caha
Climate and Health Alliance

The Fuel Efficiency Standard

Cleaner, Cheaper to Run Cars for Australia

Climate and Health Alliance Submission

May 2023

Introduction

Historically in Australia, there has been limited action to meet our international obligation to the Paris Agreement, with Nationally Determined Contributions (NDCs) falling far short of global targets. A recent paper from the Global Climate and Health Alliance, evaluating the healthiness of 58 countries NDCs, rated Australia 0 out of 18, demonstrating just how far we have to go in adopting a 'health in all policies' (HiAP) approach that recognises the benefits of action on climate and health.

In June 2022, the newly elected Albanese Government committed to reducing greenhouse gas emissions to 43 per cent below 2005 levels by 2030. This commitment represents a radical shift, and opened the opportunity for climate change considerations in the business of government that will have benefits for current and future generations. The new Government has also committed to developing a comprehensive Health and Climate Strategy, with a consultation paper expected in the very near future.

The Climate and Health Alliance (CAHA) welcomes the opportunity to contribute a submission to the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the Department) on the 'Fuel Efficiency Standard (FES): Cleaner, Cheaper to Run Cars for Australia' consultation. The approach and decisions arising from the FES consultation will significantly impact the health and wellbeing of all people living in Australia.

There is no safe level of air pollution for the environment or human health, and as such, there is a pressing need to reduce emissions. Transport-Related Air Pollution (TRAP) is significantly affecting the health of all people living in Australia. Policies must seek to decarbonise the transport sector ambitiously and rapidly with a HiAP approach that recognises the health co-benefits of decarbonisation. We stress the importance of considering health effects in making decisions about the FES and explicitly acknowledging health co-benefits as an overarching principle.

In 2021, CAHA published its 'Healthy, Regenerative and Just' Framework (the Framework). Widely supported within the health sector, the Framework includes a call for an accelerated transition away from fossil fuel based transport and the electrification of the nation's road transport fleet in order to reduce emissions and improve overall health and wellbeing. At CAHA we believe a mandatory FES is an important step towards setting Australia on a pathway to a zero emissions fleet and will help to reduce TRAP. We support the Commonwealth Government in its development and implementation of a mandatory FES.

In response to this consultation, and inline with our organisations' core business and expertise, this submission:

- Provides the Department with a high level understanding of the connection between the FES, climate change and human health;
- Provides broad recommendations for an FES that incorporates benefits for climate and health;
- Provides specific feedback on relevant general consultation questions in line with our expertise, and with guidance from technical experts; and,

- Provides specific feedback on relevant technical consultation questions in line with our expertise, and with guidance from technical experts.

CAHA wishes to thank the contributions of key experts, members (Appendix 1) and stakeholders on our response to this consultation. We have sought to reflect below consensus views within the sector, and provide guidance on how health and climate intersect with the implementation of a mandatory FES.

As highlighted in the Minister's Foreword, Australia is among the only developed nations in the world without a FES, despite clear links to disease burden and climate change. If Australia is serious about achieving net zero by 2050, and realising the benefits for climate and health, it is crucial the Commonwealth Government implement an effective and healthy FES without delay.

CAHA is pleased to contribute to the consultation on the FES, and looks forward to working with the Department and our membership on its development and future opportunities to decarbonise the transport sector.

About the Climate and Health Alliance

The Climate and Health Alliance (CAHA) is a national charity and the peak body on climate change and health in Australia. CAHA is an alliance of organisations within the health sector working together to raise awareness about the health risks of climate change and the health benefits of emissions reductions. The membership of CAHA includes a broad cross-section of health sector stakeholders with over 100 member organisations (Appendix 1), representing healthcare professionals from a range of disciplines, as well as healthcare service providers, institutions, academics, researchers, and consumers.

Acknowledgement

The Climate and Health Alliance recognises Aboriginal and Torres Strait Islander People as the traditional custodians of the land on which we live and work, and acknowledge that sovereignty of the land we call Australia has never been ceded. We commit to listening to and learning from Aboriginal and Torres Strait Islander people about how we can better reflect Indigenous ways of being and knowing in our work.

