



Australian Government

Submission on matters relating to the work programme for urgently scaling up mitigation ambition and implementation referred to in paragraph 27 of decision 1/CMA.3

September 2023

Australia welcomes the opportunity to provide views on 'opportunities, best practices, actionable solutions, challenges and barriers' relevant to 'accelerating just energy transitions in transport systems' as the designated thematic focus for the upcoming global dialogue (GD) and investment-focused event (IFE) under the Sharm el-Sheikh mitigation ambition and implementation work program (MWP). This submission also includes our views on potential aspects of the annual CMA decision on the MWP.

Mitigation ambition and implementation is a core pillar of our cooperation under the Paris Agreement, with view to limit the worst impacts of climate change and secure a sustainable and liveable future for all. Strong global action on mitigation will limit loss and damage and improve our ability to adapt to the impacts of climate change by avoiding excessive warming. Australia values the MWP as a crucial mechanism that leverages the significant convening power of the UNFCCC to bring countries together to discuss how to urgently scale up mitigation ambition and implementation in this critical decade of climate action.

1. CMA decision

The annual CMA decision for the MWP is a critical opportunity to progress the international climate agenda on mitigation. Consistent with Paragraph 16 of 4/CMA.4, the MWP decision could:

- raise the profile of key mitigation trends, opportunities and best-practice solutions, identify gaps, challenges and priorities for further action, and follow-up on previously agreed global mitigation commitments;
- reflect on lessons learned from the first GD and IFE held in Bonn in June this year to improve the design and delivery of the MWP in future years; and
- consider follow up actions in relation to the outcomes of the first Global Stocktake (GST) under the Paris Agreement.

1.1 Mitigation opportunities, best practices, actionable solutions, challenges and barriers

Discussions at the first GD and IFE clearly conveyed the urgency of scaling up mitigation ambition and implementation in this critical decade. At the same time, Parties identified significant cost-competitive technologies that are already available, that could drive deep and sustained emissions reductions in the short, medium and long-term. Key takeaways that could be profiled in this year's CMA decision include:

- The potential for accelerated renewable energy deployment and improved energy efficiency to drive near-term emissions reductions around the world – these opportunities can be backed in by the global calls proposed by the COP28 Presidency, to triple renewable energy capacity and double energy efficiency by 2030;

- The need to accelerate the energy transition through the phase out of unabated fossil fuels and the rapid acceleration of renewable energy deployment;
- The importance of strengthening national and international energy transmission and storage networks and systems;
- The challenges many developing countries face accessing finance and catalysing investment, particularly in smaller markets and economies;
- The need for enhanced technology transfer, capacity building and international cooperation; and
- The urgency of rapidly scaling up mitigation ambition and implementation – including by reiterating calls for Parties who have not yet done so to revisit and strengthen 2030 targets in their NDCs.

These high-level opportunities and challenges can be complemented with reference to practical examples as identified by Parties during the GD and IFEs of actionable solutions to drive action and overcome barriers.

1.2 Lessons learned to improve the design and delivery of the MWP

The CMA decision should reflect on lessons learned during the MWP's first year of operation and make recommendations on how to improve in future years, with a view to ensuring it is fit-for-purpose and maximises its potential to scale up global mitigation ambition and implementation. Reflecting on experience to date, the decision could:

- emphasise the importance of engaging non-Party stakeholders (NPS) with view to improve on the level of engagement at the first GD and IFE in June;
- invite the UNFCCC High-level Climate Champions to participate in future dialogues and support enhanced NPS participation;
- in light of Paragraph 9, Decision 4/ CMA.4, emphasise the call for the organisation of regional dialogues, including inviting Parties and regions to consider hosting opportunities, to allow for in-depth discussion of specific regional circumstances, priorities and investment opportunities and challenges;
- identify issues raised at GDs and IFEs that would benefit from follow-up discussions – for example, we expect aspects of energy transition (the thematic focus for this year) to be a part of the agenda in future years given its significant mitigation potential, relevance to Parties' priorities, and the fruitful areas for discussion; and
- noting the wide range of international initiatives and processes that aim to enhance mitigation ambition and implementation, the MWP can profile and incorporate perspectives from other relevant initiatives, including but not limited to the Action Agenda.

1.3 Follow-up on outcomes of the Global Stocktake

The MWP can take forward relevant outcomes of the Global Stocktake. For example, the MWP could consider the outcomes of the Global Stocktake and support a practically-oriented exchange on related challenges and opportunities.

