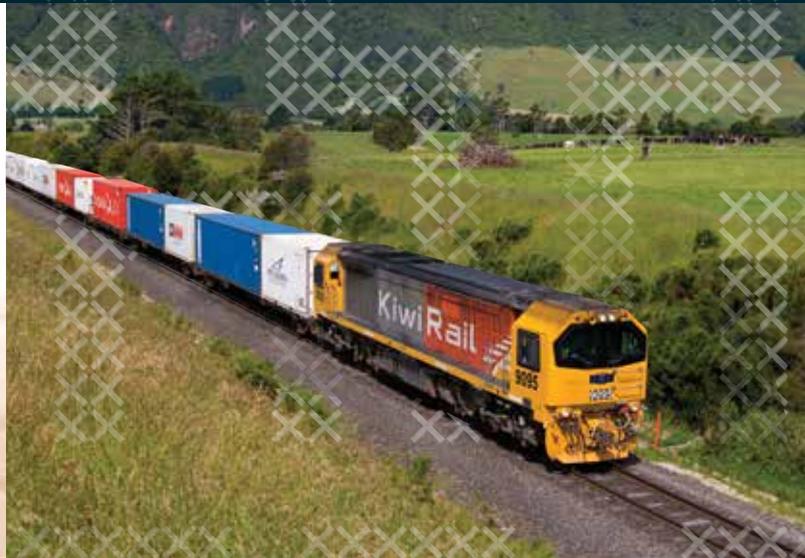


# Te rautaki ueā me te rautaki whakawhiwhinga o Aotearoa | New Zealand freight & supply chain issues paper

Preparing our freight and supply chain system for the future

Consultation Document

Submissions close 3 June 2022



Ehara taku toa i te toa taki tahi,  
engari he toa taki tini ] Success is  
not the work of an individual, but  
the work of many

UARA  
OUR VALUES

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WHAKAPAKARI  
IMPROVING OUTCOMES



AKO  
CAPABILITY DEVELOPMENT



MAHI TAHI  
WORKING TOGETHER



RANGATIRATANGA  
EMPOWERING  
AND LEADING



KAITIAKITANGA  
GUARDIANSHIP AND  
PROTECTION



WHANAUNGATANGA  
COLLABORATION  
AND UNITY



MANAAKITANGA  
CARING FOR AND  
VALUING OTHERS

## He kupu nā te Minita | Ministerial foreword

**New Zealand's freight and supply chain system plays a vital role in enabling our economy and improving our standard of living by connecting us within New Zealand and with international markets.**

During the COVID-19 pandemic, we have witnessed around the world, and experienced in New Zealand, the impacts of major disruption in the freight and supply chain system. These include congestion at ports, the loss in capacity and reliability of air and shipping services, difficulties securing shipping containers and so on – all contributing to a very difficult operating environment, delays in deliveries, and increased costs to businesses and consumers. The pandemic has also highlighted just how complex, extensive, and interdependent the whole system is – when something goes wrong in one part of the system, it has ripple effects on the rest of the system. The grounding of a container ship in the Suez Canal in 2021, and the resulting delays it caused around the world, is one example of this.

While our freight and supply chain system is still grappling with these disruptions, it also faces some fundamental, longer-term shifts especially with climate change, demographic changes, technological advancement, and developments in the international context. These changes make it less likely that we will return to how things were before the pandemic. There are complex challenges involved, but more importantly, there are significant opportunities to review and design the system to achieve the best outcomes for New Zealand.

This issues paper is the first step in that direction. It identifies the key changes in the operating context of New Zealand's freight and supply chain system, and proposes an approach to developing a New Zealand freight and supply chain strategy

for the next 30 years. Through the development of a strategy, we can build a long-term and holistic view of our system, agree on the outcomes that we want to achieve, and direct resources to priority actions to maximise impact.

Officials have engaged widely across supply chain stakeholders to inform the drafting of this issues paper. I thank those who have shared their time and insights with us during this very busy and challenging period for supply chains. I hope you will participate in this consultation process and give your views. The output of the work can only be as good as the input we all provide from a diverse range of perspectives, experiences, and expertise.

COVID-19 has been hard for many of those involved in the freight and supply chain system, but it has helped us reflect on how the system is performing and vulnerabilities in the current system. To position our system well into the future, we want to take a more strategic, systemic, and coordinated approach going forward.

This is the beginning of an exciting journey. By drawing on your collective knowledge and perspectives I want us to develop a crisp and clear strategy that goes beyond the interests of any one sector at a point in time, to identify the key directions that will serve New Zealand's collective interests in a fast changing and disruptive world.



**Hon Michael Wood**  
Minister of Transport



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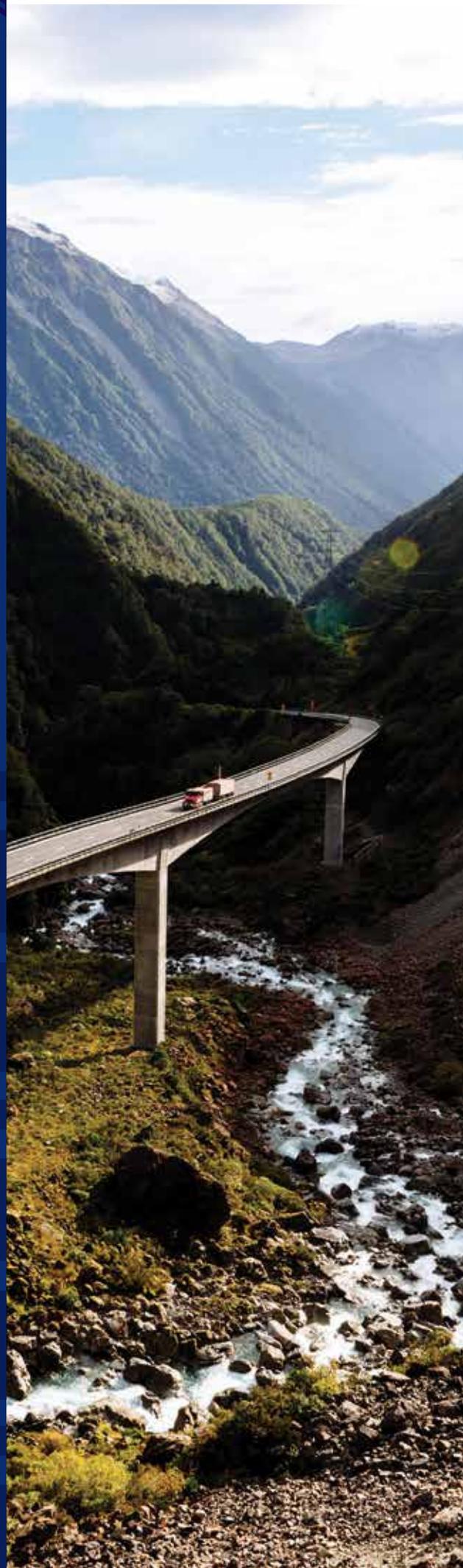
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# Introduction



INTRODUCTION

# Introduction

Freight and supply chains are a complex system that directly affects all New Zealanders every day. The movement of goods is a fundamental activity that enables our society and economy to function and flourish, which in turn affects New Zealanders' quality of life. It enables New Zealand to prosper by engaging in international trade. Prices of goods are indirectly affected by various elements of the freight and supply chain system such as road quality, port efficiency, and rail capacity. For example, freight costs can comprise up to 12% of the total cost of supermarket goods,<sup>1</sup> or higher in times of supply chain disruption.

Over the next 30 years, New Zealand's freight and supply chain system will play a crucial role in the transport sector's transformation to a low carbon future. This new future will require the system to produce much lower emissions and adapt to climate change impacts, while at the same time managing the pressures of increasing consumer demand, geopolitical uncertainty, and increasing vulnerability to disruption. We must achieve this transition in a way that is fair, equitable, and inclusive for all, and that contributes to healthy and safe communities.

This issues paper aims to present a view of the big issues facing New Zealand's freight and supply chain system over the next 30 years. It will also lay out a strategic approach for responding collectively to these issues and taking advantage of opportunities. The paper reflects on our recent engagement with stakeholders who have different roles and relationships across the freight and supply chain. Between August and October 2021, we spoke with over 140 stakeholders in workshops, interviews and meetings. Their insights and suggestions have been invaluable in preparing this issues paper. We want to agree on and deliver a freight and supply chain strategy centred on a strong partnership with all stakeholders. Establishing this partnership is a key focus for us this year.

## 30 years

Over the next 30 years, New Zealand's freight and supply chain system will play a crucial role in the transport sector's transformation to a low carbon future.

<sup>1</sup> Kemp, A., O'Fallon, C., Counsell, K., & Chow, M. (2012). *Transport's proportion of total costs for New Zealand businesses* (Research Report No. 495). New Zealand Transport Agency. <https://www.nzta.govt.nz/assets/resources/research/reports/495/docs/495.pdf>

## Developing a freight and supply chain strategy

### We need to prepare the freight and supply chain system to face substantial changes, including decarbonisation

Our freight and supply chain system faces some big changes, including:

- climate change and more frequent extreme weather events
- shifting patterns of production and consumption
- changing consumer demand and expectations
- population change and intensifying urbanisation
- technological development and digitalisation
- shifts in international geopolitics
- changes in international freight sectors.

These trends had been identified by the International Transport Forum (ITF) and other international commentators long before the COVID-19 pandemic began. Many of these changes will put upward pressure on freight rates – the low rates New Zealand enjoyed and relied on for trade before the pandemic are no longer a certainty. New Zealand’s unique geography and remote location will exacerbate the impacts of higher freight rates. This means that even after the pandemic, the operating environment for New Zealand’s freight and supply chains is unlikely to return to its previous ‘settings’. The operating models we have relied on for decades may no longer be fit for purpose.

The need to change is increasingly urgent, given New Zealand’s ambitious target of having net zero emissions by 2050 to mitigate the worst impacts of climate change. This requires a drastic transformation of New Zealand’s entire economy, including how our supply chain operates. Freight has a crucial role to play with heavy trucks emitting around 25% of total transport emissions, even

though they make up only 3% of our vehicle fleet. The reduction in emissions needed to meet a net zero target will be sizeable, requiring significant investment, long-term planning, and shifts in operating practices.

All these changes pose challenges for the sector, but also opportunities for the system to adopt and embed better ways of doing things. The market and the Government are already responding to these changes. International shipping and airfreight companies are investing in biofuels and other low emissions technologies. Some businesses are increasing their inventory to better absorb the impact of supply chain disruptions, while others are adapting their operating models to improve agility. The Government is also developing and implementing measures to reduce freight emissions, support business resilience, accelerate digitalisation and uptake of technologies, and ensure fair, inclusive, and equitable transitions.

### We also need to address vulnerabilities in the system to take on these challenges and maximise opportunities

While our freight and supply chain system has weathered the storm of COVID-19, the pandemic has highlighted some of its vulnerabilities. For example, the predominant ‘just-in-time’ operational model prioritises lean inventories and commercial efficiency. This means that shocks and disruptions have greater impacts and are more difficult to recover from. Effective responses to disruptions are also limited by a lack of agility in shifting between freight options. There is a reliance on international shipping lines for domestic freight coastal movement, and a lack of easily accessible freight data. Some parts of the system are fragmented while others are localised, such as ports whose shareholders tend to be regionally focused. This division reduces the sector’s

## INTRODUCTION

ability to create change that benefits the national interest. There have been chronic labour shortages in parts of the freight sector, which will require more collaborative and longer-term planning across employers, unions, and government to ensure the right conditions to build a sustainable labour force.

One of the system's main issues is the lack of data, which makes it harder to plan and assess how it is performing. Despite this we do have some indications that the system could be performing better. For example, Statistics New Zealand data shows that productivity in the freight sector has been declining over the last two decades. We need to find better ways to collect and share data and to measure and review the freight and supply chain system's performance.

### **Government and industry will have to adopt a more strategic and coordinated approach**

A more strategic and coordinated approach to the freight and supply chain system is needed to deliver change of the magnitude and in the time required, and in a system where the government is only one of many agents. While the system is largely driven by private enterprises and will remain so, action and cooperation by participants across the supply chain will be hard for the market to achieve by itself. Investment in freight and supply chain infrastructure can have long lead times, high costs, and long-lasting legacies. This means that investment requires clear and long-term planning from all parts of the sector, including the government. Tackling climate change and changing population dynamics will require near-term decisions in an environment of change and unpredictability. Better coordination across government and industry could help provide more certainty.

We are proposing to develop a forward-looking strategy for the freight and supply chain centred on a close working partnership with stakeholders, to support a transition to a low emissions, resilient, productive and innovative freight and supply chain system in New Zealand. Together we will ensure that this transition is carried out in an equitable and inclusive way that results in positive outcomes for all New Zealanders.

The strategy will lay out:

- a set of outcomes to seek for the New Zealand freight transport and supply chain system
- the changes that need to occur to prepare the system for the future
- a set of pathways and priority actions to achieve intended outcomes
- a mechanism for stakeholders and government to work together on an ongoing basis.

Through developing the strategy, we intend to:

- provide a long-term and system-wide view of New Zealand's freight and supply chain system
- build a strategic direction to inform investment decisions by government and the private sector
- align relevant government policies to maximise impact
- support coordination and information sharing among various agents in the system where appropriate.

### **The freight and supply chain system is already changing**

In sum, changes are already happening. While adapting to changes can be hard, it can also be a catalyst to embed new and better ways of doing things. We have an opportunity to take a step back and consider the big picture. Developing a freight and supply chain strategy for New Zealand will enable us to adopt a more strategic and coordinated approach to effectively address the opportunities and challenges before us, and improve our ability to manage unexpected changes in the future.

While many studies have investigated aspects of freight transport over the years, New Zealand has never had a comprehensive freight and supply chain strategy. As we are doing this for the first time, we will need to take an iterative approach to the strategy: reviewing and adapting the work programme as we go along. This issues paper is the beginning of that process. Some elements of the work will progress more quickly than others, reflecting their different levels of urgency, complexity, and capacity available to tackle the various topics. For example, the urgency of climate change action means that we need to progress our work on freight decarbonisation quickly.

## How the strategy fits with wider government goals

Supply chains are intricately connected with a wide range of sectors and activities: economic development, primary production, regional development, and urban planning, to name a few. Given the cross-cutting nature of supply chains, the freight and supply chain strategy will need to align with wider government goals, such as the goal of transitioning to a productive, sustainable, and inclusive economy.

The freight network will also have to support changing industry needs driven by other government or industry-led economic strategies. These needs will include various sectors' ongoing industry transformation plans, or the development of a circular economy.<sup>2</sup> The strategy will also draw on broader concepts of wellbeing and what contributes to it, as outlined in Te Manatū Waka, Ministry of Transport's Transport Outcomes Framework<sup>3</sup> and the Treasury's Living Standards Framework.<sup>4</sup>

The Government's first emissions reduction plan, to be released in May 2022, will outline the immediate steps needed to enable decarbonisation from 2022 to 2025, including in the freight sector. The freight and supply chain strategy will need to look further to meeting the goal of net zero emissions by 2050. This will include meeting New Zealand's other climate change commitments, such as signing up to MARPOL Annex VI (on preventing air pollution from ships), and the international agreement that 30% of new heavy vehicles entering New Zealand will be zero emissions by 2030 and 100% by 2040.

The first National Adaptation Plan, which responds to the risks identified in the National Climate Change Risk Assessment and helps to prepare New Zealand for climate change impacts, will also be published this year.

In developing the freight and supply chain strategy, we will not be starting from scratch, and can build on previous or ongoing work. In turn, the strategy can also inform the development of other relevant policies. This includes, but is not limited to, work on developing or involving New Zealand's freight networks, such as the Government Policy Statement on land transport 2021, the Upper North Island Supply Chain Strategy (2018-2020 – see box on the following page), the New Zealand Rail Plan (2021), the New Zealand Infrastructure Strategy (ongoing), as well as work on a new transport revenue system. The strategy will also have to link in with the proposed reforms to the Resource Management Act.

Te Manatū Waka, Ministry of Transport's Green Freight Project and the Hīkina te Kohupara discussion document have also set out opportunities and challenges in reducing heavy vehicle emissions. These documents also explain policy options for transitioning the freight sector to net zero by 2050. We can also draw on existing strategies to improve road safety, employment, and workplace health and safety.

➤ **“A more strategic and coordinated approach to the freight and supply chain system is needed to deliver change of the magnitude and in the time required...”**

<sup>2</sup> A circular economy is one that involves designing products for longevity, keeping products and materials in circulation as long as possible, including shared ownership or shared use, and recovering and regenerating materials at the end of a product's life.

