Transport and Infrastructure Net Zero Consultation Roadmap

Take the survey

Department of Climate Change, Energy, Environment and Water

Response received at:
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Response ID:
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1 Confirm that you have read and understand this privacy notice.
Yes

2 Please indicate how and if you want your submission published.
Public

3 Published name
L.E.K. Consulting

4 Confirm that you have read and understand this declaration.
Yes

5 First name
Natasha

6 Last name
Santha

7 Email
[redacted]

8 Phone

[redacted]

9 Who are you answering on behalf of?

Organisation

10 Organisation name

L.E.K. Consulting

11 What best describes you or your organisation?

Other: "Corporation"

12 What sector do you represent?

All transport

Climate change/net zero

13 What state or territory do you live in?

Victoria

14 Postcode

3000

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.

Please see attached document

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

Not answered

19 2.1 Please add details to your response.

Please see attached document

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

Not answered

21 3.1 Please add details to your response.

Please see attached document

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

Please see attached document

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?

Please see attached document

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?

Please see attached document

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

Please see attached document

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

Not answered

27 7.1 Please add details to your response.

Please see attached document

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?

Please see attached document

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

Please see attached document

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

Please see attached document

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?

Please see attached document

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

Please see attached document

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?

Please see attached document

36 13. Do you agree with the proposed net zero pathway for rail?

Not answered

37 13.1 Please add details to your response.

Please see attached document

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?

Please see attached document

40 15. What role should low carbon liquid fuels play in rail decarbonisation?

Please see attached document

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?

Please see attached document

42 16.1 How would these actions address the identified challenges and opportunities to reduce rail emissions?

Please see attached document

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

Not answered

44 17.1 Please add details to your response.

Please see attached document

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?

Please see attached document

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

Please see attached document

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

Please see attached document

48 19.1 Please add details to your response.

Please see attached document

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.

Please see attached document

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?

Please see attached document

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

Not answered

52 21.1 Please add details to your response.

Please see attached document

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?

Please see attached document

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

Please see attached document

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?

Please see attached document

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

Please see attached document

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?

Please see attached document

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?

Please see attached document

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

Please see attached document

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

Please see attached document

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?

Please see attached document

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

Please see attached document

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

Please see attached document

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

Please see attached document

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

Please see attached document

66 Would you like to upload a document?

Yes

67 Have you removed any identifying information from your submission?

Yes

68 Upload a submission

178 Redacted L.E.K._Consulting_Response_Net_Zero_Roadmap.a90e0c0e.pdf

69 Upload a submission

Not answered

70 Upload supporting file

Not answered

71 Upload supporting file

Not answered

L.E.K. Submission - Transport and Infrastructure Net Zero Consultation Roadmap

Date: 1 August 2024

Contact details:

Natasha Santha
L.E.K. Consulting
Level 32, 8 Exhibition Street
Melbourne VIC 3000
N.Santha@lek.com

Simon Barrett
L.E.K. Consulting
Level 26, 88 Phillip Street
Sydney NSW 2000
S.Barrett@lek.com

About L.E.K.

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Introduction

Congratulations on the development of the Transport and Infrastructure Net Zero Roadmap and Action plan. It's a very positive step forward for the sector.

Given our deep interest in the transport sector and on-going work in decarbonisation, we wanted to write to you both to provide some L.E.K. perspectives, in parallel from the broader feedback process. Thank you for providing the opportunity to provide input into the development of Australia's Transport and Infrastructure Net Zero Roadmap and Action plan.

We understand the significant challenge and complexity involved in developing a sector wide plan for decarbonisation, and the important role the Australian Government must play to achieve its Net Zero targets. L.E.K. commends the Department's leadership on the issue, and on the initial framework and perspectives put forward as part of the Consultation Roadmap. In particular, we found the roadmap to be an accessible and holistic document which provides good coverage across a diverse sector. It is thorough in its consideration of the variety of transport tasks, modes, and time horizons at play. Furthermore, L.E.K. broadly agrees with many initial perspectives outlined in the Consultation Report, which have clearly been informed by a significant body of previous and current work undertaken by the Government.