2. Opportunities, best practices, actionable solutions, challenges and barriers relevant to accelerating just energy transition in transport systems

Rapidly reducing transport emissions is essential if the world is to transition to global net zero and keep 1.5 degrees of warming within reach. Transport accounts for more than a third of global carbon emissions from end-use sectors and presents key mitigation opportunities. Without intervention, the Intergovernmental Panel on Climate Change (IPCC) projects that carbon emissions from transport could grow between 16% and 50% by 2050.¹ Strong action will be needed to bring about transformative change in transport systems.

The decarbonisation of the transport sector is a priority for the Australian Government. Transport accounts for 19% of Australia's total emissions and represents one of the largest shares of Australian energy consumption.² The scale of change needed to decarbonise our transport sector represents both a considerable challenge and a significant opportunity for Australia.

We welcome the opportunity to discuss the decarbonisation of transport systems through the second GD and IFE and suggest the following options for sub-topics of discussion. We also note the value of the MWP to draw insight and profile outcomes from other international processes and initiatives and refer to examples of relevant initiatives.

2.1 Electrification

Electrification of light vehicles is a key pathway to achieve rapid and sustained emissions reductions in transport systems. Global adoption of electric vehicles (EVs) has significantly accelerated. According to the International Energy Agency (IEA), EV sales grew exponentially in 2022, exceeding 10 million worldwide and accounted for 14% of the global car market. This growth is expected to continue in 2023 with an estimated 14 million global sales – a 35% year-on-year increase from 2022.³

In Australia, EVs accounted for 8% of new light vehicle car sales in early 2023. As in many other countries, EV demand is growing rapidly in Australia. Through the [National Electric Vehicle Strategy](#), which incorporates insights from international best practice, the Australian Government plans to improve access to a range of more affordable EV models, build infrastructure to enable EV use across the nation and create new industries and jobs along the EV supply chain. We recognise the wide range of social, economic, business, health and environmental co-benefits that electrifying our transport system will bring, such as better air quality, new jobs and reductions in the cost of living over time.⁴

2.1.1 Opportunities

- We would welcome in-depth discussion amongst relevant experts and practitioners on **best-practice policies and measures to support EV uptake**. As Australia builds on existing policies and programs to rapidly advance electrification in our transport systems, we value opportunities to learn from the experiences of international partners, explore areas where enhanced international coordination can support domestic policy and consider fit-for-purpose solutions across different national contexts. Examples of policies to explore could include:

¹ IPCC (2022), AR6 WGIII, 'Transport', pg. 1053, [IPCC AR6 WGIII Chapter10.pdf](#)

² Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2023), pg. 1, [National Electric Vehicle Strategy \(dcceew.gov.au\)](#)

³ IEA (2023), pg. 8, [Global EV Outlook 2023: Catching up with climate ambitions \(windows.net\)](#)

⁴ DCCEEW (2023), pg. 2, [National Electric Vehicle Strategy \(dcceew.gov.au\)](#)

- Fuel Efficiency Standards: Vehicle fuel efficiency standards set limits on a manufacturer's average emissions and are a strong driver for the supply of fuel-efficient vehicles. Over 85% of the global car market, including most major economies, already have vehicle fuel efficiency standards.⁵ The Australian Government has committed to design and implement an Australian Fuel Efficiency Standard as a matter of priority.
- Investment in charging infrastructure: Increasing the uptake of EVs must come alongside investment in the necessary enabling infrastructure, particularly charging infrastructure. The Australian Government will develop a national network of charging infrastructure on major highways at intervals of 150km. Residential charging facilities, including for rental properties and apartment buildings, as well as opportunities for off-grid/ remote charging facilities, should also be considered as part of the GD.
- Demand-side measures: Analysis of consumer sentiment in Australia shows that demand for EVs is growing rapidly. Governments can play a role in further incentivising EV uptake, supporting user experiences and building confidence in the EV transition. Financial incentives for EVs, such as reducing taxes and registration costs, green car loans and rebates, help to increase demand by targeting affordability. Opportunities to drive just workforce transitions, including by supporting sufficiently skilled mechanics, build confidence in the emerging second-hand market and improve consumer information could also be valuable areas of discussion.
- **Opportunities to enhance trade in critical minerals, batteries and other EV components** would be a beneficial sub-topic. Critical minerals are the foundation for key clean energy technologies, including EVs and batteries. The expected increase in global demand for EVs over the next decade will place significant pressure on current supply chains. The development of diverse and resilient supply chains for critical minerals and batteries, bolstered by cross-jurisdiction cooperation and subject to appropriate environment and social governance standards, will be crucial to facilitating widespread EV uptake. Noting that raw material costs account for 50-70% of total battery costs, we further welcome discussion on how international cooperation on critical mineral supply chains could help to drive down EV costs.⁶
- Discussions on key developments in **research and innovation along EV supply chains** could profile and improve awareness of new trends and opportunities. For example, innovation in bidirectional/ vehicle to grid charging, which allows EVs to both receive and discharge energy, will enable more EV models to contribute electricity to power homes and the grid. EVs could also play a role in storing and later dispatching excess power generated from renewable sources, and potentially assist in electricity grid management in some jurisdictions.

