

Infrastructure Quarterly – January 2022

A quarterly snapshot of issues and trends for New Zealand's infrastructure sector by the New Zealand Infrastructure Commission, Te Waihanga.



Geoff Cooper
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Foreword – Geoff Cooper

Welcome to our first Infrastructure Quarterly for 2022.

The new year was met with a significant announcement of the Government's preferred option for a new mass transit service from the Auckland city centre to Māngere. This project will be New Zealand's largest ever and a significant opportunity to shape the future of Auckland.

The announcement comes in a challenging economic environment however, where Omicron has led to significant and widespread challenges, from sourcing an international workforce, through to global supply chain issues for materials. The result is significant price inflation in the construction sector tracking well above national averages, as Peter Nunns describes in the economic insights section.

The National Pipeline has risen to some \$65.8 billion, with the Christchurch City Council infrastructure program recently added, with 247 projects and \$2.2 billion of capital expenditure. On the back of this we speak to Ruth Cable, Head of the Programme Management Office about the impact of Covid and how they are managing rising costs. We also speak with John O'Hagan, General Manager of Development at Ōtākaro Limited, about the new Christchurch Convention centre which officially opened just before Christmas.

As always, if you have any feedback on our work or publications, don't hesitate to reach out.

What's in the Pipeline

The New Zealand Infrastructure Commission Pipeline pulls together key information on the infrastructure projects planned for New Zealand and sources project data direct from government, councils, utilities and others. The Pipeline has grown from approximately 176 projects and total value of \$6.1 billion in 2019 to more than 2700 projects and \$65.6 billion at the end of 2021.

The Pipeline includes projects that have a level of certainty around timing. For projects with a longer horizon such as Let's Get Wellington Moving and Auckland Light Rail, the [ANZIP Pipeline](#) and others can be a useful source of information.

We are continuing to build on and improve the data in the Pipeline and it remains a one-stop summary of what's coming up for industry.

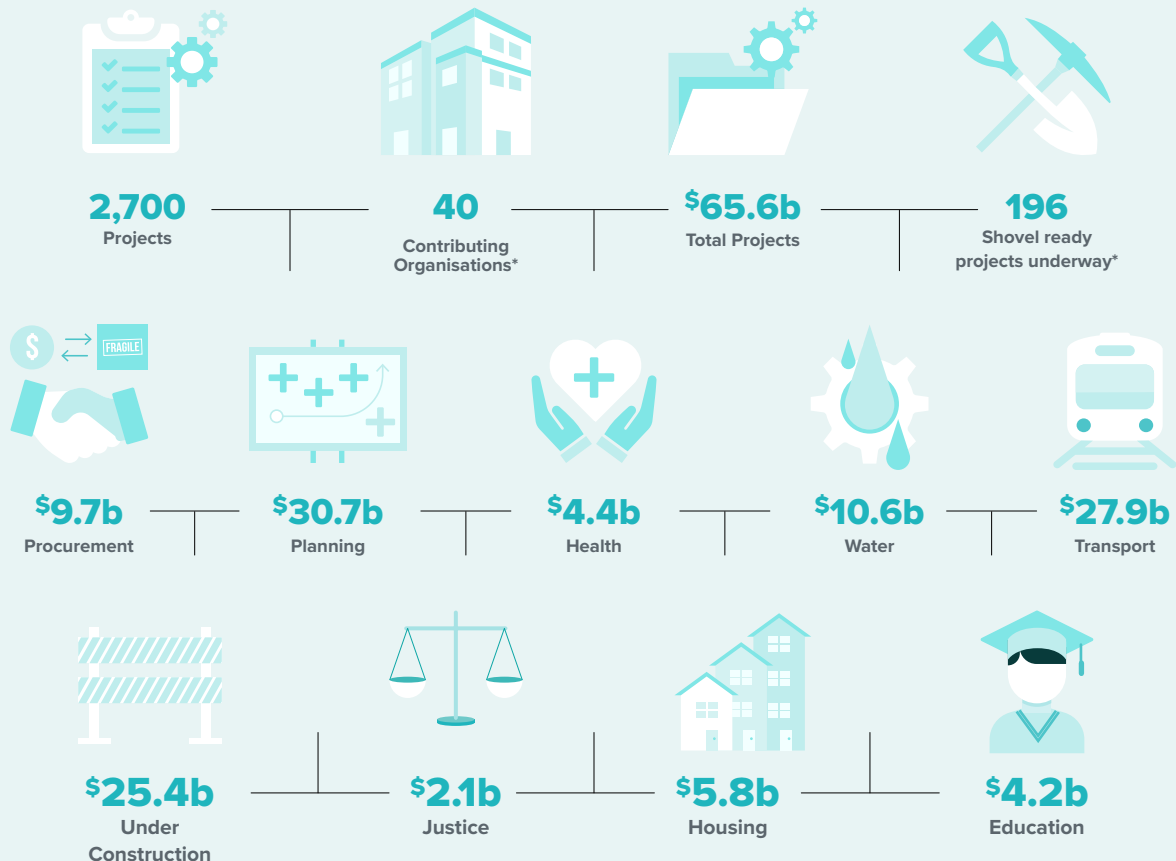
You can search the Pipeline on our [website](#).