Our feedback on the Consultation Report is provided below in two parts:

1. Suggested **opportunities to build on the guiding principles and overall framework** for how abatement activities will be explored, assessed, implemented and monitored
2. Based on L.E.K.'s work across the transport ecosystem, we have provided some more **detailed perspectives on key additional issues relevant for specific sectors covered in the roadmap**

We welcome any feedback you have on our perspectives above and would be happy to set up a time to discuss these in more detail with you.

Part 1 – Opportunities to build on the guiding principles and overarching framework

We think the next version of the Roadmap would benefit from the following elements, as it is further developed.

Clarity on the role the Commonwealth will take to coordinate across the States and Territories. The roadmap highlights the importance of collaboration between the Commonwealth and State and Territory Governments. It will be important to be more specific in defining the respective roles of each party in the transition. There is a risk that decisions by the States relating to matters such as technology choices, investment in local manufacturing and interface risks may lead to inefficiencies, incongruent outcomes or missed opportunities. There is an important role for the Commonwealth in both the coordination effort, but also in driving a unified approach and sharing the dissemination of best practices and learning across the country. Clearer and more specific actions and next steps will be important in the next version of the roadmap.

An overarching framework that prioritises the options for decarbonisation.

It will be important to evaluate each mode's pathway for decarbonisation in a holistic manner. Pathways should be prioritised and phased based on a wide set of inputs: economic benefits to the community (both direct, and indirect), marginal and total abatement cost (MAC), technology readiness and risks, and supply chain constraints.

Decarbonisation initiatives assessment and prioritisation Freight – heavy vehicles (Illustrative)	Emissions reduction potential	Broader economic benefit	Technology maturity / availability	Supply chain readiness	Cost to implement	Other risks
	High is better				*Low is better*	
Improvement to energetic efficiency of diesel fleet	Low	Low	High	High	Low	Low
Mode shift towards rail	Medium	Medium	High	High	High	Low
Electrification – battery swapping	High	High	Low	Low	Medium	Medium
Electrification – plug-in charging	High	High	Low	Low	High	Low
Hydrogen (green)	High	High	Low	Low	High	Medium
Etc.	-	-	-	-	-	-

Furthermore, it is important to take a whole of network perspective when evaluating different pathways to zero emissions, as pathways by mode can be somewhat dependent on each other. Evaluating a pathway for a single mode in isolation could miss opportunities. For example, the cost, risks and supply chain readiness of implementing plug-in charging for heavy vehicles could be better optimised if generation and transmission investment had already been made for the transition of light vehicles.

To ensure a holistic evaluation of decarbonisation pathways and to account for the interdependencies, we expect that the framework adopted by the government could include (but not be limited to) some form of the following four steps:

- **'End state' options** – Define the different plausible 'end states' of each sector's transition to zero emissions
- **Transition plan options** – Define the high-level pathways to achieve those end states, acknowledging technology maturity/risks, supply readiness and other risks. Note the overlaps and dependencies, and define combined pathways
- **Evaluation** – Estimate the total cost, emissions and overall economic impact for each of the pathways (as per the framework articulated above)

- **Disaggregate into a mode-by-mode view** – Break down the transition plan into key actions by mode, that in totality reach the desired end state

Consideration given to multiple future scenarios. The pace of technology development is highly uncertain. The final strategy must account for the significant uncertainty in how consumer behaviour and technologies are likely to evolve. For example, there are significant uncertainties in the availability and cost economics of the different technologies (e.g. hydrogen, batteries), the cost of carbon, and changes in prevailing macroeconomic conditions (inflation, GDP growth, input costs etc). Collectively these influences will drive transport demand and mode choice. We would recommend overlaying a scenario-based analysis before recommending priorities and investments for decarbonisation. This will help ensure the proposed policies and investments are generally robust to a range of future scenarios.

