



Improving Fuel Security By Moving Long-Distance Road Freight To Coastal Shipping And Rail

Inter-regional road freight suitable for mode shift	Up to 5b tonne-km	per year
Net fuel savings from full mode shift	Up to 150m litres	of fuel per year
Diesel savings	Up to 16 days	of national diesel demand
Import savings	Up to \$350m	In fuel import costs

Introduction

In recent decades, New Zealand has come to rely on trucking for the majority of inter-regional freight movement. That dependence has long been a source of inefficiency and environmental cost. The fuel crisis has given it a new and more urgent dimension: a shock to oil supply, whether through geopolitical instability, price spikes, or physical disruption, hits a road-dependent freight system harder and faster than one with genuine modal choice.

This imbalance is not an inherent feature of freight logistics. Other countries with similar geography to New Zealand (eg Norway, Italy, and Japan) have much higher use of coastal shipping for domestic freight. New Zealand's situation is a consequence of policy settings that have systematically favoured road over more fuel-efficient alternatives.

The Maritime Union of New Zealand has consistently argued that the country's dependence on trucking for inter-regional domestic freight leaves it exposed in ways that are predictable and preventable. This report quantifies that exposure and estimates the fuel savings available if long-distance inter-regional road freight were shifted to coastal shipping and rail.

The findings are significant. Based on official freight data, nearly half of inter-regional road freight movements are suitable for conversion to coastal shipping or rail. Shifting that freight would save a net 147 million litres of fuel per year, including enough diesel to meet New

Zealand's demand for 16 days. These are not marginal gains. Even achieving a fraction of this potential result in a meaningful reduction in the country's exposure to fuel supply risk, a saving of hundreds of millions of dollars in import costs, and a significant cut to transport emissions.

The fact that mode shift saves diesel is particularly significant in a crisis scenario. Diesel is the fuel most critical to economic function. It powers not only freight trucks but agricultural machinery, construction equipment, emergency services, and electricity generation. A 16-day buffer in diesel demand, delivered through structural changes to how freight moves rather than through emergency reserves, is resilience built into the supply chain itself.

The goal of this report is to provide an upper-limit calculation - a description of the maximum possible results from freight mode shift, to show that a meaningful change is possible. Actually achieving significant mode shift and reaping the resultant fuel savings will take concerted government leadership and industry action. Realistic policy options to help get there are available: hub and spoke model, removing barriers to NZ-flagged coastal shipping, and mode-neutral transport investment.

The Long-Distance Freight Task

New Zealand's total freight task amounts to over 30 billion tonne-kilometres (tkm) per year. Of this, 3.6 billion tkm is carried by rail and around 4 billion tkm by coastal shipping. Road carries the remaining 26 billion tkm.

Not all road freight is comparable. A substantial portion is intra-regional: short-haul movements between nearby towns, on-farm transport, urban deliveries. These are trips for which road is usually the appropriate mode and for which no realistic alternative exists. Stripping out intra-regional movements leaves approximately 12 billion tkm of inter-regional road freight.

Mode	Billions of tonne-kilometres per year
Rail	3.6
Coastal shipping	4
Truck (total)	26
Truck (inter-regional only)	12

Current Fuel Consumption

The fuel efficiency difference between road and alternative modes is large and well-established. Coastal shipping and rail each use approximately a quarter of the fuel per tonne-kilometre that road transport requires.

Mode	Kgs of emissions per tonne-kilometre	Litres of fuel per tonne-kilometre	Total annual fuel use, millions of litres
Rail	0.028	0.010	38
Coastal shipping*	0.030	0.010	39
Truck (inter-regional)	0.105	0.039	470

**Fuel oil is typically expressed in tonnes, but presented here in litres for comparison purposes*

Despite carrying only 60% of long-distance freight tonne-kilometres, trucking accounts for 86% of the fuel used in long-distance freight. Coastal shipping and rail, together moving 40% of the freight, account for just 14% of the fuel consumed.

