

Transport and Infrastructure Net Zero Consultation Roadmap

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Department of Climate Change, Energy, Environment and Water

Response received at:

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Organisation
- 10 Organisation name
Infrastructure Australia
- 11 What best describes you or your organisation?
Not answered
- 12 What sector do you represent?
Not answered
- 13 What state or territory do you live in?
New South Wales
- 14 Postcode
2000
- 15 What area best describes where you live?
City
- 16 1. Do you support the proposed guiding principles?
Yes
- 17 1.1 Please add details to your response.
IA broadly agrees with the pathway for transport infrastructure and the need for decarbonisation to be a consideration throughout the infrastructure lifecycle, including construction of infrastructure. Our research also highlights a range of other important elements required to support decarbonisation of transport infrastructure.

Recommendation 4: The Australian Government should include an additional guiding

principle to ensure the Roadmap and Action Plan are measurable.

We recommend that, in finalising and implementing the Roadmap, the Government consider an additional principle that the Roadmap and Action Plan be measurable. This would reinforce the emphasis on measuring success (in Section 5.2), ensure that progress and success in working towards desired national outcomes is effectively monitored and support effective data-driven decisions and continuous assessment and adjustment of policies and initiatives.

18 2. Do you support the use of the avoid-shift-improve framework as a tool to identify opportunities for abatement?

Yes

19 2.1 Please add details to your response.

IA supports the proposed use of the avoid-shift-improve framework as a structured hierarchy for prioritising decarbonisation strategies, and agrees with the proposed guiding principles.

20 3. Do you agree the development of a national policy framework for active and public transport will support emissions reduction?

Yes

21 3.1 Please add details to your response.

Recommendation 5: The Australian Government should ensure that a national policy framework for public and active transport is targeted towards priority areas where national coordination, cooperation and consistency across different levels of government is required.

IA supports, in principle, the concept of a national policy framework for public and active transport. IA recommends that, to be effective, such a framework should:

- Be targeted, focusing on areas where national coordination is most needed.
- Establish a clear basis for cooperation between different levels of government in transport planning and delivery, which reflects respective roles and responsibilities.
- Define measurable goals for levels of public and active transport mode share required to contribute to timely achievement of national emissions reductions targets, and the data and methods required to consistently track and publish progress towards these targets.

22 4. What should be included in a national policy framework for active and public transport and how should it be developed?

IA suggests that Government consider the following as relevant examples of areas requiring national coordination that could be incorporated in a framework:

- Adopting holistic, whole-of-government approaches to identify where the delivery of infrastructure and public services, such as health and education, can contribute to 'avoid' strategies by designing and delivering public services in ways that reduce the need for people to travel (including digital transformation, mixed-use development or mobile service delivery).
- Considering investments in land transport infrastructure by Australian, state and territory governments between public and private transport, including opportunities to shift the balance of future investments towards mass public transport solutions and rail freight.
- Promoting consistent approaches to integrated land use and transport planning, such as transit-oriented development.
- Promoting nationally consistent and integrated active transport networks, through targeting priority 'missing links' in active transport infrastructure networks via the Active Transport Fund and promoting consistent application of Austroads' national guidelines on active transport infrastructure into broader transport, infrastructure and land use development planning across jurisdictions.
- Collaborating nationally on transport pricing and charging across modes that balances and promotes efficiency, fairness and incentives that encourage mode shift, as well as reforms that facilitate the transition to low and zero emission vehicles and greater shared mobility on roads.
- Cooperating to improve access to and cost-effectiveness of public and active transport solutions for places and groups that are currently less able to access these services and heavily reliant on private vehicles, including lower-income households, people with disability, older Australians and those living in rural and remote Australia and outer-urban areas.

23 5. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the movement of people contributes to transport emissions reduction?

Not answered

24 6.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to

ensure that the movement of goods contributes to transport emissions reduction?

Recommendation 6: The Australian Government should prioritise specific national actions to decarbonise freight related to harmonising freight and vehicle technology regulations and prioritising Commonwealth investments that support freight mode shift, ensuring a coordinated approach between related national strategies.

IA broadly supports the proposed pathway for decarbonising freight and supply chains. Below we recommend several important areas for consideration in developing the Action Plan – which are consistent with our feedback to the 2023 review of the National Freight and Supply Chain Strategy:

- Harmonising national standards and regulations for the freight sector. This includes:
 - o streamlining and addressing inconsistencies in regulatory frameworks and operating procedures across borders, building on the progress made by the National Heavy Vehicle Regulator.
 - o examining regulatory changes and harmonisation to enable and promote low carbon heavy vehicle technologies – including issues such as heavy vehicle mass limits and dimensions, heavy vehicle battery-electric and hydrogen re² charging/e-fuelling infrastructure, vehicle maintenance and repair requirements and associated qualifications.
- Investing in infrastructure to enable freight mode shift, by increasing the availability, efficiency and use of freight rail. This includes:
 - o delivering and optimising access to Inland Rail.
 - o investing in intermodal facilities and in rail projects that maximise separation of freight and passenger rail movements.
 - o addressing missing links in freight rail lines that take double-stacked containers to sea ports for export
 - o supporting the ongoing maintenance and improved resilience of existing rail assets and national freight networks.
 - o Ensuring alignment and coordination between the Roadmap and the various other national strategies impacting freight, including the National Freight and Supply Chain Strategy, the National Electric Vehicle Strategy and the National Hydrogen Strategy. This will be important to ensure coordinated, efficient and effective national action and clear directions for industry

25 6.2. How would these actions address the identified challenges and opportunities for emissions reduction in the movement of goods?

