

Land Transport

Simply building more efficient vehicles, won't solve our transport problems, we need far less vehicles

Policy

Vehicles, roads and internal combustion engines have disastrous side effects for animals, the environment and people. The Animal Justice Party (AJP) recognises that Australia needs a national shift away from road transport and toward other more environmentally-friendly modes, including all forms of rail and mass transit, together with *walking and cycling*.¹ This shift needs to be concurrent with changes in urban and inter-city planning and development, with the wellbeing of animals and people factored into the design (see our *Human Population*² *Policy*³).

In addition to long term goals, we have an urgent need to rapidly decarbonise Australia's transport system. Powering vehicles with alternative energy sources such as hydrogen or electricity is a good start, but it is not enough to slow climate change or environmental destruction, or keep us *within climate carbon budgets*.⁴ This will require not only different vehicles but also far fewer.

Key Objectives

1. Encourage the growth of efficient, low carbon transport and steep reductions in private vehicles, particularly in urban areas.
2. Rapidly transition away from the internal combustion engine towards hydrogen, electric vehicles and other clean technology with better emissions standards (possibly including offsets) in the interim.
3. Provide financial incentives to both producer and consumer to switch to more eco-friendly land transport solutions.

¹<https://theconversation.com/cycling-is-ten-times-more-important-than-electric-cars-for-reaching-net-zero-cities-157163>

²<https://animaljusticeparty.org/policieslist/environment/human-population/>

³<https://animaljusticeparty.org/policieslist/environment/human-population/>

⁴<https://www.theguardian.com/commentisfree/2020/sep/23/electric-cars-transport-train-companies>

⁵<https://www.cityofparramatta.nsw.gov.au/environment/connected-resilient-communities/sustainable-transport/active-transport>

⁶<https://www.brisbane.qld.gov.au/clean-and-green/natural-environment-and-water/biodiversity-in-brisbane/wildlife-in-brisbane/wildlife-movement-solutions>

⁷<https://www.brisbane.qld.gov.au/clean-and-green/natural-environment-and-water/biodiversity-in-brisbane/wildlife-in-brisbane/wildlife-movement-solutions>

⁸<https://bit.ly/38f9HVT>

⁹<https://www.publish.csiro.au/WR/WR17099>

¹⁰<https://www.bbcearth.com/news/australias-road-kill-map>

¹¹<https://doi.org/10.1111/ecog.02801>

4. Ensure that public transport is affordable, reliable, accessible and safe for all people and companion animals.
5. Prioritise walkability, *active transport*⁵ and public transport in town planning while minimising travel time.
6. Support the technologies and practices that will allow for remote work where appropriate.
7. Reduce animal deaths and injuries on roads by modifying vehicles and existing roads, including *wildlife*⁶ *infrastructure*⁷.
8. Cease the expansion and widening of road networks that destroy ecosystems and encourage urban sprawl and car-dependent communities.
9. Reduce inner city traffic by reallocating road and car park space for native habitats, cyclists, pedestrians and social connectivity and connections with nature.
10. Ensure the adoption of automated, self-driving vehicles provides a net benefit for animals and nature and does not lead to heavier road use and urban sprawl.

Background

The real cost of roads

The current road transport network has negative impacts on animals and nature. Every driver in Australia is familiar with the unfortunate reality of roadkill. However, there is *no national roadkill*⁸ monitoring or information system, so information is piecemeal. A 2018 *study*⁹ estimates 4 million mammals are killed every year, leaving approximately half a million orphans. *Another study*¹⁰ estimates the annual death toll of animals to be 10 million. A *US study*¹¹ suggests tens of millions of animals were saved during COVID19 lockdowns, with fewer vehicles on the road.



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Traffic is not a natural phenomenon and some species' instinctive response to an oncoming threat (e.g., stopping, withdrawing or playing dead) can *increase*¹² the risk of harm and mortality. While the AJP advocates for increased driver education relating to injured wildlife (see our *Wildlife Protection Policy*¹³), it is clear that much wider reform is required.

New and widened roads require damaging or destroying habitat. We need to consider not only individual roads and the animals this affects, but the impact of *road networks cutting off populations*¹⁴. Entire animal populations are *put at risk*¹⁵ by roads, with genetic diversity reduced as animals cannot reach other populations, and numbers depleted as animals are struck by cars. *For example*¹⁶, koalas around Brisbane are becoming inbred. Even when there is *no* traffic or threat of collision, roads act as a *strong barrier*¹⁷ to more timid species who typically avoid the danger of open space. Building roads through habitat permanently changes the local ecosystem, with the new open space increasing predation on *animals who were previously sheltered by trees*¹⁸. *Cane toads*¹⁹, *fire ants*²⁰, and other introduced animals move rapidly along road networks, meaning human infrastructure is a key part of their growth.

