New Zealand Productivity Commission

Te Kōmihana Whai Hua o Aotearoa

International migration to New Zealand

Future opportunities and challenges

Working paper 2021/09

NEW ZEALAND
PRODUCTIVITY COMMISSION
Te Kōmihana Whai Hua o Aotearoa

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Note: This working paper is intended both to promote informed debate about immigration policy and to outline the thinking and analysis that has underpinned the New Zealand Productivity Commission's preliminary findings and recommendations for its immigration inquiry. It is a draft and one of six supplementary reports, that may change and be updated, as the Commission prepares its final advice to the Government for April 2022.

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1. The Commission that pursues abundance for New Zealand.

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Key points

- The Commission looks ahead in this paper to identify factors that might affect the demand for and supply of migrant labour in the future, the impacts these drivers might have on New Zealand's future wellbeing, and possible policy responses.
- The Commission identified four main factors:
  - *Population ageing, in both the developed and developing world.* Ageing populations in the developed world are expected to substantially increase the old-age dependency ratio, healthcare and superannuation costs in these countries. This will likely increase the demand for migrants in the richer world, to help deliver public services and fill key roles in these economies. Many OECD countries are ageing faster than New Zealand and may be able to outcompete this country for labour. At the same time, ageing, economic development and improved living standards in many traditional source countries for migrants are likely to limit the future supply of workers. Both forces mean greater competition for talent in the future.
  - *Climate change.* New Zealand's temperate climate, low population density and abundant land resources, together with its relatively high adaptive capacity, could reduce climate change harms and provide more opportunities for improving the relative socio-economic performance of the country. This could help make New Zealand more attractive to local and migrant skilled workers. At the same time, rising sea levels and temperatures and more frequent and damaging weather events will put pressure on communities and economies in the Pacific, and could ultimately make some low-lying island nations unviable. This may create a need for New Zealand to accept more migrants from the Pacific.
  - *New Zealand's exposure to sudden inflows of citizens, permanent residents and Australians.* New Zealand citizens and permanent residents and Australians have the right of free entry and exit. As the Covid-19 pandemic has revealed, external shocks may prompt unforeseen surges of people to return home, putting pressure on New Zealand's infrastructure, housing and public services.
  - *A technology-driven upswing in global productivity.* There are indications that global productivity is on the rise after decades of low growth and on the back of technological advances. New Zealand will be competing in a global market for skills and talent, but if it is slow to adopt new technology, productivity growth and living standards will lag, making this country less attractive to migrants.
- It is difficult to develop 'future ready' policies, as there are a number of uncertainties. However, the Commission looked into future scenarios and identified several possible policy options.
  - New Zealand's ability to attract and retain overseas and local talent depends in part on our ability to grow world-leading innovation ecosystems that enable its universities and leading firms to operate at the global frontier. These ecosystems would provide attractive working environments for talented, skilled workers, and help New Zealand offer competitive living standards. Improving the quality and responsiveness of the training system would also help improve opportunities for New Zealanders.
  - Whether and how New Zealand accepts climate change-induced migrants from the Pacific is ultimately a decision for the Government. If New Zealand is to do so in the future, it makes sense to take steps soon that would help such people successfully settle here. Such steps could include training opportunities aligned with areas of high labour demand in New Zealand, and small incremental increases in some existing Pacific immigration quotas.
  - The rights of New Zealand citizens and Australians to freely enter and exit the country are either fundamental or well established. However, New Zealand's permanent residence (PR) policies are unusually generous, giving visa holders who have since re-migrated an unlimited right of return. Limiting the right of return for permanent residents who re-migrate could help partially reduce New Zealand's exposure.

1 Introduction

The Productivity Commission has been assigned an inquiry by the Government to examine New Zealand's immigration system, and make recommendations that would best facilitate its contribution to long-term economic growth and the wellbeing of New Zealanders.

The Terms of Reference for this inquiry direct the Commission to consider immigration settings that would best contribute to New Zealand's "*long-term* prosperity and wellbeing" (Minister of Finance, 2021; emphasis added). As part of this work, the Commission decided to look forward over the next 10 to 30 years, to identify factors that might significantly influence the need for, and supply of, migrants in New Zealand.