Pipeline snapshot

Recent changes

Our Pipeline is updated quarterly. Key changes since the last update include:

- An additional 22 organisations have updated project information
- 65 completed projects were removed from the Pipeline, totalling \$1.5 billion
- Additional projects from Auckland airport have been added
- The Christchurch City Council infrastructure program has been added, including 247 new projects valued at \$2.2 billion. This includes:
 - › \$800 million water
 - › \$400 million transport
 - › \$1 billion community facilities (including the new stadium)



Shovel ready projects

The number and value of shovel ready projects is now beginning to decrease as projects reach completion and are removed from the Pipeline. Since the last quarter, 30 projects have reached completion.

Forecast project spend by sector

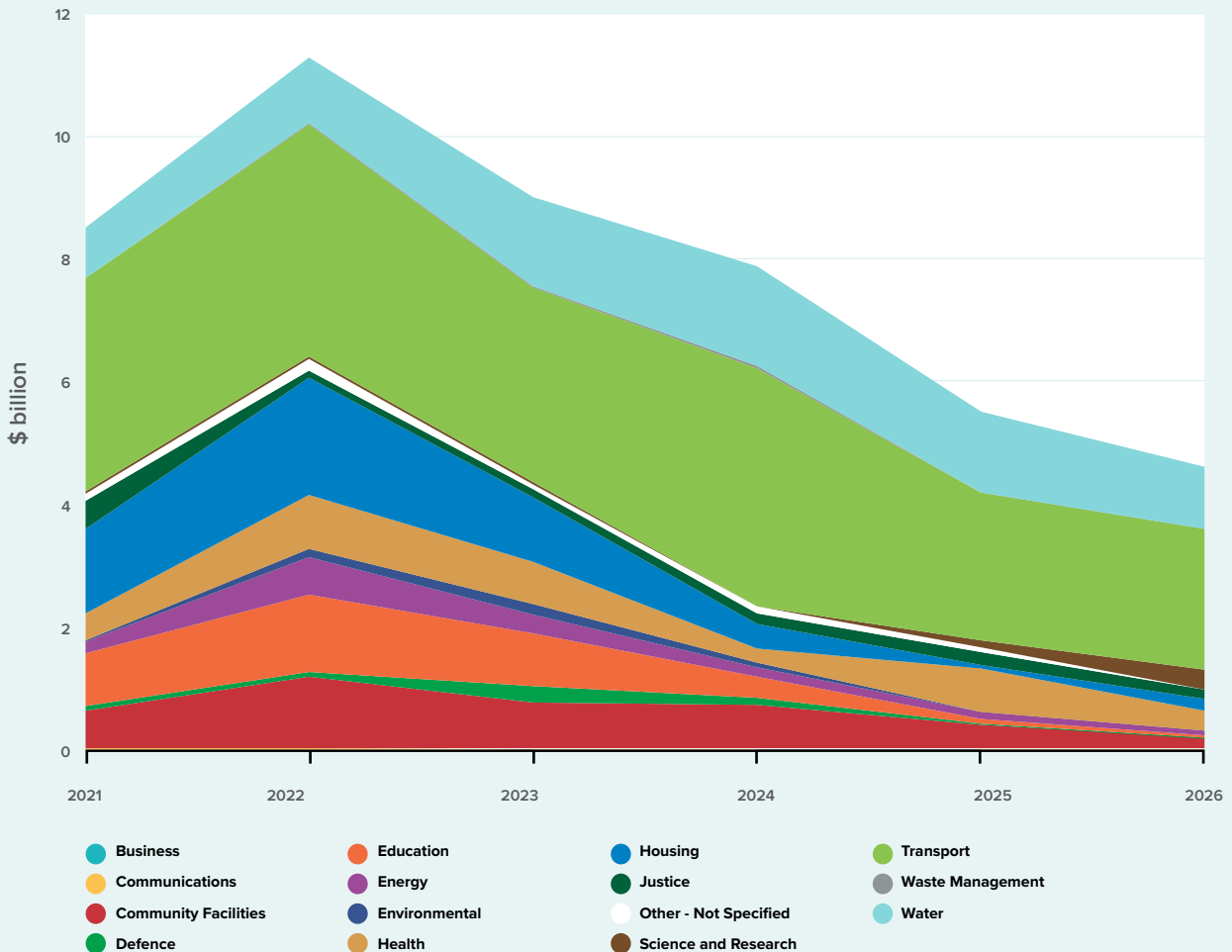
The forecast annual spend by sector for the projects in our Pipeline has been modelled.