2.1.2 Challenges

- The electrification of transport systems can pose significant challenges for electricity distribution networks. Australia would value **best-practice approaches to manage the**

⁵ DCCEEW (2022), pg. 21

⁶ IEA (2021), [Executive summary – The Role of Critical Minerals in Clean Energy Transitions – Analysis - IEA](#),

impact of EVs on electricity grids as a sub-topic for discussion. The transition to EVs must be supported by the decarbonisation of electricity grids, which need to have the capacity to accommodate increased demand. The average Australian household uses 5000 kilowatt hours of electricity a year and it is projected that an EV could increase that by around 70 per cent.⁷ Countries must ensure the necessary infrastructure and policy settings are in place so electricity grids can support the expected increase in electricity demand.

- As the uptake of EVs accelerates around the world, it will be important to consider **sustainable management practices for EV waste** to mitigate negative environmental impacts and reduce strain on battery supply chains by recycling and repurposing batteries, where possible. For example, EV and battery recycling, reuse and stewardship initiatives that consider end market demand for materials derived from batteries can reduce waste, create jobs, and support further EV production. However, processes for recycling and reusing EVs and batteries can be complex, resource intensive and variable between different technologies. Further research and development to support the incorporation of circular economy principles across EV value chains will be important.
- The **lack of international standardisation of EV charging protocols, standards and infrastructure** is another key challenge to widespread EV uptake. Enhanced standardisation will help to avoid increasing costs and inefficiencies for vehicle importers and international operators. Multiple charging standards are currently in use internationally, and technical specifications for ultra-fast charging are still under development.⁸ Enhancing international alignment and interoperability of EV charging standards and battery standards could facilitate the development of infrastructure that is commercially viable across borders. The potential for battery swapping for heavy vehicles and battery replacements for all EVs can also be considered.

2.1.3 Relevant initiatives

Australia would welcome insights from other initiatives focusing on transport electrification, including the International Council on Clean Transportation, the Road Transport Breakthrough Agenda, the Global Battery Alliance, and the Global Electric Mobility Programme (UNEP).

2.2 Low or zero emission fuels (hydrogen and low carbon liquid fuels)

Low or zero emissions fuels can play a significant role in decarbonising aspects of transport systems, including sectors that currently have no existing pathway to electrification such as some freight, maritime, aviation and rail applications. These fuels can often be blended into more emissions-intensive fuels or act as a direct substitute without upgrading existing refuelling infrastructure or engines. For light vehicles, low or zero emissions fuels can drive faster emissions reductions than EVs due to the rate of fleet turnover and infrastructure requirements, while also offering decarbonisation opportunities for those who cannot afford to purchase EVs. In 2022, low-emission fuels covered just 1% of global final energy consumption, largely from liquid biofuels. Under the IEA's Net Zero Scenario, low emission fuels will need to increase to 5% of global energy consumption and 11% of final energy demand in the transport sector by 2030.⁹ This will require significantly enhanced production and distribution pathways, supported by further research and innovation.

