

A framework for shaping our transport system:

Transport outcomes and mode neutrality

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Purpose of this paper

This paper defines a set of outcomes for New Zealand’s transport system, and explains how government should work toward these outcomes through a guiding principle of mode neutrality.

Why this framework has been developed

A quality transport system is crucial for supporting and improving people’s wellbeing. Central government is heavily involved in the transport system, as a planner, funder, partner, enforcer, and regulator.

Government’s involvement in this system has major impacts—not just on how people and products travel, but on many other outcomes, such as human health, social development, economic prosperity, global connectivity, the liveability of our towns and cities, and the quality of our environment.

The impacts of transport planning and investment decisions often continue for decades, or centuries, as transport infrastructure is long-lived and shapes how our cities and regions develop.

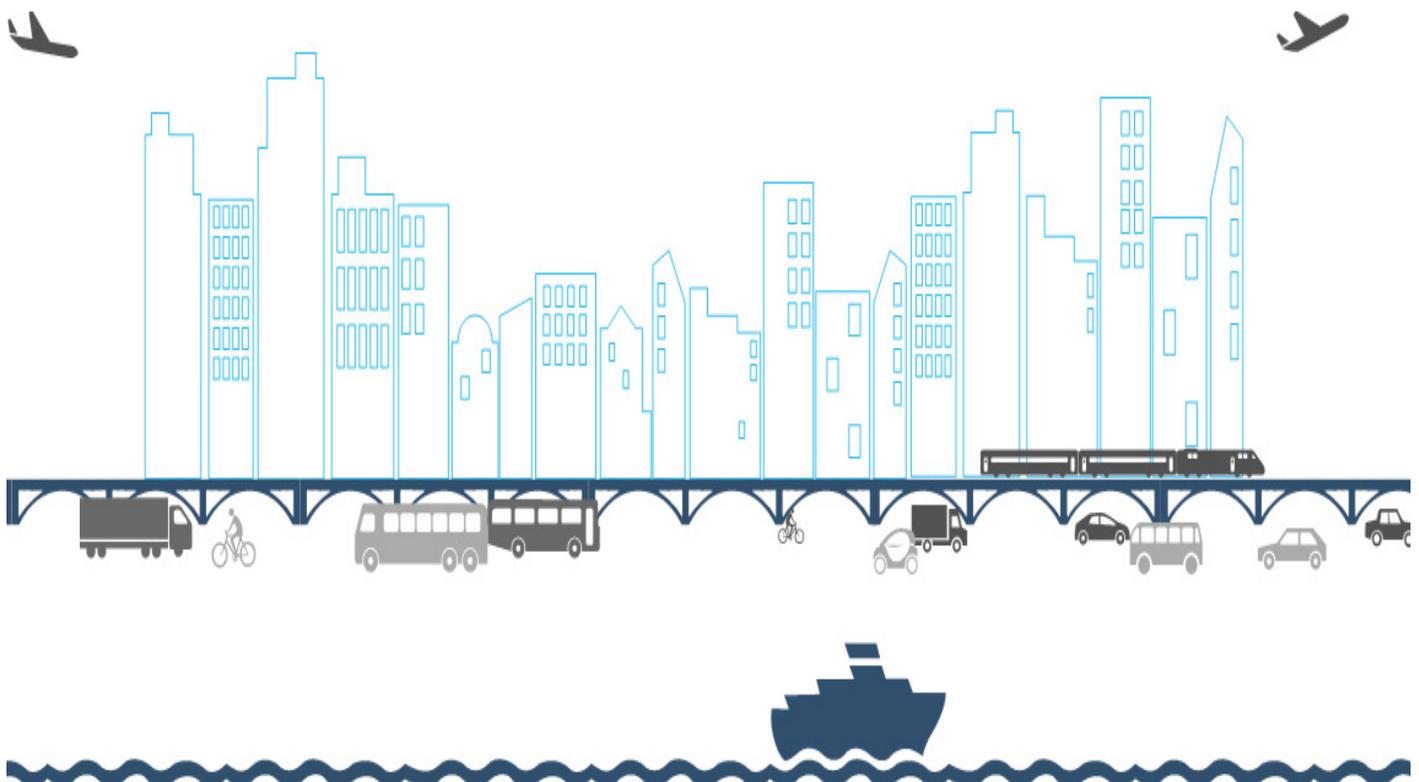
Government therefore needs to take a strategic, long-term, and integrated approach to transport. We need to be clear on what we are aiming to achieve, why this is important, and how we will achieve these outcomes together.