Roads cause degradation of natural habitats, but the physical fragmentation is *exacerbated*²¹ by the ongoing noise caused by traffic. A 2017 study²² in south-east Queensland found that biophony (the sounds of wildlife) decreases near roads but especially with competing traffic noise. "*Acoustic masking*²³" prevents many animals from hearing one another, resulting in their reduced population around traffic noise and slicing habitat into isolated pockets. When roads go through habitat, car headlights and street lights negatively affect nocturnal species as well as animals who take behavioural cues from exposure to sunlight or moonlight,* e.g.*, *robins*²⁴ or *turtles*²⁵.

Bitumen roads are also sources of serious chemical pollution. In the US, a 2020 study *discovered*²⁶ that water run-off from roads is carrying poisonous chemicals from tyres into streams, resulting in mass fish deaths. Another study found frogs near roads suffer from *skeletal abnormalities*²⁷. With fumes, oils,

heavy metals, debris and litter all added to a potent mix, it is impossible to know the full extent of road pollution and the impact it is having on animals and the environment. Roads can be made from *recycled materials*²⁸, but this is unlikely to be of sufficient scale in the near future and should not be considered as a miracle solution.

Mitigation, automation are not complete solutions

Roads can be made to be more animal and environmentally-friendly, but is this enough? A 2018 study²⁹ in Tasmania suggests that virtual road fencing devices can reduce mortality by up to 50%, but this still means animals are dying in their millions and does not prevent roads acting as barriers or as catalysts for environmental degradation.

A range of *wildlife movement solutions*³⁰ or *fauna-sensitive road design guidelines*³¹ promise safer crossing for animals. However, their design and effectiveness is generally still poorly understood and they can have *unintended negative consequences*³² for different species when used haphazardly. *Ongoing research is required*³³ into which crossing designs work for different animals and there is no "one size fits all" solution, so their implementation is complex. Properly done, it needs a mix of overpasses, underpasses, rope/canopy bridges and all of varying sizes, materials and accompanying vegetation tailored to specific animals – far more extensive than most efforts to date and requiring serious analysis of local needs. Other considerations include the deterrent effect of traffic noise and the need for appropriate roadside barriers to prevent riskier crossing attempts. Retrofitting existing roads is much harder than designing infrastructure with animals in mind in the first place.

Traffic fatalities are *worse*³⁴ when animals are more active in their peak activity periods (e.g., *breeding, feeding, migration*³⁵), leading to calls for reduced speeds during these busy times. With hundreds of species impacted by a single road

¹²<https://mds.marshall.edu/cgi/viewcontent.cgi?article=1609&context=etd>

¹³<https://animaljusticeparty.org/policieslist/animals/wildlife-protection/>

¹⁴<https://doi.org/10.1111/ecog.02801>

¹⁵<https://doi.org/10.1016/j.biocon.2011.09.010>

¹⁶https://www.researchgate.net/publication/336047690_2018_Brisbane_City_Council_Koala_Population_Study

¹⁷<https://doi.org/10.1111/j.1523-1739.2004.00268.x>

¹⁸<https://doi.org/10.2307/1939174>

¹⁹<https://doi.org/10.1016/j.biocon.2006.05.020>

²⁰<https://doi.org/10.1023/A:1008073813734>

²¹<https://doi.org/10.1016/j.eiar.2017.05.003>

²²<https://doi.org/10.1111/aec.12555>

²³<https://doi.org/10.1007/BF02465629>

²⁴<https://doi.org/10.1093/condor/108.1.130>

²⁵<https://doi.org/10.2307/1564739>

²⁶<https://www.washington.edu/news/2020/12/03/tire-related-chemical-largely-responsible-for-adult-coho-salmon-deaths-in-urban-streams/>

²⁷<https://doi.org/10.1289/ehp.10963>

²⁸<https://www.rmit.edu.au/news/all-news/2021/feb/recycling-face-masks-into-roads-to-tackle-covid-generated-waste#:~:text=Their%20study%20shows%20that%20using,waste%20from%20going%20to%20landfill>

²⁹<https://doi.org/10.1071/AM18012>

³⁰<https://www.brisbane.qld.gov.au/clean-and-green/natural-environment-and-water/biodiversity-in-brisbane/wildlife-in-brisbane/wildlife-movement-solutions>