Recommendations

1. **Implement an ambitious FES:** We recognise that FES apply only to new vehicles. However over time they will have a significant impact on both CO2 emissions and transport-related air pollution. The approach and decisions arising from the FES consultation will significantly impact the health and wellbeing of all people living in Australia. **CAHA recommends the Commonwealth Government implement an FES that will get to zero emissions as quickly as possible, and no later than 2035.**

2. **Adopt sector-wide emissions reduction policies:** In addition to the FES, **CAHA recommends the Commonwealth Government embrace a broader set of policy measures that will ensure the rapid decarbonisation of the transport system in order to achieve net zero.** In the 'Healthy, Regenerative and Just' Framework, CAHA has called for:
    - Strengthening national emissions standards for all motor vehicles
    - Improving national fuel quality standards
    - Expanding and electrifying public transport infrastructure and incentivising utilisation
    - Developing infrastructure, programs and incentives to reduce car dependency
    - Developing incentives to accelerate uptake of low or zero emissions vehicles

3. **Embrace a 'health in all policies' approach:** The introduction of a fuel efficiency standard in Australia represents a significant opportunity to reduce emissions and improve human health outcomes. **CAHA recommends the FES embrace a 'health in all policies' approach**, whereby it "..integrates and articulates health considerations into policymaking across sectors to improve the health of all communities and people". Maximising health co-benefits should be an explicit guiding principle for this work.

Why we need Fuel Efficiency Standards

The approach and decisions arising from the Fuel Efficiency Standards (FES) consultation will significantly impact the wellbeing of all people living in Australia, including current and future generations.

There is clear scientific evidence showing there is a connection between climate change, health outcomes and what comes out of the tailpipe. As such, it is crucial that the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the Department) develop a FES that reduces emissions as rapidly and ambitiously as possible through the adoption of a HiAP approach.

This section of the CAHA submission provides the Department with a high level understanding of the connection between the FES, climate change and human health. We welcome the opportunity to provide further information.

Impact of transport emissions on climate and health

Transport emissions account for 18 per cent of overall emissions. Road transport emissions have grown more than any other sector in Australia, increasing nearly 60 per cent since 1990 with Australia's per capita road transport emissions 45 per cent higher than the OECD average(1) . A significant portion of these emissions come from individual car ownership and overdependence on inefficient transport systems(1). These emissions have serious implications for both climate change and human health, leading to significant economic burden.

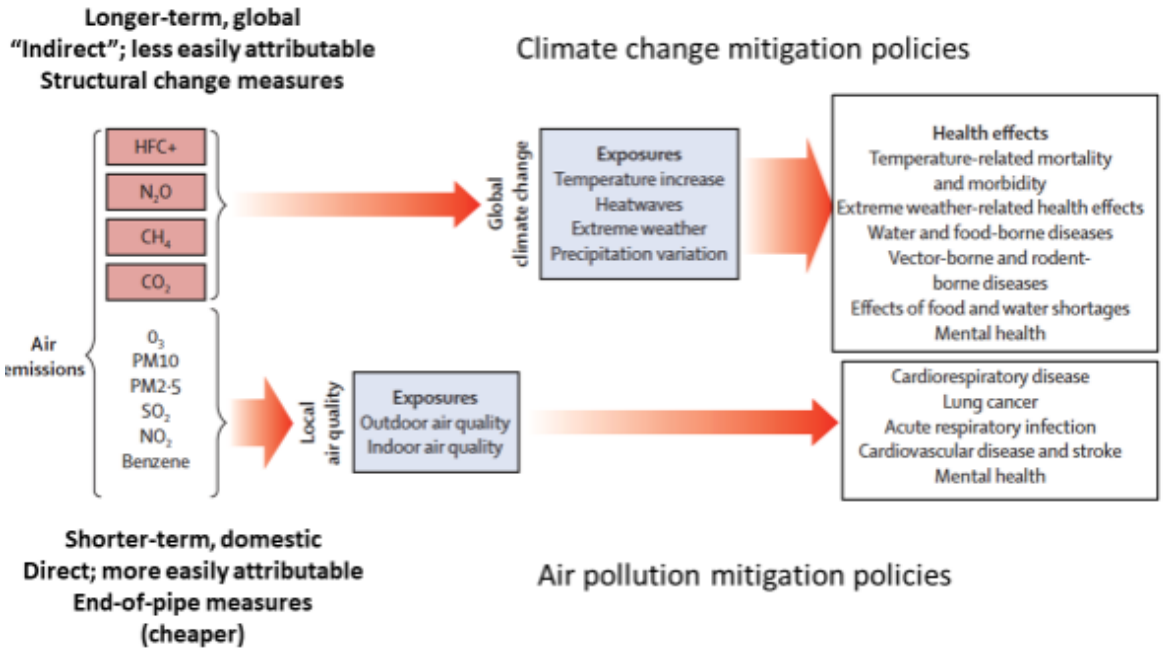


Figure 1: Air emissions-related health impacts, stratified by GHG emissions (in red) and air pollutants (in white)(2)