The role of this framework

This framework establishes the groundwork for a strategic approach, by identifying what government is aiming to achieve through the transport system. It defines mode neutrality as a guiding principle for transport planning, investing, and regulating.

This framework does not identify how government will deliver on these outcomes. Government transport agencies will need to establish how they are impacting on, and intending to contribute to, the outcomes. For example, the framework will influence the development and delivery of a new road safety strategy, and a new Government Policy Statement on land transport planned for 2019. Agencies will need to work together to deliver positive outcomes across the transport system.

This framework gives broad direction to the transport system, across the five connected outcomes. The Ministry of Transport will provide more specific guidance, in collaboration with other transport agencies, by developing indicators for each outcome to orient and track progress in key areas.



Content of this document

There are two parts to this paper:

1. **Outcomes** [the vision]: *These are the core outcomes that government is seeking to achieve through the transport system. Part one identifies five outcomes, and explains why they are important.*
2. **Mode neutrality** [the guiding principle]: *To meet the outcomes, all transport planning, regulating, and investing needs to be done in a mode neutral way. Part two identifies three key aspects of this principle.*

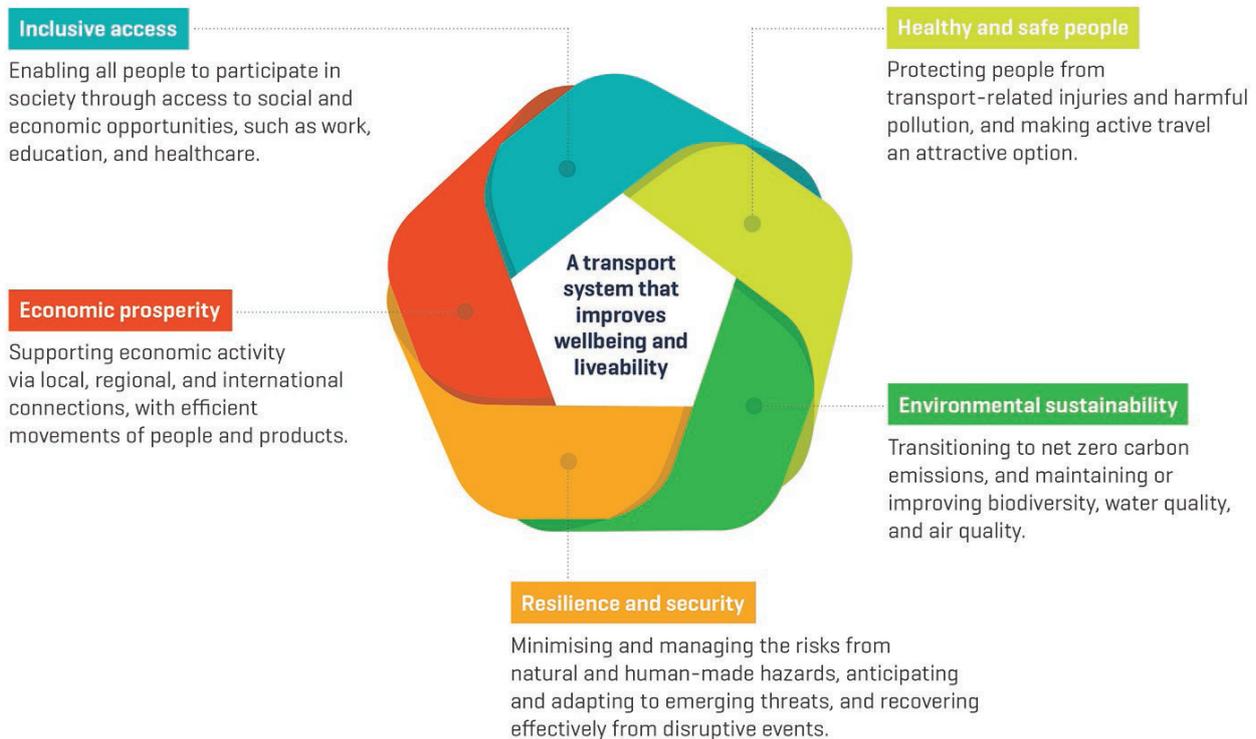
Note: 'Transport' in this document refers to the transport system as a whole.