Not answered

26 7. Do you agree with the proposed net zero pathway for light road vehicles?

Yes

27 7.1 Please add details to your response.

Not answered

28 8. The Australian Government is currently developing an Australian New Vehicle Efficiency Standard and has already begun to implement actions in the National Electric Vehicle Strategy.8.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce light vehicle emissions?

Recommendation 7: The Australian Government should conduct continuous monitoring of EV adoption and supporting ecosystems to inform proactive, evidence-based decisions on targeted future actions to support a timely and just transition of the light vehicle fleet to achieve Net Zero targets.

The proposed net zero pathway for light road vehicles is sound. The precise pace and trajectory of EV adoption is uncertain, and will be influenced by a range of technology, economic and human factors. It will be vital for the Government to undertake continuous monitoring of the EV market and ecosystem at a national level. This will help understand whether the market is transitioning to full adoption at the pace required to support achievement of 2050 and interim net zero targets and identify any priority areas for government intervention along the way.

IA also notes the following further considerations for decarbonising light vehicles in addition to those identified in the Roadmap, which will also be informed by ongoing market monitoring:

- While the Roadmap discusses fiscal incentives as a measure for offsetting the price differential between EVs and ICE vehicles, even where price parity is achieved there may still be barriers to consumer adoption to the pace and extent required to achieve net zero targets. Subject to how the market develops, further fiscal incentives may still need to be considered in the longer term to deliver national goals.
- The proposed timeline for widespread charging infrastructure rollout will require significant public and private investment to achieve. This rollout is a key enabler that needs to keep pace with EV uptake to avoid presenting a barrier to adoption. The variable pace of uptake and commercial attractiveness of charging infrastructure across geographies means that careful planning and support by governments will

likely be necessary to ensure that the transition is timely, equitable and successful across different regions in Australia.

- Successful transition to EVs will require an effective after-market to support consumer adoption. This includes developing or transitioning the necessary workforce skills, services and availability of parts to support EV maintenance and repairs. This should be monitored in collaboration with industry to identify emerging risks and potential action areas, for example through regulations, training programs or infrastructure to support the EV aftermarket.

29 8.2 How would these actions address the identified challenges and opportunities to reduce light vehicle emissions?

Not answered

30 9. Do you agree with the proposed net zero pathway for heavy road vehicles?

Not answered

31 9.1 Please add details to your response

Not answered

32 10. The proposed pathway for heavy road vehicles relies on a mix of battery electric, hydrogen fuel-cell and low carbon liquid fuels. Rank from 1 to 3, the order in which these should be prioritised for emissions reduction.

Not answered

33 10.1 Please add details to your response. Why did you rank them in that order?

Not answered

34 11. What role should low carbon liquid fuels play in the heavy vehicle decarbonisation?

Not answered

- 35 12. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce heavy vehicle emissions?
Not answered
- 36 13. Do you agree with the proposed net zero pathway for rail?
Not answered
- 37 13.1 Please add details to your response.
Not answered
- 38 14. The proposed pathway for rail relies on a mix of battery electric, hydrogen fuel-cell and low carbon liquid fuels. Rank from 1 to 3, the order in which these should be prioritised for emissions reduction.
Not answered
- 39 14.1 Please add details to your response. Why did you rank them in that order?
Not answered
- 40 15. What role should low carbon liquid fuels play in rail decarbonisation?
Not answered
- 41 16. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce rail emissions?
Not answered
- 42 16.1 How would these actions address the identified challenges and opportunities to reduce rail emissions?
Not answered

43 17. Do you agree with the proposed net zero pathway for maritime?
Yes

44 17.1 Please add details to your response.
Not answered

45 18. The Australian Government is engaging in consultation as part of the development of the Maritime Emissions Reduction National Action Plan and those consultations will also inform the final Roadmap and Action Plan. 18.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce maritime emissions?

Recommendation 3: The Australian Government should expand the consideration of ports infrastructure in the Roadmap and Action Plan to include opportunities to measure and reduce lifecycle emissions from the construction and operation of port infrastructure, examine the role of ports in the clean energy and circular economy transitions and ensure effective planning for resilient ports and supply chains in a changing climate.

IA broadly supports the proposed pathways for decarbonisation of transport modes set out in the Roadmap. While the Roadmap captures opportunities for ports in areas such as shore power, low carbon fuels for international shipping and exports for emerging This section provides advice in response to consultation questions 17 and 18:

17 Do you agree with the proposed net zero pathway for maritime?

18 The Australian Government is engaging in consultation as part of the development of the Maritime Emissions Reduction National Action Plan and those consultations will also inform the final Roadmap and Action Plan.

18.1. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce maritime emissions?