Tailpipe emissions comprise a range of harmful gases, including nitrogen dioxide (NO2), sulphur dioxide (SO2), volatile organic compounds (VOCs), and fine particulate matter (PM2.5)(3). The particulate matter is composed of tiny particles of combusted carbon that, when inhaled, are small enough to reach the bloodstream, resulting in systemic inflammation and potentially affecting every organ(4).

In addition to the broad array of health impacts contingent on global carbon trajectories there are substantial local impacts arising from population exposure to vehicle exhaust (Figure 1). There is no safe level of air pollution, and this should be at the forefront of policy decisions that impact population exposure to air pollution(5). How air pollution health impacts are quantified holds implications for the health and economic wellbeing of all people living in Australia. Conversely, reductions in exposure will have a range of social, environmental, financial and health benefits for all people in Australia.

Premature mortality is the most common metric to assess these impacts and inform policy decisions. Impacts stretch well beyond this to include adverse birth outcomes, and a wide range of respiratory and cardio-metabolic impacts including asthma, acute lower respiratory infections in children, ischaemic heart disease, diabetes, and lung cancer (HEI)(6). Personal and societal costs related to hospitalisations, primary healthcare burden and lost productivity are yet to be accurately quantified.

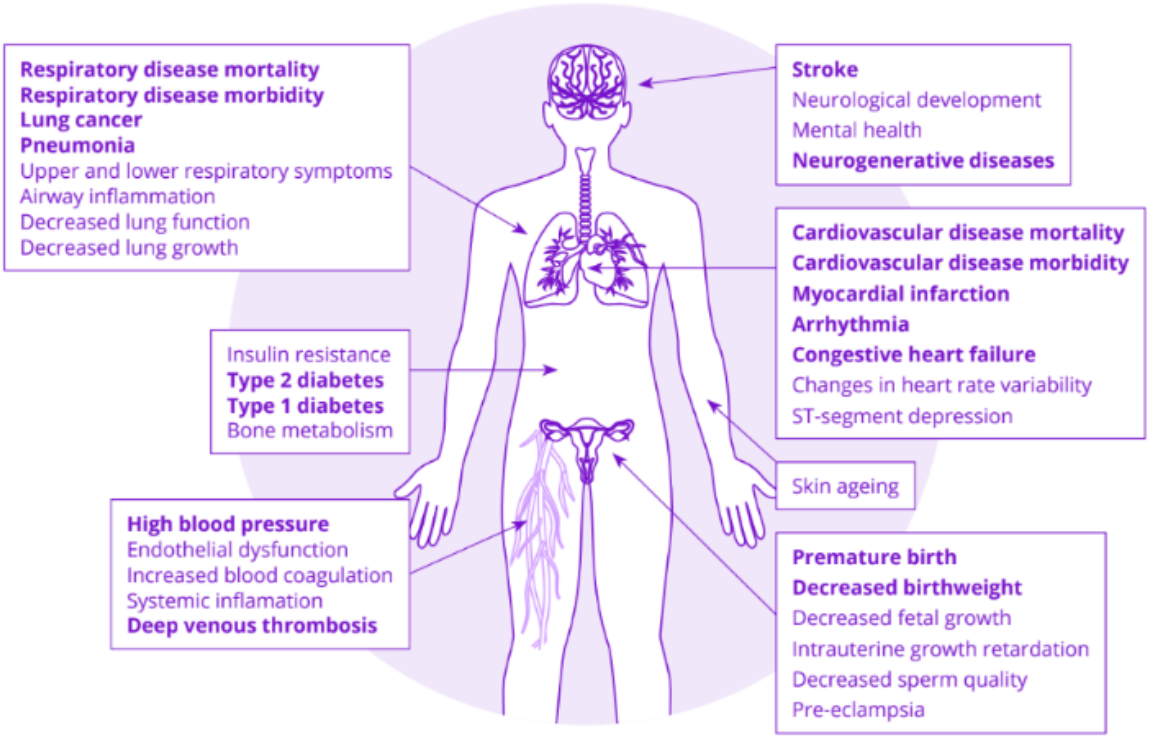


Figure 2: Overview of diseases, conditions and biomarkers affected by outdoor air pollution. Bold type indicates conditions current included in the Global Burden of Disease categories (4)