Develop a fit-for-purpose data collection and emissions measurement system to support agile decision-making and course correction when needed. Given the highly distributed nature of the transport task, and its mixed public / private ownership, operation and funding, significant further effort will be required to deliver fit-for purpose and timely measurement. Many existing transport data sets are:

- Not collected nationally on a consistent basis
- Do not contain many of the right metrics (particularly those relevant to decarbonisation)
- Are often not reported in a timely manner
- Can be unreliable or inconstant between data sets

Significant and coordinated effort with Commonwealth leadership will be required to create an effective measurement framework and reporting for decarbonisation.

Specifically, the system developed should be:

- Transparent about definitions, sources used, and currency of inputs, to give users confidence that the system can be relied upon
- Based on data that is relatively cheap to collect, update and administer, making it the ongoing main source of truth for information on national carbon emissions and decarbonisation roadmap progress
- Updates results regularly and not just at a point in time

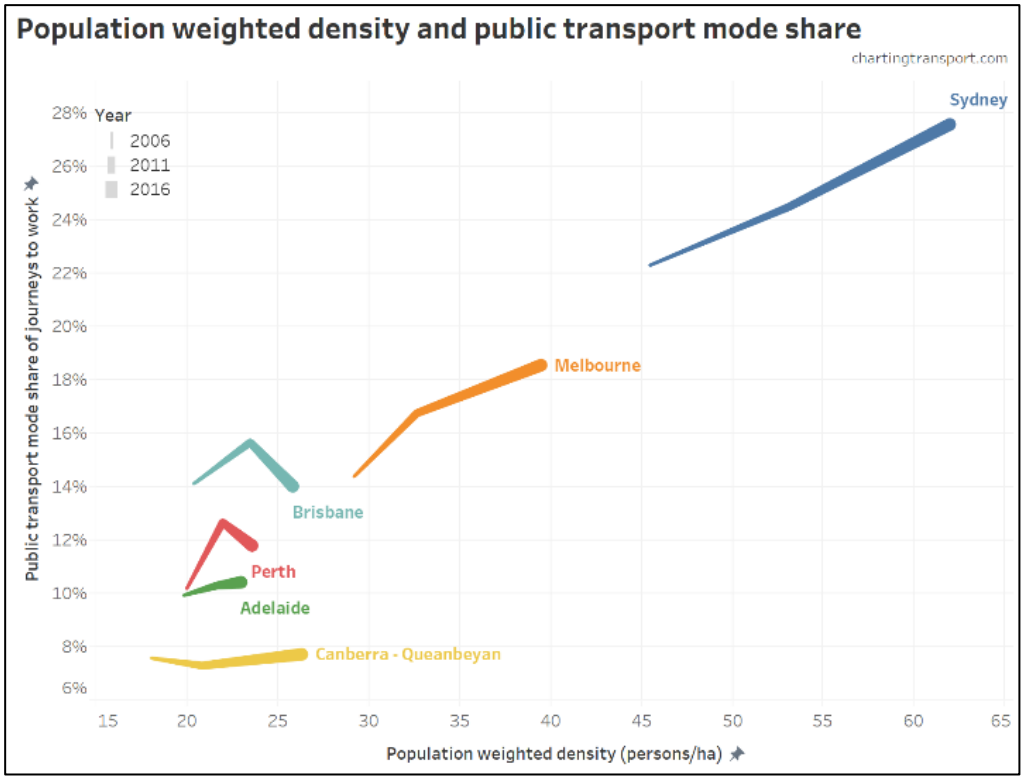
Part 2 – Perspectives on key issues relevant to specific parts of the roadmap

L.E.K. has deep experience globally and in Australia on both transport and decarbonisation. Below are some perspectives from our prior work relevant for the approach to decarbonising specific modes and tasks.

Public transport (PT)

PT mode shift is an important but relatively high-cost intervention for carbon abatement.

History has shown that there are significant challenges in achieving mode shift to PT. Given the scale of this challenge, much more detail is required on how the Commonwealth proposes to accelerate mode shift via the “national policy framework for active and public transport”. Efforts to drive PT mode shift should consider the significant costs associated with both capital and operational expenditure related to PT. To illustrate this, PT opex alone was c.$12bn in 2023 across Australia’s five major cities. This network carries c.1.4b passengers delivering a mode share of c.6-10%. Investment in PT is required but needs to be considered with a cost efficiency lens and focus on the interventions that are likely to move the dial e.g. uplift in service frequency, rather than large scale infrastructure build out.