18.2. How would these actions address the identified challenges and opportunities to reduce maritime emissions?

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clean industries, we recommend the pathway for maritime and subsequent Action Plan also consider the following challenges and opportunities related to ports infrastructure:

- Emissions: Consider opportunities for governments and industry (including port owners/operators) to both measure and reduce lifecycle emissions from the

construction and operations of port infrastructure. Opportunities include avoiding and mitigating significant negative impacts from reducing blue carbon stocks due to dredging, seagrass removal and clearing coastal land/vegetation, such as mangroves and saltmarsh, for port construction.

- **Renewable transition:** Consider the potential role for ports infrastructure to support the transition to renewable energy. Ports are a critical enabler, for example as landing points and delivery hubs for wind infrastructure and locations for hydrogen and future fuels bunkering. Ports also have the potential to develop facilities for energy generation and large-scale electricity storage, offer capacity to operate as grid interconnectors and facilitate import and export of clean energy products (such as green hydrogen).
- **Circular economy:** Consider opportunities for port infrastructure to provide shared facilities to support circular economy, recycling and waste reduction objectives to encourage decarbonisation of co-located industries. For example, ports are well suited to enable carbon capture, utilisation and storage services.
- **Resilience:** Ensure that the development of ports infrastructure comprehensively considers climate change scenario analysis and resilience challenges, due to its exposure to some of the worst effects of extreme weather and sea level rise.

46 18.2 How would these actions address the identified challenges and opportunities to reduce maritime emissions?

Not answered

47 19. Do you agree with the proposed net zero pathway for aviation?

Not answered

48 19.1 Please add details to your response.

Not answered

49 20. The Australian Government has already engaged in consultation on aviation decarbonisation through the development of the Aviation White Paper and those consultations will also inform final Roadmap and Action Plan.

Not answered

50 20.1 What additional actions by governments, communities, industry

and other stakeholders need to be taken now and in the future to reduce aviation emissions?

Not answered

51 21. Do you agree with the proposed net zero pathway for transport infrastructure?

Yes

52 21.1 Please add details to your response.

Not answered

53 22. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce transport infrastructure emissions and ensure that transport infrastructure is ready for and enables low-emission transport modes?

Recommendation 1: The Australian Government should have regard to the recommendations in IA's Embodied Carbon Projections for Australian Infrastructure and Buildings report in its Action Plan to reduce emissions from transport infrastructure.

IA broadly agrees with the pathway for transport infrastructure and the need for decarbonisation to be a consideration throughout the infrastructure lifecycle, including construction of infrastructure. Our research also highlights a range of other important elements required to support decarbonisation of transport infrastructure.

In July 2024, IA released the findings of its comprehensive research into the Embodied Carbon Projections for Infrastructure and Buildings, providing the first comprehensive estimate of the embodied carbon intensity of Australia's infrastructure pipeline.²

Findings show that over the five years to 2026-27, construction activity will produce between 37 and 64 megatonnes of CO₂ in upfront embodied carbon each year—a total of 247 megatonnes of CO₂ over the period. Findings also show that by 2026-27, it is possible to achieve a 23 per cent reduction in CO₂ on the five-year pipeline by switching to cleaner, market-ready building materials and technologies.

Our research reinforces the observation made in the Consultation Roadmap that the Australian Government can spearhead a more consistent, nation-wide approach to transport infrastructure decarbonisation by encouraging low emission building practices, creating a stable investment environment and providing certainty to industry supply chains. To this end, our report highlights several opportunities for the Australian Government, working with other governments and industry, to pursue specific areas for action. These include:

- Providing education and training for professionals, trades and consumers, which focus on addressing carbon literacy, specification of low carbon products, and construction techniques with low carbon materials.
- Developing a nationally standardised embodied carbon measurement system to allow for consistent methods to collect, measure and assess data on embodied carbon.
- Developing a common national approach to drive sustained market demand for low carbon products and solutions through project guidance and fiscal incentives.
- Developing new methods for project delivery, which share risks and rewards for low carbon project outcomes.
- Driving greater national alignment on low carbon expectations through performance based standards and specifications.

This section provides advice in response to consultation questions 21 and 22:

21 Do you agree with the proposed net zero pathway for transport infrastructure?

22 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce transport infrastructure emissions and ensure that transport infrastructure is ready for and enables low-emission transport modes?

22.1. How would these actions address the identified challenges and opportunities to reduce transport infrastructure emissions?

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Recommendation 2: The Australian Government should identify priority areas for intervention in reducing transport infrastructure emissions throughout the lifecycle, based on a decarbonisation hierarchy, and consider specific actions identified by IA to promote circular economy practices and recycled materials in infrastructure projects. IA's research findings reinforce the Roadmap's observation that decarbonisation must be considered throughout all stages of the infrastructure lifecycle. Considering emissions at every stage – from planning and design through to construction, operation, maintenance and eventual decommissioning – ensures that no significant sources of emissions are overlooked and maximises the overall potential for emissions reduction.

IA recommends using a decarbonisation hierarchy to prioritise actions by identifying the most effective points for intervention, whether this is in material selection during design, construction methods, operational efficiency improvements or end of life recycling. In this context, we note that land clearing in project delivery needs to be a critical consideration.