This year, spend on these projects is forecast to reach \$11.3 billion, up from \$10.7 billion in the last quarter. The increase is driven by the addition of projects to the Pipeline, such as those added by Christchurch City Council, which helps to improve our national view of infrastructure investment.

The modelling shows that transport projects continue to dominate the total spending on pipeline projects, accounting for just over 30% of forecast spend in 2022 (see Figure 1). Annual spend on water projects is forecast to continue increasing, up 50% from nearly \$1.1 billion in 2022 to over \$1.6 billion by 2024.

Figure 1: Transport dominates projected infrastructure spending

Forecast project spend by sector



Source: Te Waihangā Infrastructure Pipeline

Regional Spotlight – Canterbury

Christchurch City Council has added their capital programme to the Pipeline consisting of 247 projects

We asked Ruth Cable the Head of Programme Management Office at Christchurch City Council about their projects.

How is Christchurch City Council managing and responding to the issues of cost escalation and supply chain issues?

Over the last year global steel prices have continued to rise due to a significant escalation in raw material costs. In addition, transport and logistics costs have also been under pressure leading to higher container, shipping and other freight charges.

The ongoing impact of COVID-19 outbreaks and the resulting emergency measures on international trade are unknown.

Mitigations for this risk have been identified and include:

- Early procurement and subcontract package tendering in order that price and quantities can be locked in
- Leverage of existing supply chains

- Selection of materials that avoid fluctuations, including local material selection
- Early purchase of materials, procuring steel early and passing it to the main contractor
- Early visibility of the Council forward works provided to the contractor market
- Encouraging contractors to fully consider their supply chain when preparing a tender response - identifying how they will manage the supply chain as well as lead in times for supplies.

In December 2021 Christchurch City Council staff proposed to cut the capital budget from \$475.5m to \$433.9m. This proposal was in response to the impacts of COVID-19, supply chain issues, cost escalation, and labour shortages. What are the impacts of the current proposal to cut back the capital budget for 2022-23?

The overall proposed budget for FY23 is similar to the Long Term Plan proposed budget for FY23. There are proposed adjustments to spend by activity, in light of the current environment. Where there are proposed changes to an activity budget, these have been recommended based on multiple inputs – affordability, deliverability, the market, as well as current environmental risks. Programmes of work have been prioritised to ensure no material impact to current performance targets across the 10 years.

