.

## Climate change conversation volume and sentiment



Source: Crimson Hexagon Jan 2016 - Jul 2020 "climate change" on Twitter, YouTube headlines, public Instagram, available crawled web, Reddit, Australia only. Research conducted by We Are Social in July 2020<sup>29</sup>

## A lack of charging infrastructure

Investment in transport infrastructure is critical to consumer uptake. The newest ultra-fast chargers on the market can take less than 30 minutes to charge an empty EV. But most Australian EV owners using standard at-home charging stations are left waiting anywhere from 11 to 30 hours. A recent survey of consumer attitudes found that the lack of access to and perceived inconvenience of charging stations are key barriers to adoption of EVs.<sup>30</sup> These barriers highlight the need for adequate charging options at home, in public and at destinations (e.g. at hotels, shopping centres). The latest information from the Electric Vehicle Council suggests that Australia currently has 1,950 standard charging stations and approximately 550 fast-charging stations.<sup>31</sup> To alleviate the concerns of consumers and facilitate EV uptake, Australia needs significant investment in EV charging infrastructure in the coming years.

## Battery lifespan

The lithium-ion batteries that are used to power EVs are a relatively new technology, that is yet untested over an extended period. The performance of all batteries degrades over time. But we don't yet know the expected lifespan of an EV battery, or what will happen as they need to be replaced or recycled. This uncertainty is a key issue for the industry, particularly for dealers considering stocking EVs.<sup>32</sup>

## Range anxiety and consumer misinformation

'Range anxiety' is the fear that an EV will run out of power before completing a journey. Although the average range of an EV is 400 km on a single charge, almost 80% of consumers

believe it to be less or choose not to purchase an EV due to concerns the range is too low to meet their needs for weekend travel or longer distance trips.<sup>33</sup>

Many Australians are unaware of the functionality and benefits of EVs. It is critical that consumers are equipped with relevant and accurate facts to make informed purchasing decisions appropriate for their own circumstances.<sup>34</sup> As Australians rely on car dealers as key sources of consumer information, marketing support and training for car dealers is critical to public education strategy that aims to bust misconceptions about owning and using an EV.

## Upfront consumer costs

The high upfront costs of purchasing an EV in Australia is a key barrier and is predicted to remain so for at least another five to 10 years. There is a limited range of models and low diversity of price points for domestic consumers. New all-electric vehicles are priced from approximately \$47,500 – almost three times the price of the most affordable fuel-powered cars on the market.<sup>35</sup> Due to the higher initial cost, purchases of an EV often triggers the application of Australia's luxury car tax.

## Insufficient incentives

In contrast to the policy direction taken in other developed nations, the incentives to offset the initial outlay for an EV in Australia are currently limited. Indeed, some governments are considering changing the way we recover the costs of road use by transitioning away from registration and fuel-related taxes and charges to new charging systems that, instead, charge drivers for each kilometre they travel.<sup>36</sup> Notwithstanding the benefits that would arise from more directly linking cost

recovery with road use, this could further erode the incentives to take up EVs in Australia and slow early adoption, rather than accelerating it.

Countries such as Norway and New Zealand have successfully piloted and introduced rebates or tax credits on initial purchases, financial support for charging stations, discounts on parking fees, preferential parking spaces for EV drivers and access to express lanes on freeways.<sup>37</sup> Exploring positive incentives for EVs may help Australia to more quickly and fully realise the benefits of a clean transport.