IA also recommends incorporating circular economy principles more prominently in the Roadmap and in the Action Plan. Delivering projects with circularity in mind helps promote the efficient use of resources, reduce environmental impacts and significantly lower the carbon embedded in projects.

IA's 2022 Replacement Materials report found that around 27% of conventional materials used in road projects can be replaced with recycled materials. It also identified the potential to unlock new supply chains of recyclable materials to meet growing infrastructure demand. However, market constraints impacting the uptake of recycled content in road projects were also identified.

Actions recommended by IA to address challenges include improving awareness, enhancing confidence in using recycled materials, addressing regulatory issues, improving recycling infrastructure and driving demand through sustainable procurement practices

- 54 22.1 How would these actions address the identified challenges and opportunities to reduce transport infrastructure emissions?

Not answered

- 55 23. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the energy mix is ready to support transport emissions reduction?

Not answered

- 56 24. How should the use of low carbon liquid fuels (LCLFs) be prioritised across different transport modes over time to achieve maximum abatement?

Not answered

- 57 25. What are the best ways for the Australian Government to work collaboratively with industry, business, governments and communities to implement the proposed pathways?

Recommendation 8: The Australian Government should consider specific actions identified by IA to collaborate with governments, industry and the research community to decarbonise infrastructure and construction through support for capacity-building, innovation and knowledge-sharing.

Through our research, IA has identified other areas for action that the Government can pursue in collaboration with key stakeholders to implement the proposed pathways.

These include:

- Capacity building and training: The Australian Government can provide training programs and support to enhance skills and knowledge among stakeholders. IA's research into embodied carbon has identified opportunities regarding:
 - o Education programs for professionals, trades and consumers which target low carbon project specifications and construction approaches.
 - o A national sharing platform for industry practitioners to showcase learnings from projects, pilots, concessions, model contracts and specifications for low carbon solutions.
 - o Pilot projects to trial new solutions and project data about new projects and construction techniques.
- Investment in research, development and scale-up of innovative solutions and technologies: The Australian Government can support trials and pilot projects for emerging zero emission technologies, materials and construction techniques which would accelerate the development of new technologies and solutions. This also includes funding policy and infrastructure measures to support the decarbonisation of transport modes (such as co-funding deployment of light and heavy vehicle charging infrastructure and incentives to accelerate uptake of low emission vehicles and fuels).
- Knowledge sharing: The Australian Government can establish knowledge sharing forums for governments, industry and researchers to exchange best practices on transport decarbonisation initiatives. One example is the Materials and Embodied Carbon Leaders' Alliance, which facilitates government collaboration with the private sector and promotes thought leadership and innovation

58 25.1 What are good domestic or international examples of partnership and collaboration on transport and transport infrastructure emissions reduction that could inform the final Roadmap and Action Plan?

The Infrastructure and Transport Ministers Meeting has been an effective vehicle at the national level for facilitating cooperation between the Australian Government and state/territory governments, ensuring a coordinated approach to national infrastructure and transport issues. Recent successes enabled by its inter-governmental collaboration include the development and agreement of a set of nationally consistent emissions values for use in transport infrastructure economic appraisal, led by IA.

59 25.2 What opportunities can Government leverage to show leadership in Australia and internationally?

Not answered

60

26. What measures and metrics should be used to evaluate the final Transport and Infrastructure Net Zero Roadmap and Action Plan?

Recommendation 9: The Australian Government should ensure the approach for measuring success includes and differentiates between implementation and outcomes measures, aligned to stated goals, and is supported by nationally consistent metrics, data collection and reporting across levels of government.

IA agrees that the success of the Roadmap and Action Plan should be primarily guided by the emissions reductions achieved by the transport sector.

We recommend that in finalising and implementing the Roadmap and Action Plan, the Government:

- Develops a more comprehensive evaluation framework that includes and clearly differentiates between both implementation and outcomes measures, to ensure that both delivery progress and results in working towards desired national outcomes is effectively monitored and evaluated.
- Considers the inclusion of metrics related to areas of economic opportunity associated with the net zero transition in the evaluation framework, which align with stated goals in the Roadmap and potential to grow low-carbon jobs and industries.
- Leads the development of a standardised data collection and reporting framework in collaboration with jurisdictions to support nationally consistent measurement over time

61 26.1 What other data and evidence could governments use and how could this offer further insights on the pace, scale and location of transport emissions reduction pathways?

Not answered

62 27. Do you have any feedback on the proposed review process?

Not answered

63 28. Do you have any further feedback on the Consultation Roadmap and proposed pathways?

Not answered

64 28.1 Is there anything missing? Are the sections appropriately integrated? Is the Roadmap appropriately ambitious?

Not answered

65 29. Is there any further information or documentation that you wish to be considered with your submission?

Not answered

66 Would you like to upload a document?

Yes

67 Have you removed any identifying information from your submission?

Yes

68 Upload a submission

IA_Submission_Transport and Infrastructure Net Zero Roadmap Consultation (Final).pdf

69 Upload a submission

Not answered

70 Upload supporting file

Not answered

71 Upload supporting file

Not answered

Submission to the Transport and Infrastructure Net Zero Roadmap Consultation

26 July 2024

Introduction

Infrastructure Australia (IA) welcomes the opportunity to make a submission to the Department of Infrastructure, Transport, Regional Development, Communications and the Arts on the development of the Transport and Infrastructure Net Zero Roadmap and Action Plan. This submission provides advice and recommendations from IA in response to the consultation questions.