⁷ Energy Networks Australia (2022), [Australia needs to get smart in charging electric cars | Energy Networks Australia](#)

⁸ IEA (2023), [Global EV Outlook 2023: Catching up with climate ambitions \(windows.net\)](#)

⁹ IEA (2023), [Low-Emission Fuels - Energy System - IEA](#)

2.2.1 Opportunities

- We consider opportunities to **scale up development of hydrogen powered vehicles** to be a beneficial sub-topic, particularly its potential to assist in the decarbonisation of hard-to-abate transport sectors. Green hydrogen is a flexible, safe, transportable and storable fuel that produces no emissions. Compared to battery electric vehicles, hydrogen powered vehicles contain lighter batteries, can be refuelled faster and can travel longer distances carrying larger loads before refuelling.¹⁰ This could make them more suitable for long distance and commercial vehicle operations such as heavy-duty transport. The Australian Government is providing significant support to de-risk investments and kick-start hydrogen transport uptake. This includes investment in hydrogen transport refuelling infrastructure and revenue support for large-scale renewable hydrogen projects.
- We see value in discussing the potential for **second, third and fourth generation biofuels** to contribute to the decarbonisation of transport systems and fuel-reliant sectors. First generation biofuels made from food crops dominate the current market. They can present significant problems if used at scale as they can compete with food production for water and arable land and could therefore contribute to resource and environmental depletion and push up food prices. Second generation biofuels from residual and waste products and third and fourth generation biofuels, which use algae or modified algae as feedstocks and are still in the development phase, could offer more sustainable, long-term alternatives to fossil-based fuels. We suggest an in-depth discussion on biofuels from non-food resources would allow for consideration of appropriate market opportunities and help raise awareness of developments in emerging technologies.
- **Renewable synthetic fuels of non-biological origin** could be a further sub-topic for discussion. This includes electrofuels and solar fuels, which use renewable energy to power the conversion of basic chemical feedstocks such as carbon and water into clean alternative fuels. These fuels offer advantages in terms of carbon neutrality and long-term sustainability, but many are still in the development phase.

2.2.2 Challenges

- It is important to take into account challenges related to the **early stage of technological and/or commercial maturity of many low or zero emission fuel technologies**. While global investment in hydrogen is growing, some countries and private companies may hesitate to make firm investment decisions. Current hydrogen demand is still strongly linked to traditional, fossil-based applications, with less than 0.1% of global hydrogen demand coming from new applications such as transport.¹¹ Similarly, third and fourth generation biofuels and synthetic fuels are still in the developmental phase. Further technological development and investment is required to ensure commercial maturity and build market demand.
- We support a sub-topic focused on **challenges in reducing emissions in the road freight and heavy transport sector**. Road freight remains the primary mechanism to bring goods to stores and homes and accounts for around 9% of global emissions. While emerging technologies such as electric battery haulage, low and zero carbon liquid fuels and hydrogen-powered vehicles have significant potential, they have yet to be deployed at scale. Decarbonising long-distance freight remains one of Australia's biggest challenges in

¹⁰ DCCCEW (2019), [Australia's National Hydrogen Strategy \(dcccew.gov.au\)](https://www.dcccew.gov.au/Australia's-National-Hydrogen-Strategy)

¹¹ IEA (2023), [Hydrogen - IEA](https://www.iea.org/hydrogen)

transitioning our transport sector. Australia welcomes the opportunity to learn from other countries' experiences developing and implementing policies to reduce emissions in the road freight and heavy transport sector.

2.2.3 Relevant initiatives

Australia welcomes insights from other initiatives focusing on low or zero emission fuels, including the Global Commercial Drive to Zero Program, the Clean Hydrogen Mission (Mission Innovation), and the International Partnership on Hydrogen and Fuel Cells in the Economy.

2.3 Energy efficiency

Energy efficiency provides some of the quickest and most cost-effective mitigation opportunities and is the single largest measure to lower energy demand. As demand for mobility both within and between countries continues to grow, significant improvements in transport efficiency will be crucial. According to the IPCC, systematic changes in transport systems offer the opportunity to decouple transport emissions from economic and population growth.¹² This includes systemic infrastructure change that facilitates changes in transport use behaviours that could reduce energy demand.

2.3.1 Opportunities

- Australia sees merit in **sustainable city and intercity planning** as a sub-topic for discussion, particularly policies and investments to enhance public, low or zero emission transport options, such as walking, cycling, and public transport. According to the IPCC, cities can reduce their transport-related fuel consumption by around 25% through land-use and transport infrastructure policies.¹³ There are growing opportunities to implement strategies, including institutional and community-based initiatives, that can drive behavioural change, promote a culture of more efficient modes of mobility and support the adoption of new transport technologies.
- We would value in-depth discussion between experts and practitioners on **opportunities to improve fuel and tyre efficiency**. Energy is lost from engines in the form of waste heat through exhaust and cooling systems. Innovations in fuel technologies can reduce these losses significantly and improve profit margins and competitiveness. Similarly, innovations in complex rubber compounds, casing construction and tread design have led to the development of tyres that can achieve fuel savings of around 5% for heavy vehicles.¹⁴ Discussions could consider policy and research opportunities to enhance fuel and tyre efficiency, including through vehicle fuel efficiency standards, carbon fuel standards and improved data collection.

