

Cleaning Australia's Transport Reimagining Aviation

iMOVE Conference
Sydney 15 November 2022

Dr Emma Whittlesea
A / Executive Director
Climate Ready Initiative



**CLIMATE READY
INITIATIVE**
Shaping a climate ready future

 **Griffith** UNIVERSITY

Queensland, Australia

Climate Action Beacon



THE REPORT WAS WRITTEN BY

Professor Susanne Becken
Mr Paresh Pant

Griffith
UNIVERSITY

UNIVERSITY OF
SURREY

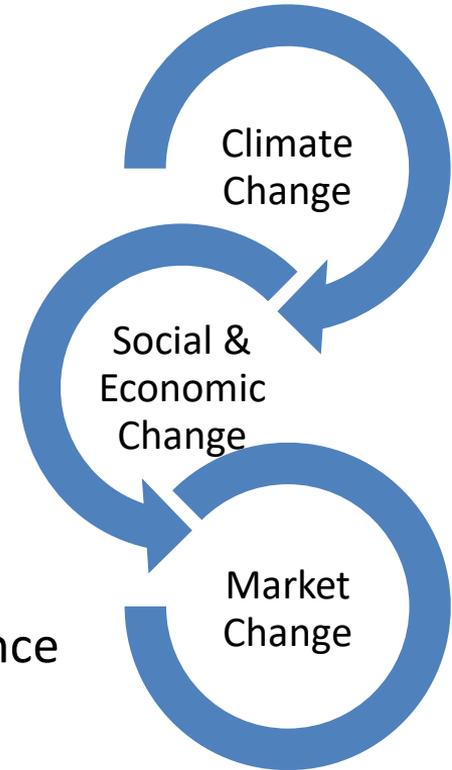
AMADEUS

Presentation Outline

- The Climate Ready Initiative
- Framework for an Australian Clean Transport Strategy
- High-level challenges and opportunities for the aviation sector to decarbonise

Climate Ready Initiative

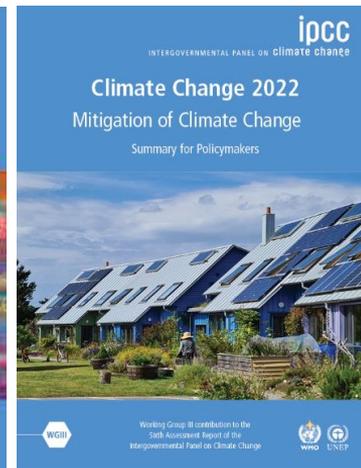
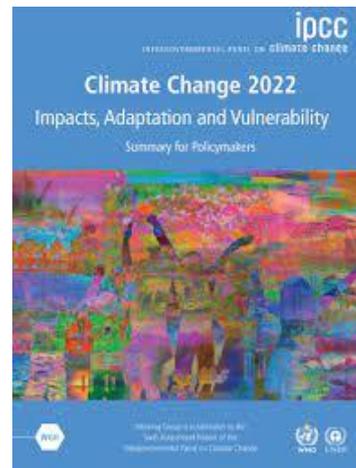
- ✓ Partnership-based approach
- ✓ Transformative climate action that values net-zero emissions and climate resilience
- ✓ Builds on decades of climate action partnerships
- ✓ Practical guidance to inform better decisions and effective climate action
- ✓ University hosted – trusted expertise and independence
- ✓ Guided by an independent high-calibre board



2030 – Critical Decade

A carbon emissions target is defined as science-based if it is in line with the scale of reductions required to keep global temperature increase below 2°C above pre-industrial temperature (pursuing efforts to hold it at no more than 1.5°C).

To have a chance of limiting global warming to 1.5°C, global emissions must be halved by 2030.