Understanding the data

It is crucial that the FES is developed using the most up to date and accurate scientific evidence on how emissions are impacting climate change and human health. The following contains an excerpt from a report published by the University of Melbourne, providing evidence on how health is factored into the FES.

"How is health factored into the fuel efficiency standards?"

While the FES consultation paper makes little reference to health co-benefits, it does include two figures related to premature mortality: 1,715 annual premature deaths and 11,105 annual premature deaths. **We would like to highlight that the most robust figure is 11,105 premature deaths.**

In 2017 the lower figure (1,715) was produced by using the International Health Metric Evaluation (IHME) estimate for premature mortality attributed to PM2.5 and ground level ozone (O3) in Australia and a 2014 OECD report on the cost of air pollution health impacts related to transport(2-3). **It was highlighted in the document this figure did not include NO2 and was therefore an underestimation**. The relevant population exposure data was not available in 2017, and there were no robust dose-response functions that could be applied to the Australian context.

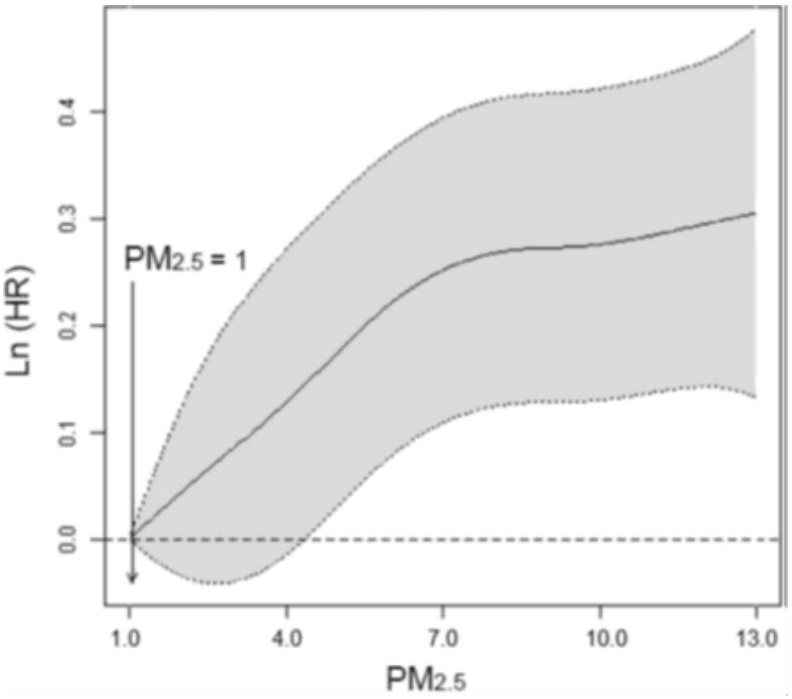
Vehicle exhaust contains a mixture of many pollutants and air toxics. Disentangling individual impacts is difficult and may result in 'double counting'. Historically, $PM_{2.5}$ has been used as there was more available evidence and data related to population exposure, however it is less specific to vehicle exhaust compared with NO_2(4). Nitrogen dioxide (NO_2) is considered the most appropriate criteria pollutant to be used as a surrogate for traffic exhaust exposure(1). Multi-pollutant models demonstrate while there is significant overlap between most criteria pollutants, fine particulate matter ($PM_{2.5}$) AND nitrogen dioxide (NO_2) exert independent effects, therefore BOTH should be used to assess pollution impacts with dose-response functions that are adjusted for the proportion of overlap.