The transport system includes:

- the vehicles that move people and products, physical infrastructure [e.g. ports, roads, car parks]
- digital infrastructure [e.g. satellite-based navigation aids, travel apps, communications technologies]
- mobility services [e.g. public transport, bike-sharing, ride-sharing]
- the institutions and regulatory systems that influence how the transport system functions and develops [e.g. through their structures, management practices, rules, policies, and funding/investment tools].

Part one: Outcomes for the transport system

The purpose of the transport system is to improve people's wellbeing, and the liveability of places. It does this by contributing to five key outcomes, summarised in the diagram below.



All of these outcomes are inter-related, and need to be met as a whole to improve intergenerational wellbeing and the quality of life in New Zealand's cities, towns, and provinces.

Government may sometimes prioritise some outcomes over others, depending on social/economic/environmental circumstances and the Government of the day.

At a project level, transport agencies will often face tensions when deciding how to meet these outcomes, and may need to make trade-offs between different outcomes. Agencies should aim to get the best results across a range of outcomes.

More details on the outcomes

Overall purpose: A transport system that improves wellbeing and liveability.

New Zealand's transport system has a crucial role to play in supporting and improving peoples' wellbeing, and the quality of places that we live in and visit.

Transport provides people with ways to access whanau/family and places for learning, earning a living, and participating in society. It contributes to the economic prosperity of cities, towns, local neighbourhoods, and rural communities. It connects New Zealand economically and culturally with the rest of the world, and brings a world of people and products to our shores. It shapes land use, urban form, and street-level interactions. It impacts on human health by influencing how people travel, how physically active we are, and how safe it is to journey from one place to another. It also affects environmental health (with associated impacts on people and economic prosperity) in many ways, including air and water quality, biodiversity gains or losses, and global greenhouse gas emissions.

To improve intergenerational wellbeing, transport needs to make a positive contribution across the five outcomes discussed in this document. The transport system cannot do this on its own. It also needs to be integrated with land use planning, urban development, and regional development strategies to shape places that are inclusive, prosperous, healthy, safe, sustainable, and resilient.

Inclusive access: enabling all people to participate in society through access to social and economic opportunities, such as work, education, and healthcare.

Note: 'Inclusive' means that the transport system should be accessible by all people in New Zealand, including those with disabilities, low income earners, and people of different ages, genders, and ethnicities.

The transport system provides ways for people and products to move from one place to another. This enables people to access economic opportunities (e.g. work) and social opportunities (e.g. friends, family/whanau, and community services). Transport therefore plays an important role in social development. Access is also vital for economic activity, as recognised in the economic prosperity outcome.

Accessibility is shaped by location and distance (i.e. how far people need to travel to access what they need/want), personal capabilities (including physical and financial abilities), the range of travel options available, and time (i.e. how long it takes to travel by each option). Digital infrastructure, such as high speed internet connections, can also enhance accessibility. Access is high when people can access many social and economic needs and opportunities within a short amount of time and at an affordable cost.

