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# Submission to the Transport and Infrastructure Net Zero Roadmap Consultation

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## INTRODUCTION

For the safety of all Australians, the Transport and Infrastructure Net Zero Roadmap must be redrawn. As it stands the Roadmap will take Australia to a very dangerous place. Net zero 2050 is an unsafe destination.

The purpose of the Roadmap to net zero emissions in 2050 is to help prevent warming reaching 2C. Yet getting there comes with a greater than one in three probability of failing to prevent +2C of warming (IPCC) and the civilisation-devastating consequences of the multiple tipping points thereby triggered. We wouldn't choose to get on a plane or cross a bridge with such odds of collapse.

As such, consulting the public and industry in a discussion of how to get to a dangerous destination, is a dangerous distraction. It's a bit like we're in a car speeding toward a precipice and you're asking for us to comment on all the different ways the car could be slowed, while ignoring the visceral physical reality that, even if we manage to slow to 5km/hr, we'll still go over the edge.

An honest, evidence-based and risk-averse assessment of the planet's past, current and future climate, reveals the necessity to cut emissions at emergency speed, and to draw down atmospheric CO2 from 420ppm to below 350ppm, for an acceptable probability of avoiding 2°C.

**In general, we feel the Roadmap process has gone wrong in the following ways:**

### **Reliance upon application of speculative technologies**

Mention of hydrogen fuelled flight and carbon capture and storage are the most egregiously unscalable ones, however deployment of 100% biofuels and e-fuels imagines massive changes to the aviation fleet. And in the case of hydrogen the whole fleet must be replaced. It is a huge leap of faith that this can happen given the basic physics problems of hydrogen air travel, and it does not belong in a government document.

### **Silo approach**

It is clear to us that each measure has been considered in isolation without noting false equivalence of their effectiveness or the cannibalisation of other parts of our climate transition by the approaches suggested. A key example is e-fuels. This policy preferences business as usual for high polluters over achievement of necessary climate action. An aviation emissions policy based on deploying speculative technology - that IPCC authors say could undermine global climate efforts due to its inefficient use of land and renewable energy - is absurd.

### **No attention to feasibility in terms of cost**

The approach of treating each method brought forward as equal, and then apportioning a cost weighting at a later stage, is flawed. Some methods are completely unworkable purely because of their vast diversion of finance. Aviation growth as normal through alternative fuelling arrangements is as much of a fantasy as a nuclear-powered Australia, because the cost of neither will be accepted by their customers.



## **Blurring of importance with multiple criteria**

It is good that the government thinks about incorporating the wishes of all Australians to travel, however this report should fundamentally be about a safe transition away from an existential threat to humanity. With multiple criteria for success it has clearly failed. A good example is the failure to consider easy to avoid and shift journeys from aviation to other forms, or to prioritise supporting local travel over long distance travel. Another is the prioritising of jobs in agricultural production over biodiversity or nature based climate solutions, a repeat of the failure of aviation offsets policies.

## **Industry and foreign views given preference**

A consultation process that prioritises industry's speculative blueprints (and failing foreign roadmaps that have little credibility even within their own industries) over the views of climate scientists, has gone badly wrong. It is clear, from multiple studies, that climate scientists have little faith in aviation successfully transitioning, yet the government appears to be grasping at lifelines imagined for it by the industry rather than acting as a fair umpire as to what is and is not a sound way forward, de-emphasising climate incomes. This appears to be why no actual measurable benefit to the climate is attached to the measures put forward. We have been able to get no answer as to what tangible outcome Australians can expect for the environment from the over a billion dollars of subsidies to alternative fuel industries in the recent budget.

## **Side effects of inappropriate policy direction**

'Low ambition' policies provide cover for the growth of aviation emissions as industry focuses on the margins of its emissions problem, rather than the bulk. This has dangerous side effects distracting the public from addressing behaviour change, as they see a mirage of activity suggesting the issue is being "taken care of". This takes limited resources of finances, time and labour from effective climate action.

## **GOVERNMENT QUESTIONS TO SUBMITTERS**

We aim to answer your questions on aviation only, questions 1, 19 and 20.1. Please note, in general, all our remarks will refer to examples of aviation related policy.

### ***QUESTION 1: DO YOU SUPPORT THE PROPOSED GUIDING PRINCIPLES?***

We discuss three of the criteria you put forward, briefly.

#### **> Maximise emissions reduction: Yes.**

But maximise relative to what? This principle only has meaning when "maximising" is measurable against stated performance criteria. Without actual targets (whether percentage reductions or absolute tonnes reductions) or deadlines, even a paltry reduction could be claimed as the maximum possible.

To meet a "Net zero 2050" target the tonnage of CO<sub>2</sub> removed from the atmosphere must equal the tonnage added to the atmosphere. But the Roadmap presents no modelling of Australia's total emissions in 2050. So the tonnage to be removed, to reach net zero, is unknown.