The role of Infrastructure Australia

IA is established by the *Infrastructure Australia Act 2008* as the Australian Government's independent advisor on nationally significant infrastructure investment planning and project prioritisation. Our role is to provide the Australian Government with independent and expert advice on Australia's current and future nationally significant infrastructure needs and priorities.

Decarbonising transport infrastructure is crucial for Australia to meet our legislated emissions reduction targets of 43% below 2005 levels by 2030 and achieve net zero emissions by 2050. IA has a mandate under the *Infrastructure Australia Act 2008*, to account for Australia's greenhouse gas emissions reduction targets in our advice.

IA has produced a range of advice and research relevant to the issues covered in the Roadmap and Action Plan, which provide the primary basis for our response to this consultation, including:

- [National emissions values](#) for use in economic appraisal, to measure the social impact of emissions in infrastructure proposals received from Australian, state or territory governments.
- The [Embodied Carbon Projections for Infrastructure and Buildings](#) report, which provides a series of insights and recommendations to the Australian Government on lowering embodied carbon across the built environment.
- Research into replacement materials as part of our Market Capacity research program, which reports on the capacity of the market to deliver on Australia's investment pipeline. The 2022 [Replacement Materials report](#) examines the potential for using recycled materials in road infrastructure projects across Australia.
- The [2019 Australian Infrastructure Audit](#) and [2021 Australian Infrastructure Plan](#), which identify a range of challenges, opportunities and recommendations for decarbonising the infrastructure sector.

Summary of Recommendations

Roadmap section	Infrastructure Australia recommendations
Key Recommendations	
4.1 Transport Infrastructure	<p>Recommendation 1: The Australian Government should have regard to the recommendations in IA's <i>Embodied Carbon Projections for Australian Infrastructure and Buildings</i> report in its Action Plan to reduce emissions from transport infrastructure.</p> <p>Recommendation 2: The Australian Government should identify priority areas for intervention in reducing transport infrastructure emissions throughout the lifecycle, based on a decarbonisation hierarchy, and consider specific actions identified by IA to promote circular economy practices and recycled materials in infrastructure projects.</p>
3.4 Maritime	<p>Recommendation 3: The Australian Government should expand the consideration of ports infrastructure in the Roadmap and Action Plan to include opportunities to measure and reduce lifecycle emissions from the construction and operation of port infrastructure, examine the role of ports in the clean energy and circular economy transitions and ensure effective planning for resilient ports and supply chains in a changing climate.</p>
Additional Recommendations	
1.2 The approach	<p>Recommendation 4: The Australian Government should include an additional guiding principle to ensure the Roadmap and Action Plan are measurable.</p>
2.1 Promoting active and public transport	<p>Recommendation 5: The Australian Government should ensure that a national policy framework for public and active transport is targeted towards priority areas where national coordination, cooperation and consistency across different levels of government is required.</p>
2.2 Decarbonising freight and supply chains	<p>Recommendation 6: The Australian Government should prioritise specific national actions to decarbonise freight related to harmonising freight and vehicle technology regulations and prioritising Commonwealth investments that support freight mode shift, ensuring a coordinated approach between related national strategies.</p>
3.1 Road - light vehicles	<p>Recommendation 7: The Australian Government should conduct continuous monitoring of EV adoption and supporting ecosystems to inform proactive, evidence-based decisions on targeted future actions to support a timely and just transition of the light vehicle fleet to achieve Net Zero targets.</p>
5.1 Travelling in partnership	<p>Recommendation 8: The Australian Government should consider specific actions identified by IA to collaborate with governments, industry and the research community to decarbonise infrastructure and construction through support for capacity-building, innovation and knowledge-sharing.</p>
5.2 Measuring success	<p>Recommendation 9: The Australian Government should ensure the approach for measuring success includes and differentiates between implementation and outcomes measures, aligned to stated goals, and is supported by nationally consistent metrics, data collection and reporting across levels of government.</p>

Key recommendations

Decarbonisation of transport infrastructure

This section provides advice in response to consultation questions 21 and 22:

21 Do you agree with the proposed net zero pathway for transport infrastructure?

22 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce transport infrastructure emissions and ensure that transport infrastructure is ready for and enables low-emission transport modes?

22.1. How would these actions address the identified challenges and opportunities to reduce transport infrastructure emissions?

Recommendation 1: The Australian Government should have regard to the recommendations in IA's *Embodied Carbon Projections for Australian Infrastructure and Buildings* report in its Action Plan to reduce emissions from transport infrastructure.

IA broadly agrees with the pathway for transport infrastructure and the need for decarbonisation to be a consideration throughout the infrastructure lifecycle, including construction of infrastructure. Our research also highlights a range of other important elements required to support decarbonisation of transport infrastructure.

In July 2024, IA released the findings of its comprehensive research into the *Embodied Carbon Projections for Infrastructure and Buildings*, providing the first comprehensive estimate of the embodied carbon intensity of Australia's infrastructure pipeline.