Transport needs to be closely integrated with land use planning to maintain and improve access long-term. Particular attention needs to be given to the ways that transport shapes and is shaped by land use (e.g. the location and density of housing developments). To create highly liveable places, it is also important to consider ways to improve access while maintaining and improving the vibrancy of local streets and neighbourhoods.

Transport planning should focus on moving people and products, rather than vehicles. In urban areas in particular, where high travel volumes often lead to congestion, people should have access to a range of transport options (e.g. walking, cycling, car travel, and public transport), so that they are not constrained by the limitations of any one mode.

Economic prosperity: encouraging economic activity via local, regional, and international connections, with efficient movements of people and products.

Transport supports economic activity by connecting businesses with their workers, customers, suppliers, and other businesses. This enables each community and region of New Zealand to take advantage of their unique strengths and resources.

At a local level, transport connects people with nearby places for working, shopping, and accessing services.

At a regional and national level, transport provides routes for products to journey from producers to domestic and international markets, and for imports to enter New Zealand. It also provides the backbone for tourism, with international visitors arriving by air and sea, and domestic and international tourists traveling throughout New Zealand on roads, trains, planes, ferries and cycleways.

Economic productivity and business competitiveness are affected by the range of transport options available, journey times and costs, and the capacity and reliability of each option.

Initiatives to improve transport options, and to reduce journey times/costs, benefit economic growth and productivity when they are part of a broader economic development strategy. These initiatives also need to benefit the other social and environmental outcomes to ensure that developments are sustainable.

Healthy and safe people: protecting people from transport-related injuries and harmful pollution, and making active travel an attractive option.

The transport system can benefit or harm people's health, depending on how it is designed, developed, and used.

New Zealand's transport system needs to be much safer in the future, particularly in the area of land transport. 379 people died from vehicle crashes in New Zealand in 2017, and over 4,000 people were seriously injured. The social cost of these crashes was estimated to be \$4.17 billion in 2017.

To protect people's health, we also need to manage and reduce harmful pollutants from vehicles. The 2012 Health and Air Pollution in New Zealand report found that harmful emissions from vehicles cause 256 premature deaths (with social costs of \$934 million) annually in New Zealand.

Health is not just the absence of illness and injuries. As defined by the World Health Organisation, it is a state of complete physical, mental, and social wellbeing.

There are significant opportunities for transport to play a more positive role in supporting physical and mental wellbeing. Only 50 percent of New Zealand adults are sufficiently active for health benefits. New Zealand has the third highest adult obesity rate in the OECD, partly due to lack of physical activity. Providing people with attractive options to incorporate physically active travel into their daily lives could bring significant personal and public health benefits. For example, a five percent increase in cycling and walking for trips of 2km or less in Auckland could bring estimated health benefits of \$225 million per year, as well as reduce traffic. To achieve these sorts of benefits, safe and attractive walking and cycling infrastructure needs to be widely available for making local journeys.

While the greatest health needs are in the land transport system, it is just as vital to protect human life in the air and on the water. Maritime and air accidents can have potentially catastrophic social and economic consequences, and new technologies such as unmanned aircraft present new risks that need to be carefully managed. Our aviation security system also plays an important role in protecting people travelling to/from New Zealand and between regions.

Environmental sustainability: transitioning to net zero carbon emissions, and maintaining or improving biodiversity, water quality, and air quality.

People and places will only be able to prosper long-term if the living systems that our society, economy, and wellbeing depend on are sustained in a healthy condition.

The transport sector has a particularly important role to play in responding to climate change. New Zealand is committed to reducing greenhouse gas emissions by 30 percent below 2005 levels by 2030 under the Paris Agreement on Climate Change. For New Zealand as a whole this will be met through a combination of emissions reductions, planting more trees to remove carbon dioxide, and purchasing credits in international carbon markets. Government is also setting a target for New Zealand to be net carbon neutral by 2050.