Maximising emissions reduction has no meaning if the tonnage to be added to and removed from the atmosphere in equal measure, to reach net zero, is unknown. Indeed, how can we know if net zero will be achieved?

For aviation to maximise its contribution to net zero, we would first need to know how much CO<sub>2</sub> would need to be removed from the atmosphere for



Australian aviation emissions to be net zero in 2050. So we could set an upper limit, a maximum. Which we could then use to give us a relative measure of any actual reduction maximising done in the manufacture and deployment of LCLF (whether in the form of biomass or via direct air capture). But the Roadmap doesn't require this essential calculation.

Removing CO<sub>2</sub> from the atmosphere, while essential to net zero, has another purpose. One that's critical to preventing dangerous climate change: that is, to reduce the absolute level of atmospheric CO<sub>2</sub> to a safe level.

Climate impacts around the world right now, with warming nudging 1.5°C, are evidence that the current level of atmospheric CO<sub>2</sub> – 420 ppm – is unsafe. The fact that warming hit 3°C and sea levels rose 10 metres the last time it was this high is additional evidence that, for safety sake, it needs to be lowered (A). We need to draw down existing emissions to cool the planet, as well as stopping new emissions heating the planet.

Therefore, how much CO<sub>2</sub> needs to be drawn down to both get to net zero in 2050 *and* cut Australia's share of the 420 ppm to under 350 ppm? Without this number assessing the maximising of reductions is not possible.

Like the emperor having no clothes, the net zero roadmap has no numbers or costs.

Peter Drucker's statement "You can't manage what you can't measure" reminds us that, for strategies and actions to be evaluated effectively, measuring outcomes is key.

#### **> Value for money: No.**

This principle is arguably irrelevant. When a Net Zero 2050 pathway comes with an unacceptably high risk of pushing warming beyond 2°C – with globally acknowledged organised-society-ending costs to the community – how can any emissions reduction actions that effectively prevent 2°C - and the flood, fire emergencies, loss of productivity, life and livelihoods associated be said to be too expensive. We know the massive cost of ongoing warming. Has this been considered as the benchmark? In addition, the suggestion that this is being considered must be brought into question as seed funding for alternative aviation fuels (which has already been provided) is appalling value for money as a climate action. It does not take into account the massive cost and side effects of fully replacing aviation fuel: this policy merely begins this process and its rollout is entirely uncoded.

#### **> Evidence-based: Yes.**

But by proposing a Net Zero destination in the first place the extensive evidence of the existential danger of heading in that direction has been ignored. By relying on foreign and industry led proposals by engineering teams - even the CSIRO roadmap must be read as a joint effort with Boeing who are a hugely interested stakeholder - rather than climate scientists, the proposals put forward do not appear to be evidence-based. The advice taken appears to have been too narrowly focused with little consideration given to the socio-economic impacts. We did not see evidence that the Royal Society report on Net Zero Aviation Policy has been examined or heeded. The creation of independent research drawing in expertise from science, economics and society would help rectify that,



QUESTION 19.  
DO YOU AGREE WITH THE PROPOSED NET ZERO PATHWAY FOR AVIATION?

**No.**

The proposed net zero pathway for aviation is not a pathway that will get aviation emissions to net zero.

We do not agree with the method or intent of the proposed pathway for aviation, and believe it is a dangerous distraction that can do genuine harm both through biodiversity loss and opportunity loss by deprioritising other, better forms of climate action and by using renewable power in ineffective ways.

We quote IPCC climate scientist from Griffith University, Queensland, Brendan Mackey in the report “Implications of preferential access to land and clean energy for Sustainable Aviation Fuels” who says “Large-scale SAF deployment could undermine global climate efforts.”

We have included more detail in our response to the government’s Green Paper on Aviation and to the Climate Change Authority. But we summarise these again here.

**These alternative fuels won’t cut warming by the aviation industry.**

Promotion of SAF by the government, industry and media as ‘sustainable’, ‘ecofriendly’, and cutting aviation emissions misleads the public into thinking they can be reduced sufficiently.

The same amount of CO<sub>2</sub> is emitted burning biofuels as jet diesel, not less. Graham Warwick, Aviation Week executive editor for technology says “The big problem with bio-based SAF is you’re not reducing emissions ... you’re still pumping CO<sub>2</sub> out of the tailpipe of the engine.” (2)

**An accounting, not physical reduction:** CO<sub>2</sub> emissions from biofuels can only be said to be less than those from jet diesel in a ‘lifecycle emissions’ calculation, where the CO<sub>2</sub> drawn down months or years earlier in growing the biofuel feedstock, is subtracted from the in-flight CO<sub>2</sub> emissions.

**Half measures:** To be used in the existing global airline fleet both biofuels and eFuel must currently be blended 50:50 with fossil jet diesel, thereby halving claimed ‘lifecycle emission’ cuts in the crucial decade for climate action we are currently in.