Table 1: Canterbury projects in the Pipeline

| PROJECT | DELIVERY AGENCY | VALUE (\$) | PROJECT START DATE | PROJECT END DATE |
|--|---------------------------|-------------------------|--------------------|------------------|
| Canterbury Multi Use Arena (CMUA) | Christchurch City Council | 500 million - 1 billion | Q2 2020 | Q2 2025 |
| Te Pae Christchurch Convention Centre | Otakaro Ltd | 250 – 500 million | Q3 2015 | Q1 2023 |
| Parakiore Recreation and Sport Centre (formally known as Metro Sports Facility) - Christchurch | Otakaro Ltd | 250 – 500 million | Q4 2013 | Q1 2024 |
| Canterbury Provincial Chambers Works (Stage 1) | Christchurch City Council | 100 – 250 million | Q4 2015 | Q2 2028 |
| Christchurch Hospital Redevelopment, Tower 3 | Ministry of Health | 100 – 250 million | Q3 2020 | Q4 2023 |
| University of Otago - Christchurch Health Science Campus Redevelopment - Stage 1 | University of Otago | 100 – 250 million | Q2 2016 | Q1 2023 |

Source: Te Waihanga Infrastructure Pipeline
Project dates are not always equivalent to construction timeframes

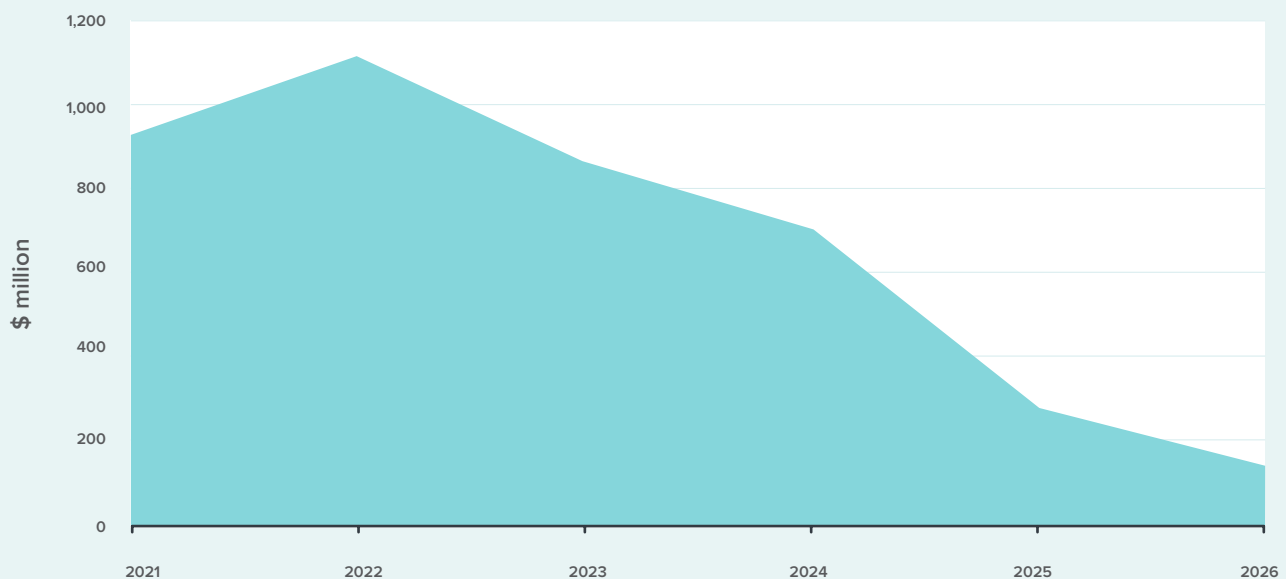


Figure 2 shows a breakdown of expected project spending by year for Canterbury (estimated on the listed projects only).

These projections will always show a drop towards the end of the time frame. However, Christchurch has a particularly steep decline in project activity. This decrease is driven by several large projects finishing up and suggests some capacity in the Canterbury vertical construction market from around 2024/2025.

Figure 2: Expectations for a steep decline in project activity in Canterbury

Forecast project spend



Source: Te Waihanga Infrastructure Pipeline



Project Spotlight: Te Pae Christchurch Convention and Exhibition Centre

John O'Hagan, General Manager of Development at Ōtākaro Limited, the Government agency that has developed and will own the facility, tells us about the project.

Tell us about the convention centre, how long has it taken to build and when will it be completed?

Te Pae took four years to build at a cost of about \$450m (including land, land improvements and event equipment).

The building has been designed to a very high level of structural integrity. There are 4,500 tonnes of steel in the building and 25,000m³ of concrete went into the foundations, walls, and suspended slabs, which equates to well over 4,000 concrete truck loads. Construction took 3 million person hours.

