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Submitted to New Zealand freight and supply chain issues paper | Te rautaki ueā me te rautaki whakawhiwhinga o Aotearoa
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What is your organisation?

Organisation:
Adapt Research Ltd

Part 1: Understanding the freight and supply chain system in New Zealand

1 Do you agree with the outlined description of the freight and supply chain system?

Please explain in the box below. :

NA

2 Do you have any views on the outlined role of government in the freight and supply chain system?

Please leave your comment in the box below::

Government should take a more active, long-term, resilience-focused, intergenerational justice inspired approach. Including a view to large scale global catastrophes beyond the capability of markets to manage, such as volcanic eruption, nuclear terrorism, or tsunami, at strategic (global) pinch points (eg Luzon strait, Taiwan, Korea, Mediterranean, etc), or other scenarios that could isolate New Zealand, such as solar flare, high-altitude EMP, extreme pandemic, nuclear war, etc. Scenarios should include those where New Zealand is unable to import oil/refined fuel. See for example this paper on global pinch point fragility to volcanic eruption: <https://www.nature.com/articles/s41467-021-25021-8>

Part 2: The strategic context for change

3 Do you agree with the outlined strategic context and key opportunities and challenges?

Please explain in the box below. :

A key additional 'external context' (p.56) is the probability and impact of global catastrophic risks (see below). A key 'internal context' factor is the possibility of zero access to refined fuels if imports are shut off, or zero access to operationally critical cloud data and analytics if Amazon/Microsoft incapacitated.

Challenges need to include global catastrophic risks that are likely this century, those that are less likely but extremely damaging, including both natural disasters and anthropogenic technological risks. These should include volcanic eruption, nuclear terrorism or war (including nuclear winter or volcanic winter), or asteroid/comet impact, or tsunami at strategic pinch points, or other scenarios that could isolate New Zealand, such as solar flare, high-altitude EMP, extreme pandemic (biological weapons), nuclear war, devastating global cyber-attack, and so on.

4 Are there any trends missing that we should consider?

If "yes", please write the trends we are missing in the box below. :

Given the long list of potential global catastrophic risks above, analysis should extend to the rising probabilities of such risks. Eg nuclear war seems more likely in 2022 than it was in 2021. Volcanic eruptions at global pinch points (Mani 2021) and the impact of climate change on the cooling effects of large volcanic eruptions (Aubry 2021) both suggest the risk from major eruption on global trade is higher than once thought. Advances in biotechnology make extreme pandemics more likely. These trends in the field of 'global catastrophic and existential risk studies' should be tracked. Resilience has co-benefits across a wide range of risks.

5 Which of the opportunities and challenges do you believe will be most important in shaping the future of the freight and supply chain system in New Zealand and why?

Please explain in the box below. :

A huge challenge is New Zealand's dependence on oil and imports of refined fuel now that the Marsden Point Refinery has stopped refining oil. This is a major strategic weakness. The corresponding opportunity is the chance to completely decarbonise transport with new rail and electrification, green hydrogen and electric fleet. More hydro diverted away from foreign owned aluminium production and into resilience-building local clean hydrogen schemes and electric vehicles and a distributed clean energy grid. This will provide resilience to New Zealand in scenarios where it is relatively or completely isolated from the world. This is just one example of how the strategic approach to supply chain and freight needs to integrate with other sectors, such as energy, and the strategy needs to be government driven, at scale and at pace.

Part 3: Current vulnerabilities of the freight and supply chain system

6 Do you agree with the outlined vulnerabilities of the current system?

If not, please explain why:

NA

7 Is there any key information missing in understanding the vulnerabilities of the current system?

If 'Yes' please explain here:

More effort should be made to understand the expertise needs of advancing technology, drones, electrification, hydrogen energy, AI, and ensure NZ-based expertise, and a labour force sufficient for operational needs, even if NZ is isolated from the world (currently a lot of operational IP eg cloud engineering, resides overseas). Lessons can be learned from marine fishing and fruit industries during covid (labour/expertise shortage), also from NZ's historical need to import international experts to repair infrastructure such as Wellington's wastewater/sewerage and the fuel pipeline from Marsden Point or the gears on a Cook Strait ferry. New Zealand may not be able to depend on these international imports in some scenarios identified above.