**Non-CO<sub>2</sub> emissions remain:** Burning biofuels and eFuels does not cut non-CO<sub>2</sub> emissions significantly, and these are twice as warming as CO<sub>2</sub> alone. (3)

**Flights growing 4% annually:** Any reduction in emissions from burning SAF will be more than countered by the extra emissions from increased flights. (4, 5) Many scenarios have been explored, but none of these show aviation can get close to a zero emissions industry, still less one that draws down emissions by use of CCS. Work by the CSIRO/Boeing shows Australia has only 60% of the feedstock to replace existing jet fuel use with alternative sources, whilst governments consultants have mapped scenarios where no change in the quantum of emissions takes place because government fails to regulate to reduce pollution from flying, At most, scenario plans show a 43% reduction in emissions, while some scenarios see warming from aviation increasing.



## Using these alternative fuels won't even make flight emissions 'net zero by 2050'

Flightfree Australia does not agree that Net Zero in 2050 equates to a safe climate landing. We do not accept the losses to humanity from the loss of the Great Barrier Reef, the financial burden of massive increases in insurance, nor the loss of lives, human and animal, from a slow trajectory and unsafe landing place for our atmosphere. We agree with the Climate Council adoption of a Net Zero by 2035 approach and urgent change, and accept that all parts of government should be used to transform our emissions trajectory urgently. This is why we propose alternatives to the government's roadmap.

In assessing the current proposal against its own benchmarks we find:

### **Deployment of SAF will be too slow, very expensive, and too damaging.**

**Too slow:** Constraints likely to prevent the domestic manufacture of enough SAF to supply total fuel demand include:

> *Low industry ambition:* Qantas targets SAF replacing only 10% of fuel use by 2030, and only over 50% by 2050. (6)

> *Feedstock shortages:* Federal Infrastructure and Transport Minister, Catherine King, has spruiked canola and tallow as new low carbon liquid fuel feedstock (7) in parliament, despite CSIRO/Boeing suggesting they can replace at most 11% of domestic jet fuel demand, which is only 4% of domestic and international demand (8). The CSIRO/Boeing industry report does not detail where the 60% of current jet fuel to be replaced by "SAF" will be sourced from, mentioning only a variety of sources. Meanwhile, the latest UK projections see eFuel providing only 3.5% of aviation fuel demand by 2040. (9)

> *Land availability:* The production of enough biofuel to provide for Australia's aviation needs "would likely require an area in the order of that needed to grow Australia's total wheat crop – around 11 million hectares." (10)

**Very expensive:** Prohibitive costs include: SAF fuel production two to seven times higher than jet diesel (11), and the expense of modifying aircraft fuelling systems across the entire fleet to use 100% non-blended SAF. While much is made of "drop-in fuels", these only achieve 50% blends with fossil fuels. This fleet replacement would only be the first complete fleet replacement, given that hydrogen fuelled planes would have an entirely different design. The government should not rely upon work which the CSIRO undertakes in conjunction with Boeing who are an interested stakeholder in airplane manufacturing. (12)

**Too damaging:** Monoculture SAF feedstock cropping damages biodiversity, takes land from food cropping, and prevents nature-based carbon sequestration (13). IPCC climate scientist Brendan Mackey says "Large-scale SAF deployment could undermine global climate efforts." (14) To be clear, this suggests a SAF led solution would damage other, more effective climate actions in other sectors.

## QUESTION 20.1

WHAT ADDITIONAL ACTIONS DOES THE GOVERNMENT NEED TO TAKE TO REDUCE AVIATION EMISSIONS?

### **HOW AVIATION EMISSIONS CAN BE CUT EFFECTIVELY**

The only effective way currently available for emissions reductions from aviation to align with the 2015 Paris Agreement limits, is through a reduction in the number of flights.



Enacting policies such as the following can achieve this goal. We are unclear as to why none of these policies appear to have been considered or addressed in the Roadmap.

#### **Cap and reduce fossil fuels**

> Cap the amount of jet fuel sold annually at a rapidly reducing volume. Under current policies, emissions by fossil fuel use by aviation continue with the industry aiming to cap emissions growth at most. This is unacceptable when the world faces tipping points with disastrous consequences.

#### **Count all emissions**

> Include emissions from international flights in annual Australian aviation emissions totals [1].

> Require the aviation industry to report Scope 3 [2] and non-CO2 emissions [3].

#### **Stop emissions greenwashing**

> Exclude the use of carbon offsets in the calculation of aviation emissions.

> Halt taxpayer funding of biofuels [4].

#### **Stop incentivising aviation emissions**

> End the aviation fuel subsidy by raising its fuel excise tax to that of other, less polluting transport fuel for ground based transport [5].

> Discourage flight growth by banning airline advertising and frequent flyer schemes, penalising greenwashing, and by halting airport expansions.

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