Since 2017 the body of evidence related to NO_2 and health has grown considerably. Other countries have responded to this evidence, updating their methods of assessment to include both pollutants. In the UK the respective individual impacts of $PM_{2.5}$ and NO_2 were estimated as 29,000 and 23,500 annual premature deaths(5-6); combined and accounting for the degree of overlap, the premature mortality rate attributed to anthropogenic outdoor pollution became an estimated annual 40,000 premature deaths(7). New Zealand released a third iteration of air pollution health estimates in 2022 (HAPINZ 3.0), which updated exposure estimates to include both PM2.5 and NO2 developed over three years of applying pollutant exposure at the census area unit level and then matching to population and health data. HAPINZ 3.0 was informed by an extensive air quality monitoring network that included source apportionment and accounted for a range of potential confounding factors. The research was peer-reviewed by leading international experts and has been widely published in a range of peer reviewed publications(8).

In the absence of dose-response functions for the Australian population, the New Zealand dose-response functions provide the most robust option for the Australian context.

It is important to note, the figure 11,105 pertains only to vehicle emissions. In New Zealand, a country of 5 million, an annual 3,300 premature deaths are attributed to outdoor air pollution, of these deaths a total of 2,220 are ascribed to vehicle emissions (2,000 from NO_2 and 221 from $PM_{2.5}$). Other significant pollution sources from industrial activities, power generation and wood heaters were not included in this analysis. The 11,105 premature Australian deaths were derived by scaling up the figure that was solely attributable to vehicle emissions. This figure is likely to be conservative, as variances in underlying factors such as fleet composition, vehicle emission factors, urbanisation and driving patterns all point to a higher per capita vehicle exhaust population exposure in Australia.

Variances in underlying population health have not been accounted for, however nor do any of the previous estimates used to inform Australian policy decisions. It is likely the population health status in New Zealand is more closely matched to Australia than the US, where mortality dose-response functions for $PM_{2.5}$ were previously adopted from. Recent evidence highlights a non-linear dose-response function with a steeper curve at lower pollution concentrations(9-10) further supporting the applicability of New Zealand estimates in the Australian context.



A tenfold difference in deaths makes a substantial difference to public health, and to the cost benefit analyses that drive policy decisions.

The full material for the New Zealand study HAPINZ 3.0, the previous submission to the 2017 federal discussion on fuel quality which contained the previous estimate of 1,715 premature deaths, and the current expert position paper which provides the updated estimate of 11,105 premature deaths are provided in the links below.

1. HEI Panel on the Health Effects of Long-Term Exposure to Traffic-Related Air Pollution. (2022). Systematic Review and Meta-analysis of Selected Health Effects of Long-Term Exposure to Traffic-Related Air Pollution. Special Report 23. Boston, MA:Health Effects Institute.
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3. OECD 2014. The Cost of Air Pollution: Health Impacts of Road Transport, Brussels, 21 May 2014. http://www.oecd.org/env/the-cost-of-air-pollution-9789264210448-en.htm PM+ Ozone mortality: Australia - 1483 deaths
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Emissions impacts on children and young people

Australian research has consistently demonstrated children 0 – 4 years are the most vulnerable to respiratory impacts of traffic pollution, with Australian risk estimates higher than international comparison(7). The Australian Children's Health and Air Pollution Study

(ACHAPs) revealed a relatively small increase in nitrogen dioxide (4.0ppb) was significantly associated with a 54 per cent (95 per cent CI: 1.26, 1.87) increase in the odds ratio for asthma(8). Exposure to traffic emissions prior to 15 years of age can also permanently stunt lung growth, leading to a host of other cardio-respiratory impacts throughout the course of life(9).

Figure 3: Vulnerable groups to impacts of air pollution(10)

Diesel and lung cancer

After thirty years of epidemiological research investigating the link between diesel emissions and lung cancer, diesel was categorised as a Group 1 human carcinogen in 2012(11). Cancer accounts for 34 per cent of the fatal burden of disease in Australia(12), and lung cancer is responsible for more deaths than any other cancer(13). Overall lung cancer incidence rates have stabilised during the past few decades, but major shifts have been recorded in the frequencies of different histological types of lung cancer, with substantial increases in adenocarcinomas and decreases in squamous-cell carcinomas(14). Adenocarcinoma is the only subtype of lung cancer that affects a significant (and increasing) non-smoking population(15). It is considered likely vehicle pollution has contributed to these shifts(16). A meta-analysis of twenty studies examining the association between nitrogen dioxide exposure and lung cancer found a 5.3 ppb increase in NO2 was significantly associated with a 4 per cent (95 per cent CI: 1 per cent, 8 per cent) increase in lung cancer. The findings were further supported by finding positive associations between lung cancer and distance to roadways and traffic volume(17).