Part 4: Our proposal for developing a freight and supply chain strategy

8 Do you agree with the proposed outcomes? If not, please explain why.

Do you agree with the proposed outcome 1. Low emissions? - 1. Low Emissions - New Zealand's freight and supply chain system is underpinned by a low emissions freight transport system:

Strongly agree

If you have answered "Disagree" or "Strongly disagree" please explain why:

Do you agree with the proposed outcome 2. Resilience? - 2. Resilience - New Zealand's freight and supply chain system is resilient, reliable, and prepared for potential disruptions:

Strongly agree

If you have answered "Disagree" or "Strongly disagree" please explain why:

Do you agree with the proposed outcome 3. Productivity and Innovation? - 3. Productivity and Innovation - New Zealand's freight and supply chain system is highly productive and innovative, and performs well when measured against global standards:

If you have answered "Disagree" or "Strongly disagree" please explain why:

Do you agree with the proposed outcome 4. Equity and Safety? - 4. Equity and safety - We transition to a low emission, resilient, productive and innovative freight and supply chain system in a way that is equitable and safe for all:

If you have selected "Disagree" or "Strongly disagree" please explain why here:

9 Are there more outcomes the strategy should focus on? If so, please explain what they are.

Please explain here:

Yes, cross-sectoral integration and risk planning. Perhaps an overarching 'parliamentary commissioner for extreme risks', perhaps the establishment of a panel of red-teaming experts to challenge each strategic plan and figure out where its breaking points are.

10 Do you agree with the potential areas of focus for the strategy?

If not, please explain why:

We agree there needs to be a long-term focus, with immediate action. Important considerations need to include inter-generational justice, being good ancestors, and resilience to uncertain but inevitable global catastrophes.

When assessing parts of the system that are most critical, improving their resilience is important but so too is planning for their failure. How will the system work when those critical components are disabled? The freight and supply system should gracefully degrade under stress, it shouldn't immediately grind to a halt. Heavy reliance on road and diesel are problematic.

We agree with decarbonisation and resilience as two primary foci of the issues paper. However, we would add, specifically, that New Zealand needs to end its oil dependency. When the Marsden Point Refinery was operating, New Zealand could refine some of its domestic oil production (and there used to

be a synthetic petrol plant). Now there is 100% importing of refined fuels. If a global catastrophe were to isolate New Zealand (eg nuclear war, supervolcanic eruption, eruption at strategic global pinch points, major tsunami in South East Asia, etc), then absence of oil would quickly degrade freight and the supply chain. New Zealand needs to rapidly switch to an electric or clean hydrogen fleet. This might require strategic decommissioning of the Tiwai Point aluminium smelter and local production of green hydrogen. This is important not just for the supply chain but for food security, eg milk must be transported every day. Electrification of a wider rail network could help with this. Eg finish and electrify the rail connection between West Coast and Nelson/Picton to ship eg West Coast milk. Add a second Cook Strait crossing for resilience (perhaps a second electricity cable too). A broader lens looking across the range of global catastrophes and New Zealand's resilience to them would be optimal, not merely freight and supply chain, though these are particularly important, but so are the energy and agricultural sectors, communications and cloud. It is acknowledged at the outset that the strategy fits with wider government goals, but perhaps there should be overarching governance of these as a set of strategic issues.

11 Which of these areas of focus would be most important to prioritise?

Type your answer here:

Speed and size of response. In general, New Zealand tends to think too little too late, and tends to take actions that are watered down versions of what is needed. This is evidenced through problems associated with covid-19, climate change, housing, etc. We need to think big, fast, resilient, self-sufficient.

There could be more focus in the report on the co-benefits of strategic action, for example decarbonisation has obvious climate and resilience benefits, what other co-benefits are there for other pillars of the strategy, eg regarding employment, the economy, resilience to natural disasters etc? Articulating the wide range of co-benefits will help with marketing the strategy and make it politically appealing.

12 What would successful stakeholder engagement on the development of the strategy look like from your perspective?

Type your answer here :

Consultation should extend to all sectors. One excellent example of this is the New Zealand Nuclear Impacts Study from the 1980s (Green et al 1987), (Green et al 1989). This study collected data from over 300 industry experts across all sectors, posing them scenarios and asking how such a scenario would impact their sector. Fragile interconnectedness became clearly apparent.

It will be important to conduct 'red-teaming' exercises to challenge the assumptions in any list of weaknesses or any strategic plan. A key scenario that should be fleshed out and red-teamed is the scenario where New Zealand is isolated in part or entirely from the rest of the world, as there are multiple triggers that would result in this scenario (eg nuclear war, volcanic eruption at a major pinch point, extreme pandemic, solar flare, high altitude EMP, etc). Such scenarios should include zero-oil scenarios.

The issues paper states that it has used feedback from 140 stakeholders to inform the content. However, some of the stakeholder feedback should be emphasised, including: the interconnectedness of all sectors beyond freight and supply chain, for example the extreme dependence of New Zealand on components and parts imported from overseas for the functioning of equipment and infrastructure necessary to freight, distribution, energy production, manufacturing, agriculture etc.

13 How could we best engage with Māori on the strategy?

Type your answer here :

NA

The process from here

Provide further feedback

14 Any general feedback on the consultation

Add your comments, ideas, and feedback here:

NA

15 Upload supporting documentation

Upload documentation:

No file uploaded