<sup>3</sup> Ministry of Transport. (n.d.). *Transport outcomes framework*. Ministry of Transport. <https://www.transport.govt.nz/area-of-interest/strategy-and-direction/transport-outcomes-framework/>

<sup>4</sup> The Treasury. (n.d.). *Our living standards framework*. <https://www.treasury.govt.nz/information-and-services/nz-economy/higher-living-standards/our-living-standards-framework>

## INTRODUCTION



### The Upper North Island Supply Chain Strategy (UNISCS)

The UNISCS began as a desire to develop a strategic approach to the supply chain system in the upper North Island, including its ports. This strategy was intended to identify ways to support a more efficient supply chain and advise on priorities for investment. The two primary studies on this issue include the reports from the UNISCS Independent Working Group in 2019 and Sapere in 2020.

Both studies focused heavily on the future of the Ports of Auckland and the issues surrounding when and to where it should move.

Neither study, with their limited scopes, considered the wider supply chain or the flow-on national impacts of moving the port. A key takeaway of the UNISCS process was how difficult it is to deal with individual parts of the system, such as ports, in isolation of each other.

Given the complex, interconnected nature of the freight and supply chain system, decisions of this magnitude will have to be considered within a broader set of decisions to make up an effective freight and supply chain network. This is where a national freight and supply chain strategy is useful as it gives us the opportunity to take a system-wide, holistic view of our supply chain to understand the impacts of such decisions.

The Government is committed to an evidence-based and constructive process with stakeholders to support decision-making on the future of the upper North Island ports. The broader strategic direction provided by this freight and supply chain strategy will inform how this work is progressed, which the Government intends to do in its current term.



### How can you contribute?

Your feedback will shape how we develop and focus the freight and supply chain strategy. Anyone can make a submission, which could be a short note or a document responding to the consultation questions included in this issues paper. Submissions may be:

- lodged at the Te Manatū Waka, Ministry of Transport website [www.transport.govt.nz/supplychainconsultation](http://www.transport.govt.nz/supplychainconsultation)
- emailed to [supply.chain@transport.govt.nz](mailto:supply.chain@transport.govt.nz)

Submissions close on 3 June 2022. If you have questions about making a submission or would like to meet the strategy development team for a discussion, please contact us via [supply.chain@transport.govt.nz](mailto:supply.chain@transport.govt.nz)

We have received several submissions relating to freight decarbonisation and developing a freight and supply chain strategy through the emissions reduction plan submission process. We will also take these submissions into account as part of this issues paper consultation.

Please note that Te Manatū Waka, Ministry of Transport will proactively release all submissions on its website. We can only withhold material in confidence in special circumstances, such as it being commercially sensitive or containing personal information. Please contact us before submitting such material.

We thank you for your interest in the issues paper and look forward to receiving your comments.

# Part 1. Understanding New Zealand's freight and supply chain system



**UNDERSTANDING THE SYSTEM**

# What is the freight and supply chain system?

Supply chains are the networks of individuals, companies, resources, infrastructure, activities, and technologies involved in supplying things from those who produce or manufacture them to those who use them. Our freight sector and its infrastructure underpin the operation of supply chains by enabling the physical movement of primary, intermediate, and finished goods, both within New Zealand and to and from overseas markets.

Trucks, trains, ships, and planes move about 280 million tonnes of freight a year around New Zealand. Almost everything we have, or need to live our lives and operate our society and economy, is brought to us via this system. It is a complex and dynamic web of links and nodes involving multiple modes of transport, infrastructure networks, logistics nodes such as warehouses and cold stores, and agents including producers, freight forwarders, distributors, container yard operators, transport operators, and many more.



Supply chains involve far more than transport. Of the five key supply chain management aspects – the plan or strategy, the sourcing of raw materials or required services, manufacturing, delivery and logistics, and the return of defective or unwanted products – the delivery and logistics task is the key focus of this issues paper.



### The trucking sector

92.8% of freight volumes within New Zealand are transported by trucks. The road freight industry employs around 30,000 staff across about 4,700 firms. Over 60% of those firms have fewer than two employees.



### The rail sector

5.6% of freight volumes within New Zealand are transported by rail. There are around 4,000 rail employees.



### The coastal shipping sector

1.6% of freight volumes within New Zealand are transported by coastal shipping. There are around 13 vessels in New Zealand's domestic coastal shipping fleet, of which only one is a container ship.



### The international shipping sector

Sea freight carries 99% of the country's trade by volume and around 80% by value. New Zealand is serviced by international container shipping lines and other bulk ships.



### The airfreight sector

Airfreight carries less than 1% of our trade volume, but about 16% of our exports and 22% of our imports by dollar value. It is heavily tied to passenger travel. Domestic airfreight volumes are very small.



### Roads

New Zealand has 94,000 km of roads with over 4,200 bridges on the state highway network.



### Railway lines

New Zealand has 3,700 km of railway with more than 1,300 bridges and almost 100 tunnels.



### Coastal shipping

Cargo moved by coastal shipping includes bulk commodities like cement, grain, fertiliser and aggregate. Containerised cargo includes domestic goods, export and import transshipments, and empty containers.



### Ports

New Zealand has 15 ports of varying sizes and development. Nine of them are international container ports. The biggest container ports are Tauranga (39% of container volumes), Auckland (22%), and Lyttelton (14%). Tauranga is the largest bulk export port, while Northport (Whangārei) is the largest bulk import port.



### Airports

New Zealand has three international freight airports. Auckland handles 85% of airfreight, Christchurch 14%, and Wellington 1%.

UNDERSTANDING THE SYSTEM

# Why is the freight and supply chain system important?

New Zealand's economy relies on the efficient running of the freight and supply chain system. Exporters depend on a predictable, timely, affordable supply chain to get their goods to overseas markets. Importers (of both finished goods and raw materials for manufacture) need certainty that the supply chain will deliver what they need on time and at an affordable cost. The profitability of these businesses is essential to preserve and grow jobs in New Zealand.

In addition, the performance of the freight and supply chain system has a direct impact on New Zealanders' standard of living. Every day we depend on the freight and supply chain system for stocked shelves at the supermarket, retail stores, pharmacies, and the delivery and receipt of mail and purchases. We also depend on the system to import vehicles and to transport fuels around New Zealand.

The recent supply chain disruption and increased freight costs triggered by the COVID-19 pandemic have contributed to the inflationary pressures that are happening around the world, including in New Zealand. This experience has shown that the performance of the freight and supply chain system not only affects our ability to export and import, but also has the potential to exacerbate existing socioeconomic issues such as housing affordability.

Ultimately, the performance of the freight and supply chain system directly impacts our ability to transition towards a more productive, sustainable and inclusive economy.

90%

of New Zealand's building materials and products are imported.

## Housing and wellbeing

About 90% of New Zealand's building materials and products are imported. The construction sector has recently experienced the impacts of supply chain disruption with delays and price increases for building materials and products.

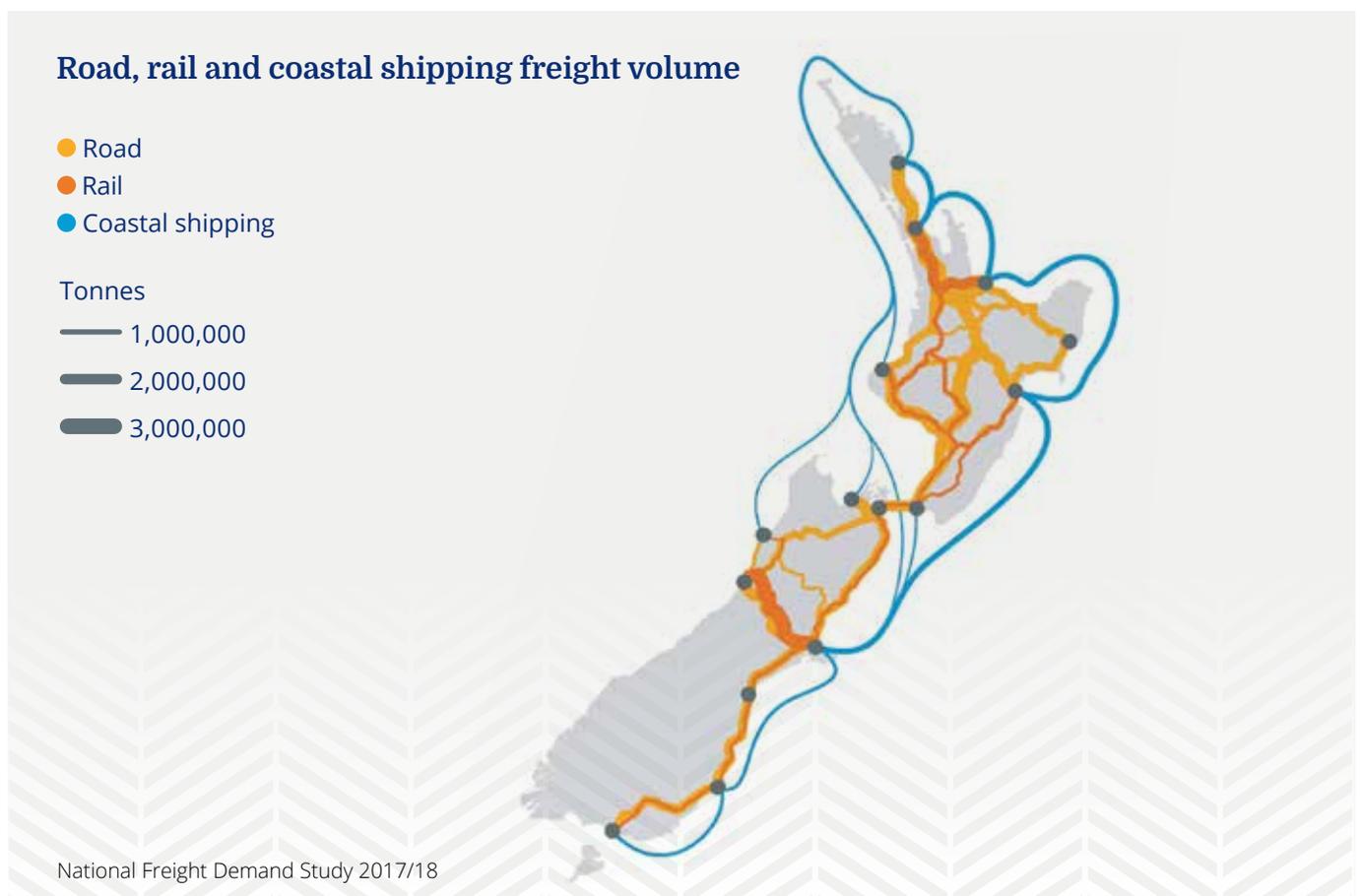
The houses we live in are the foundation of our wellbeing and a focus on housing is a priority for the Government. Optimising the operation of New Zealand's freight and supply chain system can improve New Zealanders' wellbeing.

## How does freight move domestically and internationally?

Within New Zealand, freight can travel by road, rail, coastal shipping, or air. Sometimes goods will travel by several different modes and be transferred from one mode to another at hubs before reaching their destination.

Our main domestic freight routes are dictated by our unique geography, widely dispersed populations, regional production and manufacturing, and the location of ports for import and export. The diagram below is illustrative of where and how much freight is moved around New Zealand via road, rail, and coastal shipping (by both domestic and international ships) in a year.

A considerable proportion of our economy is based on primary production. These products can be very heavy and high in volumes – creating a significant freight task in moving goods along the supply chain.<sup>5</sup>



<sup>5</sup> About 35% of freight (in tonnes) is comprised of primary products. Ministry of Transport. (2019). *National Freight Demand Study 2017/18*. <https://www.transport.govt.nz/assets/Uploads/Report/NFDS3-Final-Report-Oct2019-Rev1.pdf>

## UNDERSTANDING THE SYSTEM

Internationally, 99% of New Zealand's imports and exports travel along global shipping routes to reach consumers. The remaining 1%, generally made up of high-value, time-sensitive, or critical goods, travels via air – most of which is carried in the belly hold of passenger airplanes.

The maps on pages 16 and 17 show the previous or next international port for the top 90% of containerised imports/exports. There they are either offloaded, or put on to another ship (transhipped) to travel to New Zealand, or to their next destinations further afield e.g. Europe and the Middle East.

Disruption in any part of this global network has significant impacts on the New Zealand supply chain, because there is little spare capacity in the global freight network to absorb disruption. This is why disruption at ports in the US, China, Southeast Asia, or Australia, or in strategic routes like the Panama Canal and the Straits of Malacca can have such a large impact. The Suez Canal blockage caused by the Ever Given container vessel in March 2021, and the resulting delays to goods reaching New Zealand, is one such example of this 'contagion effect'.

In the global context, Australia/New Zealand and Oceania make up only about 4% of total global container shipping capacity.<sup>6</sup> In addition, New Zealand is located far away from the main international shipping routes that flow between Asia in the east to Europe and the US in the west. Our small size and remote geographical location present a challenge in accessing reliable international transport services at competitive costs, especially when the international supply chain is experiencing disruption.

# 99%

Internationally, 99% of New Zealand's imports and exports travel along global shipping routes to reach consumers

Ports are the gateways through which most of our imports and exports flow. While in New Zealand, imports and exports travel on the same road, rail, and coastal shipping networks as domestic freight. The majority of imports arrive through the ports of Auckland and Tauranga, and are bound for main centres in the upper North Island, while the Port of Tauranga is our largest export port. Compared to imports, our exports are relatively more evenly generated across the North and South Islands. These tend to leave through the nearest regional port, either directly on an international ship or to be transhipped at our major ports. In the case of container shipping, this geographical imbalance in imports and exports creates the need for additional freight movements of empty shipping containers from importers in the upper North Island, after they have removed their goods, to exporters around New Zealand. An illustrative example of the complexities involved in the journey of a shipping container within New Zealand is at Appendix 2.

<sup>6</sup> Alphaliner. (2021, December). *The Worldwide Reference in Liner Shipping (Monthly Monitor)*.

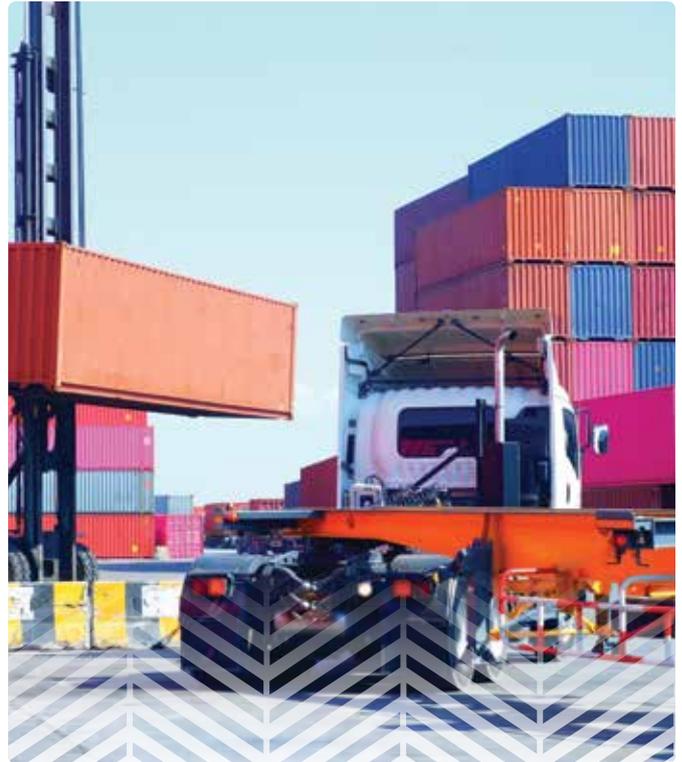
### Containerised vs bulk shipping

Containerised shipping only began in the 1950s but it quickly revolutionised the sector. It allowed large volumes of different types of goods to be packed and stacked neatly in standardised boxes, and taken on and off ships, trains and trucks in a seamless way with less labour. The increased efficiency helped lower transport costs and pave the way for global supply chains.

Bulk shipping, where the cargo is transported in big quantities and without specific packaging, is generally used for commodities like logs, grains, cement, or coal. (There are a variety of other ships that cater to specialised cargoes like cars and vehicles, fuel, and livestock.)

Given the standardised nature of container shipping, container ships tend to operate on a schedule, visiting multiple ports in each rotation. Bulk shipping operates more like a taxi service, where cargo generally travels directly from its origin to its destination.

In 2020, containerised exports made up 29% of New Zealand's sea export tonnage but 83% of the value (Freight Information Gathering System (FIGS), Te Manatū Waka, Ministry of Transport).



# 29% & 83%

In 2020, containerised exports made up 29% of New Zealand's sea export tonnage but 83% of the value.