18 percent of New Zealand's domestic emissions currently come from transport, and emissions have been on an upwards path for the last two decades. Emissions increased 68 percent from 1990 to 2015 (the most recent year for data). The vast majority (90 percent) of these emissions come from road transport. Domestic aviation is the next highest source, producing six percent of transport emissions.

The transport system now needs to shift to a low-carbon path, with ongoing emissions reductions. Fortunately there are many opportunities to reduce and avoid transport emissions while also benefiting health, access, and economic prosperity. While most emissions reductions need to occur in the land transport sector, New Zealand also needs to participate in international initiatives to reduce/offset international air and maritime emissions.

Transport also has significant impacts on local air quality (as noted in the Healthy and Safe people outcome), land use, water quality, and biodiversity. At a minimum, these environmental impacts need to be mitigated. Opportunities should also be explored to maintain/improve environmental sustainability (e.g. planting native trees around new transport developments to improve biodiversity).

The transport system also needs to be ready to prevent and respond to environmental emergencies, such as marine oil spills.

Resilience and security: minimising and managing the risks from natural and human-made hazards, anticipating and adapting to emerging threats, and recovering effectively from disruptive events.

New Zealand is a geologically active country, and we often experience wild or extreme weather. We therefore face ongoing natural hazard events (e.g. earthquakes and cyclones) that can cause serious damage to infrastructure and communities. Our transport system needs to anticipate both natural and human-made risks, and be prepared to recover from disruptive events.

We know that some risks will increase in the future. In particular, the transport system needs to be prepared for the impacts of climate change. These impacts include increasing threats from sea level rise and storm surges to ports, airports, and low-lying coastal networks; more frequent and severe flooding and rainfall-induced landslips; increased heat buckling of the rail network due to higher temperatures; and stronger winds affecting some roads and ports.

The transport system also plays an essential role in supporting communities to withstand and recover from disruptive events. It provides a vital lifeline for communities during emergency responses, by enabling evacuations and supplying essential goods and services. A well-functioning transport system is vital for restoring communities and business activity after the emergency phase is over. This means that the transport system itself needs to be resilient and ready to respond.

The security of the transport system also needs to be maintained, to guard against intentional harm to people, infrastructure, the environment, and our economic prosperity.

Part two: Mode neutrality

The transport system includes many different travel modes across land, air, and water. Every travel mode has different strengths and limitations, and causes different impacts. To meet the outcomes discussed in the previous section, mode neutrality should be a guiding principle for government's involvement in the transport system.

Mode neutrality means considering all transport modes when planning, regulating and funding transport, and basing decisions on delivering positive social, economic, and environmental outcomes. Mode neutrality involves two important aspects:

1. Making sure all modes and options are considered and evaluated to find the best system solution.
2. Making users and decision-makers more aware of the benefits and costs of transport choices, to incentivise robust decision-making and smart travel choices.

These aspects are explained below.

Making sure all modes and options are considered and evaluated to find the best system solution

Government is aiming to achieve a broad set of economic, social, and environmental outcomes through transport. To achieve these outcomes, all transport modes need to be considered when planning, regulating, and investing. Decisions should be based on achieving the best contribution to these outcomes, within the available resources.

Land, air, and maritime transport in New Zealand are funded, managed, governed and regulated in different ways. Both the public and private sectors play a role in providing transport infrastructure and services.

Aviation, coastal shipping, and rail are managed more commercially than other parts of the transport system. Theoretically, investments in these modes depend on customers that are prepared to pay for it. However, rail has needed public financial support to remain viable.

The majority of government's investments in the transport system are in the land transport sector. Land transport includes transport on footpaths, cycleways, roads, public transport, rail, and by coastal shipping. Land transport is primarily funded from fuel excise duties and road user charges, which flow into the National Land Transport Fund [NLTF], and property rates. An investment appraisal and evaluation system is used to make investment decisions from these funding sources. Any bias in this system towards particular modes would have significant impact on the investment choices made.