Urban density is a key driver of mode shift. Related to the point above, urban densification is a major driver of PT mode share. Multiple studies have shown that PT adoption is a lot higher along key mass transit corridors and in more densely populated areas. The extract below from chartingtransport.com[1] illustrates the point within the Australian context. It proves that decisions about PT investment must be taken into consideration together with urban planning to deliver the right foundation for mode shift. This critical role of urban density could be given more weight in the discussion of mode shift in the Roadmap.

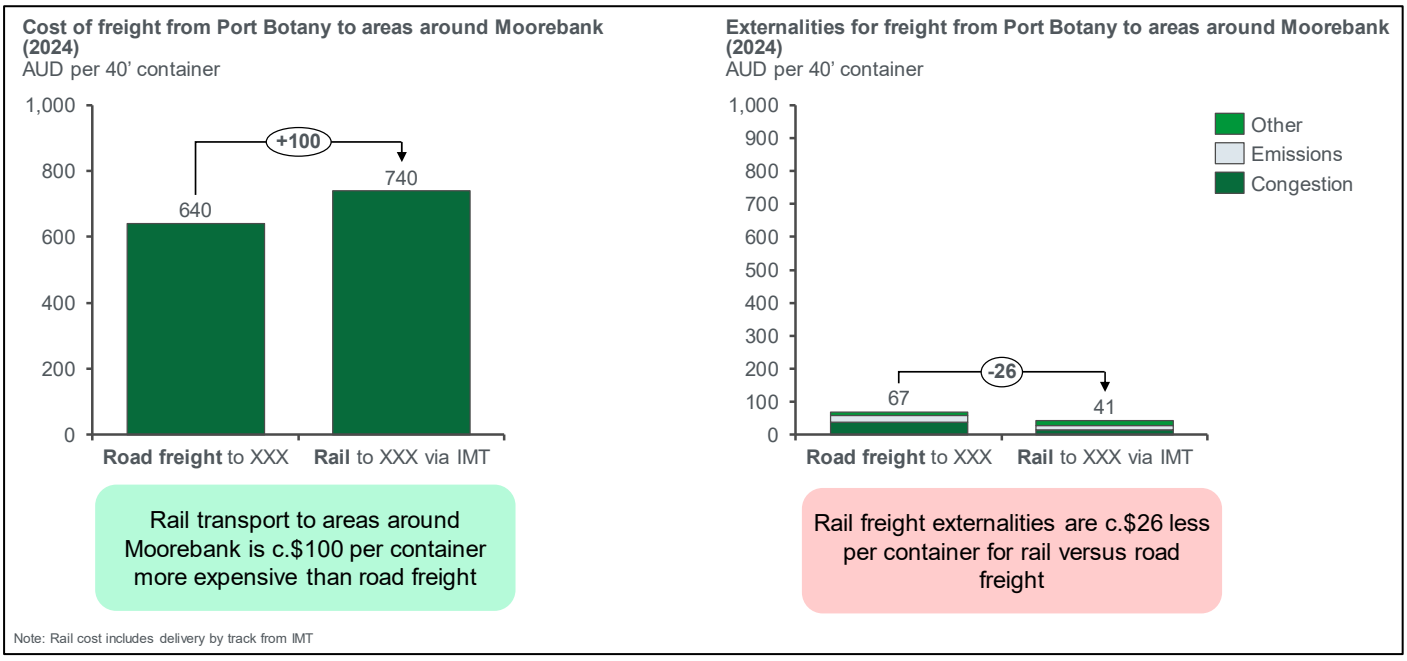
Fare modernisation and broader road pricing reform should be part of the consideration set. We agree with the Roadmap's position that there is an opportunity for more efficient PT fare settings (as recommended by the Productivity Commission) as a means to incentivise the use of public and active transport. Fares need to be modernised to better reflect post-COVID working patterns and encourage greater use of PT, even for those people who no longer commute 5 days per week. The Roadmap could also give more weight to road pricing reform (e.g. access and congestion charging) as another lever to incentivise the efficient use of transport infrastructure and reduce emissions.