**UNDERSTANDING THE SYSTEM**



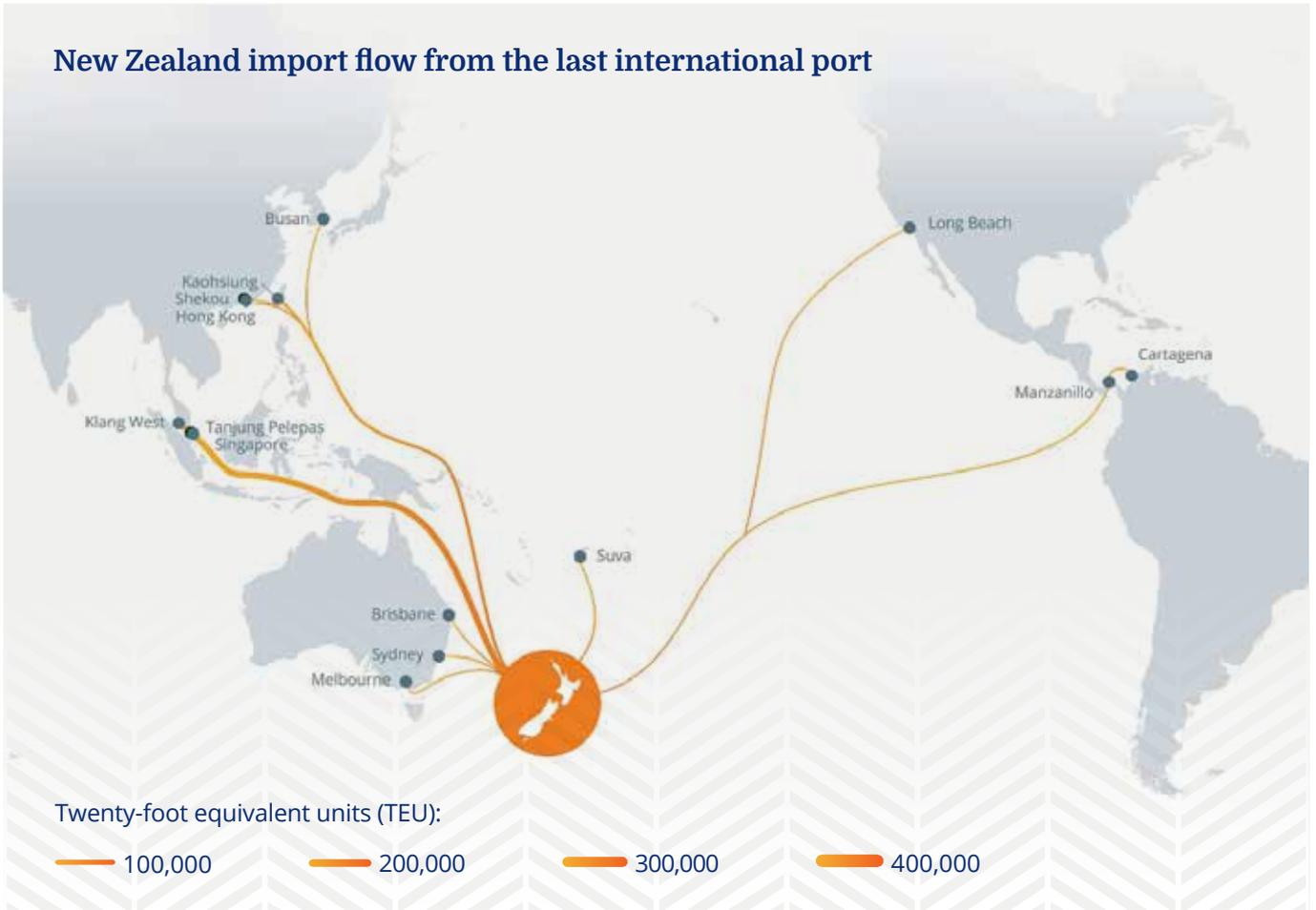


In 2019 (the last year pre-COVID-19), New Zealand exported 28% of all goods (by value) to China, 15% to Australia and 9% to the US. It imported 20% from China and 12% from Australia.



The main container exports by quantity were dairy products, meat, and wood products.

### New Zealand import flow from the last international port



In containerised trade, about 40% of our exports and 34% of imports are shipped through or to South East Asia. 18% of exports and 23% of imports go through or to the Port of Singapore.



13% of our containerised exports are shipped directly to or through North and Central America, while this is the case for 6% of containerised imports.

**UNDERSTANDING THE SYSTEM**

# What is the role of government in the freight and supply chain system?

While the freight and supply chain system is largely operated by private entities and individuals, the government has a role to play in ensuring that the system functions well and serves the interests of New Zealand and its people. This includes:

<p><b>Supporting what is needed for commercial activities to occur</b></p>	<p>The government sets the ‘rules’ of the market through regulation, to ensure the system works well and is competitive, and that businesses and consumers are able to participate in the market with the same understanding of how things work. The government also invests heavily in public infrastructure such as roads, bridges, tunnels, and railway tracks. The building, maintenance, and repair of these are fundamental to the movement of goods in freight and supply chains. The government provides services important to New Zealand which may otherwise struggle to be commercially viable, such as rail and postal services, through State-owned Enterprises.</p>
<p><b>Ensuring broader public good outcomes and national interests are achieved</b></p>	<p>The government works to ensure that broader public good outcomes are also achieved, which may not be prioritised by the commercial sector. These include outcomes such as environmental sustainability, health and safety of the workforce, fair and equitable distribution of economic growth and opportunities, etc.</p>
<p><b>Facilitating New Zealand’s participation in global value chains</b></p>	<p>This provides our businesses with access to global networks, markets, capital, knowledge, and technology, which is valuable for a small country like New Zealand. The government supports this by building international relationships and agreements to ensure good connections, standards, trading conditions and opportunities, and effective management of trade routes.</p>
<p><b>Facilitating collaboration and coordination across the sector</b></p>	<p>There is a role for government to play in coordinating action across the sector, especially one as large and complex as the freight and supply chain system. This is also relevant in cases of emergency management and national resilience in response to major catastrophic events such as the COVID-19 pandemic, and natural disasters.</p>
<p><b>Providing a system-wide, longer-term view</b></p>	<p>Similarly, the government is in the position to take a system-wide view of the freight and supply chain system, to monitor performance across the freight sector, and to provide longer-term planning and investment in the system.</p>

## The government has Treaty obligations to Māori to improve outcomes for Māori within the freight and supply chain system

The government has obligations under Te Tiriti o Waitangi to work in partnership with Māori, to deliver improved outcomes and enhanced wellbeing for Māori within the freight and supply chain system. Māori are key participants in the system, including through Māori businesses which rely on the freight system to get goods to market, and connectivity to regional economies where Māori representation is strong. Māori are also owners of freight infrastructure and have a responsibility of care over environments through which freight is moved. There is also significant Māori participation in some freight sector workforces. According to data from the Ministry of Business, Innovation and Employment, about 23,000 Māori are employed in the Transport, Warehousing, Information Management and Communications sector.

## New Zealand also has obligations to our neighbours in the Pacific

New Zealand is a key hub for the transfer of people and freight by air and sea to our Pacific Island neighbours. This has increased in the context of COVID-19 where measures to minimise health risks in these countries, as well as global disruptions and shortages, have adversely affected their supply chains. New Zealand has obligations at the treaty level with the Pacific, with special constitutional responsibilities for the Cook Islands, Niue and Tokelau. The government will have to ensure that any adverse impacts on the Pacific's access to essential supplies, resulting from changes to New Zealand's supply chain and climate change policies, are avoided or mitigated.

## Government can do more to add value to the freight and supply chain system going forward

There has been a relatively low level of government intervention in the operations of the freight and supply chain system. But there may be more that the government could do, in collaboration with the sector, to improve the system. This is because fundamental changes need to happen in the freight and supply chain system in order for New Zealand to achieve a low emission, climate-resilient economy, in a fair, equitable, and inclusive way that works for all New Zealanders. This will in turn require the action and cooperation of all participants across New Zealand's supply chains, which will be hard to achieve by the market on its own.

### Port sector reform

In 1988 a new port regulatory framework was introduced to improve port productivity. This removed central government's role in port capital investment decision-making, and local government's role in operating ports (via harbour boards). Instead ports had to operate as private companies, which led to some significant increases in productivity. Currently, all ports are owned by local councils to varying extents. The way supply chains work has changed since the reforms, with the rise of globalisation and 'just-in-time' models, and it may be timely to consider how to further improve our port settings.

Q1

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

Q2

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

## Part 2. The strategic context for change

The context in which our freight and supply chain system operates is changing. This part of the issues paper examines major changes affecting the system now and in the future, and what opportunities and challenges these changes present. To enable the system to continue delivering services and contributing to wider economic and social goals, we need to capitalise on the opportunities while meeting the challenges.

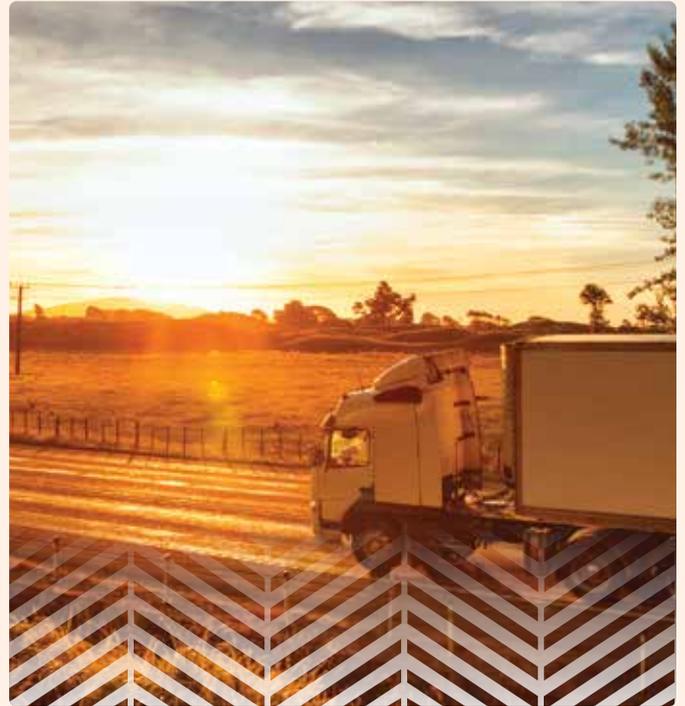




# Climate change will impact all aspects of our supply chain

Our climate is changing, and we have seen more intense and frequent extreme weather events impacting all countries. This will impact on all aspects of our supply chain:

- **It will affect what we produce and where** – The National Climate Change Risk Assessment reported that climate change will reduce the quality and quantity of output across our horticulture, viticulture, agriculture, and forestry sectors.<sup>7</sup> This could lead to significant shifts in what primary products are produced and where. Investment in infrastructure in some areas may not deliver on expected benefits because of an unanticipated decline in production. Conversely, some regions may transition to new land use more quickly than expected. To avoid missing opportunities for regional economic development, freight infrastructure and services will need to be invested in to unlock the potential of new producing regions.
- **It will increase the risk of damage to infrastructure and supply chain disruption** – We may need to relocate at-risk infrastructure and build new infrastructure. Ports, transport corridors, airports, and associated infrastructure are increasingly exposed to extreme weather events, sea-level rise, landslides, and coastal erosion.<sup>8</sup> It will be necessary to identify infrastructure critical to our supply chain within our planning system, and ensure we are ready for potential risks, perhaps by relocating some infrastructure.
- **It will increase the likelihood of global supply chain disruptions** – As climate change affects other parts of the world, we are likely to see more disruptions to the global supply chain. This will affect our ability to export and import goods.



In 2020, the first National Climate Change Risk Assessment was published, with the first National Adaptation Plan to follow this year. The Government is also developing a Climate Adaptation Act to address funding options and issues associated with managed retreat from areas at risk from future climate change.

7 Ministry for the Environment. (2020). *National Climate Change Risk Assessment for New Zealand*. <https://environment.govt.nz/assets/8-Publications/Files/national-climate-change-risk-assessment-main-report.pdf>  
8 Ibid.



## THE STRATEGIC CONTEXT FOR CHANGE

### We have committed to ambitious goals to decarbonise our economy – this requires changing how we move goods

Countries all over the world have committed to reducing emissions in their economies to keep global warming to 1.5 degrees Celsius above pre-industrial levels. As part of the global effort, New Zealand has committed to reduce its net emissions of all greenhouse gases (except biogenic methane) to zero by 2050.

Meeting these goals will require a drastic transformation of how our supply chain operates. This transformation will include the decarbonisation of all freight modes and the operations of the infrastructure that supports them (such as ports and airports). If we do not reduce emissions from our freight and supply chain, it will pose significant economic risks with costs passed onto the consumer.

- Exporters could face challenges with demands to reduce ‘food miles’ as consumers seek goods perceived to have lower emissions.
- Freight operators will be affected by rising fuel prices as the price of emissions increases.
- Freight operators may experience cost increases as international shipping is brought into other countries’ carbon pricing schemes.
- New Zealand may become less desirable for international shipping companies that transition to low or zero emissions fuels and ships if we do not have supporting infrastructure.

Major ways to reduce sector emissions include using renewable electricity and zero or low emissions fuels, such as bioenergy and hydrogen, and improving energy efficiency. This process will require significant investment in new infrastructure and technologies to support production and deployment.

The Green Freight Project, published by Te Manatū Waka, Ministry of Transport in 2020, identified opportunities and challenges for reducing the heavy vehicle fleet’s emissions. In 2021, Hīkina te Kohupara set out a range of policy options for transitioning the transport sector to net zero by 2050. Our first emissions reduction plan, to be published by 31 May 2022, will outline steps to begin work now to reduce emissions from heavy transport and freight. However, more needs to be done to analyse all the options for the longer term, to ensure the sector adequately contributes to emissions targets.

➤ **“As part of the global effort, New Zealand has committed to reduce its net emissions of all greenhouse gases (except biogenic methane) to zero by 2050.”**



## Decarbonising our road fleet presents the biggest opportunity for reducing emissions in the freight sector

Heavy vehicles present only 3% of New Zealand's vehicle fleet, but deliver 93% of freight volume and contribute around 25% of total transport emissions. The emissions reduction plan will set targets for reducing freight sector emissions by 2035, and put the sector on a path to meeting New Zealand's net zero target by 2050.

The Sustainable Biofuels Mandate will take effect from 2 April 2023, reducing the emissions intensity of fuels sold in New Zealand. The mandate will help to reduce these emissions, but we also need to accelerate the uptake of low and zero emissions heavy vehicles in New Zealand. Battery electric and hydrogen heavy vehicles have advanced considerably in the last decade. We have already seen successful large-scale commercialisation and deployment of heavy electric buses. Vehicle manufacturers are committing to large scale commercialisation of zero emissions trucks in the 40-ton GVM class in the next few years.<sup>9</sup>

At the 26<sup>th</sup> UN Climate Change Conference (COP26), New Zealand signed an international agreement to increase the proportion of zero emissions heavy vehicles entering the country.

The Government pledged that these vehicles would make up 30% of new vehicle sales by 2030 and 100% by 2040. This target is ambitious, and combined with our other targets, tells manufacturers and suppliers that New Zealand is ready to take these vehicles. Through the COP26 commitment we are working with a forum of international governments and manufacturers to share information and learn from other fast-moving countries on the best way to meet these targets. To prepare for this, we need to understand what low emissions heavy vehicle infrastructure will be required, and build that into our long-term planning. These kinds of infrastructure have significant costs and the government and the private sector will need to consider how they will be funded.

We will also need to reduce emissions from our current fleet. The Sustainable Business Council's Low Emissions Freight Pathway shows significant reductions can be achieved through vehicle efficiency measures, such as:

- reducing weight of vehicles
- making better use of carrying capacity
- adopting telematics to optimise routes
- collaboration to maximise utilisation of transportation assets
- making use of multi-company hubs.<sup>10</sup>

# 2040: 100%

The Government pledged that zero emissions heavy vehicles entering the new vehicle fleet would make up 30% of sales by 2030 and 100% by 2040.

<sup>9</sup> Volvo Trucks Global. (2021, April 19). *Volvo trucks ready to electrify a large part of goods transports*.

<https://www.volvotrucks.com/en-en/news-stories/press-releases/2021/apr/volvo-trucks-now-ready-to-electrify.html>;

Scania. (2021, January 19). *Scania's commitment to battery electric vehicles*.

<https://www.scania.com/group/en/home/newsroom/news/2021/Scania-commitment-to-battery-electric-vehicles.html>

<sup>10</sup> Comedant, C., Taylor D., & Stevenson T. (2020). *Low Carbon Freight Pathway*. Sustainable Business Council.