Evidence trends and the 'precautionary principle'

Over the past few decades the scientific evidence related to the health impacts of air pollution has been consistently mounting with associations strengthening and the range of impacts widening with each year(18). The direction of this body of evidence has been steadily going in one direction only; highlighting impacts are progressively worse as our knowledge base increases.

Diabetes and adverse birth outcomes are now causal associations(19), yet there has been no formal accounting of the impact vehicle emissions have on these outcomes in the Australian population. Emerging evidence suggests likely associations between cognitive impairment in the elderly and children(20), behavioural impacts in children and neurodegenerative diseases including Alzheimer's disease(21) and Parkinson's disease(22).

Scientific evidence regarding these impacts is not yet casual, but previous trends should give policymakers reason for pause. The human health stakes are high, supporting adoption of the precautionary principle.

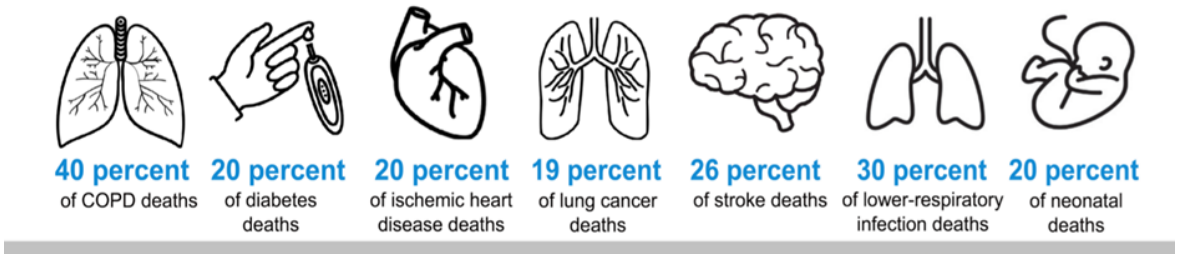

Figure 4: Percentage of Global Deaths (by Cause) attributed to air pollution(19).

General Questions

In line with our expertise, the Climate and Health Alliance (CAHA) has sought to provide guidance and feedback to the Department on how aspects of the consultation paper will impact climate change and human health. As such, we have focused on questions where CAHA can provide expert input. Where we do not have internal expertise, we have consulted and collaborated with our membership and external experts to develop advice and policy positions.

Are these the right guiding principles? Are there other principles that you think we should keep in mind?

CAHA broadly supports the guiding principles set out in the FES consultation paper. Principles such as 'effective' and 'equitable' and their associated definitions reflect our position that decarbonisation must include a just transition that supports better health outcomes. Below are recommendations for some changes to guiding principles, and recommended wording for an additional climate and health principle to support the ambition and needs of the FES.

- **Effective:** The FES must be considered within the context of national international commitments and obligations to decarbonise to improve health outcomes. As such, 'effective' should:
    - Include Australia's commitment to net zero by 2050 and obligations under the Paris Agreement
    - Include broader commitment to decarbonisation of the domestic transport system, including strengthening national emissions standards for motor vehicles; improving national fuel quality standards; expanding and electrifying public transport infrastructure and incentivising utilisation; developing infrastructure, programs and incentives to reduce car dependency; and, developing incentives to accelerate uptake of low or zero emissions vehicles.

- **Equitable:** This guiding principle should include maximising the availability of low emissions transport for people already facing significant inequities, and rapidly reducing the exposure of these groups to Transport Related Air Pollution (TRAP).

- **Credible and robust:** This guiding principle should include a commitment to phasing out fossil fuels completely within a time period consistent with climate science and Australia's national commitments.

- **Maximise health co-benefits:** In addition to improvements to the guiding principles outlined above, CAHA also recommends that an additional principle be included to reflect the climate and health benefits of a comprehensive, mandatory FES that considers preventive health. We propose: "Maximise health co-benefits to decarbonisation of the transport sector through a 'Health in All Policies' (HiAP) approach to fuel efficiency standards. This includes the integration of health considerations into policymaking that will improve the wellbeing of all communities and people living in Australia".