Findings show that over the five years to 2026-27, construction activity will produce between 37 and 64 megatonnes of CO_{2e} in upfront embodied carbon each year—a total of 247 megatonnes of CO_{2e} over the period. Findings also show that by 2026-27, it is possible to achieve a 23 per cent reduction in CO_{2e} on the five-year pipeline by switching to cleaner, market-ready building materials and technologies.

Our research reinforces the observation made in the Consultation Roadmap that the Australian Government can spearhead a more consistent, nation-wide approach to transport infrastructure decarbonisation by encouraging low emission building practices, creating a stable investment environment and providing certainty to industry supply chains. To this end, our report highlights several opportunities for the Australian Government, working with other governments and industry, to pursue specific areas for action. These include:

- Providing education and training for professionals, trades and consumers, which focus on addressing carbon literacy, specification of low carbon products, and construction techniques with low carbon materials.
- Developing a nationally standardised embodied carbon measurement system to allow for consistent methods to collect, measure and assess data on embodied carbon.
- Developing a common national approach to drive sustained market demand for low carbon products and solutions through project guidance and fiscal incentives.
- Developing new methods for project delivery, which share risks and rewards for low carbon project outcomes.
- Driving greater national alignment on low carbon expectations through performance-based standards and specifications.

Recommendation 2: The Australian Government should identify priority areas for intervention in reducing transport infrastructure emissions throughout the lifecycle, based on a decarbonisation hierarchy, and consider specific actions identified by IA to promote circular economy practices and recycled materials in infrastructure projects.

IA's research findings reinforce the Roadmap's observation that decarbonisation must be considered throughout all stages of the infrastructure lifecycle. Considering emissions at every stage – from planning and design through to construction, operation, maintenance and eventual decommissioning – ensures that no significant sources of emissions are overlooked and maximises the overall potential for emissions reduction.

IA recommends using a decarbonisation hierarchy to prioritise actions by identifying the most effective points for intervention, whether this is in material selection during design, construction methods, operational efficiency improvements or end of life recycling. In this context, we note that land clearing in project delivery needs to be a critical consideration.

IA also recommends incorporating circular economy principles more prominently in the Roadmap and in the Action Plan. Delivering projects with circularity in mind helps promote the efficient use of resources, reduce environmental impacts and significantly lower the carbon embedded in projects.

IA's 2022 *Replacement Materials* report found that around 27% of conventional materials used in road projects can be replaced with recycled materials. It also identified the potential to unlock new supply chains of recyclable materials to meet growing infrastructure demand. However, market constraints impacting the uptake of recycled content in road projects were also identified.

Actions recommended by IA to address challenges include improving awareness, enhancing confidence in using recycled materials, addressing regulatory issues, improving recycling infrastructure and driving demand through sustainable procurement practices.

Ports infrastructure

This section provides advice in response to consultation questions 17 and 18:

17 Do you agree with the proposed net zero pathway for maritime?

18 The Australian Government is engaging in consultation as part of the development of the Maritime Emissions Reduction National Action Plan and those consultations will also inform the final Roadmap and Action Plan.

18.1. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce maritime emissions?

18.2. How would these actions address the identified challenges and opportunities to reduce maritime emissions?

Recommendation 3: The Australian Government should expand the consideration of ports infrastructure in the Roadmap and Action Plan to include opportunities to measure and reduce lifecycle emissions from the construction and operation of port infrastructure, examine the role of ports in the clean energy and circular economy transitions and ensure effective planning for resilient ports and supply chains in a changing climate.

IA broadly supports the proposed pathways for decarbonisation of transport modes set out in the Roadmap. While the Roadmap captures opportunities for ports in areas such as shore power, low carbon fuels for international shipping and exports for emerging

clean industries, we recommend the pathway for maritime and subsequent Action Plan also consider the following challenges and opportunities related to ports infrastructure:

- *Emissions:* Consider opportunities for governments and industry (including port owners/operators) to both measure and reduce lifecycle emissions from the construction and operations of port infrastructure. Opportunities include avoiding and mitigating significant negative impacts from reducing blue carbon stocks due to dredging, seagrass removal and clearing coastal land/vegetation, such as mangroves and saltmarsh, for port construction.
- *Renewable transition:* Consider the potential role for ports infrastructure to support the transition to renewable energy. Ports are a critical enabler, for example as landing points and delivery hubs for wind infrastructure and locations for hydrogen and future fuels bunkering. Ports also have the potential to develop facilities for energy generation and large-scale electricity storage, offer capacity to operate as grid interconnectors and facilitate import and export of clean energy products (such as green hydrogen).
- *Circular economy:* Consider opportunities for port infrastructure to provide shared facilities to support circular economy, recycling and waste reduction objectives to encourage decarbonisation of co-located industries. For example, ports are well suited to enable carbon capture, utilisation and storage services.
- *Resilience:* Ensure that the development of ports infrastructure comprehensively considers climate change scenario analysis and resilience challenges, due to its exposure to some of the worst effects of extreme weather and sea level rise.

Additional feedback and recommendations

The approach

This section provides advice in response to consultation questions 1 and 2:

- 1 *Do you agree with the proposed guiding principles?*
- 2 *Do you support the use of the avoid-shift-improve framework as a tool to identify opportunities for abatement?*

Recommendation 4: The Australian Government should include an additional guiding principle to ensure the Roadmap and Action Plan are measurable.