<https://www.sbc.org.nz/media/sbc/our-word/low-carbon-freight-pathway-documents/Low-carbon-freight-pathway-report.pdf>



## THE STRATEGIC CONTEXT FOR CHANGE

### Coastal shipping and rail offer lower emissions modes of transport, but will require investment to increase their attractiveness to freight users

We will also have the opportunity to shift some products from road transport to lower emissions modes such as rail and coastal shipping.<sup>11</sup> The independent He Pou a Rangi Climate Change Commission<sup>12</sup> has recommended that New Zealand will need to move significantly more freight by rail and coastal shipping to achieve decarbonisation objectives. The inaugural Rail Network Investment Programme,<sup>13</sup> arising from the New Zealand Rail Plan, targets to increase rail mode share from 12% of total freight task in 2020 to 14% by 2030.

This would also provide multiple economic and social benefits beyond reducing transport emissions, such as reducing congestion, roading maintenance costs, air pollution and safety risks from road vehicles (especially trucks). Desktop modelling by Ernst & Young<sup>14</sup> found coastal shipping provides an externality benefit of up to \$306.4 million per annum when compared to the roading alternative. A similar report<sup>15</sup> also found that rail could provide externality benefits of up to \$2.14 billion, although a large portion of these is attributed to the commuter rail networks in Auckland and Wellington reducing congestion.

The extent of mode shift we can achieve will be limited by which products can viably be moved this way, so further study will be needed. Rail and coastal shipping are modes that are more cost-competitive for bulk goods and for longer distances. They are slower modes of transport and need to aggregate greater volumes of cargo to maximise their utilisation on each journey. This leads to challenges in schedules being timely enough to meet market expectations. Rail and coastal shipping tend to compete for similar types of goods, so the extent of mode shift to each mode may be limited.

It will take time and substantial investment to improve New Zealand's rail and coastal shipping capacity, and enable these modes to compete more effectively with road. Rail infrastructure has deteriorated over past decades due to a lack of long-term sustainable investment. To address this, over \$6 billion has been committed to rail since 2017. The New Zealand Rail Plan outlines a 10-year vision to support increased investment in the rail network's resilience. A major component of this plan is a new long-term planning and funding framework for the heavy rail track network. As a first step, investment over the next decade is focused on restoring a resilient and reliable rail network. Further investment will be required to support growth in rail freight.

11 Diesel road freight emits on average 135g of CO<sub>2</sub> equivalent (which includes carbon dioxide, methane and nitrous oxide) per tonne-kilometre. This is compared to 28g by rail (21% of road) and 16 to 46g by coastal shipping (12 to 34% of road, levels of emissions vary according to type of shipping). Ministry for the Environment. (2020). *Measuring Emissions: A Guide for Organisations: 2020 Detailed Guide*. <https://environment.govt.nz/assets/Publications/Files/Measuring-Emissions-Detailed-Guide-2020.pdf>

12 Climate Change Commission. (2021). *Ināia tonu nei: a low emissions future for Aotearoa*.

<https://www.climatecommission.govt.nz/our-work/advice-to-government/topic/inaia-tonu-nei-a-low-emissions-future-for-aotearoa/>

13 KiwiRail. (2021). *Rail network investment programme*.

<https://www.kiwirail.co.nz/assets/Uploads/documents/Rail-Network-Investment-Programme-July-2021.pdf>

14 Ernst & Young. (2020). *The externality value of coastal shipping*. Ministry of Transport.

<https://www.transport.govt.nz/assets/Uploads/Report/TheExternalityValueOfCoastalShipping.pdf>

15 Ernst & Young. (2021). *The Value of Rail in New Zealand*. Ministry of Transport.

<https://www.transport.govt.nz/assets/Uploads/Report/EY-Report-Externality-value-of-rail-2020.pdf>



The Government's investment directed through the New Zealand Rail Plan also includes replacement of KiwiRail's Cook Strait Interislander ferry assets and contributions towards the landside infrastructure. Connections across the Cook Strait are important for New Zealand's economy and transport system, and provide a vital link for people and freight between the North and South Islands. These ferries use hybrid technology to run on both diesel (for main propulsion) and electrical power generated by batteries and shore power (for entering into port, manoeuvring and when docked in port). It is expected that the two new ships will use 36% less fuel than the current fleet of three ships, leading to a 40% reduction in the Interislander's carbon footprint compared to 2012 levels.

The Government has also allocated \$30-45 million in the National Land Transport Fund 2021-24 for coastal shipping. Waka Kotahi NZ Transport Agency will consider proposals from the sector to improve coastal shipping. These could include new or enhanced domestic services, reducing sector emissions, new or enhanced inter-modal links, and new or enhanced maritime infrastructure.

➤ **“Rail infrastructure has deteriorated over past decades due to a lack of long-term sustainable investment ...over \$6 billion has been committed to rail since 2017.”**



### **Coastal shipping and rail will also need to decarbonise in the long term**

While these are lower emissions modes than road freight, in 2019 rail still contributed 0.9% and coastal shipping 2.1% of our total transport emissions.<sup>16</sup> Rail and coastal shipping are both included under the Sustainable Biofuels Mandate and we will see some emissions reductions happen this way. After the rail network is restored over the next ten years, we could consider further electrifying our rail system or using green hydrogen fuels. This process would involve significant investment and careful consideration of whether the emissions reductions would be cost effective. It will also be necessary to consider whether this investment could yield better reduction outcomes if spent on other decarbonisation measures.

Decarbonising our coastal shipping will be entwined with the global effort to decarbonise our shipping emissions (see next section). This is because international carriers perform some of our domestic freight tasks, and because we need to ensure we have the appropriate infrastructure to service domestic and international carriers at our ports.

<sup>16</sup> These numbers are taken from the National Greenhouse Gas Inventory under 'rail' and 'domestic navigation' in the transport category <https://environment.govt.nz/publications/new-zealands-greenhouse-gas-inventory-1990-2019/>



## THE STRATEGIC CONTEXT FOR CHANGE

### We also need to decarbonise how we move goods to and from overseas markets

While international shipping is considered one of the most fuel-efficient means of global transportation due to the sheer volume it carries, it is still responsible for about 3% of the world's carbon emissions and this is expected to grow.<sup>17</sup> The International Maritime Organization's initial strategy to combat emissions proposes targets for reducing the carbon intensity of vessels. Compared to 2008 levels, they recommend a 40% reduction of carbon intensity by 2030 and 70% by 2050. They also recommend reducing total annual emissions by at least 50% by 2050.

Shipping lines have made corresponding efforts to explore alternative fuels, such as electric ships and alternative sources of propulsion. However, there is not yet a universally available and accepted solution. To make alternative fuels attractive to shipping, some countries have called for a global carbon tax of US\$100 to \$300 per tonne on all greenhouse gas emissions from shipping. Other regions have also crafted their own shipping emission regulations, e.g. the EU's plans to extend its Emissions Trading Scheme to maritime shipping.

As part of international efforts to decarbonise trade routes, New Zealand has signed the Clydebank Declaration to establish 'green shipping corridors', which are zero emissions shipping routes between two or more ports. Successful 'green corridors' could provide reputational benefits to New Zealand exports.

Measures to decarbonise the aviation sector are also underway. Carbon emissions from domestic and international air transport accounted for around 2.5% of all energy-related emissions before the COVID-19 pandemic.<sup>18</sup> International Civil Aviation Organization member states are still contemplating an agreement on a long-term target for reducing emissions. Some members have agreed to measures such as more fuel-efficient aircraft technology and operations, and sustainable aviation fuels (SAF) with lower carbon intensity. Airlines can also offset their emissions increases by purchasing emission units under the Carbon Offsetting and Reduction Scheme for International Aviation. In New Zealand, the Ministry of Business, Innovation and Employment and Air New Zealand have agreed to explore the feasibility of operating a SAF plant at a commercial scale.

#### "Green" ports

Several New Zealand ports have taken steps to decarbonise their operations. For example, the Ports of Auckland has committed to zero emissions by 2040, which includes a project for a commercial hydrogen production and refuelling facility and a battery-powered tug.<sup>19</sup> The Port of Tauranga is targeting net zero emissions by 2050 and to reduce emissions from port activities by 5% per year relative to cargo volumes, including by transitioning to battery-hybrid straddle carriers and light vehicles.

<sup>17</sup> International Transport Forum. (2018). *Decarbonising Maritime Transport: Pathways to zero-carbon shipping by 2035*. Paris, France: OECD Publishing. <https://www.itf-oecd.org/sites/default/files/docs/decarbonising-maritime-transport.pdf>

<sup>18</sup> International Transport Forum. (2021) *Decarbonising Air Transport: Acting Now for the Future*. Paris, France: OECD Publishing. <https://www.itf-oecd.org/sites/default/files/docs/decarbonising-air-transport-future.pdf>

<sup>19</sup> POAL – Sustainability. (n.d.). Ports of Auckland Limited. <https://www.poal.co.nz/sustainability>



## Opportunities and challenges

### The opportunities of transitioning to a low emissions freight transport system

As awareness of climate change grows, we are seeing **increasing demand globally for low emissions products and freight services**. New Zealand is in some ways well positioned to increase its use of low emission energy due to its abundance of renewable electricity and domestic biofuel production opportunities. This could provide a market advantage to New Zealand's freight sector if they are early adopters of low emissions technologies.

**Reducing emissions will require optimising the freight network and increasing efficiency.** Increased collaboration and consolidation could help optimise the supply chain and reduce costs to business. Government regulation could have a role in increasing the number of more fuel-efficient vehicles coming into the country.

Successfully establishing **'green corridors'** from New Zealand could provide reputational benefits to New Zealand exports. This will require our ports to investigate options for **decarbonising their operations** such as using alternative fuels for port equipment or providing shore power for idling ships. It may also require ports to provide alternative low carbon fuels to visiting ships, especially if shipping lines increasingly invest in green ships and plan their networks around ports they can refuel at.

### The challenges of transitioning to a low emissions freight transport system

**Uncertainty around how climate change will impact future production requires agility in our freight networks.** Climate change will impact on production volumes, and significantly shift which primary products are produced and where. The freight and supply chain system needs to be able to cope with these unpredictable swings.

The high costs and long-term nature of supply chain infrastructure will require **longer term planning by operators, freight owners, and government** to prepare for and respond to climate change risks. This may mean changing the current 'just-in-time' model to more of a 'just-in-case' model to ensure we have enough critical goods to weather a supply chain disruption. This may also mean re-thinking our freight network in places where only one route is available.

Freight operators will need to transition to low emissions vehicles or use low emissions fuels such as biofuels and hydrogen. However, **supply constraints, high up-front costs, and uncertainty over fuel choice and technologies present challenges for operators.** While early adoption offers opportunities to stay ahead of the curve, it could also create stranded assets. This will be a particular challenge for smaller owner/operators in the trucking sector.

Ports, airports, and rail will need to decarbonise their operational emissions. This will require **significant investment in current and new infrastructure, certainty around government investment and the future of our port system, and certainty around future energy supplies.**

New Zealand is at the end of international trade routes. **This means our international trade could be disrupted if countries start to limit trade with higher emissions economies to meet decarbonisation targets.** For example, New Zealand has attracted attention in the global debate about 'food miles' despite having relatively carbon-efficient food production systems. The recent announcement of a Free Trade Agreement with the UK generated heated responses from UK farmers about the impacts of importing food from the other side of the world.



# We must adapt to New Zealand's growing population and increasing densification

## Our population is expected to grow, especially in urban areas

New Zealand's population is expected to grow by 1.2 million people in the next three decades.<sup>20</sup> The Draft New Zealand Infrastructure Strategy reports two-thirds of population growth is likely to occur in less than 3% of New Zealand's land area.<sup>21</sup> This would see the majority of population growth concentrated in and around Auckland, Hamilton, Tauranga, Christchurch and Wellington. Auckland is projected to grow by around 648,000 people, accounting for almost half of all population growth.<sup>22</sup> This will place pressure on existing infrastructure, increase transport demand, and cause demand for greater investment in our urban areas.

## Housing shortages and efforts to respond to climate change are increasing urban densification

Urban densification provides several opportunities for New Zealand to make more efficient use of land and infrastructure. Building more medium and higher-density mixed-use developments could help address New Zealand's housing supply challenges. This could also reduce emissions as people would live closer to where they work, with increased access to public and active modes of transport, which would reduce reliance on cars.

## The corresponding increase and concentration of freight volumes will put pressure on our freight and supply chain system

Freight volumes are expected to increase 55% from 237 million tonnes in 2012/13 to 366 million tonnes in 2042/43.<sup>23</sup> Combined with population growth, this will put pressure on infrastructure and transport corridors. Increasing population concentration in the Auckland – Waikato – Bay of Plenty 'golden triangle' will intensify the competition between passengers and freight for the use of road and rail networks. This will also pose challenges for moving freight through these cities, given that national freight routes on main state highways pass through them. This will impact the ability of goods to move to and from the major international ports at Tauranga and Auckland. These ports will also need to handle higher freight volumes to service the demands of the growing population in this area.

Urban densification will also cause changes to the way urban areas and transport corridors are designed. This will impact on how we move freight within these areas and how and where we perform urban first- and last-mile deliveries, which are generally carried by trucks or vans. Denser populations would also increase traffic congestion and make it slower to move freight, impacting the system's productivity and cargo owners' competitiveness.

<sup>20</sup> Statistics New Zealand. (2021). *Subnational population projections: 2018(base)–2048*.

<https://www.stats.govt.nz/information-releases/subnational-population-projections-2018base2048#grows>

<sup>21</sup> New Zealand Infrastructure Commission. (2021). *Draft New Zealand Infrastructure Strategy*.

<https://www.tewaihang.govt.nz/assets/Uploads/211012-Draft-New-Zealand-Infrastructure-Strategy.pdf>

<sup>22</sup> Statistics New Zealand. (2021). *Subnational population projections: 2018(base)–2048*.

<https://www.stats.govt.nz/information-releases/subnational-population-projections-2018base2048#grows>

<sup>23</sup> Ministry of Transport. (2017). *Transport Outlook: Future State*.

<https://www.transport.govt.nz/assets/Uploads/Report/TransportOutlookFutureState.pdf>



### Congestion pricing could help enable freight movement

The Congestion Question project modelled that, by 2046, severe congestion on Auckland's freight network during the morning peak and interpeak periods will increase by 50%.

Congestion pricing has reduced traffic and congestion in other countries and enabled more efficient freight movements. Central government and Auckland Council officials are investigating whether to introduce congestion pricing on part or all of Auckland's road network.

Most urban environments in New Zealand have developed around ports, but as cities densify, ports are less able to expand their operations. Greater interest in developing waterfront areas as public spaces has also generated friction between commercial and public users. It is unclear how much the public will tolerate ports' commercial activities in the heart of our cities.

Changes in zoning to allow for densification may also reduce the availability of land for storing freight. This could disrupt efforts to consolidate and optimise freight and logistics networks with distribution centres. Competition for land space may increase if businesses move away from a 'just-in-time' logistics model to hedge against supply chain disruptions. In this case, they would require more industrial land for domestic manufacturing, or warehousing to hold higher volumes of inventory.

## Opportunities and challenges

**The opportunities of a growing population and increasing densification** Urban densification could provide an opportunity to incentivise low emissions options and new markets for first- and last-mile urban deliveries. These options could include micro-freight, cargo bike delivery, and drones.<sup>24</sup>

Tackling congestion issues could provide efficiency gains for freight. Measures to encourage mode-shift by commuters to active and public modes of transport could reduce traffic congestion and increase the efficiency of freight movements.

**The challenges of a growing population and increasing densification** We will need to think carefully about freight needs in our land use planning (such as for moving goods, storage, logistics centres, and expanding ports). Urban land use planners will need to understand freight movement and its challenges, and strike an appropriate balance between the competing demands for land. Greater agility in land use planning and resource consenting will be needed to enable changes in favour of the public interest.

As populations shift towards urban centres, it will be important to ensure reliable and adequate freight corridors to service regional communities.

24 Aldred, R., Collignon, N., Itova, I., & Verlinghieri, E. (2021). *The Promise of Low-Carbon Freight: Benefits of cargo bikes in London*. <https://static1.squarespace.com/static/5d30896202a18c0001b49180/t/61091edc3acfd2f4af7d97f1627987694676/The+Promise+of+Low-Carbon+Freight.pdf>



# Technology and digitalisation may change how we move goods

## Advancing technology may change how freight is moved

Advancing technology trends over the next few decades could transform how we move freight. Several areas of technology development are relevant to our freight and supply chains:

- **Artificial intelligence (AI)** will enable autonomous vehicles to become mainstream. The freight sector is likely to transition faster than personal transport, especially on fixed routes along major highways.
- **Advances in automation technologies** could provide opportunities to improve efficiencies and create higher-quality jobs, especially in the face of labour shortages and land constraints. For example, automation systems at ports allow containers to be stacked higher and closer together, making better use of space. Automation in warehouses can also reduce the amount of land required.
- **3D printing**, if scaled up sufficiently in the next few decades, could disrupt production processes and freight transport. Freight transport could involve moving 3D printing materials to produce complete products at localised sites, instead of moving parts from various locations to assembly centres. For now, 3D printing technologies remain limited to making parts which still require transport to assembly centres.<sup>25</sup>
- **Low emissions vehicle technology** has been advancing across the globe, including electric- or hydrogen-powered heavy trucks, and container ships powered by carbon-neutral methanol. We are starting to see more manufacturers putting in dates for the commercialisation of these vehicles.