Organiser

Climate Action

climateaction.org | @Climate_Action_



WE SUPPORT
THE GLOBAL GOALS



UN CLIMATE
CHANGE
CONFERENCE
UN 2020



**Sustainable
Innovation Forum**

VIRTUAL PANEL

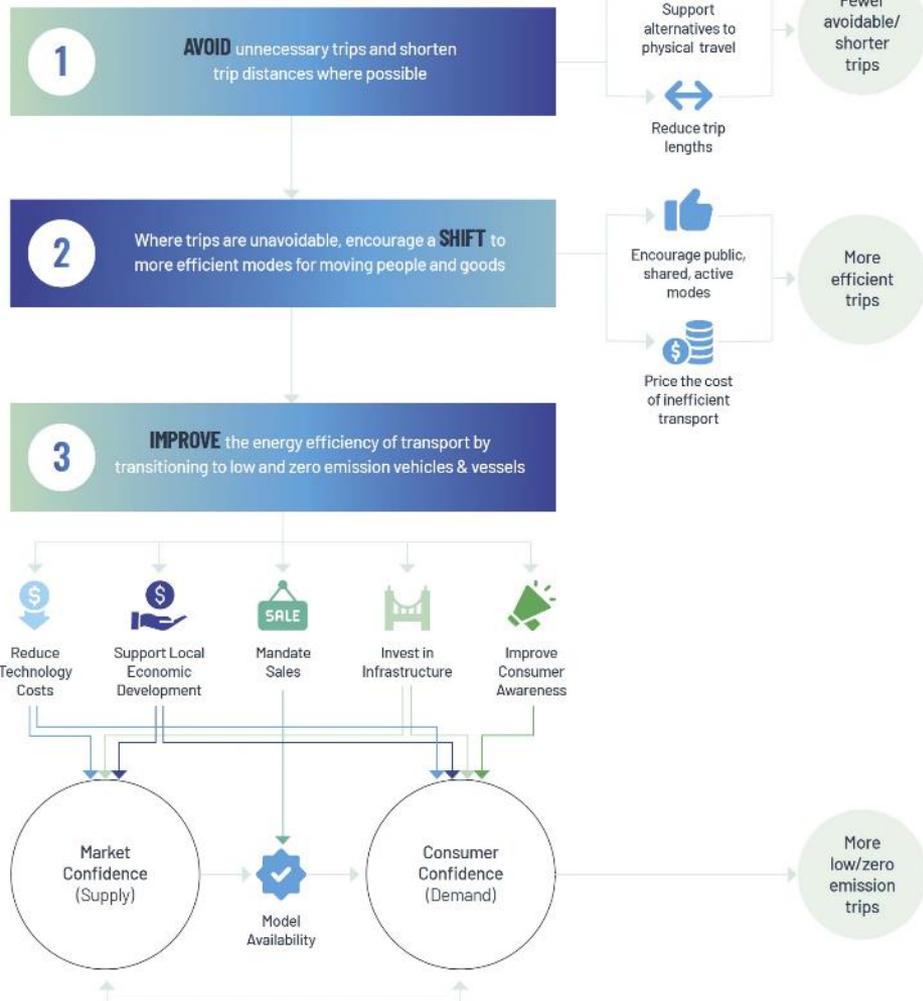
COP26: A Decade to Deliver



2022

FACTS

Framework for an Australian
Clean Transport Strategy





Light vehicle targets

A national target of 1 million zero emission light vehicles by 2027

State 2027 zero emission light vehicle targets QLD: 200k, NSW: 300k, VIC 275k, SA: 75k, WA: 100k, TAS: 25k, ACT: 20k, NT: 5k

55% zero emission light vehicle sales by 2030 (a fleet of 2-2.5 million vehicles)

100% zero emission light vehicle sales by 2035

100% zero emission light vehicle fleet by 2045



Bus targets

No new urban diesel buses purchased from 2023 onwards

100% zero emission urban bus fleet by 2030

100% zero emission bus fleet (transit and coaches) by 2040



Shipping targets

50% emissions reduction in shipping by 2040

Net zero shipping by 2050



Government fleet targets

100% of new government vehicles to be 0g CO₂ /km by 2023 - where fit-for-purpose models are available

100% of government fleet vehicles to be 0g CO₂ /km by 2027 - where fit-for-purpose models are available

100% of service vehicles to be 0g CO₂ /km by 2030 - where fit-for-purpose models are available



Mode share shift targets

50% active and public transport commuting share by 2035



Urban truck target

100% zero emission urban truck fleet by 2035



Rail target

100% net zero emission rail fleet by 2045



Domestic Aviation targets

20% fossil free domestic aviation by 2030

50% fossil free domestic aviation by 2035

Net zero domestic aviation by 2045

International Aviation targets

20% fossil free international aviation by 2035

50% fossil free international aviation by 2045

Net zero international aviation by 2050



Heavy truck targets

100% zero emission heavy truck sales by 2035

100% zero emission heavy truck fleet by 2045



Ferry targets

100% of government supported ferry fleets to be fossil free by 2035

100% net zero emission ferry fleet by 2050



Domestic Aviation targets

20% fossil free domestic aviation by 2030

50% fossil free domestic aviation by 2035

Net zero domestic aviation by 2045

International Aviation targets

20% fossil free international aviation by 2035

50% fossil free international aviation by 2045

Net zero international aviation by 2050

Policies to accelerate the transition

This report details suggested policies that support the transition to net-zero emissions transport and ensure a liveable future in Australia. There is a policy checklist for each level of government included below.

Local government checklist

Local government action is critical to addressing transport emissions in our cities and local regions.

Set net zero and interim decarbonisation targets for each transport segment

Encourage remote work	✓	Provide zero emission fleet support	✓
Introduce anti-idling initiatives	✓	Reform building policy	✓
Invest in active transport networks	✓	Fund urban charging	✓
Support electric micro-mobility	✓	Electrify taxis and ride-share fleets	✓
Support car-sharing	✓	Trial and support zero emission ferries	✓
Parking reform	✓	Reduce avoidable travel	✓
Introduce low emissions zones (LEZs)	✓	Introduce zero emission heavy vehicle fleet support	✓
Support road pricing reform	✓	Fund a national charging network	✓
Improve public transport networks	✓	Consider virtual international conferences	✓
Improve investment decision making	✓	Consider freight choices	✓
Set an airport 2030 decarbonisation target	✓		
Introduce a low-carbon ports initiative	✓		

State / territory government checklist

State and territory governments can work together to move past the current patch-work approach and strive to help Australian households and businesses to make the most of the transport transition and ensure Australia stays connected.