There are 43,000 panels on the building façade, 28,000sqm of event space and it has the largest commercial kitchen in the South Island. Te Pae will be able to serve 2,000 meals in 20 minutes.

The ultra-efficient heating and aircon system has the equivalent output of 500 home aircon unit and is located on the roof so delegates will not hear any noise.

The facility was officially opened just before Christmas. The first major conferences in February are in doubt because of the red traffic light setting but we have more than 100 events booked for the first year. Te Pae is likely to likely to inject about \$60m a year into the local economy.

Have the impacts of COVID-19 with labour shortages affected the build of the convention centre?

COVID-19 has had a major impact on the construction of Te Pae, delaying the opening by more than a year. Our workforce was very much international, and many workers returned home because of COVID-19.

In many larger cities, a major construction project like Te Pae would consume only a small percentage of the construction labour market but in a smaller city like Christchurch, the impact is much greater.

COVID-19 also created challenges with the supply of critical components, particularly from abroad and domestic travel constraints also had an impact. When Auckland went into lockdown, 30 key construction and commissioning specialists were unable to travel south.

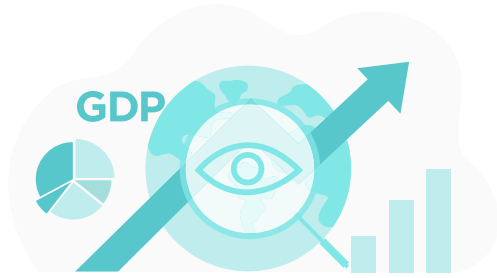
Will it change the way you work with your contractors/tenders in the future?

Going forward, we would set realistic timeframes that accounted for possible pandemic-related delays.

Also, we would be very cautious about international procurement. For example, the stunning 43,000 façade tiles on Te Pae have come from three different countries. They were installed before COVID-19 hit, but if we were to design another facility like that now, knowing the impact of the pandemic, we would reduce that risk.

As the rebuild wraps up and major projects are completed or nearing completion, do you see signs of excess capacity in the contractor market there?

No. The market resources are quite transient. As the Auckland construction market has heated up, many resources have moved north, creating a shortage in the south.



Economic Insights

Peter Nunns
Director of Economics,
Te Waihanga

Construction cost inflation – how does New Zealand measure up?

Construction costs are rising rapidly in New Zealand. Residential and non-residential costs rose by more than 10% last year, and similar increases are forecast for the upcoming year. Construction costs are rising at their fastest rate since the Global Financial Crisis.

Construction cost inflation reflects rising demand colliding with constrained supply. Infrastructure providers, property developers, and households are trying to build more than ever, but shortages of construction labour, material supply chain bottlenecks, and Covid-induced slowdowns have gotten in the way. Other countries are also facing similar issues, which raises the question: How do we stack up when it comes to cost inflation?

Benchmarking construction cost inflation

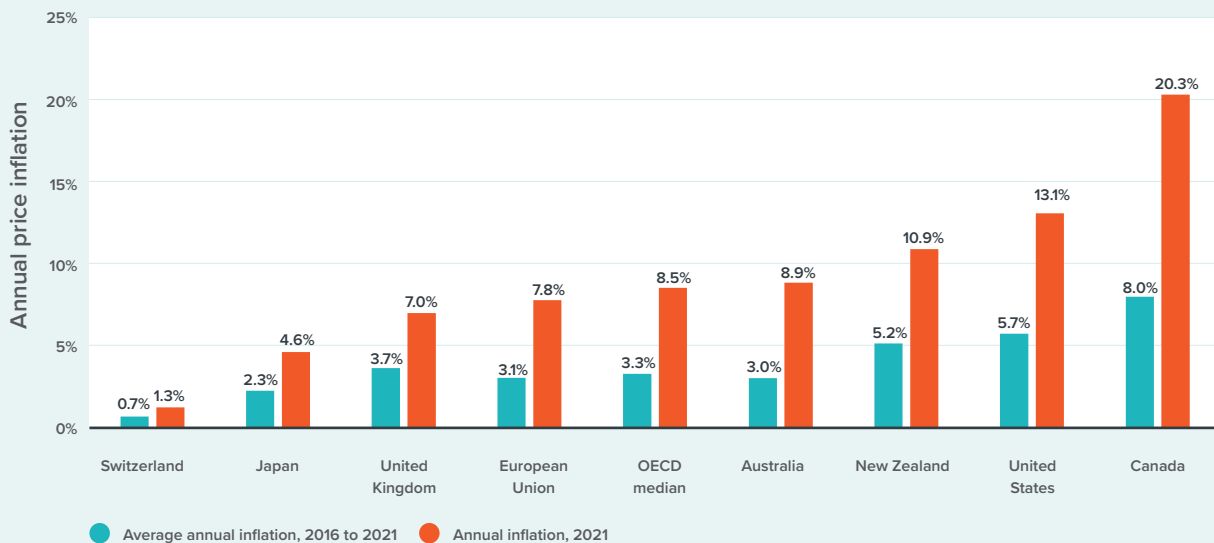
We sourced residential construction price indices for New Zealand and 30 other OECD countries, plus the European Union as a whole.¹ This data shows that New Zealand has experienced above-average construction price inflation over the last year: We had the 10th-highest construction price inflation in the OECD during this time.