Freight

Incentives will likely be required to encourage mode shift from road to rail. As highlighted in the Roadmap, it is estimated that rail freight produces 16 times less carbon pollution than road freight for every tonne kilometre travelled[2] (Our own analysis suggests this figure is lower in metro-environments). Recent work on IMEX rail freight in Sydney suggests that cost competitiveness of rail relative to road varies significantly across the region, depending both on the distance from port and proximity to IMTs. For longer distance trips (e.g., Port Botany to areas around St Marys), rail can be c.$130 cheaper per 40ft container than road. Achieving mode shift to rail for these trips is less about cost competitiveness and more about easing capacity constraints, given conflicts with passenger trains. Conversely, for shorter trips (e.g., Port

[1] Chartintransport.com – What explains variations in journey to work mode shares between and within Australian cities?
[2] https://ara.net.au/about-rail/environmental-benefits/

Botany to areas around Moorebank), rail is typically c.$50-100 per FEU more expensive than road. Higher externalities associated with road freight (congestion and emissions) could help to justify a partial rail subsidy to improve rail's competitiveness on these trips and increase mode share.



The Commonwealth will need to lead the decarbonising efforts of end-to-end supply chains by developing a single, consistent strategy that will serve a broad range of needs and environments (e.g., urban and rural/remote areas; interstate routes; commodity agnostic, etc.). There is a role for the Commonwealth to guide the transition. An uncoordinated private sector could deploy multiple technologies that are not interoperable, effectively creating technology-specific corridors/areas and increasing the cost of domestic supply chains (i.e., an effect similar to that observed with the different rail gauges across the country).

Zero Emissions Buses (ZEBs)

While we understand the attractiveness of local manufacturing to leaders, at scale it is likely to be challenging and will slow the pace of the transition. While there may be employment and other benefits in supporting local manufacturing of ZEBs a locally manufactured bus will cost c. $900,000 to $1m, compared to an imported ZEB at $600-700,000. This will inevitably slow the decarbonisation process by 25-30% purely on the basis of available funding. Furthermore, the local bus industry will need time to ramp up to meet demand. Each state pursuing its own local strategy and content rules risks a proliferation of sub-scale and uncompetitive state-based manufacturing facilities. Better coordination of manufacturing at a national level would be strongly preferable, with each State building a different specialisation. Local design rules are also acting as a barrier to creating a level playing field with imports and creating deeper supply chains.

Aviation

SAFs alone will not be enough to decarbonise aviation. The aviation industry is targeting 65% SAF penetration by 2050. To fully decarbonise aviation the Government must also consider other technologies, including electric aircraft, drones and eVTOLs as part of the mix, as well as the appropriate use of carbon capture technology and offsets. IATA estimates that new technologies will contribute to a material reduction in emissions reduction: electric and hydrogen 13%, offsets and carbon capture 19%, and efficiency gains

3%[3]. These alternative technologies are likely to deliver an outsized contribution for short-haul aviation in particular.

Low Carbon Liquid Fuels

There are well developed international schemes for sustainability certification assessment which the Roadmap should cover. The 'guarantee of origin' scheme discussed in the Consultation Report appears to be underdeveloped, and will require further time, effort and resources before it can be implemented. Adopting a certification scheme consistent with global markets could reduce development and ongoing administrative cost and facilitate tracking of emissions across international supply chains. For example, the International Sustainability and Carbon Certification (ISCC) scheme has global recognition across multiple commodities, a low cost of compliance, and immediate potential to access certified SAF markets through ISCC CORSIA[4]. This is discussed in the Government's LCLF consultation paper which appears further advanced in its thinking than the design of the guarantee of origin scheme referred to in the Roadmap.

[3] IATA
[4] Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), ISCC