³¹https://www.vicroads.vic.gov.au/-/media/files/documents/planning-and-projects/environment/vicroads_n1571864_vicroads_fauna_sensitive_road_deisgn_guidelines_final.ashx?la=en&hash=C3D414518A0A02739925627880AF4E92

³²<https://doi.org/10.1111/btp.12480>

³³<https://doi.org/10.1007>

³⁴https://www.researchgate.net/profile/Brett-Degregorio/publication/260208395_Patterns_of_snake_road_mortality_on_an_isolated_Barrier_Island/links/0046353027e6c4954500000/Patterns-of-snake-road-mortality-on-an-isolated-Barrier-Island.pdf

³⁵<https://doi.org/10.1016/j.biocon.2008.10.026>

and thousands by a road network, there are many conflicting schedules. Therefore, it is *always* a risky time for someone to cross the road. Even with cars driving slower, roads are still linear barriers and extensive sources of pollution.

Automated, driverless vehicles may solve many traffic and town planning problems, especially if they are shared and not privately owned. Automated vehicles may improve efficiency and free up space otherwise used by congestion or parking, allowing for increased urban green space. On the other hand, an *analysis*³⁶ warns their greater convenience may also lure new and existing road commuters to drive *more*. The same analysis warns that urban sprawl may be worsened by people owning and using automated vehicles, as automation extends daily commuters' reach. Governments must plan ahead and implement policy for the inevitable autonomous vehicle. If the problems with roads are not addressed then the "green" benefits promised by autonomous vehicles will be limited mostly to urban centres and the environment will still suffer from road transport. At their worst, autonomous vehicles may further exacerbate environmental degradation. However the new technology does provide an opportunity to reimagine the entire transportation network – this time with animals in mind – and may be a chance to decrease the number of roads and cars.

Mass transit, whether urban or inter-city, must be designed with local conditions in mind, and must be affordable, reliable, accessible and safe for all people and companion animals. No one technology will solve all problems, but could involve buses, trams, trains, maglev and other high-speed rail plus entirely new technologies.

Greenhouse gases and traffic modes

Transport, in all its forms, is a major generator of greenhouse gases and a major contributor to the climate crisis. *Road transport*³⁷ dominates all other forms of transport (Figure 1). Surprisingly to many, the emissions per person-kilometre are similar for private cars and commercial planes; so driving from Sydney to Perth will not save much in the way of emissions compared to flying. The most effective way to reduce emissions from travel is to simply reduce travel.

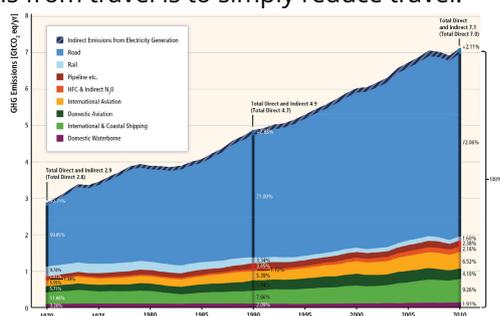


Figure 1 - Direct greenhouse gas emissions of the transport sector, shown by transport mode, rose 250% worldwide from 1970 to 2010.

Source: IPCC Assessment Report 5: (<https://www.ipcc.ch/report/ar5/>)

Buses and trains are more efficient than cars but only by a factor of about *two*³⁸ which will not achieve net-zero transport emissions. To be highly effective, changes need to be in the order of 10-fold.

A *European study*³⁹ demonstrated how difficult it will be to make the deep reductions we need. The study assessed both the manufacturing and tailpipe emissions of different kinds of electric and petrol vehicles. As shown below, the emissions from making the battery for an electric vehicle are, alone, bigger than we can afford; and this is before we add in the manufacture of the rest of the vehicle.

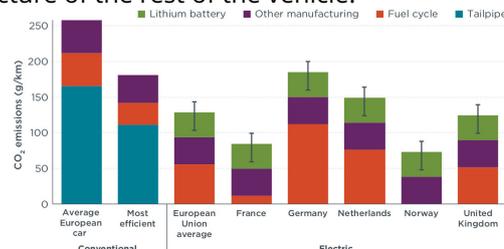


Figure 2 - Life-cycle emissions (over 150,000 km) of electric and conventional vehicles in Europe in 2015.