The practical implication is that every tonne-kilometre shifted from road to coastal shipping or rail delivers a roughly four-to-one improvement in fuel efficiency for that movement. At scale, those gains are transformative.

Inter-Regional Road Freight Suitable for Coastal Shipping or Rail

Of the 20 billion tonne-kilometres of inter-regional freight moved each year, around two-thirds, approximately 13.5 billion tkm, can be classified as long-distance freight: movements between non-adjointing regions, averaging around 450km.

Of this long-distance freight, 8 billion tkm is currently moved by truck, including approximately 2 billion tkm of inter-island road freight. Most of these long-distance road freight movements are between regions that are easily connected by rail and have major seaports.

These are, by their nature, the road freight movements most amenable to conversion to coastal shipping or rail. The distances involved make the time and cost advantages of road over sea and rail much smaller than for shorter trips. At these distances, the genuine operational advantages of rail and coastal shipping — fuel efficiency, capacity, and lower per-unit cost at scale — become commercially competitive.

The composition of these freight flows reinforces the case for mode shift. The majority of long-distance road freight consists of manufactured goods and retail products - categories well-suited to the scheduled, containerised services that coastal shipping and rail already provide. Petroleum products, dairy products, timber, coal, and logs make up most of the remainder. Livestock is the only significant category not suited to coastal ship or rail travel, and it accounts for less than 4% of long-distance road freight.

Timeliness is one factor frequently cited in favour of road freight over coastal shipping and rail, but an NZTA study shows that most freight shippers are relatively insensitive to transport time (Valuing freight transport time and reliability, June 2020). For 70% of movements, shippers were unwilling to pay more for faster travel.

On this basis, we estimate up to 5 billion tkm of long-distance road freight is suitable for conversion to coastal shipping or rail. For the purposes of this study, we have assumed equal portions of this 7.5 billion tkm of road freight would be converted to coastal shipping and rail.

Mode	Billions of tonne-kilometres per year currently	Billions of tonne-kilometres per year with mode shift
Rail	3.6	6.1
Coastal shipping	4	6.5
Truck (total)	26	21
Truck (inter-regional only)	12	7

Fuel Savings

Shifting 5 billion tkm of freight from road to coastal shipping and rail would have a substantial impact on fuel consumption. The calculation is straightforward: road transport uses roughly four times as much fuel per tonne-kilometre as the alternatives. Transferring freight to more efficient modes generates fuel savings proportional to the volume shifted and the efficiency differential.

Mode	Current annual fuel use, millions of litres	Annual fuel use with mode shift, millions of litres
Rail	38	63
Coastal shipping*	39	64
Truck (inter-regional only)	470	273
Total fuel use	547	400

**Modelling assumes all additional coastal shipping is containerised, with fuel consumption of 0.015 litres per tkm*

The net result is a saving of 147 million litres of fuel per year. This comprises 172 million fewer litres of diesel, partially offset by 25 million additional litres of fuel oil consumed by coastal shipping. The net diesel saving is equivalent to 16 days of New Zealand's total annual diesel demand. At current prices, New Zealand would save up to \$350m on annual fuel import costs.

Component	Volume
Diesel saved (road freight removed)	172 million litres/year
Additional fuel oil consumed (coastal shipping)	25 million litres/year
Net fuel saving	147 million litres/year
Equivalent diesel demand	16 days of national demand

These figures represent the savings available from a full conversion of suitable freight. In practice, mode shift occurs incrementally as infrastructure, policy, and commercial conditions improve. Even a partial shift - say, a third of suitable freight - would save over 55 million litres of diesel per year and meaningfully reduce the country's exposure to supply disruptions.

Policies to Support Mode Shift

The fuel savings estimated in this report will not materialise through market forces alone. New Zealand's freight modal mix is not simply the product of rational transport economics; it reflects decades of infrastructure investment decisions that have heavily favoured road, pricing structures that do not reflect the full social and environmental costs of trucking, and regulatory settings that have made coastal shipping more difficult and expensive to operate than it needs to be.