This report looks at the demographic, environmental and economic drivers of migration, among the many factors that affect peoples' aspirations and capabilities to migrate (Chapter 1). It briefly reviews the underlying drivers of global migration and explores New Zealand's migration flows in the last few decades (Chapter 2). It also investigates the impacts of major demographic and climate trends, and external shocks, on future migration flows to and from New Zealand. The report focuses on the major long-term trends that were emerging prior to Covid-19 pandemic, but also discusses the implications for migration of a possible technology and productivity upswing in the wake of the pandemic. It considers New Zealand's ability to use migration to take advantage of opportunities and tackle these challenges (Chapter 3).

Finally, it outlines some scenarios which lay out possible futures and sets of immigration policy choices that could be taken in response (Chapter 4).

2 Drivers of international migration

2.1 The underlying drivers of global migration

Economists have traditionally used pull and push factors to explain people flows (see, for example, Lee's (1966) model of migration). Factors such as higher wages, better opportunities, safety and stability, freedom, better quality of life and family reunification 'pull' people to a new country. Other factors such as poverty and violence, lack of jobs and opportunities, pollution and natural disasters 'push' people away from their home country. A combination of economic and non-economic factors and the disparities in the performance of the origin and destination countries drive international migration.

More recent migration theories have moved beyond linear pull-push factors toward a greater integration of context (Box 1). These theories highlight the interactions between various drivers, as well as the influence of 'migration industries and infrastructures' (agents, brokers and recruiters, regulations, transport and communication technologies, licensing and training institutions and social networks) on generating, directing and constraining people flows (Black et al., 2011; F. Collins, 2021a; Lin et al., 2017; Xiang & Lindquist, 2014; Hunter et al., 2015).

Two key insights from these frameworks are that:

- migration patterns emerge and become solidified over time through transnational channels of mobility; and
- migration decisions and actions are affected by a range of non-state actors outside the direct control of governments.

An example of this is the rise in the number of Indian migrants following the active promotion of New Zealand as a quality study destination in India (section 2.2). Migration industries and infrastructures acted as platforms for enabling and shaping this migratory flow.

> The work of brokers, agents, recruiters and other actors in migration industries has become much more significant in part because of shifts in forms of border control and the increasing complexity of state attempts to manage migration… Even for authorised migrations, the greater emphasis on vetting skills, health, character, family, finance and other requirements, alongside a proliferating and shifting landscape of visas/permits, means that a functioning migration industry has become indispensable to continuation of movement, as well as serving as an extension of state control. (F. Collins, 2021a, p. 4)

Migration intermediaries more than ever play a key role in attracting skilled workers and enabling their migration (F. Collins, 2021b; Cranston et al., 2018; Harvey et al., 2018; Xiang & Lindquist, 2014).[1]