However, high construction price inflation isn't just a Covid-era phenomenon. Over the last five years, New Zealand had the seventh-highest construction price inflation in the OECD. Our residential construction price inflation averaged 5.2% per annum from 2016 to 2021.

The following chart shows how New Zealand's construction price inflation compares to selected OECD countries. Switzerland has experienced the lowest inflation – 1.3% over the last year – while Canada has experienced the highest inflation – 20.3% over the last year.

Figure 3: New Zealand construction price inflation is high by OECD standards

Residential construction price inflation, 2016-2021, selected OECD countries



Source: ABS, Eurostat, StatCan, SNZ, Census Bureau

Scaling up to build?

Prior to the Covid pandemic, OECD countries had diverging housing construction trends. In some countries, including New Zealand and Australia, rapid population growth has increased demand for housing, while others, like Japan, are growing more slowly. In some European countries, like Ireland and Greece, housing construction still hasn't recovered from the Global Financial Crisis.

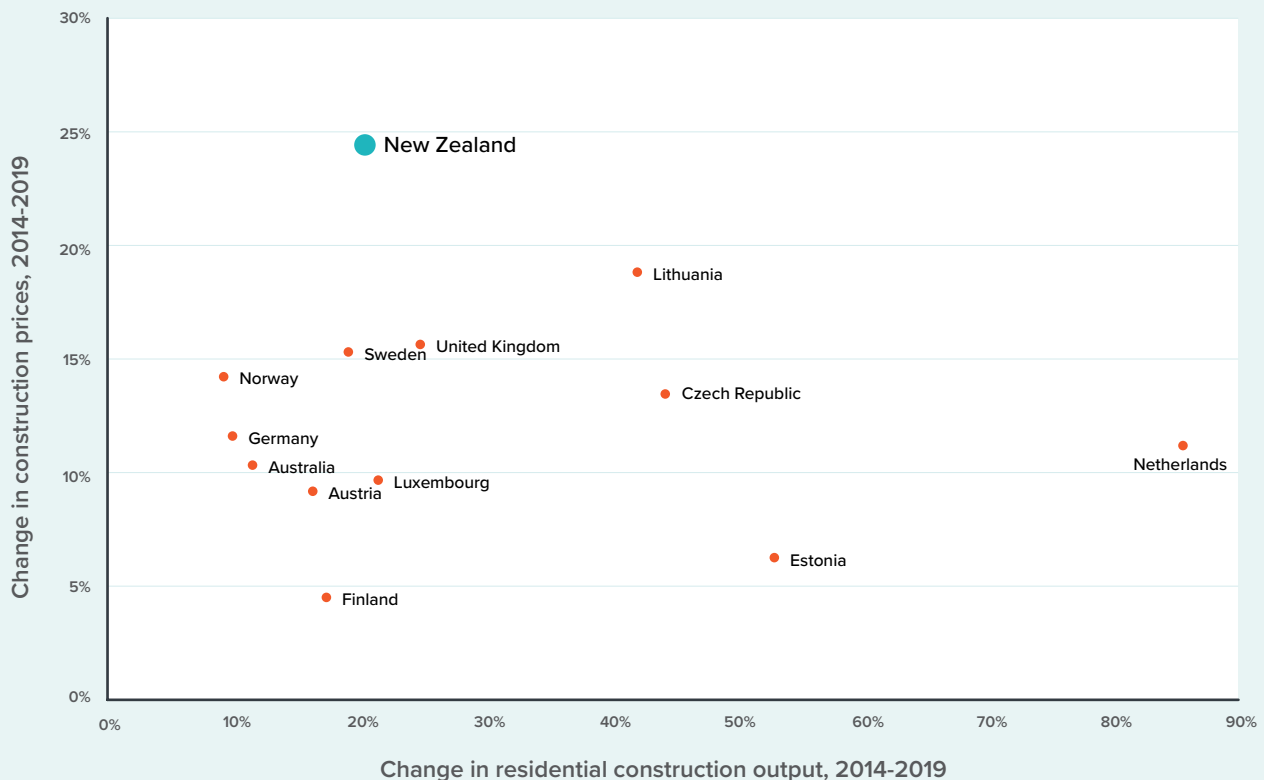
All else equal, we would expect faster growth in residential construction to lead to higher construction price inflation. However, some countries may be better at scaling up to build while keeping price inflation at more moderate levels.