IA supports the proposed use of the avoid-shift-improve framework as a structured hierarchy for prioritising decarbonisation strategies, and agrees with the proposed guiding principles.

We recommend that, in finalising and implementing the Roadmap, the Government consider an additional principle that the Roadmap and Action Plan be measurable. This would reinforce the emphasis on measuring success (in Section 5.2), ensure that progress and success in working towards desired national outcomes is effectively monitored and support effective data-driven decisions and continuous assessment and adjustment of policies and initiatives.

National policy framework for active and public transport

This section provides advice in response to consultation questions 3, 4 and 5:

- 3 *Do you agree the development of a national policy framework for active and public transport will support emissions reduction?*
- 4 *What should be included in a national policy framework for active and public transport and how should it be developed?*
- 5 *What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the movement of people contributes to transport emissions reduction?*

Recommendation 5: The Australian Government should ensure that a national policy framework for public and active transport is targeted towards priority areas where national coordination, cooperation and consistency across different levels of government is required.

IA supports, in principle, the concept of a national policy framework for public and active transport. IA recommends that, to be effective, such a framework should:

- Be targeted, focusing on areas where national coordination is most needed.
- Establish a clear basis for cooperation between different levels of government in transport planning and delivery, which reflects respective roles and responsibilities.
- Define measurable goals for levels of public and active transport mode share required to contribute to timely achievement of national emissions reductions targets, and the data and methods required to consistently track and publish progress towards these targets.

IA suggests that Government consider the following as relevant examples of areas requiring national coordination that could be incorporated in a framework:

- Adopting holistic, whole-of-government approaches to identify where the delivery of infrastructure and public services, such as health and education, can contribute to 'avoid' strategies by designing and delivering public services in ways that reduce the need for people to travel (including digital transformation, mixed-use development or mobile service delivery).
- Considering investments in land transport infrastructure by Australian, state and territory governments between public and private transport, including opportunities to shift the balance of future investments towards mass public transport solutions and rail freight.
- Promoting consistent approaches to integrated land use and transport planning, such as transit-oriented development.
- Promoting nationally consistent and integrated active transport networks, through targeting priority 'missing links' in active transport infrastructure networks via the Active Transport Fund and promoting consistent application of Austroads' national guidelines on active transport infrastructure into broader transport, infrastructure and land use development planning across jurisdictions.
- Collaborating nationally on transport pricing and charging across modes that balances and promotes efficiency, fairness and incentives that encourage mode shift,

as well as reforms that facilitate the transition to low and zero emission vehicles and greater shared mobility on roads.

- Cooperating to improve access to and cost-effectiveness of public and active transport solutions for places and groups that are currently less able to access these services and heavily reliant on private vehicles, including lower-income households, people with disability, older Australians and those living in rural and remote Australia and outer-urban areas.

Decarbonising freight and supply chains

This section provides advice in response to consultation question 6:

6 *The Australian Government has already engaged in consultation on the 2023 review of the National Freight and Supply Chain Strategy and those consultations will also inform the final Roadmap and Action Plan.*

6.1 *What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure that the movement of goods contributes to transport emissions reduction?*

6.2 *How would these actions address the identified challenges and opportunities for emissions reduction in the movement of goods?*

Recommendation 6: The Australian Government should prioritise specific national actions to decarbonise freight related to harmonising freight and vehicle technology regulations and prioritising Commonwealth investments that support freight mode shift, ensuring a coordinated approach between related national strategies.

IA broadly supports the proposed pathway for decarbonising freight and supply chains. Below we recommend several important areas for consideration in developing the Action Plan – which are consistent with our feedback to the 2023 review of the *National Freight and Supply Chain Strategy*:

- *Harmonising national standards and regulations for the freight sector.* This includes:
 - streamlining and addressing inconsistencies in regulatory frameworks and operating procedures across borders, building on the progress made by the National Heavy Vehicle Regulator.
 - examining regulatory changes and harmonisation to enable and promote low carbon heavy vehicle technologies – including issues such as heavy vehicle mass limits and dimensions, heavy vehicle battery-electric and hydrogen re-charging/re-fuelling infrastructure, vehicle maintenance and repair requirements and associated qualifications.
- *Investing in infrastructure to enable freight mode shift, by increasing the availability, efficiency and use of freight rail.* This includes:
 - delivering and optimising access to Inland Rail.
 - investing in intermodal facilities and in rail projects that maximise separation of freight and passenger rail movements.
 - addressing missing links in freight rail lines that take double-stacked containers to sea ports for export.

- supporting the ongoing maintenance and improved resilience of existing rail assets and national freight networks.
- Ensuring alignment and coordination between the Roadmap and the various other national strategies impacting freight, including the National Freight and Supply Chain Strategy, the National Electric Vehicle Strategy and the National Hydrogen Strategy. This will be important to ensure coordinated, efficient and effective national action and clear directions for industry.

Decarbonising light vehicles

This section provides advice in response to consultation question 7:

7 Do you agree with the proposed net zero pathway for light road vehicles? 7.1 Please add details to your response.

Recommendation 7: The Australian Government should conduct continuous monitoring of EV adoption and supporting ecosystems to inform proactive, evidence-based decisions on targeted future actions to support a timely and just transition of the light vehicle fleet to achieve Net Zero targets.