Set net zero and interim decarbonisation targets for each transport segment

Encourage remote work	✓	Trial and support zero emission ferries	✓
Introduce anti-idling initiatives	✓	Reduce avoidable travel	✓
Support Mobility-as-a-Service (MaaS)	✓	Introduce a zero emission heavy vehicle sales mandate	✓
Invest in active transport networks	✓	Introduce a zero emission heavy vehicle fleet support	✓
Support electric micro-mobility	✓	Introduce zero emission heavy vehicle curfew exemptions	✓
Parking reform	✓	Fund a national charging network	✓
Introduce low emissions zones (LEZs)	✓	Support electric and hydrogen aviation trials	✓
Support road pricing reform	✓	Consider virtual international conferences	✓
Improve public transport networks	✓	Support traffic management	✓
Improve investment decision making	✓	Consider freight choices	✓
Introduce a zero emission vehicle sales mandate	✓	Fund strategic green hydrogen clusters	✓
Provide zero emission fleet support	✓	Set strategic direction for Sustainable Aviation Fuels	✓
Reform building policy	✓	Set an airport 2030 decarbonisation target	✓
Introduce emissions stickers	✓	Introduce a low-carbon ports initiative	✓
Fund urban charging	✓	Enhance Australia's critical minerals strategies	✓
Enhance grid utilisation and renewable energy uptake	✓	Incentivise local component production & vehicle manufacturing	✓
Develop an EV database	✓	Incentivise local component recycling	✓
Initiate an EV charging infrastructure register	✓	Invest in local skills development	✓
Support charging infrastructure planning	✓	Support new technology pilot projects	✓
Electrify taxis and ride-share fleets	✓		

Federal government checklist

The Australian federal government has an essential role to play to ensure the nation captures the significant economic opportunities that decarbonised transport can offer and ensure we remain competitive with our global peers.

Set net zero and interim decarbonisation targets for each transport segment

Encourage remote work	✓	Introduce a zero emission heavy vehicle sales mandate	✓
Introduce anti-idling initiatives	✓	Introduce a zero emission heavy vehicle fleet support	✓
Invest in active transport networks	✓	Introduce zero emission heavy vehicle company tax benefits	✓
Support electric micro-mobility	✓	Introduce zero emission heavy vehicle design rule exemptions	✓
Introduce low emissions zones (LEZs)	✓	Fund a public charging network	✓
Road pricing reform	✓	Support zero emission aviation trials	✓
Improve public transport networks	✓	Support new technology pilot projects	✓
Improve investment decision making	✓	Consider virtual international conferences	✓
Introduce a zero emission vehicle sales mandate	✓	Support traffic management	✓
Provide zero emission fleet support	✓	Introduce carbon pricing	✓
Introduce a zero emission vehicle incentive scheme	✓	Consider freight solutions	✓
Introduce a zero emission vehicle company tax benefit	✓	Fund strategic green hydrogen clusters	✓
Reform building policy	✓	Set strategic direction for Sustainable Aviation Fuels	✓
Provide consumer support	✓	Include international aviation and shipping in national targets	✓
Enhance grid utilisation and renewable energy uptake	✓	Set an airport 2030 decarbonisation target	✓
Develop an EV database	✓	Introduce a low-carbon ports initiative	✓
Initiate an EV charging infrastructure register	✓	International transport R&D	✓
Support charging infrastructure planning	✓	Develop net zero plans for shipping and aviation	✓
Transition to World Harmonised Light Vehicle Testing Procedure (WLTP)	✓		✓

Electrify taxis and ride-share fleets	✓	Enhance Australia's critical minerals strategies	✓
Trial and support zero emission ferries	✓	Incentivise local component production and vehicle manufacturing	✓
Consider a future scrappage scheme	✓	Incentivise local component recycling	✓
Reduce avoidable travel	✓	Invest in local skills development	✓
Consider air-travel alternatives	✓	Retrofit support	✓

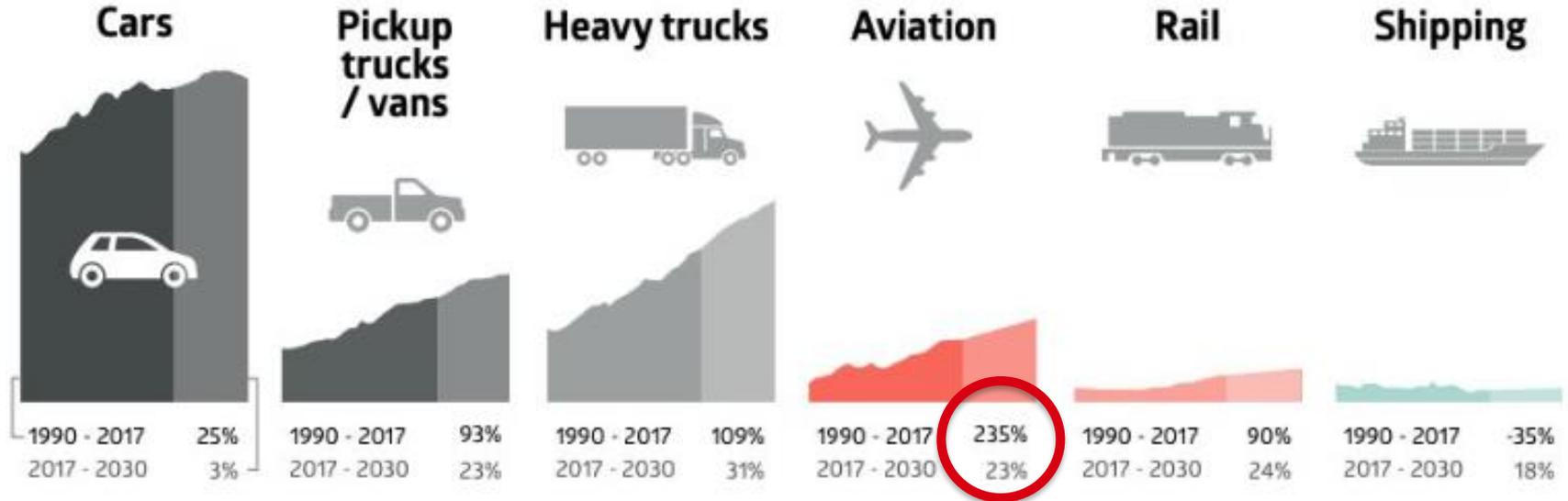
What you can do?