Figure 3 shows the pre-Covid relationship between growth in residential construction investment and growth in residential construction prices in New Zealand and twelve other OECD countries that had fully recovered from the GFC.² Between 2014 and 2019, the median country experienced 21% growth in residential construction output and 12% growth in residential construction prices.

The relationship between construction output growth and price growth varies between countries. For instance, Sweden and Finland both experienced similar growth in construction output (19% vs 17%), but construction price inflation was three times as rapid in Sweden (15% vs 5%). This suggests that Finland is better at scaling up to meet increased construction demand.

Figure 4: New Zealand's construction market struggled to scale up prior to Covid

Changes in residential construction output and prices among selected OECD countries, 2014-2019



Source: ABS, Eurostat, SNZ, OECD.Stat

Prior to Covid, New Zealand had higher construction price inflation than other OECD countries with comparable housing market trends. Residential construction output rose by 21%, but construction prices rose by 24%. When we try to build more, we must 'buy' each 1% increase in residential construction output at the cost of 1.2% inflation. On average, our peer countries can 'buy' each 1% increase in output at the cost of 0.6% inflation – half as much construction price inflation as we incur.

Covid revealed our problems – it did not cause them

Construction price inflation has reached unprecedented levels during the Covid pandemic.

While New Zealand is not an outlier, it has experienced more rapid construction price inflation than most OECD countries over the last year.

Even before the Covid pandemic, New Zealand struggled to scale up to build. Relative to other OECD countries, we purchase increased construction output at the cost of high construction price inflation. This reflects long-term issues around workforce capacity and capability, material supply chains, and volatility of investment. These 'preexisting conditions' have made our construction market unusually vulnerable to Covid – highlighting the importance of solving those issues to build resilience and meet our long-term infrastructure challenges.