## Increased digitalisation of trade could significantly facilitate global supply chains

E-commerce, paperless trading and transactions, and electronic border procedures have reduced the cost of trading internationally and increased cross-border flows of physical and digital goods and services. Digital technologies help integrate the operations of freight providers, and optimise movements, improving the visibility and efficiency of shipments.<sup>26</sup> For example, port-call optimisation helps to optimise vessels' speeds and coordinate movements so ships reduce waiting times and carbon emissions at ports.

Data can now be shared and stored securely with distributed ledger technology (DLT) or blockchain, which improves traceability and builds trust among multiple parties. Large-scale use of DLT in transportation is still limited, but shipping lines and port operators have launched DLT platforms such as TradeLens and Global Shipping Business Network to coordinate their logistics chains in recent years.

Global e-commerce is expected to grow almost 50% in the next five years.<sup>27</sup> The COVID-19 pandemic has accelerated this trend, with New Zealanders spending \$5.8 billion on online shopping in 2020, a 25% growth from the year before.<sup>28</sup> E-commerce is likely to be further entrenched as work-from-home habits persist after personal movement restrictions are lifted. E-commerce depends on road and airfreight for fast, on-demand deliveries of small, individualised parcels. This dependence highlights the need to decarbonise the freight and supply chain system, especially the last mile of the system.

25 International Transport Forum. (2019). *ITF Transport Outlook 2019*. Paris, France: OECD Publishing. [https://doi.org/10.1787/transp\\_outlook-en-2019-en](https://doi.org/10.1787/transp_outlook-en-2019-en).

26 United Nations Conference on Trade and Development. (2019) *Digitisation in Maritime Transport: Ensuring opportunities for Development* (Policy Brief No. 75). [https://unctad.org/system/files/official-document/presspb2019d4\\_en.pdf](https://unctad.org/system/files/official-document/presspb2019d4_en.pdf)

27 Chevalier, S. (2022). *Retail e-commerce sales worldwide from 2014 to 2025*. Statista.

<https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/>

28 New Zealand Post. (2021). *The Full Download*. <https://thefulldownload.co.nz/>



## Opportunities and challenges

**The opportunities of advances in technology** Technology will **open new markets for low emissions products and support decarbonisation** of our freight and supply chain system. Early adoption by the freight sector of low emission technology will enable some goods to get a foothold in these new markets and associated first mover advantages. Digitalisation could also create opportunities to better measure emissions throughout the supply chain, and allow customers to choose lower emission delivery methods. Digital solutions such as AI can also be used to improve truck utilisation and reduce kilometres travelled.

New technologies and automation present opportunities for higher-quality **job creation across the supply chain**. This could in turn negate the need for some of the 'less-desirable' positions which are currently experiencing labour shortages.

Digitalisation could help **reduce trading costs and other upward pressures on freight costs**. This would increase the integration of New Zealand firms into global supply chains, facilitating transfer of knowledge and innovation.

There may be scope to better **integrate data streams and improve data access across government and industry to increase efficiencies in freight movements and build resilience**. Improved access to freight data could allow better monitoring and evaluation of how the freight and supply chain system is performing.

**The challenges of advances in technology** **Long-term infrastructure planning will have to take account of new vehicle technologies**. For example, New Zealand's ports would need to have the facilities and infrastructure to service greener or autonomous ships, such as shore power facilities, low carbon bunkering fuels, and compatible IT systems.

There will be concerns around **safeguarding the privacy and ownership of data and the security of cross-border data flows from cyber attacks**. Intergovernmental coordination is needed to set consistent rules around how data is handled.

The impact of the technological change could differ across the freight and supply chain system. This change could increase the productivity gap between large firms and SMEs who may not be able to afford the investment. It could also reduce the demand for workers in some parts of the system, or completely negate the need for some jobs. We need to **ensure a fair, equitable and inclusive transition**.

### AI & autonomous vehicles

Autonomous drones for heavy cargo have become more advanced in recent years. This has the potential to disrupt the shipping industry and mitigate supply chain disruption from extreme weather events at ports. Small self-sailing cargo ships are also being trialled around the world over short voyages.



## International developments will increase uncertainties faced

### International trading is likely to become more uncertain as global geopolitics in the shifts and trading patterns change

Changing geopolitics could increase the risk of supply chain disruption. These could take the form of more frequent trade wars, an uncertain trajectory for globalisation, or rising competition for resources amid climate change-driven shortages. Geopolitical tensions could also disrupt the security of key trade routes, including the maritime sea lanes which carry 99% of New Zealand's trade.

Intra-regional trade is expected to grow as emerging and fast-growing economies gain larger shares in global trade and increasingly trade with each other. This shift is already underway with the Association of Southeast Asian Nations becoming China's largest trading partner in 2020. This may also be driven by countries turning to regional trade agreements because of relatively slow progress in multilateral trade liberalisation.

As emerging economies in Asia, South America, and Africa grow and lift their standards of living, New Zealand export patterns may shift from Western markets to these new ones.<sup>29</sup> These changes in trading relationships will lead to corresponding changes in patterns and availability of freight services.

### Geopolitics and vital shipping routes

The South China Sea (SCS) is a key shipping route with an estimated one-third of international shipping trade passing through it each year. In 2016, 18% of New Zealand trade passed through the SCS.<sup>30</sup> This percentage is likely to have grown since.

This waterway is at the heart of an international territorial dispute between several Asian countries. Many countries including New Zealand have direct interests in the region's peace and security and the maintenance of freedom of navigation and overflight. Commercial shipping could be disrupted in the event of conflict or restrictions in the SCS.

➤ **“Changing geopolitics could increase the risk of supply chain disruption.”**

<sup>29</sup> New Zealand's top export partners in 2020 were China, Australia, the US, Japan and South Korea. *Statistics New Zealand. (n.d.) Exports for Overseas Merchandise Trade (fob NZ\$): Country of Destination by Commodity (HS2) and Period*. Retrieved from <https://nzdotstat.stats.govt.nz/wbos/index.aspx>

<sup>30</sup> Schrag, J. (2021, January 25). How Much Trade Transits the South China Sea? ChinaPower Project. <https://chinapower.csis.org/much-trade-transits-south-china-sea/>



## Consolidation in the international shipping sector and the rise of megaships will impact our ports

After consolidation in the international container shipping sector, the 10 largest shipping companies have organised themselves into three global alliances, controlling over 80% of the market.<sup>31</sup> These alliances involve agreements between shipping lines to share vessels and sailing schedules to operate efficiently and cover a broader area. Through vertical integration, shipping lines have also moved into other parts of the logistics chain, such as terminal operations, port services, and freight forwarding. The market share of carrier-controlled terminal operators increased from 18% in 2001 to almost 38% in 2017.<sup>32</sup> More recently, some shipping lines have purchased companies in warehousing, customs services, freight forwarding, trucking, and e-commerce logistics, or even established airfreight divisions.

Container ships have also grown in size to take advantage of economies of scale. The share of global container freight capacity carried by ships larger than 10,000 twenty-foot equivalent (TEU) quadrupled from less than 10% in 2011 to nearly 40% in 2021.<sup>33</sup> Similarly, the maximum ship size calling in New Zealand has doubled from 5,000 TEU in 2016 to about 10,000 TEU in 2021.<sup>34</sup>

However, it is unclear how long this trend of further horizontal market consolidation and increasing ship size will continue. The International Transport Forum suggests that diminishing returns on economies of scale may be setting in.<sup>35</sup> The shipping disruptions from COVID-19 have also prompted regulators to more closely scrutinise how shipping lines consolidate, and highlighted the value of medium-sized ships' flexibility.

These trends have increased the market power of shipping lines, pressuring ports to reduce rates and invest in infrastructure to retain or attract shipping lines. The increasing use of larger container ships also means ports have to invest in infrastructure to service them and the higher volumes carried each visit. Not all New Zealand ports could do this, which could require New Zealand to reconfigure its container shipping pattern in a 'hub and spoke' model. In this model, smaller ships move cargo from regional 'spoke' ports to main 'hub' ports to connect with larger international ships. Importers/exporters also potentially face less shipping reliability and choice since using bigger ships could reduce the frequency of services and amplify the impacts of delays. Vertical integration could also reduce shippers' choice further up the logistics chain.

31 Deloitte. (2021). *2021 Ports and Freight Yearbook*.

<https://www2.deloitte.com/content/dam/Deloitte/nz/Documents/icp/2021-ports-and-freight-yearbook.pdf>

32 International Transport Forum. *The Impact of Alliances in Container Shipping*. Paris, France: OECD Publishing.

<https://www.itf-oecd.org/sites/default/files/docs/impact-alliances-container-shipping.pdf>

33 United Nations Conference on Trade and Development. (2021). *Review of Maritime Transport 2021*. New York, NY: United Nations Publishing. [https://unctad.org/system/files/official-document/rmt2021\\_en\\_0.pdf](https://unctad.org/system/files/official-document/rmt2021_en_0.pdf)

34 Ministry of Transport. (n.d.). *Freight and logistics: Freight Information Gathering System*.

<https://www.transport.govt.nz/statistics-and-insights/freight-and-logistics/>

35 International Transport Forum. (2020). *Future Maritime Trade Flows: Summary and Conclusions* (ITF Roundtable Reports No. 178). Paris, France: OECD Publishing. <https://www.itf-oecd.org/sites/default/files/docs/future-maritime-trade-flows.pdf>



## THE STRATEGIC CONTEXT FOR CHANGE

### Border closures and the decline in tourism have created uncertainties for the future of airfreight

Before the pandemic, 80% of New Zealand's airfreight was carried in the cargo hold of passenger aircraft. This was driven by strong international passenger movements rising 53% from 2010 to 2019,<sup>35</sup> allowing more airfreight to be carried at lower costs. While a small number of regular dedicated freight aircraft serve New Zealand, these tend to serve Australia as well, reducing the capacity available for New Zealand. Border closures and decline in passenger travel therefore led to a drastic fall in airfreight capacity. To maintain air connectivity for passengers and freight, and protect New Zealand's links to critical supplies, the Government provided funding support to airlines to manage the gap between operating costs and the lower revenues earned. Under this scheme, airfreight capacity recovered to 90% of pre-pandemic levels.

In the immediate term, the recovery of airfreight capacity without government support is highly dependent on tourism resuming. But there is still uncertainty over the reopening of New Zealand borders due to public health concerns over COVID-19. Even after borders reopen, it may take time for passenger volumes to return despite<sup>36</sup> some potential short-term gains from pent-up travel demand, because of:

- remote working practices reducing the need for some business travel<sup>37</sup>
- airlines being slow to bring aircraft back into service
- foreign airlines moving aircraft to other routes where countries have already resumed passenger travel, which could take years to reverse.

All of this suggests that airfreight capacity for New Zealand imports and exports will remain constrained in the near future. With the high global demand for airfreight, it is also less profitable for dedicated airfreighters to service New Zealand given our distance from major markets. Airfreight rates are likely to remain at two to three times pre-pandemic levels. This is already impacting some of New Zealand's export industries, especially those with lower profit margins.

There are also some uncertainties around New Zealand's airfreight capacity in the medium to longer term. The pandemic has provided an opportunity for New Zealand to 'reset' its tourism sector towards a high-value and sustainable model, but this may reduce passenger volumes and airfreight capacity. New aircraft models powered by low emissions energy sources like electricity and hydrogen could also reduce space for air cargo, as these sources require more space and weight allocation. That said, these technologies are currently still limited to small aircraft over short distances.

35 Ministry of Transport. (n.d.). *Air and sea transport: Air Passengers*.

<https://www.transport.govt.nz/statistics-and-insights/air-and-sea-transport/sheet/air-passengers>

36 A McKinsey report suggests that air traffic will take four years to return to 2019 levels. Bouwer, J., Saxon, S., & Wittkamp N. (2021, April 2). *Back to the Future? Airline sector poised for change post COVID-19*. McKinsey & Company. <https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/back-to-the-future-airline-sector-poised-for-change-post-covid-19>

37 McKinsey estimates that global business travel is only expected to return to 80% of pre-pandemic levels even after four years. Ibid.



## Opportunities and challenges

**The opportunities of shifting international developments** Potential changes in New Zealand's export destinations, especially with increased diversification of overseas markets, will create demand for more reliable **air and sea connections to service new routes and improve connectivity.**

In a 'hub and spoke' model, **domestic coastal shipping** could connect regional ports to main 'hub' ports that larger ships can call at. This highlights the importance of good connectivity between these 'hub' ports and the production and consumption centres of New Zealand.

## The challenges of shifting international developments

**New Zealand businesses will have to diversify and build redundancy and flexibility into their supply chains to hedge against increasing geopolitical and economic changes.**

**Long-term investment at ports to accommodate larger ships will need to be coordinated.** Too many ports attempting to service larger international ships could lead to nationwide over-investment and stranded assets, or the decline of those ports unable to compete. This also has implications for decisions on where to focus investment in rail and roading infrastructure to connect to ports. A more coordinated, long-term approach may be required.

**Our freight system will have to be more productive and efficient to clear the higher volume peaks** brought by larger ships. Improving the system in this way will also maintain New Zealand's attractiveness to international lines, which strengthens the resilience of our international connections.

**Our economic strategies need to consider the needs of airfreight.** We need to explore how to respond to changes in the aviation sector with agility and build resilience to support airfreight capacity. We may also need to reconcile the needs of passenger travel and airfreight.

## Opportunities for coastal shipping

Beyond commercial drivers, there are also externality benefits to coastal shipping. Modelling by Ernst & Young suggests that coastal shipping yields an estimated \$306.4 million per annum of externality value.<sup>38</sup> As New Zealand moves to decarbonise the freight sector, there are opportunities to move more freight via coastal shipping, although this would depend on the characteristics and time-sensitivity of goods. Coastal shipping could also build resilience in supply chains by providing alternative transport during land-based disruptions.

**Q3**

Do you agree with the outlined strategic context and key opportunities and challenges? If not, please explain why.

**Q4**

Are there any trends missing that we should consider? If so, please explain what they are.

**Q5**

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?

38 Ernst & Young. (2020). *The externality value of coastal shipping*. Ministry of Transport. <https://www.transport.govt.nz/assets/Uploads/Report/TheExternalityValueOfCoastalShipping.pdf>

# Part 3. Current vulnerabilities of the freight and supply chain system

We need to address the vulnerabilities and barriers the system faces so we can meet the challenges and maximise the opportunities from the major changes ahead.



## Before the COVID-19 pandemic, New Zealand's freight and supply chain system had generally operated without severe disruptions

A global oversupply of shipping capacity after the 2008 Global Financial Crisis had kept sea freight rates to New Zealand low, with international freight costs making up about 4.2% of the value of imports in 2019.<sup>39</sup> Sea freight volumes increased steadily between 2010 and 2019, expanding by 41% (by weight) and 47% (by value).<sup>40</sup> A 2016 report on New Zealand's international airfreight assessed available capacity to be typically larger than potential demand. However, New Zealand experienced occasional temporary shortages due to unpredictable spikes in production or market demand.<sup>41</sup> Our freight and supply chain system appears to have performed well in its role of connecting New Zealand domestically and internationally without severe disruptions.

Stakeholders we have engaged with so far suggested the system has several strengths, including:

- relatively balanced import/export volumes, making New Zealand commercially attractive for international ships
- a strong New Zealand brand overseas driving exports
- a sector that is resourceful in problem solving.

There was some agreement that prior to COVID-19, air and sea freight rates were reasonable and moving goods around New Zealand's coast was cost-competitive and efficient. We also enjoyed good international connections to markets in Asia, Europe, the US and South America.

## The pandemic has highlighted some vulnerabilities to be addressed

During the pandemic, COVID-19 border closures and the decline in passenger travel led to a drastic fall in capacity for airfreight, highlighting the dependence of airfreight capacity on international passenger movements. Personal movements were restricted or reduced, contributing to a sustained surge in consumer demand for goods. This surge occurred while the freight sector was struggling with labour constraints due to COVID-19 infections and health measures. Demand for sea freight has outpaced capacity around the world, leading to congestion at ports including in New Zealand.