Australia is in the fortunate position of having many options available to us on our journey to net zero transport. But these opportunities will not last forever.

This document is a call to action for Australian governments and industry to consider and incorporate our policy recommendations, in support of achieving the decarbonised transport targets outlined in this strategy.

This is also a call to all Australians to contact your local, state/territory and federal representatives, share the Transport FACTS with them, and outline what you think they should do to support the decarbonisation of transport in Australia.

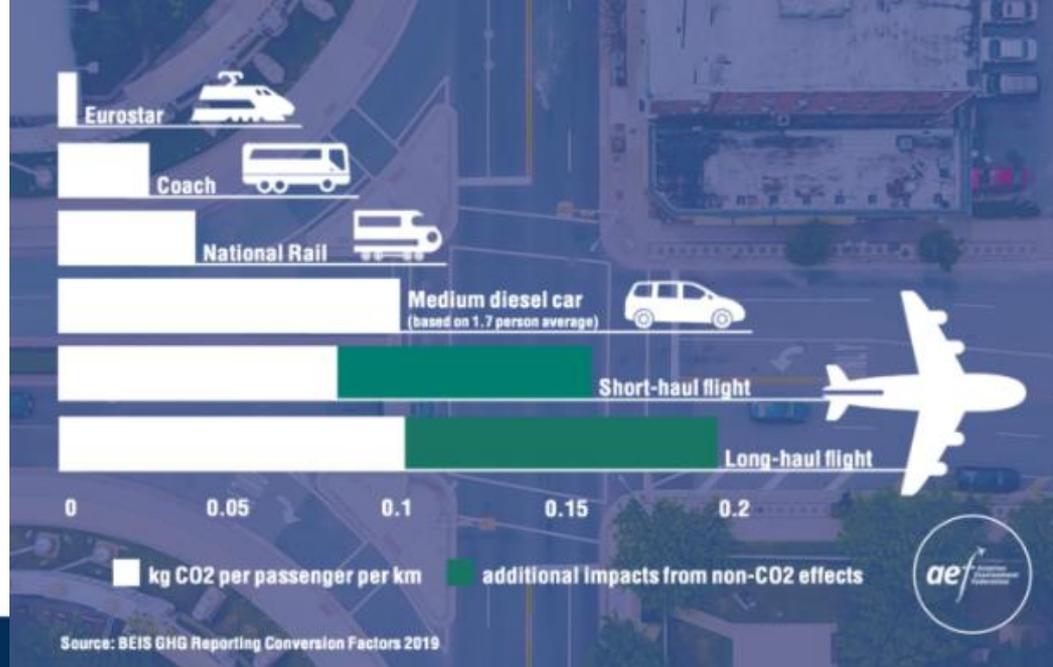
Australian Transport Emissions



Source: Climate Analytics, 2019

Full Climate Impact

Non-CO₂: the hidden side of aviation's total climate impact



... international aviation emissions are excluded from national accounting.

COMMITMENT TO FLY NET ZERO 2050



WAYPOINT 2050

AN AIR TRANSPORT ACTION GROUP PROJECT

Balancing growth in connectivity with a comprehensive global air transport response to the climate emergency: a vision of net-zero aviation by mid-century.



SECOND EDITION: SEPTEMBER 2021

IATA (2021) passed a resolution committing airlines to **Net-Zero carbon** emissions from their operations by 2050.



Luis Felipe de Oliveira
Director General



Kurt Edwards
Director General



Simon Hocquard
Director General



Jan Pie
Chair



Willie Walsh
Director General



Pete Bunce
President and CEO

Supported by innovation and action throughout the supply chain:



Guillaume Faury
Chief Executive Officer



Stan Deal
President and CEO



Stefano Bortoli
Chief Executive Officer



Gaël Méheust
President and CEO



John S. Slattery
President and CEO



Christopher Calio
President



Warren East
Chief Executive Officer



Olivier Andriès
Chief Executive Officer

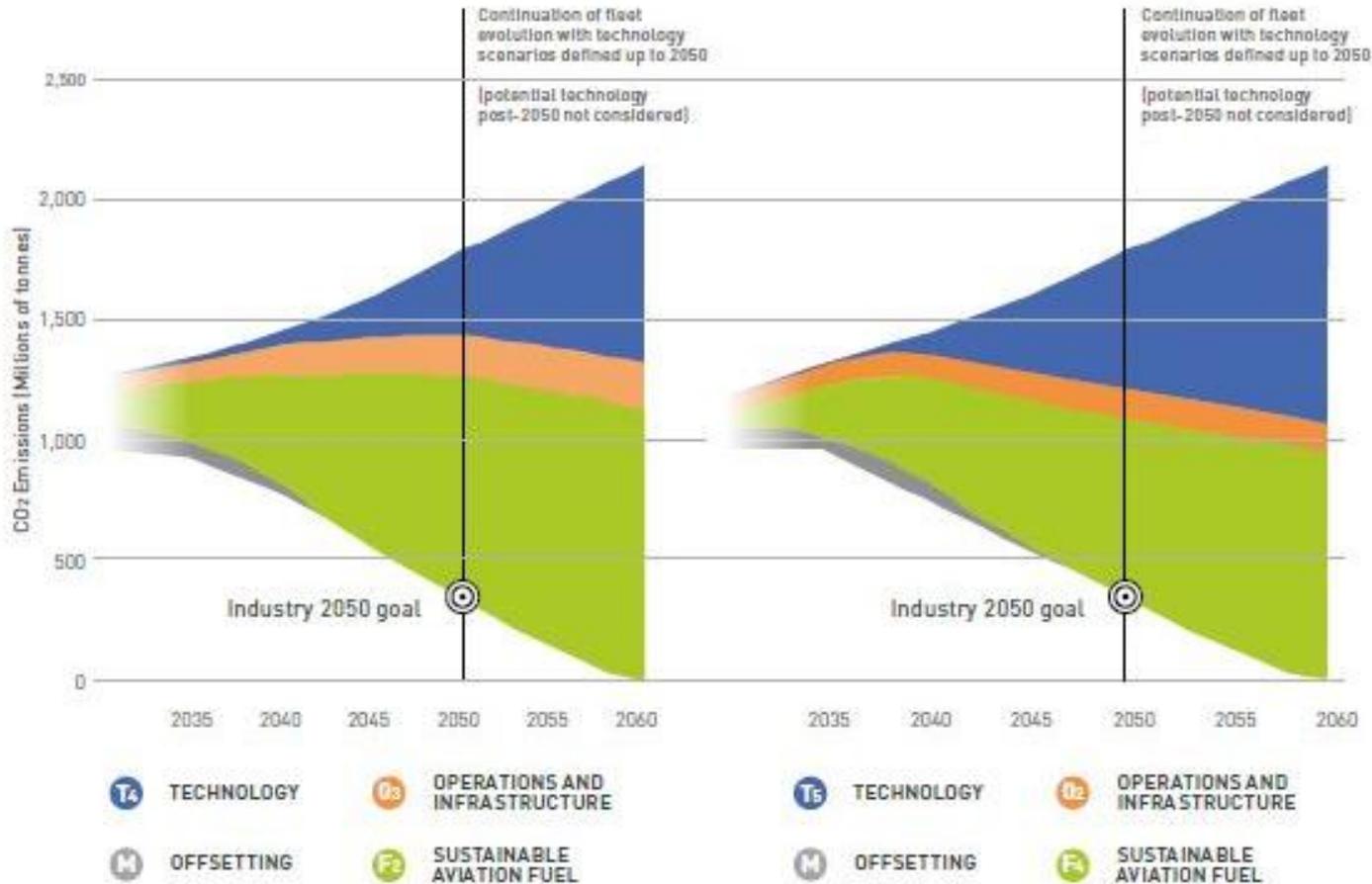


Francisco Gomes Neto
President and CEO



Stephen Timm
President

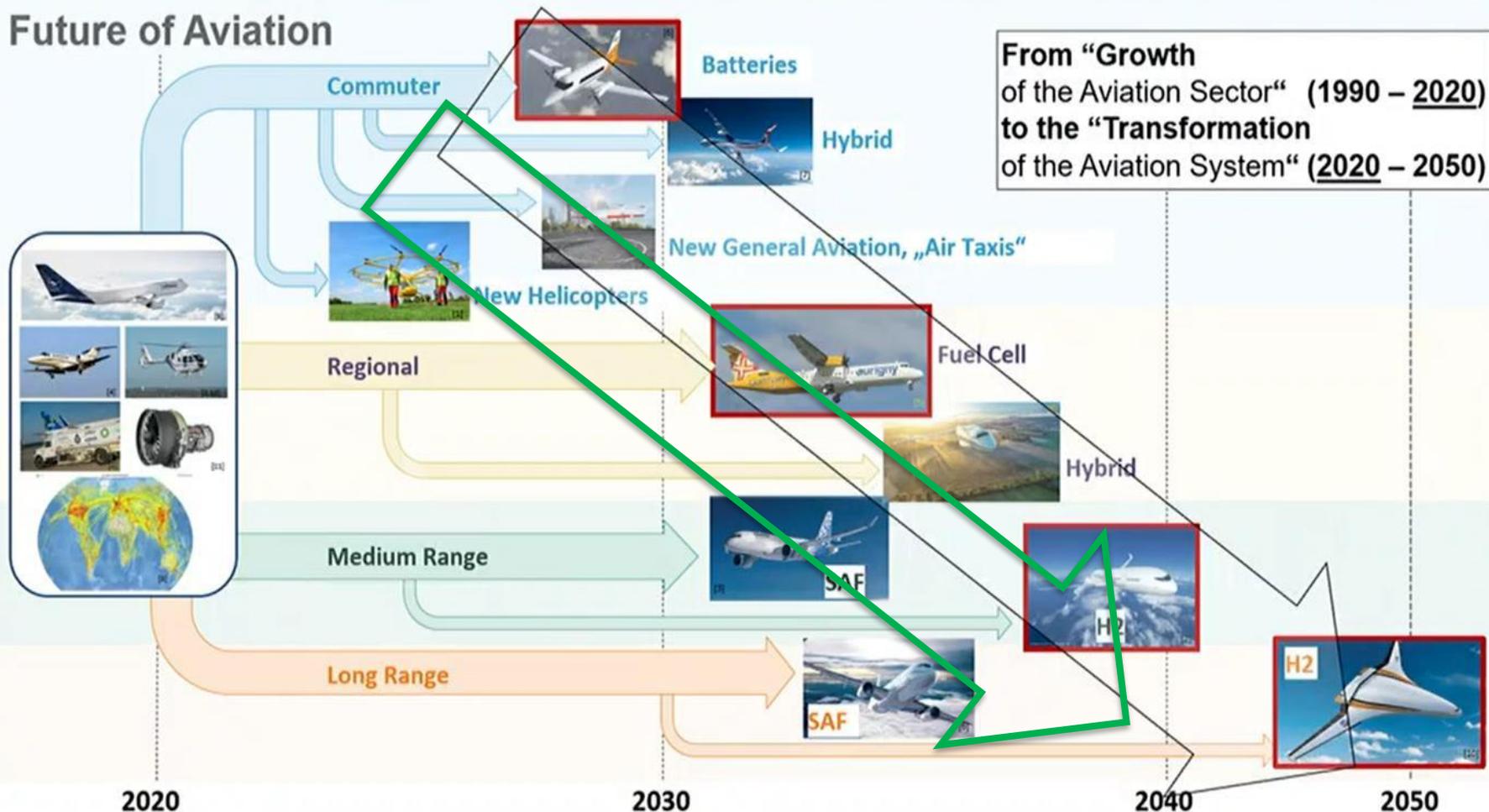
Plotting a Path to Net-Zero Emissions



Plotted using integrated scenario 1 (left) and 3 (right)

Source: The Waypoint 2050 Report, Sept 2021

Future of Aviation



2020

2030

2040

2050

[1] ADAC, [2] Airbus, [3] Airlines/Bombardier, [4] Alf van Beem, [5] ATR 72-600 | Aurigny, [6] DLR, [7] Electric Aviation Group, [8] ICAO, [9] Lufthansa, [10] NASA, [11] MTU

Virgin Atlantic buys SAF from Neste while Virgin Group enters plastic waste to fuel venture

✓ Christopher Surgenor · 17 February 2022 · 3 min read

ATR Completes Test Flight Of An Engine Powered By 100% SAF

Regional aircraft manufacturer ATR announces first flight on 100% SAF.