Just as policy decisions have forced New Zealand into this situation, policy decisions will be needed to move the country to a more secure, more fuel-efficient long-distance freight model.

Three policy levers stand out as most important in enabling the mode shift described in this report.

Hub and Spoke Networks

Coastal shipping and rail are at their most competitive when freight volumes are consolidated and concentrated on defined corridors.

The hub and spoke model is already coming to New Zealand's maritime freight sector. This is evidenced by submissions to the Parliamentary Inquiry into Ports and the Maritime Sector, which saw ports, shipping companies, and other stakeholders all communicate that a model where international shipping is limited to a few hub ports and regional ports become spokes is coming due to a confluence of economic and practical factors. A planned hub and spoke model for the ports has the potential to give a significant boost to the coastal shipping industry – more ships working the coast, more regular port calls – that will, in turn, enable more mode shift from trucks to coastal shipping.

Complementing this, a hub and spoke approach can also be taken to inter-regional freight - in which regional aggregation points feed freight into higher-volume coastal or rail services for the long-haul leg, before distribution by road at the destination - allows the modes to compete on the movements where they have the strongest advantages. Government investment in port facilities, inland rail hubs, and intermodal transfer infrastructure is the foundation for this model. Without the physical capability to move freight efficiently between modes, the economics of mode shift do not work. Investment in this infrastructure is a precondition for accessing significant fuel savings.

Boosting New Zealand-Flagged Coastal Shipping

Currently, international shipping services are allowed to carry domestic freight under s198 of the Maritime Transport Act. This law undermined New Zealand coastal shipping by allowing shipping exploiting foreign crews to undercut New Zealand-flagged vessels, resulting in the number of dedicated vessels working the coast plunging. While the immediate freight cost savings offered were attractive, in the long-run the reduction in frequency and reliability of coastal services has resulted in freight moving to higher-cost trucking, at the expense of shipping.

A deliberate policy to support the development of a New Zealand-flagged coastal fleet would improve the commercial viability of coastal services on key domestic routes. This might include reform of cabotage settings, direct support for vessel capital costs, and measures to prevent the exploitation of foreign crews working in New Zealand waters.

Mode-Blind Infrastructure Funding

Perhaps the most fundamental reform needed is a shift to mode-blind assessment of freight infrastructure investment. Current funding frameworks, across central and local government, treat road investment and non-road investment under different criteria, different funding streams, and different planning processes. The result is a systematic bias toward road, regardless of whether road is the most economically or socially efficient option for a given freight task.

Mode-blind funding would assess freight infrastructure investment on the basis of the outcomes it achieves - cost per tonne-kilometre, emissions per tonne-kilometre, resilience, safety - rather than on the basis of the mode involved. The goal is not to protect incumbent

interests but to ensure that modes can compete on a level playing field. This would allow coastal shipping and rail to compete for funding on their merits and would enable the kind of investment in intermodal infrastructure that makes mode shift commercially viable.

Conclusion

The fuel savings available from shifting suitable long-distance freight from road to coastal shipping and rail are large, achievable, and grounded in official data. A net saving of 147 million litres of fuel per year, including 16 days of national diesel demand, would significantly reduce New Zealand's exposure to fuel supply disruptions while delivering co-benefits in emissions, cost, and infrastructure resilience.

Realising these savings requires deliberate policy choices: planned intermodal hub and spoke infrastructure, support for New Zealand-flagged coastal shipping, and a shift to mode-blind freight investment criteria. None of these changes is radical. All of them are consistent with the approaches taken by comparable countries that have maintained genuine modal choice in their freight systems.

The fuel crisis has made the cost of New Zealand's road dependence visible in a new way. The path forward is not to wait for the next disruption to reveal it again, but to build the structural resilience that makes the country's freight system less vulnerable, and more efficient, over the long term.

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