Rail and coastal shipping are potential alternatives to road-based forms of transport for moving freight. These modes have not received much funding from the NLTF in the past, except rail-based public transport, even though this is permitted by legislation. This may have biased previous investments towards roads and affected the viability of rail.

Overall, greater attention needs to be given to the following travel modes:

- **public transport and active travel modes** to improve inclusive access, support healthy and safe people, reduce carbon emissions, and to make urban environments more liveable overall. Public transport and active travel can also support economic prosperity by helping to manage road congestion, increasing foot traffic around local shops, and by encouraging development around transport hubs.
- **rail and coastal shipping** to improve road safety, increase resilience, and to reduce greenhouse gas emissions. These travel modes can also support economic prosperity by improving connectivity, and by helping to manage road congestion.

A more balanced approach to transport investment will improve the range and quality of transport modes available, giving people and businesses greater choice in how they travel or move goods.

Land, air, and maritime travel tend to be regulated in different ways. This may be appropriate given the differing industry structures and risks. However, all travel modes should be considered when developing or reviewing transport regulation to ensure that regulation does not disadvantage the ability of one mode over another to meet the outcomes.



Making users and decision-makers more aware of the benefits and costs of transport to incentivise more robust decision-making and smart travel choices

When assessing the potential roles of different transport modes, it is important to recognise that benefits and costs are not static. They change at different points in time. In many sectors of New Zealand's economy, prices give consumers and business a signal that shapes what they purchase or use. Prices also give suppliers signals about how much they should invest to provide goods and services. Ideally, those prices should include any costs imposed on society, including externalities such as air pollution, noise pollution, local community cohesiveness, and greenhouse gas emissions.

If the prices paid for transport are incomplete or wrong, or inconsistent between modes, then transport choices are likely to be distorted. As a result, transport systems may show signs of unsustainability and inefficiency, such as physical deterioration, congestion, and an inability to generate sufficient revenues to upgrade the network. Comparing the full costs and charges for different types of transport will enable the Government to make well-informed decisions on policy interventions, and to assess the relative costs and benefits of different forms of freight and passenger transport.

In the aviation, maritime and rail sectors, prices are set by the suppliers of the services. These prices are based on their customers' willingness to pay and the cost of providing the service.

This means that users of these services receive signals about the cost of making a choice to use these modes (although some costs, such as externalities, may not be fully captured in the prices paid).

For roads, where prices are centrally set and averaged, price signals for users are less clear. Prices do not reflect the varying costs of construction and maintenance in different locations, or change as demand fluctuates.

Costs are averaged in all markets to some extent, including aviation. However, the lack of location-based pricing is a particular issue for roads, especially when they are congested. A PAYGO (pay-as-you-go) system currently exists where users pay the total financial cost of the system on a year-by-year basis. Non-financial costs, such as environmental externalities, are indirect or the signals are weak. For example, the carbon price for transport fuels in the Emissions Trading Scheme is a very small portion of transport costs.

An effect of this is that road users do not perceive all the costs of their travel. These costs include additional travel time, higher vehicle operating costs, schedule delays, and environmental costs. This means that roads may seem cheaper than they actually are, leading users to choose road transport over alternatives such as rail or coastal shipping (for freight) or public transport (for passengers). Better awareness of the full costs and benefits of alternative transport modes could lead to smarter travel choices, better use of existing infrastructure, and increased productivity.

Final comments on mode neutrality

When assessing the benefits and costs of different transport modes, each mode needs to be considered as part of a multi-modal system.

Mode neutrality requires looking across the whole transport system at a wider range of potential solutions. These may involve investing in physical infrastructure or transport services. However, solutions may also involve, for example, making better use of existing transport networks through pricing, new technologies or better land use planning.

Collaboration between central government, local government, and other stakeholders is essential for developing a multi-modal transport system that draws on the benefits and strengths of every mode.



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