Appendix: Residential construction cost inflation data

| Country | Source | Most recent available data | Annual inflation over last 5 years | Annual inflation over last year |
|----------------|---------------|----------------------------|------------------------------------|---------------------------------|
| Australia | ABS | Q3-2021 | 3.0% | 8.9% |
| Austria | Eurostat | Q3-2021 | 4.3% | 14.0% |
| Belgium | Eurostat | Q2-2021 | 2.5% | 4.9% |
| Canada | StatCan | Q3-2021 | 8.0% | 20.3% |
| Czech Republic | Eurostat | Q3-2021 | 5.0% | 10.7% |
| Denmark | Eurostat | Q2-2021 | 1.5% | 3.0% |
| Estonia | Eurostat | Q3-2021 | 3.4% | 12.2% |
| European Union | Eurostat | Q3-2021 | 3.1% | 7.8% |
| Finland | Eurostat | Q3-2021 | 2.1% | 7.9% |
| France | Eurostat | Q2-2021 | 2.3% | 3.9% |
| Germany | Eurostat | Q3-2021 | 3.8% | 9.4% |
| Greece | Eurostat | Q3-2021 | 1.0% | 3.9% |
| Hungary | Eurostat | Q2-2021 | 9.4% | 16.0% |
| Ireland | Eurostat | Q3-2021 | 3.2% | 7.4% |
| Italy | Eurostat | Q3-2021 | 1.6% | 4.8% |
| Japan | MLIT | Q3-2021 | 2.3% | 4.6% |
| Latvia | Eurostat | Q3-2021 | 5.6% | 9.4% |
| Lithuania | Eurostat | Q3-2021 | 4.5% | 8.5% |
| Luxembourg | Eurostat | Q2-2021 | 3.0% | 5.2% |
| Netherlands | Eurostat | Q3-2021 | 3.1% | 5.8% |
| New Zealand | SNZ | Q3-2021 | 5.2% | 10.9% |
| Norway | Eurostat | Q3-2021 | 4.3% | 11.1% |
| Poland | Eurostat | Q2-2021 | 2.9% | 3.5% |
| Portugal | Eurostat | Q3-2021 | 3.1% | 6.4% |
| Slovakia | Eurostat | Q3-2021 | 4.6% | 9.4% |
| Slovenia | Eurostat | Q3-2021 | 5.6% | 14.1% |
| Spain | Eurostat | Q3-2021 | 2.9% | 11.5% |
| Sweden | Eurostat | Q3-2021 | 3.3% | 7.4% |
| Switzerland | Eurostat | Q2-2021 | 0.7% | 1.3% |
| Turkey | Eurostat | Q3-2021 | 22.1% | 41.9% |
| United Kingdom | Eurostat/ONS | Q3-2021 | 3.7% | 7.0% |
| United States | Census Bureau | Q3-2021 | 5.7% | 13.1% |

Source notes:

ABS = Australian Bureau of Statistics: <https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/producer-price-indexes-australia/sep-2021#data-download>

Eurostat: https://ec.europa.eu/eurostat/databrowser/view/STS_COPI_Q_custom_1809990/default/table?lang=en

StatCan = Statistics Canada: <https://open.canada.ca>

[ca/data/en/dataset/6c365b33-43fb-45aa-9e7b-5f5765d771ba](https://data/en/dataset/6c365b33-43fb-45aa-9e7b-5f5765d771ba) [Canadian data only covers 2017-2021 period]

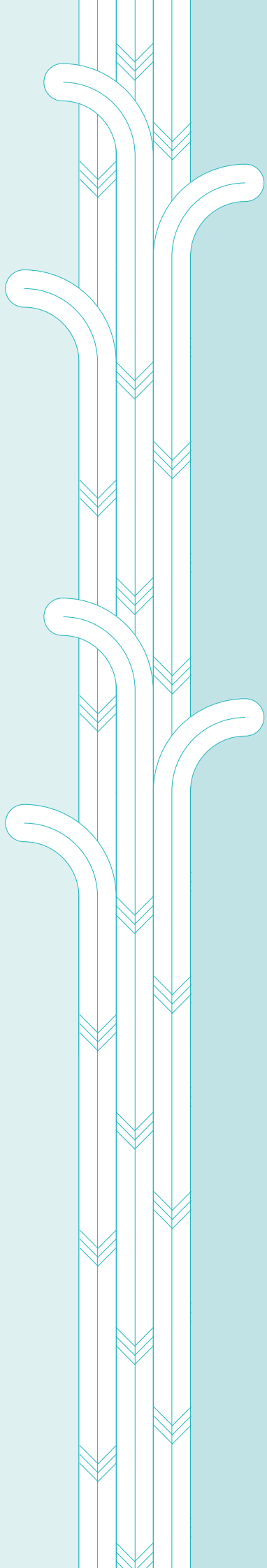
MLIT = Ministry of Land, Infrastructure, Transport and Tourism: https://www.mlit.go.jp/sogoseisaku/jouhouka/sosei_jouhouka_tk4_000112.html

SNZ = Statistics New Zealand: <https://www.stats.govt.nz/methods/price-indexes-for-the-construction-industry>

ONS = Office of National Statistics: <https://www.ons.gov.uk/businessindustryandtrade/constructionindustry/datasets/interimconstructionoutputpriceindices>

Census Bureau: <https://www.census.gov/construction/cpi/>

Data not gathered for the following OECD countries: Chile, Colombia, Costa Rica, South Korea, Iceland, Israel, and Mexico.



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