Disruptions to global supply chains triggered by the pandemic have affected New Zealand's freight and supply chain system in various ways:

- a reduction in frequency, reliability and capacity of shipping services to New Zealand
- escalating freight rates and surcharges – sea freight costs have increased to 6% of the value of imports in the first nine months of 2021<sup>42</sup>
- empty container supplies being stuck in the wrong places.

New Zealand's trade volumes held up relatively well despite the disruptions – export and import values rose 5.5% and 7.2% in the first 11 months of 2021 compared to the same period in 2019. However, other impacts have been harder to quantify, such as those associated with forgone economic activity, falling or negative profit margins, and loss of business confidence to invest or loss of overseas market share.

39 New Zealand Customs data. Customs does not collect equivalent data on New Zealand exports.

40 Ministry of Transport. (n.d.). *Freight and logistics: Freight Information Gathering System*. <https://www.transport.govt.nz/statistics-and-insights/freight-and-logistics/>

41 Murray King & Francis Small Consultancy Ltd, & Richard Paling Consulting Ltd. (2016). *New Zealand International Air Freight*. Ministry of Transport. <https://www.transport.govt.nz/assets/Uploads/Report/Airfreight-Research-Final-Report-23-March.pdf>

42 Based on New Zealand Customs data.

## CURRENT VULNERABILITIES

Small and medium enterprises (SMEs) have also borne a disproportionate impact of global supply chain disruption, with larger companies managing to secure much of the reduced sea and airfreight capacity. SMEs account for 97% of New Zealand businesses, 29% of New Zealand employees, and generate 28% of New Zealand GDP. But they typically rely on third party logistics and have lower levels of supply chain understanding, maturity and capability, and often struggle to proactively manage their supply chains.

Stakeholders have suggested several key vulnerabilities and barriers in the system, including but not limited to:

- **Just-in-time efficiency prioritised over spare capacity** – Many companies around the world adopt just-in-time logistics models with limited inventory to increase efficiency and reduce warehousing costs. It is also commercially difficult to justify the costs of spare capacity. However, this means there is little “fat” in the system to absorb disruptions. In response to the pandemic, some businesses have started shifting to more of a hybrid just-in-time/just-in-case model.
- **It can be hard to shift between freight options** – Some stakeholders felt that it was hard to shift between freight modes. This difficulty could be caused by insufficient capacity or reliability of alternative modes, or inefficient and expensive transfers across modes.
- **Relying on international shipping lines may mean New Zealand's freight needs are not prioritised** – New Zealand is geographically distant from major markets and not the most profitable trade lane. New Zealand also relies on Singapore and Malaysia as transshipment hubs to connect to the main international shipping routes. International lines also move about 75% of domestic coastal cargo,<sup>43</sup> meaning that domestic freight is susceptible to the operating decisions of international lines. New Zealand has little influence over these decisions.
- **The competition settings of New Zealand ports may not be optimal** – Some stakeholders suggested that there may be opportunities for the port sector to be better coordinated. The sector could achieve economies of scale and other efficiencies through better cooperation and specialisation, instead of duplicating infrastructure.
- **Limited data on the freight sector is available** – This lack of data hinders accurate and dynamic modelling, better decision-making, and the monitoring of sector performance against historical or international benchmarks. Most businesses in the sector are averse to sharing and adopting common standards because of the competition and fragmentation between them.

<sup>43</sup> Ministry of Transport. (n.d.). *Freight and logistics: Freight Information Gathering System*. <https://www.transport.govt.nz/statistics-and-insights/freight-and-logistics/>

- **Accessing labour can be challenging** – Several freight sectors have an aging workforce,<sup>44</sup> such as ports, trucking, and coastal shipping. Attracting new labour is difficult because the industry is seen to involve unsocial working hours and poor career prospects due to expected automation. Some jobs have long training times and cannot be filled easily.
- **Long-term planning needs to be clearer** – Stakeholders felt there is a need for a long-term plan for government investment and regulation, which is reliable, evidence-based, transparent, and non-politicised. This would give the private sector more confidence to make complementary decisions and investments. They also thought that the consenting process was too expensive and slow. They thought the low profile of freight contributed to this problem, alongside the inadequate consideration it receives compared to other transport planning in urban areas.

A full summary of stakeholders' feedback is at Appendix 4.

### Some evidence shows that our freight and supply chain system could be performing better

According to Stats New Zealand data,<sup>45</sup> labour productivity in the transport sector (combining transport, postal and warehousing), has been decreasing over the last five years, and capital productivity in the sector has been decreasing since 2002. While the Productivity Commission's 2012 inquiry<sup>46</sup> into New Zealand's international freight transport is dated, it still offers relevant insights. The inquiry found scope for improvement in:

- increasing the quality of infrastructure planning and coordination
- improving the governance of ports and airports
- developing a richer information infrastructure.

According to the Transport Indicators data compiled by Te Manatū Waka, the Ministry of Transport, we have viable alternatives for only 39% of our key social and economic corridors.<sup>47</sup> From a safety perspective, out of all the sectors in the New Zealand economy in the period from September 2020 to August 2021, the transport sector has the third highest rate of fatalities and sixth highest rate of injuries resulting in more than a week away from work.<sup>48</sup> These metrics only provide a snapshot of specific aspects of the freight and supply chain sector, and not an assessment of how the system is performing as a whole.

44 For example, according to road freight association la Ara Aotearoa Transporting New Zealand, the average age of a road freight worker is about 54 years old. In 2018, there was already an estimated shortage of 2,500 drivers. RNZ. (2018, November 23). *Difficult and dangerous – why truck drivers are quitting*. <https://www.rnz.co.nz/national/programmes/insight/audio/2018672554/difficult-and-dangerous-why-truck-drivers-are-quitting>

45 Statistics New Zealand. (n.d.). Industry Productivity Statistics ANZSIC06. Retrieved from <https://nzdotstat.stats.govt.nz/wbos/index.aspx>

46 New Zealand Productivity Commission. (2012). *International Freight Transport Services Inquiry*. <https://www.productivity.govt.nz/assets/Documents/f53fe759db/Final-report-v8.pdf>

47 Ministry of Transport. (n.d.). *Transport Indicators: Resilience and Security*. <https://www.transport.govt.nz/statistics-and-insights/transport-indicators/resilience-and-security/>

48 WorkSafe. (2021, 23 December). *Fatalities*. <https://data.worksafe.govt.nz/graph/summary/fatalities>

**CURRENT VULNERABILITIES****The pre-COVID-19 operating environment is unlikely to return, so we need to position the system for the future**

As we outlined in Part 2, we expect some major changes in the freight and supply chain system's operating environment, some of which have been accelerated by the pandemic. A government interagency group has responded to pandemic-related supply chain disruptions, as part of the Government's Trade Recovery Strategy. However, these major changes are likely to sustain the upward pressure on freight rates, including through:

- the increased price of carbon leading to rising fuel prices
- the need for more investment to adapt to and insure against climate change impacts
- higher costs due to increased competition for land use
- the costs involved in responding to or hedging against more frequent supply chain disruptions.

This means that the low rates New Zealand enjoyed and relied on for trade before the pandemic are no longer a certainty. New Zealand is likely to feel the impacts of higher freight rates much more than other countries given its geographical distance from major markets. Increases in transport related costs are also likely to be passed onto the consumer. Combined with inflation and the rising cost of living generally, this could have a disproportionate effect on vulnerable and low socio-economic communities.

**The sector will have to consider how it will ensure a sustainable labour force**

As highlighted above, one existing vulnerability is a labour shortage in several freight sectors which has been ongoing for many years, e.g. for truck drivers, port workers, and seafarers. The supply chain disruptions caused by the COVID-19 pandemic have further demonstrated the importance of having a resilient labour supply to keep the system running. The need for labour is likely to become more acute in the future as freight volumes increase. In addition, the big changes facing our freight and supply chain system, particularly new technologies and demographic changes, will reshape the future of work in New Zealand. There is a need for more collaborative and longer-term planning across industry, unions, and government to make sure the right conditions are in place to enable a sustainable labour force. This includes making sure the sector is able to attract workers that it needs now and in the future, but also the right skillsets it will need to meet longer-term challenges and opportunities, including those arising from new technologies. This could entail creating higher quality, higher skilled, and safer jobs for New Zealanders, and ensuring an adaptable workforce through further education and training. A tripartite approach that involves employers, unions, and government working together to ensure that work in the sector is supported by good training, safe conditions, fair treatment, and strong career pathways may help significantly with these issues.

## It is vital to develop a systemic approach to freight data collection and performance evaluation

To support the system to meet these challenges and maximise the opportunities, we need to address the vulnerabilities and barriers it faces. For this, we will need to build a good understanding of how the freight and supply chain system is performing.

It is currently difficult to make a more comprehensive, evidence-based assessment on the performance of the system due to the limited availability of freight data. Te Manatū Waka, Ministry of Transport maintains a Freight Information Gathering System (FIGS), which provides an overview of rail and sea freight movements around New Zealand. However, there is room to improve on the suite of performance indicators featured in FIGS, especially for road freight data. Better data collection, sharing, and analysis across the sector can present a more comprehensive picture which accounts for the interdependencies and nuances in measuring the system's performance. This will help improve operations and aid policy and investment decisions.

## We are at a good starting point to improve the system

New Zealand has an opportunity to take a more strategic and systemic approach to freight and supply chains. It can improve its productivity and ability to respond to major changes happening here and abroad. Apart from highlighting vulnerabilities, the pandemic has raised the public profile of the freight and logistics sector, underlined the importance of supply chains, and demonstrated the value of having good freight data. It has also encouraged close cooperation and relationships across government and industry. This presents a good starting point to progress work on improving the system.

➤ **“To support the system to meet these challenges and maximise the opportunities, we need to address the vulnerabilities and barriers it faces.”**

Q6

Do you agree with the outlined vulnerabilities of the current system? If not, please explain why.

Q7

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

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

The previous sections analysed the changes taking place in the freight and supply chain system, which present profound opportunities and challenges, and necessitate addressing existing vulnerabilities. For example, New Zealand could better manage increasing freight costs if it is well-positioned to embrace new technologies and digitalisation, and respond to changing consumer preferences and new markets.

While navigating and adapting to changes is hard, it presents an opportunity to transform the system to achieve the outcomes we want over the next few decades. The strategy will need to decide what is important to New Zealand and present a pathway to get there. It will have to consider what we need to protect, what we want to flourish, and how we ensure our long-term resilience.



# Proposed outcomes

## The freight and supply chain system should be low emission, resilient, productive, and innovative

We have considered the long-term trends and current vulnerabilities in our freight and supply chain system. We also engaged with some iwi group holdings, local government, and industry stakeholders to understand what the priorities for change should be.

From this we propose that the strategy focuses on four outcomes – low emissions, resilience, productivity and innovation, and equity and safety. These proposed outcomes align with the Transport Outcomes Framework developed by Te Manatū Waka, Ministry of Transport. The framework guides the design of transport policies to improve the wellbeing of New Zealanders and the liveability of places (see Appendix 3).

# 1.

## Low emissions

New Zealand's freight and supply chain system is underpinned by a low emissions freight transport system



# 2.

## Resilience

New Zealand's freight and supply chain system is resilient, reliable, and prepared for potential disruptions



# 3.

## Productivity & innovation

New Zealand's freight and supply chain system is highly productive and innovative, and performs well when measured against global standards

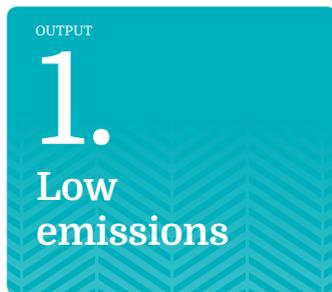


# 4.

## Equity & 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

## DEVELOPING A STRATEGY



New Zealand has committed to domestic and international targets to reduce its emissions to net zero by 2050. This in turn will contribute to the global effort to limit global warming. Moving to a low emissions freight transport system will help us avoid the worst impacts of climate change. It will also contribute to limiting disruptions arising from climate change, ensuring the connectivity and performance of supply chains and supporting the wellbeing of New Zealanders. The growing consumer preference for 'green' goods could provide opportunities for New Zealand producers. A low emissions freight system could also put us in a good position to deal with potential global taxes on shipping emissions or emission regulations imposed by trading partners.

The emissions reduction plan will outline the initial steps we need to take to enable decarbonisation in the freight sector from 2022 to 2025. However, the strategy will need to set a pathway to transition to a low emissions freight and supply chain system over the longer term. This will help inform future emissions reduction plans and give confidence to the pace, scale and direction of change required. It will also need to align with other government work on decarbonisation.



The COVID-19 pandemic and the longer-term changes explored in previous sections demonstrate the need for a strong focus on long-term resilience in our supply chains. Resilient supply chains are more able to avoid, absorb, and recover from disruptions, maintaining freight connections and keeping goods moving. While we cannot predict potential disruptions, we can embed some qualities in the system, such as agility and flexibility, that will help us adapt. This could include understanding what our critical infrastructure and freight services are, identifying risks and minimising exposure (including climate change impacts), building surplus capacity, maintaining regulatory flexibility, and building an adaptable workforce, etc.

➤ “Resilient supply chains are more able to avoid, absorb, and recover from disruptions, maintaining freight connections and keeping goods moving.”



**Taking advantage of innovation and technological change will be key to lifting productivity and creating higher quality jobs.**

We have opportunities to improve the productivity of our freight sector. The sector is dynamic and competitive in many areas, but productivity has been declining.

Given the challenges discussed earlier, it will be increasingly difficult for the sector to deliver goods as quickly, cheaply and conveniently as in the past. Improving the sector's productivity will allow us to maintain and improve on reliable connections to goods and markets at reasonable rates. This can also help New Zealand reduce the impacts of being geographically distant from major markets and production centres.



**The Government is committed to ensuring economic prosperity for all New Zealanders and contributing to healthy and safe communities.**

Part of this will be ensuring that the transition to low emissions, resilient, productive and innovative supply chains is fair, equitable, and inclusive. This means ensuring we are supporting Māori, regional economies, businesses, and workers to adapt to the changes we are expecting.

This could include:

- managing how emissions reduction policies disproportionately impact some businesses and their workforce, especially small businesses
- improving inclusive access to opportunities arising from change
- mitigating the impacts of rising freight costs
- developing vocational skills in emerging areas
- ensuring regional economic development is maintained as our urban areas densify
- ensuring New Zealanders are healthy and safe in workplaces and on our roads.

## DEVELOPING A STRATEGY

## Adopting a strategic and coordinated approach will help us achieve the proposed outcomes

Much of the work will have to begin now. Climate change and changing population dynamics will play out over the long term but require near-term decisions. Other changes may involve solutions with long lead times such as infrastructure investment or regulatory changes.

Efforts by the market and government to address the opportunities and challenges are already underway. But to meet the magnitude of the changes in this complex system in the time required, we will need a more strategic and coordinated approach.

To achieve the proposed outcomes, the market will need to cooperate and coordinate, but this will be hard for the market to achieve by itself. The high costs and long timeframes of investment in an environment of uncertainty require longer-term planning from all players in the sector, including the government.

We aim to build a strategic direction based on a long-term and system-wide view of New Zealand's freight and supply chain system. We will achieve this by developing a freight and supply chain strategy for New Zealand for the next 30 years (see Appendix 3). This will help us set the system for the future and respond effectively to opportunities and challenges, while remaining agile and flexible to adapt to unforeseen developments. In doing so, we will adopt a cross-generational approach to infrastructure investment and planning (see the following box).

### A Generational Investment Approach

Transport investments last for generations, especially infrastructure like roads, railways, and bridges. This means that today's investment decisions need to anticipate how future generations may want to live and move around. They will also need to consider changes in the environment, technology, and society.

To support this, Te Manatū Waka, Ministry of Transport is implementing a new Generational Investment Approach (GIA). This approach will take a 30-50-year view of investment choices. GIA enables organisations investing in the transport system to collaborate to identify and prioritise future choices at the earliest stage in the investment cycle. It will adopt some of the following principles and features:

- long-term terms of reference for developing and evaluating options for investment alongside other levers like pricing and regulation
- a greater emphasis on a robust and transparent evidence base, including systems for collecting and modelling data
- collaborative approaches to generating and evaluating ideas
- tracking ideas in a transparent and systematic way from start to finish (or rejection) – so everyone knows how feasible projects are, the evidence base that supports them, and their expected timeline
- enabling longer-term plans, and adapting them when needed.

This strategy will employ the GIA to prioritise, evaluate and implement options for change. This should result in clear long-term planning, based on transparent evidence that makes it more likely that organisations will invest in good ideas. This strategy will be the first time this approach has been employed in transport policy.

In essence, the strategy will lay out:

- a set of outcomes for the New Zealand freight transport and supply chain system
- the changes that need to occur to prepare the system for the future
- a set of pathways and priority actions to achieve the outcomes
- a mechanism for stakeholders and government to work together on an ongoing basis.