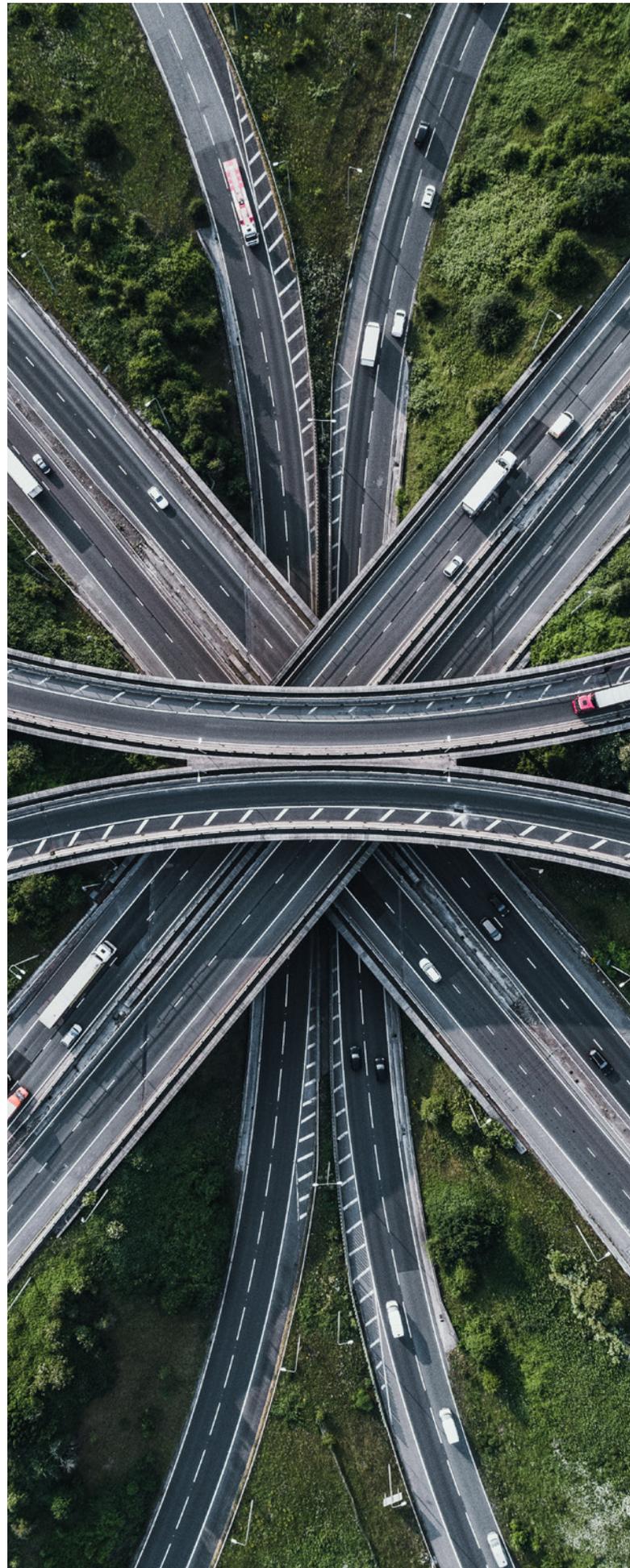
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## Moving out of the slow lane

**Notwithstanding these challenges, the case for EV adoption is incredibly persuasive. As a nation, the significant economic, social and environmental benefits to be realised makes EV adoption inevitable. So the real question is: how long will it take Australia to achieve the speed and scale of EV adoption that is required to reap the rewards?**

The coming decade will require Australia to take real and immediate action to slash our carbon emissions and play a leading role in avoiding climate change catastrophe. If nothing else, COVID-19 has shown us that rapid change is indeed possible. The switch to remote working happened almost overnight in response to widespread lockdowns, but it's a phenomenon that's almost certainly here to stay. It's a fundamental shift that shows we have a viable alternative to the traditional morning and evening commuter peak periods dominated by cars. We need coordinated and collective action from all sectors of society – government, business and the community – to accelerate the pace of change. The solution lies in a holistic approach, using a number of different levers, to solve a complex problem.

The following articles in the series will explore how and why we should work collectively, as well as outline the key elements of an effective, coordinated approach to achieve a clean transport future.