Are there any design assumptions that you think will put at risk the implementation of a good FES for Australia?

CAHA broadly supports the design assumptions set out in the FES, with some additional recommendations for consideration:

- CAHA joinS the Centre for Safe Air in their recommendation that the effectiveness of the FES should be measured by CO_2 and NOx, PAHS and other noxious emissions detrimental to health.

- CAHA believes a comprehensive approach to the FES will be the most effective in addressing climate and health.

- We note that the statement "Australians love utes and 4-wheel drives" does not acknowledge that the status quo has led to the climate crisis and increases in car size are a result of policy, as well as preference. CAHA recommends the FES should consider that there are also society wide calls for decarbonisation in the face of catastrophic climate change, and significant concerns about TRAP. CAHA urges the FES discussion paper focus on evidence related to wellbeing, rather than reiterating the position and marketing language of the car manufacturing industry.

- CAHA recommends further consideration of the approach by which the FES only applies to light vehicles. This should include analysis showing how this, or alternative, approaches will support climate and health outcomes.

- Design on the FES will consider vehicle affordability, lifetime cost and model availability. The prime objective of the FES is to reduce emissions associated with Australia's vehicle fleet. This is inline with all other major developed nations in the world. Australia is not a special case in the global landscape, and therefore the FES should embrace ambitious climate and health outcomes.

Are the exclusions for military, law enforcement, emergency services, agricultural equipment and motorcycles the right ones?

These exemptions need to be clearly justified and the climate and health impacts made explicit. There are some common sense reasons for why certain military and law enforcement vehicles (such as jet or marine engines) may be exempt. However in many instances vehicles are purchased from the same stock as consumer stock. The case for exemptions needs to be made based on evidence, rather than be a starting point. We suggest that rather than a blanket exemption a facility for exemptions is provided where evidence suggests this is warranted.

How many years ahead should the Government set emissions targets, and with what review mechanism to set limits for the following period?

CAHA joins other transport advocates in recommending a starting FES limit of 95 grams of CO_2 per kilometre – competitive with the European Union – by mid-2024. They recommend

the FES tightens over time and reaches zero grams of CO_2 per kilometre (meaning 100 per cent of new car sales are zero emissions) by no later than 2035. This will support Australia's international commitments under the Paris Agreement.

How should the Government address the risks of the standard being found to be too weak or too strong while it is operating?

CAHA supports ambitious policies that will achieve the rapid decarbonisation of the transport sector, including the implementation of a mandatory FES. The introduction of an FES in Australia represents an opportunity to reduce emissions and improve human health outcomes. CAHA recommends the FES embrace a 'health in all policies' approach, and are set to rapidly reduce CO2 emissions and pollution-related health impacts. CAHA recommends that reviews of the FES should be conducted regularly, and ratcheted up over time.

Technical Questions

In line with our expertise, the Climate and Health Alliance (CAHA) has sought to provide guidance and feedback to the Department on how aspects of the consultation paper will impact the links between climate change and human health. Where we do not have internal expertise, we have consulted and collaborated with our membership and external experts to develop advice and policy positions, which are referenced below.

What should Australia's CO2 FES targets be?

CAHA joins our public health and transport sector colleagues in recommending that the CO2 FES targets must put Australia on a path to net zero by 2050 as quickly and ambitiously as possible. The FES will have important impacts on the health and wellbeing of all people living in Australia and as such should seek to reduce health impacts associated with emissions. This requires 0g for all new sales no later than 2035 and the regular review of targets. Ultimately all vehicles, including both light and heavy, will need to reach zero emissions in order to achieve transport decarbonisation.

Should the Australian FES start slow with a strong finish, start strong, or be a straight line or take a different approach?

CAHA joins our public health and transport sector colleagues in calling for an evidence-based approach to determine the most effective emissions limit level and strategy. This must include the consideration of health impacts of slow start, strong start or straight line. Proposed options should be modelled for their effectiveness in reducing CO2 emissions and reducing TRAP, as well as any consideration of practical and political feasibility.

When do you think a FES should start?

CAHA joins our public health and transport sector colleagues in recommending the FES legislation to come into effect 1 July, 2024.

For more information, please contact:

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Appendix 1: Climate and Health Alliance Members

CAHA membership as of May 2023.