The proposed net zero pathway for light road vehicles is sound. The precise pace and trajectory of EV adoption is uncertain, and will be influenced by a range of technology, economic and human factors. It will be vital for the Government to undertake continuous monitoring of the EV market and ecosystem at a national level. This will help understand whether the market is transitioning to full adoption at the pace required to support achievement of 2050 and interim net zero targets and identify any priority areas for government intervention along the way.

IA also notes the following further considerations for decarbonising light vehicles in addition to those identified in the Roadmap, which will also be informed by ongoing market monitoring:

- While the Roadmap discusses fiscal incentives as a measure for offsetting the price differential between EVs and ICE vehicles, even where price parity is achieved there may still be barriers to consumer adoption to the pace and extent required to achieve net zero targets. Subject to how the market develops, further fiscal incentives may still need to be considered in the longer term to deliver national goals.
- The proposed timeline for widespread charging infrastructure rollout will require significant public and private investment to achieve. This rollout is a key enabler that needs to keep pace with EV uptake to avoid presenting a barrier to adoption. The variable pace of uptake and commercial attractiveness of charging infrastructure across geographies means that careful planning and support by governments will likely be necessary to ensure that the transition is timely, equitable and successful across different regions in Australia.
- Successful transition to EVs will require an effective after-market to support consumer adoption. This includes developing or transitioning the necessary workforce skills, services and availability of parts to support EV maintenance and repairs. This should be monitored in collaboration with industry to identify emerging risks and potential action areas, for example through regulations, training programs or infrastructure to support the EV aftermarket.

Opportunities for collaboration

This section provides advice in response to consultation question 25:

25 *What are the best ways for the Australian Government to work collaboratively with industry, business, governments and communities to implement the proposed pathways?*

25.1 *What are good domestic or international examples of partnership and collaboration on transport and transport infrastructure emissions reduction that could inform the final Roadmap and Action Plan?*

25.2 *What opportunities can the government leverage to show leadership in Australia and internationally?*

Recommendation 8: The Australian Government should consider specific actions identified by IA to collaborate with governments, industry and the research community to decarbonise infrastructure and construction through support for capacity-building, innovation and knowledge-sharing.

The Infrastructure and Transport Ministers Meeting has been an effective vehicle at the national level for facilitating cooperation between the Australian Government and state/territory governments, ensuring a coordinated approach to national infrastructure and transport issues. Recent successes enabled by its inter-governmental collaboration include the development and agreement of a set of nationally consistent emissions values for use in transport infrastructure economic appraisal, led by IA.

Through our research, IA has identified other areas for action that the Government can pursue in collaboration with key stakeholders to implement the proposed pathways. These include:

- *Capacity building and training:* The Australian Government can provide training programs and support to enhance skills and knowledge among stakeholders. IA's research into embodied carbon has identified opportunities regarding:
 - Education programs for professionals, trades and consumers which target low carbon project specifications and construction approaches.
 - A national sharing platform for industry practitioners to showcase learnings from projects, pilots, concessions, model contracts and specifications for low carbon solutions.
 - Pilot projects to trial new solutions and project data about new projects and construction techniques.
- *Investment in research, development and scale-up of innovative solutions and technologies:* The Australian Government can support trials and pilot projects for emerging zero emission technologies, materials and construction techniques which would accelerate the development of new technologies and solutions. This also includes funding policy and infrastructure measures to support the decarbonisation of transport modes (such as co-funding deployment of light and heavy vehicle charging infrastructure and incentives to accelerate uptake of low emission vehicles and fuels).
- *Knowledge sharing:* The Australian Government can establish knowledge sharing forums for governments, industry and researchers to exchange best practices on transport decarbonisation initiatives. One example is the Materials and Embodied

Carbon Leaders' Alliance, which facilitates government collaboration with the private sector and promotes thought leadership and innovation.

Measuring success

This section provides advice in response to consultation question 26:

26 What measures and metrics should be used to evaluate the final Transport and Infrastructure Net Zero Roadmap and Action Plan?

26.1 What other data and evidence could governments use and how could this offer further insights on the pace, scale and location of transport emissions reduction pathways?

Recommendation 9: The Australian Government should ensure the approach for measuring success includes and differentiates between implementation and outcomes measures, aligned to stated goals, and is supported by nationally consistent metrics, data collection and reporting across levels of government.

IA agrees that the success of the Roadmap and Action Plan should be primarily guided by the emissions reductions achieved by the transport sector.

We recommend that in finalising and implementing the Roadmap and Action Plan, the Government:

- Develops a more comprehensive evaluation framework that includes and clearly differentiate between both implementation and outcomes measures, to ensure that both delivery progress and results in working towards desired national outcomes is effectively monitored and evaluated.
- Considers the inclusion of metrics related to areas of economic opportunity associated with the net zero transition in the evaluation framework, which align with stated goals in the Roadmap and potential to grow low-carbon jobs and industries.
- Leads the development of a standardised data collection and reporting framework in collaboration with jurisdictions to support nationally consistent measurement over time.