BY LINNEA AHLGREN
PUBLISHED FEB 03, 2022



TUESDAY, 19 OCTOBER 2021

Rolls-Royce joins Boeing and World Energy for successful 100% Sustainable Aviation Fuel flight

The World Is Witnessing the Transition to Electric Aviation



Our Vision

To be the world's most trusted electric solutions company



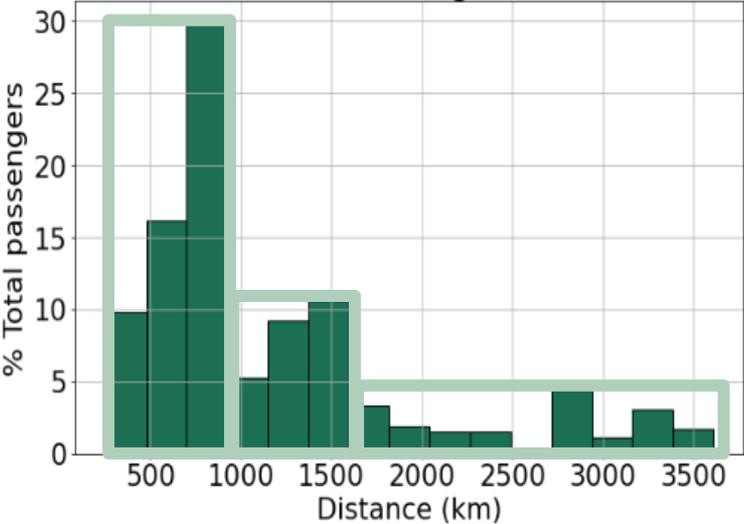
NASA Selects magniX to Rapidly Mature Electrified Aircraft Propulsion

NASA illustration of an electric aircraft powered with an Electrified Aircraft Propulsion system (EAP) from magniX.

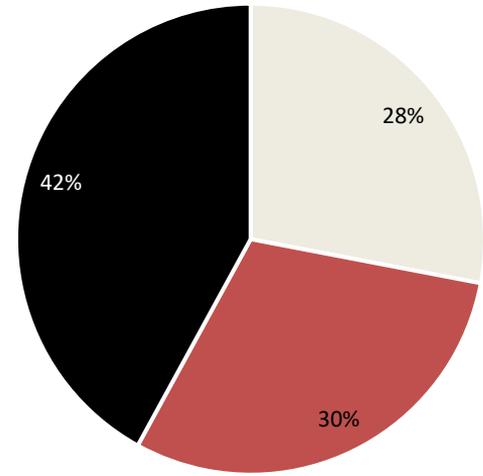


Regional Airline opportunities

Share of passengers by stage length for top 63 domestic commercial flights in Australia 2019



Percentage of CO2 produced by the top 63 domestic commercial flights in Australia 2019



<800 km 800 - 1500 km > 1500 km

Hydrogen Momentum

Fortescue teams up with aero giant Airbus to accelerate green hydrogen planes

Michael Mazengarb 8 March 2022 3

Share Tweet In 0



A rendering of Airbus' Airbus Zero E concept. Photo credit: Airbus.