Source: The International Council of Clean Transportation (https://theicct.org/sites/default/files/publications/EV-life-cycle-GHG_ICCT-Briefing_09022018_vF.pdf)

Figure 2 above shows the emissions from conventional and electric vehicles in Europe. There are two things to note: 1) the enormous emissions output from lithium battery construction (green bars) and 2) the emissions from power grids fuelling electric vehicles (red bars). The fuel cycle emissions for the electric vehicles are the emissions associated with generating the electricity to charge the batteries from power stations, including coal, hydro, nuclear and others. The very low fuel cycle emissions for Norway and France are due to their decarbonised electricity generation system. The German fuel cycle emissions are considerably higher because the German renewable energy transition has been slow and Germany's electricity generation emissions are still high. The conclusion is that electric vehicles alone are not a "silver bullet" for car emissions.

Efficiency and climate consumerism

As vehicles have become more fuel efficient, they have become larger and packed with electronics and high performance motors; not just to move the vehicle, but the doors, the windows, the air conditioning and more. Electronics are deceptive. Small devices can be associated with very *high energy costs during production; not to mention ecological impacts*.⁴⁰ Electric vehicles are fuelling a *global mining boom*⁴¹ as a result; partly this is because they are chasing the high end of the market; the conspicuous climate change consumer. Since early 2021, a global supply chain blockage of computer chips

³⁶<https://doi.org/10.1016/j.tranpol.2020.05.007>

³⁷<https://www.ipcc.ch/report/ar5/wg3/transport/>

³⁸https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter8.pdf

³⁹https://theicct.org/sites/default/files/publications/EV-life-cycle-GHG_ICCT-Briefing_09022018_vF.pdf

⁴⁰<https://spectrum.ieee.org/energy/environment/your-phone-costs-energy-even-before-you-turn-it-on>

⁴¹<https://www.visualcapitalist.com/electric-vehicles-drive-up-metals-demand/>

⁴²<https://www.theguardian.com/business/2021/mar/21/global-shortage-in-computer-chips-reaches-crisis-point>

isn't just hitting phone companies *but car companies also*⁴². Larger cars packed with electronics may be irresistible to rich consumers but will put serious pressure on the other end of the supply chain: the mining and processing. Both processes have environmental and climate implications. Habitat impacts will be multiplied if renewables are used to make new fuels. But new fuels will be impossible to avoid, not because of battery capacity bottlenecks, but for other transport uses: ships, planes and trains. We will need more batteries and new fuels in addition to shrinking car usage.

Other fuels

In addition to electric vehicles, there are other technologies that produce either no tailpipe emissions or are carbon neutral (or close), such as hydrogen, ammonia, and synthetic fuels. But there are still problems with their use which need to be determined. Biofuels are *not a global option*⁴³; meaning that they are either unsustainable, not carbon neutral or cannot provide the scale of solution required.

Transport of animals on land

The vast majority of animals transported in Australia are within the animal agriculture industry. The AJP opposes animal agriculture and the associated transport of animals as commodities.

Notwithstanding AJP's long-term goals to phase out animal agriculture, in the short term, transport has dramatic impacts on animals and needs immediate reform.

For example, the relentless requirements to keep meat industry supply chains moving means that the relevant Code of Practice (CoP), the *Land Transport of Livestock*⁴⁴, is replete

with mechanisms that allow animals to be subjected to the most horrendous of conditions while protecting the owner or transporter from prosecution. CoPs contain "Standards" and "Guidelines". Standards are what *must* be done, and Guidelines are what *should* be done, so a breach of guidelines does not constitute an offence. One of the Guidelines states that animals *should* not be subjected to extreme temperatures, meaning they can be and often are. The AJP believes that the welfare of animals must take priority over meat industry profitability..

Transport of companion animals should be subject to effective legislation; via state Animal Welfare Legislation. Unfortunately, animals are still left in hot vehicles or carried without restraint. Each jurisdiction must have laws and effective enforcement to protect animals in such circumstances.

Conclusion: holistic change required

Transport is a major contributor to the climate crisis and environmental destruction, but it is pretty clear that we cannot solve the problem by simply changing the type of vehicles. Australia needs to permanently reduce harmful methods of travel, provide clean, affordable and accessible public transport options whilst building more wildlife-friendly infrastructure. Modern day Australian cities must also prioritise active transport infrastructure.

Related Policies

- Human Population and Planning
- Land Clearing
- Environment
- Climate Change
- Wildlife Protection

⁴³https://econpapers.repec.org/article/eeeenergy/v_3a73_3ay_3a2014_3ai_3ac_3ap_3a110-125.htm

⁴⁴<http://www.animalwelfarestandards.net.au/land-transport/>