Through developing the strategy, we intend to:

- provide a long-term and system-wide view of New Zealand's freight and supply chain system
- build a strategic direction to inform investment decisions by government, iwi, and the private sector
- align relevant government policies to maximise impact
- support coordination and information sharing among various agents in the system where appropriate.

We are keeping an open mind about what the strategy should do to achieve the proposed outcomes. In this issues paper, we seek your feedback on which opportunities and challenges will be most important in shaping the future of New Zealand's freight and supply chain system. We also want your feedback on whether the proposed outcomes in the earlier section are the right ones to work towards.

Our engagement to date has informed some potential areas of focus for the strategy (see picture below). We consider these areas to be broadly in line with meeting the opportunities and challenges facing the freight and supply chain system. These potential areas of focus are not exhaustive and only indicative at this stage. We will be engaging with iwi and stakeholders to identify priorities and options as part of the strategy development process this year.

Now	Areas of focus	30 years
<p><b>1.</b> Low emissions</p>	<ul style="list-style-type: none"> <li>• Set the pace of intermediate steps between now (current emissions) and 2050 (net zero emissions)</li> <li>• Provide a road map for infrastructure requirements to enable the shift to zero and low emissions heavy vehicles – this could include biofuels, hydrogen and electric charging stations</li> <li>• Signal government support, incentives and regulation to enable long-term business planning</li> </ul>	
<p><b>2.</b> Resilience</p>	<ul style="list-style-type: none"> <li>• Assess parts of the freight and supply system that are most critical and their level of resilience, and develop plans to improve resilience</li> <li>• Improve modal options including rail and coastal shipping to support decarbonisation and enhance resilience and safety</li> </ul>	
<p><b>3.</b> Productivity &amp; innovation</p>	<ul style="list-style-type: none"> <li>• Assess port settings to improve national and regional outcomes</li> <li>• Address barriers to innovation and uptake of productive technologies</li> <li>• Support collaboration among government, industry, and unions to improve access to labour and job quality</li> <li>• Develop a systemic approach to improve freight data access and collection, and performance evaluation</li> </ul>	
<p><b>4.</b> Equity &amp; safety</p>	<ul style="list-style-type: none"> <li>• Ensure Māori interests are at the forefront and articulate Māori aspirations in relation to supply chains</li> <li>• Ensure our long-term plans maintain or increase connectivity with regional communities and support regional economic development</li> <li>• Support SMEs in transition</li> <li>• Support efforts to enhance safety on roads and in workplaces</li> </ul>	
<p><b>Across all outcomes</b></p>	<ul style="list-style-type: none"> <li>• Enhance collaboration between stakeholders and government on freight and supply chain issues</li> </ul>	

**DEVELOPING A STRATEGY**

# Collaboration will be at the heart of the process for developing and implementing the strategy

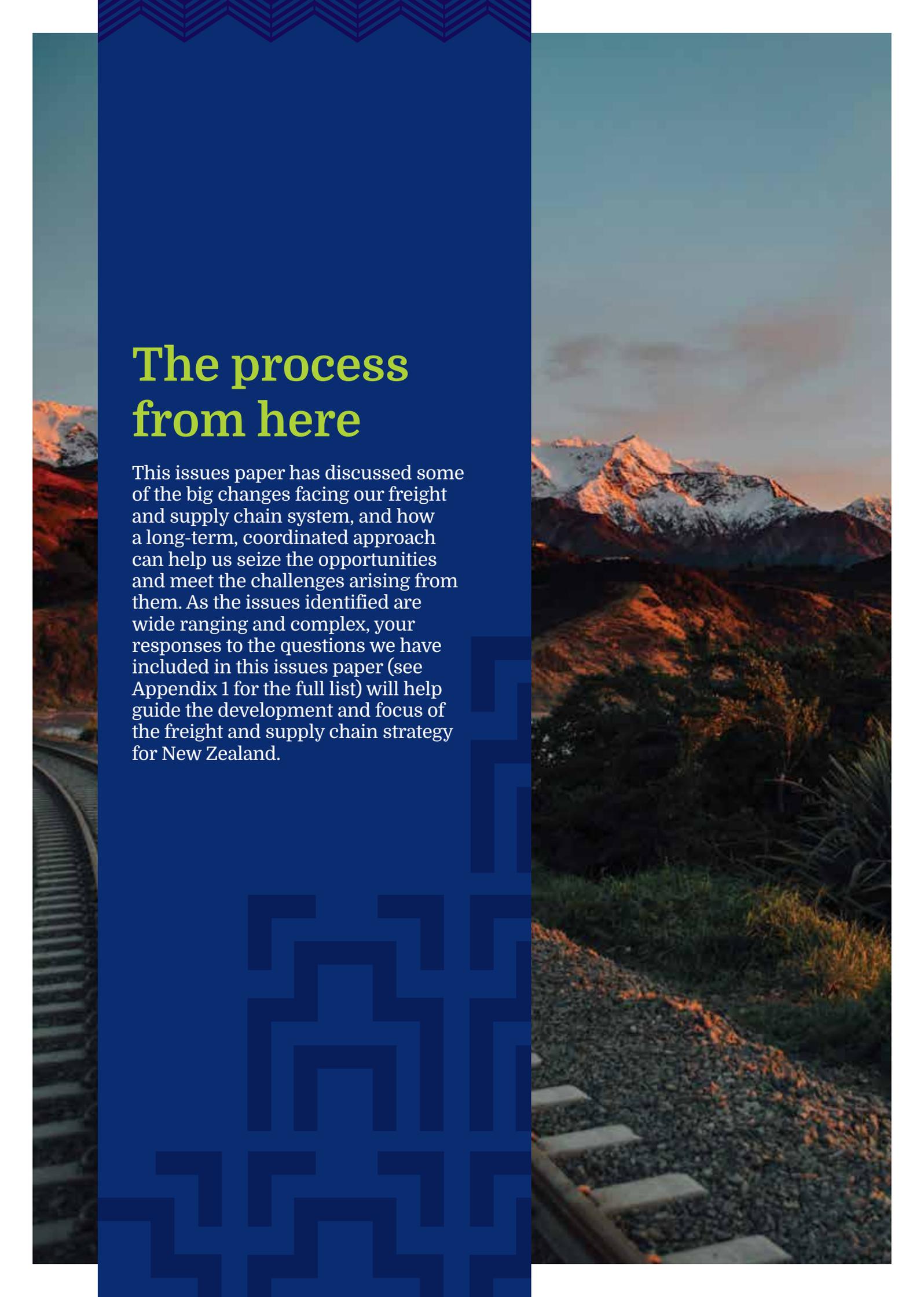
The process of developing the strategy will be as important as the final strategy itself. We will be taking a collaborative approach, and drawing on the expertise and experience of stakeholders across the system to inform the process. We would also like to work with our Treaty partners to articulate Māori aspirations relating to the freight and supply chain system and explore how to achieve them.

The task of future-proofing our freight and supply chain system will have to be shared across those who manage, operate, and use the system. These groups include central and local government, Crown agencies, iwi, unions, and industry players across the supply chain, within and outside of the transport sector. Through the strategy, we can together transform the freight and supply chain system to be sustainable, resilient, and productive.



- Q 8** Do you agree with the proposed outcomes? If not, please explain why.
- Q 9** Are there more outcomes the strategy should focus on? If so, please explain what they are.
- Q 10** Do you agree with the potential areas of focus for the strategy? If not, please explain why.

- Q 11** Which of these areas of focus would be most important to prioritise?
- Q 12** What would successful stakeholder engagement on the development of the strategy look like from your perspective?
- Q 13** How could we best engage with Māori on the strategy?



## The process from here

This issues paper has discussed some of the big changes facing our freight and supply chain system, and how a long-term, coordinated approach can help us seize the opportunities and meet the challenges arising from them. As the issues identified are wide ranging and complex, your responses to the questions we have included in this issues paper (see Appendix 1 for the full list) will help guide the development and focus of the freight and supply chain strategy for New Zealand.

## THE PROCESS FROM HERE

## Collaboration and partnership

We believe that working closely with stakeholders across the freight and supply chain system will help us design a better strategic direction to achieve our desired outcomes. While consultation is ongoing, we will be developing an engagement plan which will propose:

- further workshops, interviews, and meetings on specific topic areas to develop and test priorities and options that could be included in the strategy
- forming focus groups and reference groups to delve deeper into specific topics over a longer period
- approaches to collaborating with Treaty partners including through representation in the above groups.

As we develop the strategy, we will also be considering approaches to long-term partnership with stakeholders that continue after the work on the strategy is concluded. This could be in the form of an enduring advisory group for freight policy, a government-industry accord, or some other approach.

### Partnering with iwi Māori will be an essential part of the strategy

We recognise iwi Māori as tangata whenua of New Zealand hold unique and direct relationships with the Crown. The government has obligations under the Treaty of Waitangi to work in partnership with Māori.

We recognise more work is needed to build the relationships required to understand the issues and opportunities for Māori in the freight and supply chain system, and to work in partnership with them. We will meet with iwi Māori representatives to listen to how the freight and supply chain can support them and their businesses, and help realise their long-term aspirations. We also intend to bring together a Treaty Partner reference group to support our work with iwi Māori. Building an ongoing and enduring partnership with iwi Māori will be a key focus of our work going forward.

➤ **“Building an ongoing and enduring partnership with iwi Māori will be a key focus of our work going forward.”**

# Timeline

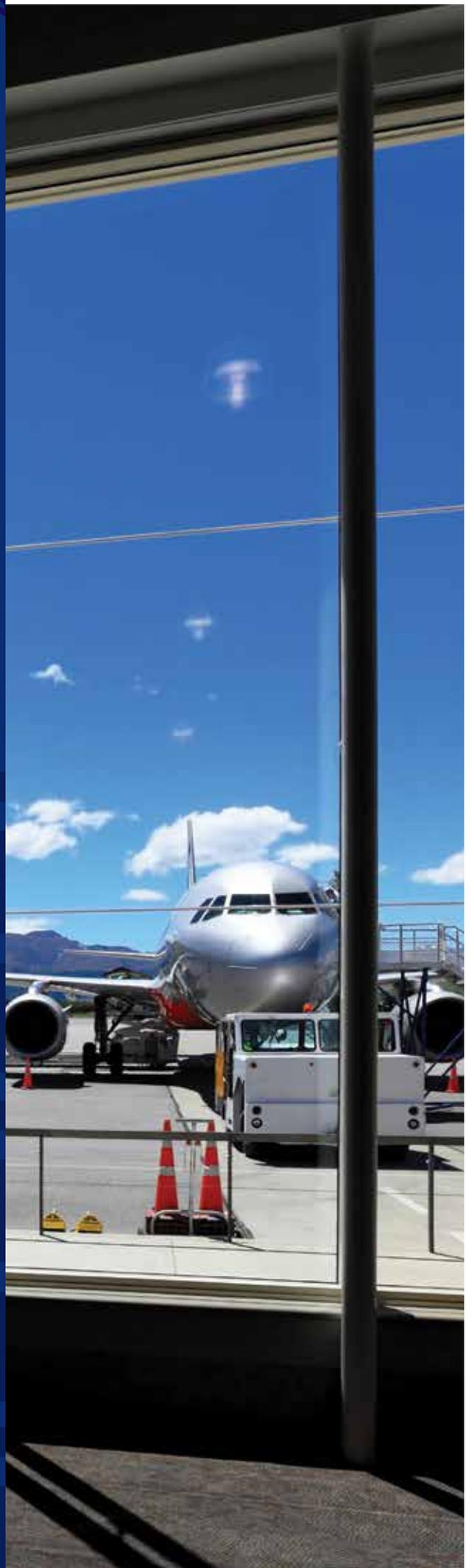
Our timelines are subject to change, but we expect the following:



- April 2022: Release issues paper.
- April-May 2022: Engage on the issues paper and scope of the strategy.
- April-September 2022: Engage with stakeholders on the actions and priorities for the strategy.
- September-October 2022: Confirm priority actions in the strategy with Ministers.
- October-November 2022: Draft the strategy.
- December 2022: Send draft strategy to the Minister of Transport for consideration.

Following this, we may undertake further public consultation on a draft strategy.

# Appendices



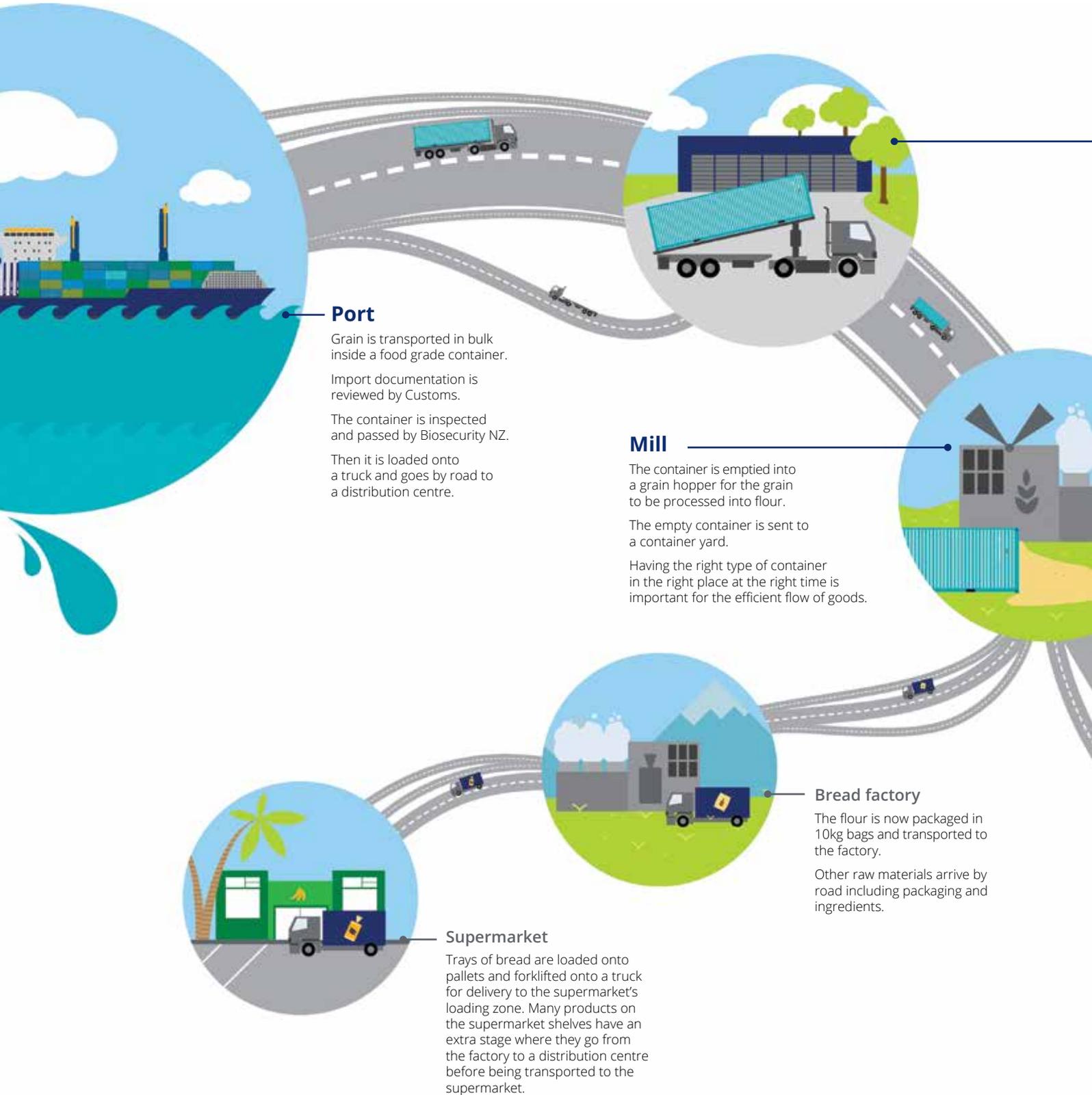
## Appendix 1.

### List of questions for consultation

<b>Q1</b>	Do you agree with the outlined description of the freight and supply chain system?	19	<b>Q7</b>	Is there any key information missing in understanding the vulnerabilities of the current system?	41
<b>Q2</b>	Do you have any views on the outlined role of government in the freight and supply chain system?	19	<b>Q8</b>	Do you agree with the proposed outcomes? If not, please explain why.	48
<b>Q3</b>	Do you agree with the outlined strategic context and key opportunities and challenges? If not, please explain why.	35	<b>Q9</b>	Are there more outcomes the strategy should focus on? If so, please explain what they are.	48
<b>Q4</b>	Are there any trends missing that we should consider? If so, please explain what they are.	35	<b>Q10</b>	Do you agree with the potential areas of focus for the strategy? If not, please explain why.	48
<b>Q5</b>	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?	35	<b>Q11</b>	Which of these areas of focus would be most important to prioritise?	48
<b>Q6</b>	Do you agree with the outlined vulnerabilities of the current system? If not, please explain why.	41	<b>Q12</b>	What would successful stakeholder engagement on the development of the strategy look like from your perspective?	48
			<b>Q13</b>	How could we best engage with Māori on the strategy?	48

APPENDICES

## Appendix 2. Illustrative journey of a shipping container in New Zealand





Freight forwarders are involved at every step of the freight journey.