ZEROe concept aircraft



Turboprop

Two hybrid-hydrogen turboprop engines, which drive eight-bladed propellers, provide thrust. The liquid hydrogen

Blended-Wing (BWB)



May 2020



Clear Pathways and Targets



UK govt establishes Jet Zero Council

15 June 2020

 HM Government

Greener Air Travel

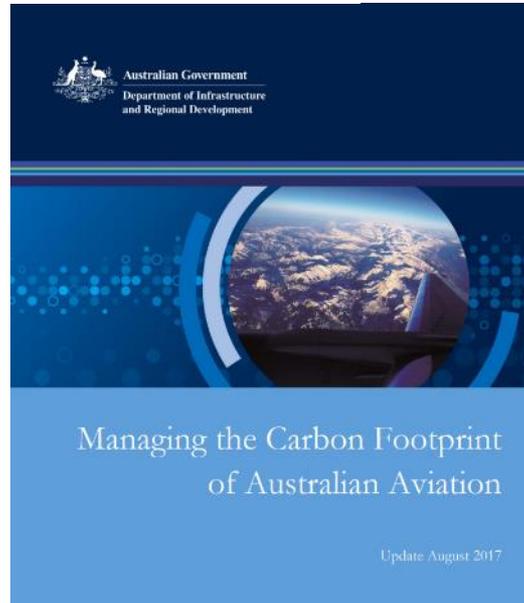
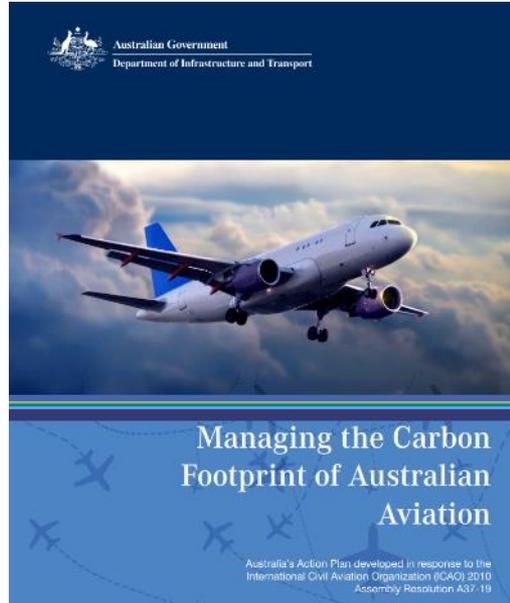
We're setting a clear pathway for reducing aviation emissions



Advocacy and Policy Development

WEDNESDAY, 30 MARCH 2022 / PUBLISHED IN MEDIA, NATIONAL MEDIA

CATHERINE KING – MEDIA RELEASE – WHITE PAPER TO CHART THE FUTURE OF AVIATION – WEDNESDAY, 30 MARCH 2022



New White Paper will consider as one of four priorities:

How to maximise the aviation sector's contribution to achieving net zero carbon emissions, including through sustainable aviation fuel and emerging technologies

A graphic for the Qantas Group Climate Action Plan. It features a scenic landscape of rolling green hills and a valley with a lake, under a warm, golden sky. The text 'QANTAS GROUP CLIMATE ACTION PLAN' is centered in white.

QANTAS GROUP CLIMATE ACTION PLAN

Industry Leadership

Airlines ¹

**Qantas targets 25% emissions cut by 2030
in push towards net-zero**

By Alfred Chua | 31 March 2022

31 MARCH 2022

1



Brisbane, 13 November 2022

The logo for Brisbane Airport Australia. It features a dark blue square with white diagonal lines radiating from the top right corner. Below the graphic, the text 'BRISBANE AIRPORT AUSTRALIA' is written in white and yellow.

BRISBANE AIRPORT AUSTRALIA

Brisbane Airport secures renewable energy future

Brisbane Airport Corporation (BAC) has entered into an historic six-year agreement to secure power that is linked to renewable energy from Queensland's Clarke Creek Wind Farm & Blue Grass Solar projects as part of its commitment to be net zero for scope 1 and 2 emissions by 2025.



SKYTRANS COMMITS TO AUSTRALIA'S FIRST HYDROGEN-ELECTRIC AIRCRAFT

By Geoffrey Thomas June 30, 2022



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Tweet on Twitter



'Aviation revolution': Sydney Harbour to be home to world's first zero-emissions airline

Sydney Seaplanes plans to create an all-electric and zero-emissions airline as soon as 2025, potentially making it the first carrier in the world to do so. The company, which operates five seaplanes mostly from Sydney Harbour, said it plans to expand its



Rex goes electric in pursuit of net zero emissions

The group is the latest airline to go green, revealing plans to retrofit its fleet of turbine powered aircraft with electric engines.