# References

1. Climate Change Authority 2014, Australia, [Light Vehicle Emissions Standards for Australia Research Report](#).
2. Climate Council, 2020, [Summer of Crisis](#); Josh Frydenberg, 2020, [Address to the National Press Club](#).
3. Australian Financial Review, 2020, [Australia's economic future is brighter without coal](#).
4. The Conversation, 2020, [California is on fire. From across the Pacific, Australians watch on and buckle up](#).
5. The Australia Institute, 2020, [Concern about climate escalates as bushfire crisis continues: Climate of the Nation polling](#).
6. SBS Hindi, 2020, [Himalayas visible for first time in 30 years as pollution levels in India drop](#).
7. Australia's Science Channel, 2020, [These 5 images show how air pollution changed over Australia's major cities before and after lockdown](#).
8. UN Environment Programme, n.d., [Transport: we promote sustainable, low-emission transport and work to reduce the sector's contribution to air pollution and climate change](#).
9. Climate Council, 2017, [Transport Emissions: Driving Down Car Pollution in Cities](#).
10. Australian Government Department of the Environment and Energy, 2019, [Quarterly update of Australia's national greenhouse gas inventory: March 2019](#).
11. Climate Council, 2017, [Transport Emissions: Driving Down Car Pollution in Cities](#).
12. Climate Council, 2017, [Transport Emissions: Driving Down Car Pollution in Cities](#).
13. Climate Council, 2017, [Transport Emissions: Driving Down Car Pollution in Cities](#).
14. ABC News, 2019, [2030: will we make it?](#); The Sydney Morning Herald, 2020, ["A global dirt magnet": Australia is losing out from fuel efficiency failures](#).
15. International Energy Agency (IEA), 2020, [Energy security: reliable, affordable access to all fuels and energy sources](#).
16. Electric Vehicle Council 2020, [State of electric vehicles 2020](#).
17. Electric Vehicle Council, 2020, [State of Electric Vehicles](#).
18. Climate Analytics, 2019, [Australia's Vehicle Fleet: dirty and falling further behind](#).
19. Climate Analytics, 2019, [Australia's Vehicle Fleet: dirty and falling further behind](#).
20. Climate Council, 2017, [Transport Emissions: Driving Down Car Pollution in Cities](#).
21. Climate Council, 2018, [Waiting for the Green Light: Transport Solutions to Climate Change](#).
22. IEA, 2020, [Energy security: reliable, affordable access to all fuels and energy sources](#).
23. NSW Government, 2019, [NSW electric and hybrid vehicle plan](#).
24. NSW Government, 2019, [NSW electric and hybrid vehicle plan](#).
25. Climateworks Australia, 2020, [Moving to Zero: Accelerating the Transition to Zero-Emissions Transport](#).
26. Climate Change Authority, 2014, [Light Vehicle Emissions Standards for Australia Research Report](#).
27. NSW Government, 2019, [NSW electric and hybrid vehicle plan](#).
28. Electric Vehicle Council, 2020, [State of Electric Vehicles](#).
29. We Are Social, 2020, PwC Climate Change Social Listening.
30. Electric Vehicle Council, 2020, [State of Electric Vehicles](#).
31. Electric Vehicle Council, 2020, [State of Electric Vehicles](#).
32. Forbes, 2019, [The Clock Is Ticking On Electric Car Batteries - And How Long They Will Last](#).
33. Electric Vehicle Council, 2020, [State of Electric Vehicles](#).
34. GoAuto News Premium, 2019, [EVs face sales barriers: study](#).
35. ClimateWorks Australia, 2016, [The path forward for electric vehicles in Australia: stakeholder recommendations](#).
36. The Sydney Morning Herald, [Road user charges for electric vehicles "on the radar" as fuel excise revenue falls](#).
37. The Australia Institute, 2019, [Driving Norse: Electric Vehicle policies in Norway](#).

# Contacts



**Kylee Anastasi**  
Partner  
PwC Australia

T +61 400 746 282  
E [kylee.anastasi@pwc.com](mailto:kylee.anastasi@pwc.com)



**Craig Fenton**  
Partner  
PwC Australia

T +61 7 3257 8851  
E [craig.fenton@pwc.com](mailto:craig.fenton@pwc.com)



**Mark Thomson**  
Partner  
PwC Australia

T +61 8 8218 7101  
E [mark.thomson@pwc.com](mailto:mark.thomson@pwc.com)



**Yann Charavel**  
Director  
PwC Australia

T +61 7 3257 5834  
E [yann.charavel@pwc.com](mailto:yann.charavel@pwc.com)



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