The role of the freight forwarder is to work on behalf of an importer or exporter to arrange the transport and relevant documentation of their goods. Larger companies do this work themselves.

### Distribution centre

The container is taken off the truck and the truck goes back to the port either with an empty chassis for its next load, or with exports.

Another truck takes the container to the mill.

### Dairy production facility

The empty food grade container is delivered to the dairy production facility by rail and filled with milk powder for export. This exporter has a railhead onsite for a direct link to the port.



### Railhead

Every week more than 900 freight trains travel on the network.



### Port

The container is unloaded and placed into short-term storage. Export documentation is checked. Then it is loaded into the ship.

The container may be offloaded and transferred to another ship at a transhipment port before reaching its final destination.



### Container yard

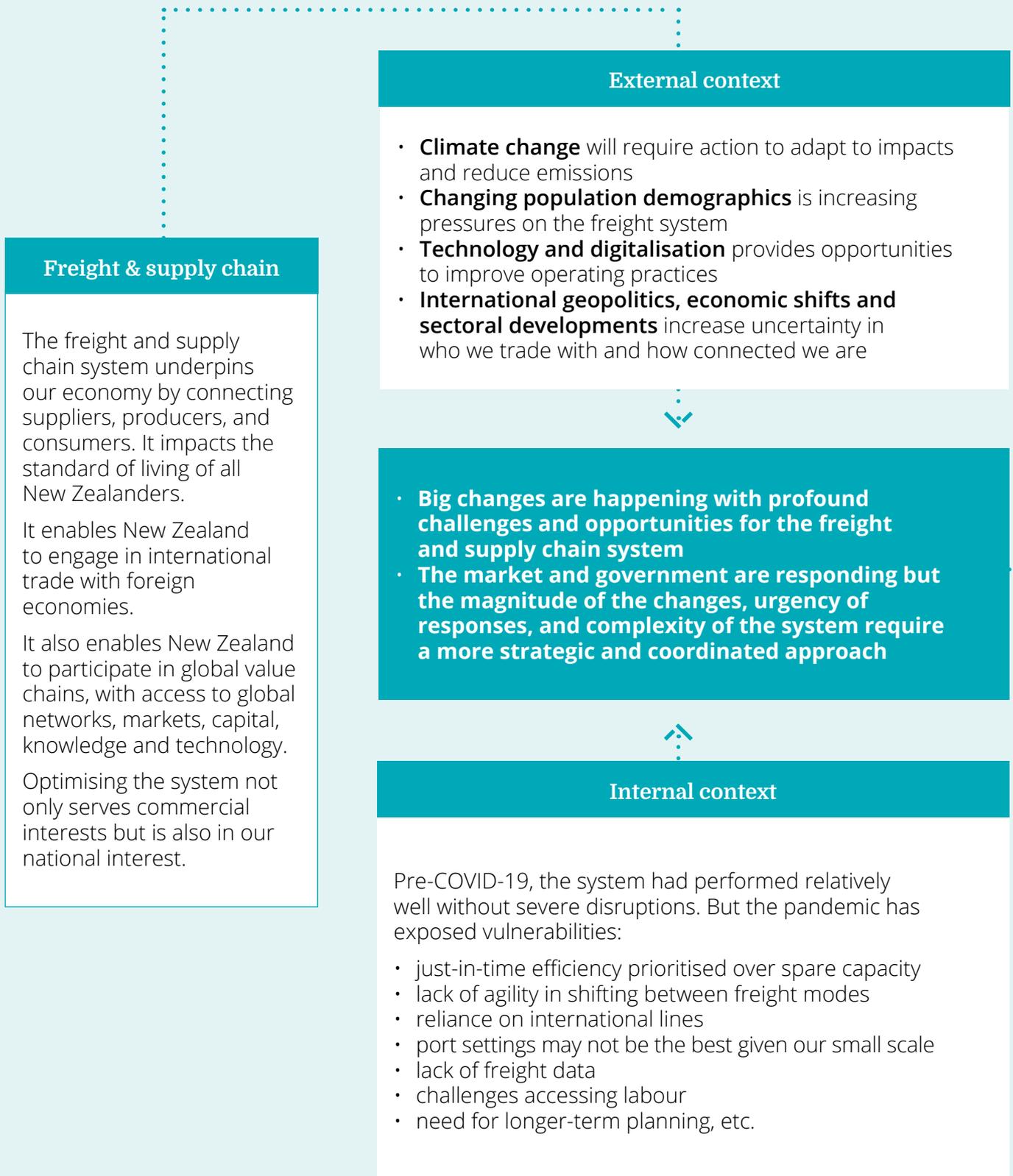
The yard is where empty containers are cleaned, maintained and stored until they are reallocated. The containers are usually owned by the shipping lines.

There are many different types of container. Many of New Zealand's exports leave the country in refrigerated containers, called reefers for short.



APPENDICES

# Appendix 3. New Zealand freight and supply chain strategy – intervention logic



**Proposed response**

**A New Zealand freight and supply chain strategy for the next 30 years**



**Outputs**

- Desired outcomes for the New Zealand freight and the supply chain system
- Changes that need to occur
- Pathways and priority actions to achieve outcomes
- A mechanism for ongoing cooperation amongst stakeholders and government



**Proposed intermediate outcomes**

**These outputs will lead to:**

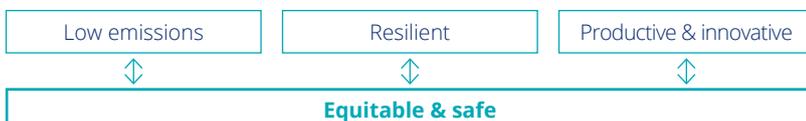
- A long-term and system-wide view of the freight and supply chain system
- A strategic direction to inform investment decisions by local and central government, and the private sector
- Aligned government policies to maximise impact
- Coordination and information sharing across the system where appropriate

**Which would contribute to building...**



**Proposed outcomes**

**...a freight and supply chain system that is:**



**...with the transition achieved in a way that is equitable and safe**

**Anticipated impacts**

New Zealand has strong and high-performing connections within itself and with the rest of the world.

**Improving the liveability of New Zealand and the wellbeing of its people.**



New Zealand Transport Outcomes Framework



## APPENDICES

## Appendix 4. Summary of stakeholders' views to date

This is a summary of the challenges and vulnerabilities which stakeholders viewed as priorities for the freight and supply chain strategy to address.

We collected this information through workshops, meetings and interviews held between August and November 2021. It represents the views of around 140 stakeholders including iwi group holdings, cargo owners, transport operators (air, road, rail, sea), freight forwarders, ports and airports, unions, consultants and local government. This table does not represent the government's views, but we have used these stakeholder comments to inform the development of the issues paper.

### 1. Low emissions

#### Stakeholders seek more awareness and leadership on decarbonisation

- **Supporting small business:** Some SMEs were uncertain on how to prepare for the future, due to a lack of skilled advice.
- **Visible leadership:** Some raised a need to see more leadership, demonstrating commercially viable approaches for others to follow.
- **Information for business planning:** Businesses raised concerns about a lack of information on when new low emissions options would be available, to enable businesses to plan their capital replacement.
- **Measuring emissions:** Exporters and retailers especially were interested in measuring or quantifying the emissions of different freight options, to help them and their customers find greener options.

#### Stakeholders need reassurance on infrastructure planning and investment

- **They want the confidence to invest:** Some did not have confidence that New Zealand could produce the energy and fuels to decarbonise, or had the infrastructure to support it.
- **Clearer planning:** Some stakeholders expressed uncertainty about the government's plans for future investment and regulation. They are waiting to see what this looks like before they invest.
- **The road freight sector is fragmented:** Stakeholders thought the road freight sector has too many small operators, which leads to a lack of scale to invest in initiatives to increase productivity and reduce emissions. This also results in underutilisation of trucks, especially for return journeys.

#### Stakeholders felt more incentives were needed

- **Capital is tied up in assets:** Some felt there were no real incentives to invest yet, especially if that meant replacing capital investment in vehicles and equipment that still had an economic life.
- **Affordability is an issue:** In the most competitive parts of the freight sector such as road freight, many companies could not afford to invest in low emissions technology.
- **New Zealand is facing global competition:** While there is some advantage in being 'first-movers' in adopting low-emissions technology, New Zealand businesses would have to compete with global demand for these technologies.

## 2.

## Resilience

**Business resilience is a multifaceted issue**

- **Cost of efficiency:** Many felt that because of the way they operate they cannot easily respond to disruption. For example, they might only hold limited inventory to reduce warehousing costs and improve their balance sheets. Even with careful planning, they felt they could still be let down by others in the supply chain.
- **Some businesses do not have capacity or foresight to plan for resilience:** This means that they prioritise short-term profitability.
- **Freight options are often not agile:** It is hard to shift between freight options – businesses are often locked into a particular mode and route. Infrastructure like freight hubs and greater port capacity is needed to unlock multi-modal options. Some stakeholders said they would use rail and coastal shipping more if these modes had more capacity and were more reliable. Some also thought that rail pricing was too high relative to more flexible road options. They expected an increase in demand for these modes as incentives to decarbonise increase.
- **New Zealand depends on international inputs:** There are no local alternatives to important inputs into some manufacturing or processing.

**Infrastructure planning and investment**

- **New Zealand's supply chain infrastructure has a lack of redundancy:** Stakeholders suggested that the supply chain has pinch-points that are a vulnerability because of a lack of spare capacity or alternatives, such as the Cook Strait ferries. However, trade-offs need to be made between productivity efficiency and resilience. It is not clear how much redundancy is needed and who should pay for it.
- **Stakeholders suggested having transparent national resiliency plans:** New Zealand has an opportunity to develop planning for specific emergencies. Some stakeholders wanted to align their own resiliency planning with a reliable national plan.
- **New Zealand needs to work on climate resilience:** It needs to plan now for sea-level rise and an increase in extreme weather events.
- **New Zealand is facing increasing cyber-security threats:** The growth in cyber attacks and our dependence on digital networks is creating significant risks.

**New Zealand could improve its resilience in international connectivity**

- **New Zealand is far from many markets:** Stakeholders saw dependence on international shipping lines as a vulnerability, because we are far from markets and not on the most profitable route. They also saw a risk of shipping lines prioritising Australia and not New Zealand in times of disruption. Smaller companies are more at risk due to short term agreements – larger companies and groups of companies are better able to negotiate with shipping lines. Our ports have to be highly productive to keep shipping lines coming here.
- **Our coastal shipping sector has faced historic decline:** This has led to greater reliance on international lines.
- **Airfreight:** Some saw the dominance of Auckland in the airfreight market as a vulnerability. Exporters of high value airfreighted products are vulnerable to a reduction in passenger travel.
- **Future geopolitical tensions may significantly undermine our access to market:** These tensions could include trade conflict, war, and other issues.

**Maritime sector**

- **New Zealand has an opportunity to build up domestic participants in coastal shipping:** This will reduce reliance on international lines and provide opportunities for domestic maritime labour.
- **Future technology will require new skillsets:** Autonomous shipping, new fuels (and associated risks), and other trends require new skillsets and regulatory approaches.
- **Vessel equipment maintenance can be a major outlay:** Many businesses in the sector lack the scale to invest in skills and facilities such as drydocks.

## APPENDICES

## 3.

Productivity  
& innovation**There is scope to improve the port system**

- **New Zealand needs to take a national rather than regional approach to ports:** There may be opportunities for the port sector to be better connected, achieving economies of scale and other efficiencies through better cooperation and specialisation. New Zealand needs to balance imports and exports to ensure an efficient flow of containers, which could be achieved through more collaboration between shippers, cargo owners and ports. It is not efficient for all ports to invest in the infrastructure needed to receive the increasingly popular larger vessels. They could consider using a hub and spoke model instead.
- **Improving access to capital:** Some of our ports may benefit from more capital investment.
- **Competition settings may not always be benefiting New Zealand consumers and exporters:** We have opportunities to explore different approaches to competition for ports.

**Long-term access to labour is a concern for many stakeholders**

- **We have an aging workforce:** A lack of new labour is restricting growth in some sectors including ports, trucking, and coastal shipping.
- **The industry has a mixed image:** Parts of the sector are seen by potential employees as difficult, with unsocial hours and poor career prospects due to issues such as expected automation.
- **Some jobs have long training times:** This means businesses can be slow to adapt to changes.
- **New Zealand's supply chain does not run 24/7:** Not all parts of the supply chain are able to operate 24/7, in part because of labour constraints. This limits our ability to move goods faster and resolve chokepoints when needed.
- **Some stakeholders thought that automation could solve some long-term problems:** However, many lacked the scale and capital to invest in it.

**City and infrastructure design could better account for freight**

- **Port cities are seeing increasing competition for land use:** As cities have grown up around ports, freight access has been increasingly crowded out. More careful planning and investment at a city level will reflect the national benefit efficient freight corridors deliver.
- **The last mile poses challenges:** Freight operators see the last mile deliveries of goods to retailers and homes as highly complex and increasingly challenging.
- **Decision-making between central and local government is fragmented:** RMA decisions are pushed to local government but not always well funded or resourced. Decisions can also focus on local interest rather than big picture.

**The sector could make better use of data**

- **Limited data is available:** The data available on the freight sector is limited, making modelling difficult and less dynamic and accurate. Some stakeholders saw an opportunity to use data better in the system – this could be through greater monitoring of freight, managing disruption, and giving transparency to freight customers. Data was also useful for monitoring the performance of the sector – some stakeholders raised issues of performance with parts of the sector. However, there was often no way to verify this against historic or international benchmarks.
- **New Zealand has opportunities to develop and adopt common standards:** For example, we could adopt common standards for location data.
- **Some stakeholders have an aversion to data sharing:** They are reluctant to share data due to competition and the fragmented nature of their sectors. Different parts of the government have data but do not necessarily share it.
- **Stakeholders want to know the emissions profiles of freight options:** However, this information is not commonly available.

### New Zealand must overcome obstacles in infrastructure planning and investment

- **We lack an overarching vision for the supply chain:** Too many individual parts of the chain act in their own interests. We need an intergenerational and national vision, but several factors are forcing stakeholders into more region-based thinking. The industry needs to agree on how to better integrate the system – it is currently too fragmented and inefficient.
- **The nation needs to do more long-term future planning:** Some said not enough consideration was being given to anticipating the future demands on the supply chain, such as changes to population density and goods moved.
- **Some stakeholders wanted more evidence for government plans:** Many said they believed investment decisions were politically driven and wanted more evidence for government plans. They also wanted a reliable long-term commitment to them across governments of the day.
- **The consenting process is complex and time-consuming:** Expanding capacity and making better use of existing assets is an expensive and slow process.
- **Investing in upkeeping road infrastructure was a concern for some:** Stakeholders wanted to see more roads suitable for heavy vehicles, including bridges. Not all of the road network is currently suitable for heavier High Productivity Motor Vehicles.
- **Construction progress on infrastructure projects is seen as slow compared to other countries:** This could be due to labour constraints, regulatory or RMA constraints and poor planning.

## 4.

### Equity & safety

### We must aim for fair, inclusive, and equitable growth

- **The freight and supply chain system must support Māori economic development:** New Zealand must consider how the freight and supply chain system can support iwi and hapū and their economic development, and honour Te Tiriti. Iwi may potentially be interested in owning assets and investment opportunities.
- **Many businesses will need support to transition to low emissions options:** This transition will be unaffordable for many businesses, and they may have to close. SMEs are especially at risk because they have less ability to absorb temporary cost surges.
- **The benefits of reform may impose a disproportionate cost on regional development:** This would be to the benefit of major centres. We need to investigate approaches which support regional development outcomes.
- **The cost of goods proportionate to the median wage will increase in the immediate term:** This will be due to the transformation of supply chains. Those less able to bear these costs may need to be supported.

### We must ensure health and safety for everyone touched by our freight system

- **We can aim for better health and safety outcomes:** Health and safety is a critical part of our freight system. New Zealand can take a more systematic approach to safety, especially in ports and other areas involving moving equipment and goods. This will need to align with WorkSafe's strategies.
- **Road safety:** Road safety needs special consideration and this strategy needs to align with the Road to Zero strategy.

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