2.3.2 Challenges

- A key barrier to enhancing energy efficiency in the transport sector is **the long life of transport assets and slow rate of fleet turnover**. Vehicles can remain serviceable for over 20-years and transport infrastructure is generally designed to have a long lifespan of up to a century. This also applies to heavy transport, rail, aviation and maritime which is serviced by capital intensive, long-lived assets with a lifespan of over 30 years. This leads to slower gains in transport efficiency in a period where rapid and sustained emissions reductions in the

¹² IPC (2022), AR6 WGIII, pg. 1058, [IPCC AR6 WGIII Chapter10.pdf](#)

¹³ IPCC (2022), pg. 1052

¹⁴ DCCEEW (2023), [Road transport | energy.gov.au](#)

near-term are crucial to achieving our goals under the Paris Agreement. Australia would value other countries' insights on addressing challenges related to the long-life of transport assets, particularly regarding technologies and policies that can accelerate fleet turnover and improve transport efficiency in the near future.

- It is also important to consider **institutional and regulatory barriers** to improving energy efficiency in the transport sector. In some countries, existing regulatory codes and standards could disincentivise new lower emissions technologies - for example, some electric battery haulage technologies will increase the weight of vehicles, which may not align with existing regulatory requirements.

2.3.3 Relevant initiatives

Australia welcomes insights from other initiatives focusing on transport efficiency, including the International Partnership for Energy Efficiency Cooperation, and the Energy Efficiency Hub.

2.4 Investment

There are a range of established and emerging climate-smart solutions that could significantly reduce GHG emissions from transport systems. However, global investment and market uptake will need to significantly increase, and in a manner aligned with broader sustainable development objectives. However, there is no one size fits all approach, and investment barriers, solutions and opportunities will differ from region to region and country to country.

The MWP's next IFE provides an important platform to exchange information on shared barriers to attracting and mobilising investment in low emissions transport systems and solutions, and to identify opportunities to rapidly increasing investment for transport sector decarbonisation.

- It would be valuable for the next IFE to include a focus on opportunities to **align global financial flows to accelerate transport sector decarbonisation in a manner which also strengthens sustainable development pathways and outcomes**. In 2019-2020, average annual finance to low-carbon transport projects rose 23% from 2017-2018 to US\$175 billion.¹⁵ Despite this growth, it is estimated that investment in green transport will need to grow to approximately US\$2,565 billion annually to align with the Paris Agreement's temperature goal.¹⁶ Climate-smart investment still represents a small fraction of overall investment in the transport sector.¹⁷
- The IFI could also **focus on identifying and overcoming barriers to investment**, including opportunities for governments to work alongside the investment community to create the enabling conditions required to mobilise finance at scale. Discussions could include opportunities and tools to attract and increase demand for investment, including by aligning and reforming policy and regulatory frameworks; sending market signals that unlock and stimulate investment in emerging and developing economies; reducing investor risk and strengthen market confidence; ensuring closer cooperation between developers, investors, public financial institutions and governments; and ensuring that our international financial architecture is fit for purpose and well positioned to leverage private finance at scale.

¹⁵ Climate Policy Initiative (CPI) (2021), pg. 27; 46, [Fast track to a low-carbon, climate resilient economy \(climatepolicyinitiative.org\)](https://climatepolicyinitiative.org/publications/fast-track-to-a-low-carbon-climate-resilient-economy/)

¹⁶ CPI (2021), pg. 49.

¹⁷ CPI (2021), pg. 8.

- The MWP's IFEs provide a platform to explore practical and actionable investment solutions, including by considering different regional contexts. Building off the first IFE in June, Australia would value a greater focus on **opportunities and barriers to increasing financial flows into Small Island Developing States**, who face a unique set of geographical, climactic and investment challenges regarding transport sector decarbonisation.

2.4.1 Relevant initiatives

Australia welcomes insights from other initiatives focusing on transport investment, including the Global Facility to Decarbonise Transport (World Bank).