Aircraft Design

Aviation's path towards zero emissions



New Players and Partnerships

“This industry transformation is a multi-stakeholder effort. Airlines are unable to change if engine producers continue to build the same carbon-fuel consuming planes. This problem requires the whole ecosystem to change”

W. Walsh, DG IATA

UK Jet Zero Council SAF Delivery Group



Innovation and Investment

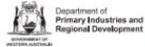
Super Hub to super-charge green hydrogen in North Queensland

Published Yesterday at 12:30 PM

JOINT STATEMENT

Premier and Minister for the Olympics
The Honourable Anastacia Palaszczuk

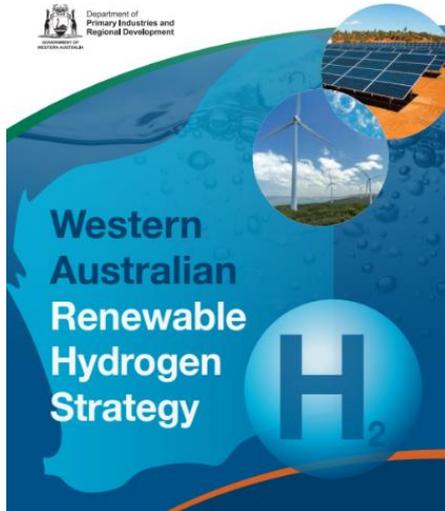
Deputy Premier, Minister for State Development, Infrastructure, Local Government and Planning and Minister Assisting the Premier on Olympics Infrastructure
The Honourable Dr Steven Miles



Australian Government
Department of Infrastructure, Transport,
Regional Development and Communications

National Emerging Aviation Technologies

POLICY STATEMENT



QANTAS AND AIRBUS JOINT INVESTMENT TO KICKSTART AUSTRALIAN BIOFUELS INDUSTRY

PUBLISHED ON 19TH JUNE 2022 AT 20:00

cefc

[Where we invest](#) [About our finance](#) [Insights](#) [Who we are](#) [Media](#) [Q](#)

MEDIA

Prepared for take off: Australian ingenuity to cut aviation emissions



14 June 2022

Demand Management

France to ban some domestic flights where train available

MPs vote to suspend internal flights if the trip can be completed by train within two and a half hours instead



[France to ban some domestic flights where train available | Climate crisis | The Guardian](#)

Schiphol airport in Amsterdam limits flights to prevent emissions, in world first



Level the Playing Field

Fossil fuel subsidies in Australia

Federal and state government assistance to fossil fuel producers and major users in 2021-22

- Largest concession
- Civil aviation pays a lower rate of excise
- Reduces incentives to minimise fossil fuel use and emissions
- Reduces government revenue
- Transfers costs to others

Source: The Australian Institute

Tax concession	Dedication	Industry segment	Estimated cost
Transport for oil rig and remote area employees exemption	Primarily	Gas/Oil	\$55,000,000
Concessional rate of excise levied on aviation gasoline and aviation turbine fuel	Wholly	Gas/Oil	\$960,000,000
Excise concessions for 'alternative fuels' (including LPG and LNG)	Wholly	Gas/Oil	\$100,000,000
PRRT - expenditure uplift rate	Wholly	Gas/Oil	\$55,000,000
PRRT - gas transfer price regulations	Wholly	Gas/Oil	\$55,000,000
PRRT - starting base and uplift rate for capital assets	Wholly	Gas/Oil	\$55,000,000
Total			\$1,280,000,000

EU axes airlines' fuel tax exemption in drive for greener fuels

The EU will end jet fuel's tax exemption which has let flying go untaxed for decades, and instead will drive airlines to use cleaner, low-carbon fuels. The tax reforms announced as part of the EU's Fit for 55 [plan](#) will, however, only apply to fuel used on private and commercial flights within Europe, exempting 60% of fuel sales. The package also strengthens Europe's carbon market for aviation and sets a mandate for the use of e-kerosene that will apply to all jet fuel sales in Europe - a crucial step in decarbonising long-haul flying, says Transport & Environment (T&E).

Consumer Trends

EIB Climate Survey

62% of Europeans support a ban on short-distance flights.



≤70% Respondents in favour of a ban on short-distance flights
 ≤60%
 ≤50%
 ≤40%



Source: BVA for the European Investment Bank

FLYING SHAME



Let's talk about it!

www.travelfordifference.com

EIB Climate Survey



Citizens supporting a carbon tax on flights

60%

72%

93%



Best departing flights

Ranked based on price and convenience ⓘ Prices include required taxes + fees for 1 adult. Optional charges and baggage fees may apply.

	6:05 PM – 12:50 AM* ¹ Separate tickets booked together - Virgin Australia	7 hr 15 min BNE – DRW	1 stop 50 min SYD	423 kg CO ₂ Avg emissions ⓘ
	3:30 PM – 12:40 AM* ¹ Jetstar	9 hr 40 min BNE – DRW	1 stop 3 hr 30 min SYD	403 kg CO ₂ Avg emissions ⓘ
	6:10 PM – 12:40 AM* ¹ Qantas	7 hr BNE – DRW	1 stop 50 min SYD	419 kg CO ₂ Avg emissions ⓘ
	9:50 AM – 1:50 PM Separate tickets booked together - Virgin Australia	4 hr 30 min BNE – DRW	Nonstop	291 kg CO ₂ -27% emissions ⓘ
	9:45 AM – 1:30 PM Qantas	4 hr 15 min BNE – DRW	Nonstop	288 kg CO ₂ -28% emissions ⓘ

MEDIA RELEASE

All time high of 75% of Australians concerned about climate change

October 13, 2021



Free Webinar Replays

AVIATION REIMAGINED: DECARBONISING FLIGHT

2022 Webinar series
September–October 2022



CLIMATE READY
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Shaping a climate ready future



Thank you!

Dr Emma Whittlesea

e.whittlesea@griffith.edu.au



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