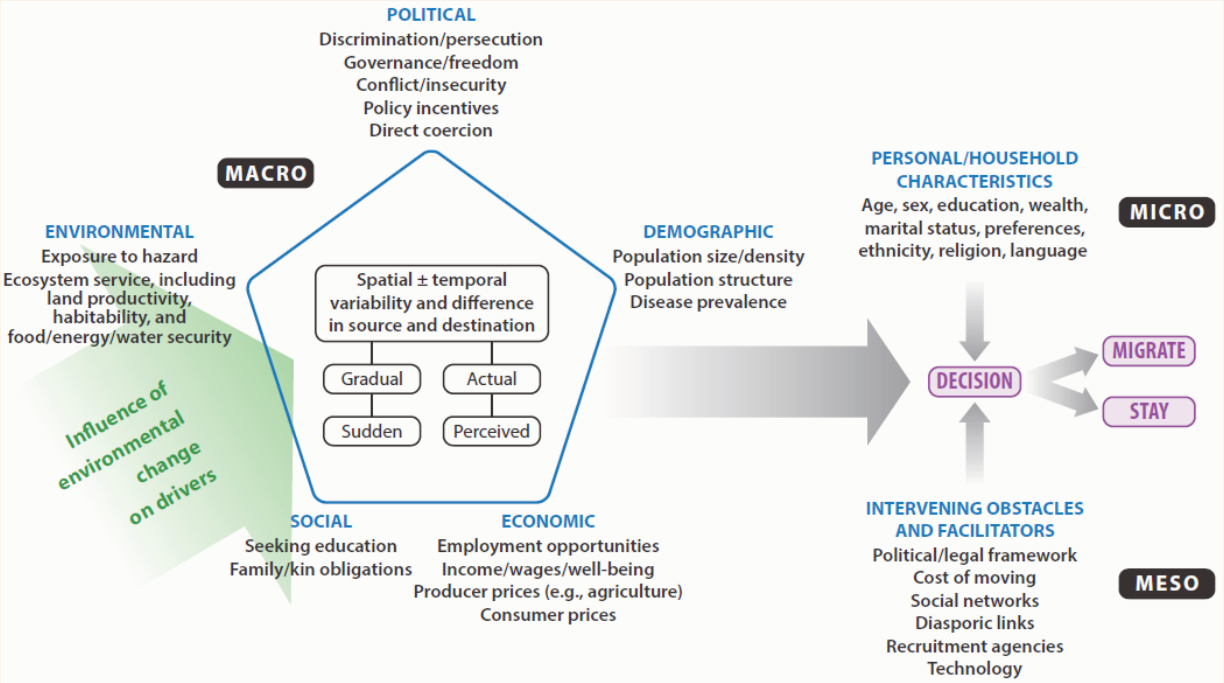
Box 1 **Beyond 'push' and 'pull'**

A number of scholars have challenged the 'push' and 'pull' framework for analysing migration, arguing instead that decisions to migrate are often far more complex and context-specific, differing by region and circumstance. Indeed, in the view of Black et al (2011), "it is far from clear that there is a consensus on what the 'drivers of migration' are" (p. S5).

Black et al.'s model - subsequently modifed by Hunter et al. (2015) (below) – sought to bring out more explicitly the impacts of environmental change on migration, but also to more clearly distinguish different types of migration decisions, the different factors that affect these decisions,

[1] Skilled workers in this report refers to workers who have special knowledge or skill which they can apply to their work. They might have gained their skills through formal education and training, previous experience, or on-the-job training.

and the issues that can either facilitate or frustate these decisions translating into action.



While peoples' aspiration and ability to move increasingly depend on a host of other factors, immigration policy settings of the destination country remain an important driver of peoples' decisions.

> Mobile individuals are picking and choosing countries in which to study, work and invest based partly on how favourable the policies are regarding family members and longer-term settlement. Although employment conditions are key to attract talents, migration policies do make a difference. (OECD, 2020a, p. 3)
>
> Government policy choices in both origin and destination countries are influential in driving migration as they shape individual perceptions of and the actual costs, benefits and risks of migration. (Doomernik, 2017, p. 2)

F2.1 While a combination of 'pull' (better opportunities overseas) and 'push' (difficulties in the home country) factors drive international migration, migration industries and infrastructures (which include a variety of non-state actors) play a key role in generating, directing and constraining people flows. Immigration policy settings remain an important factor in peoples' migration decisions.

2.2 New Zealand's recent migration flows

Growing diversity in source countries for inward migrants

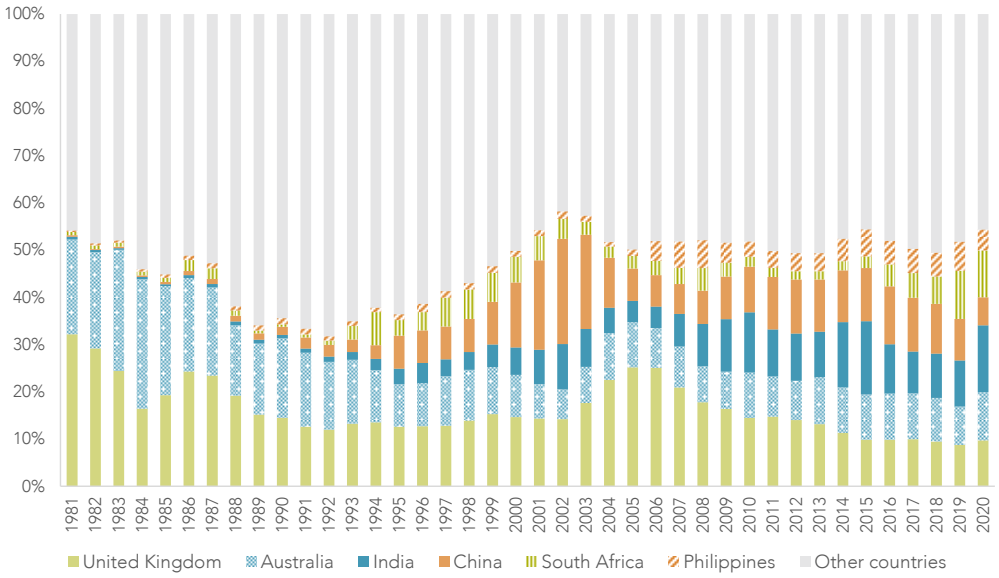
For much of modern New Zealand's history, immigration policy has had a strong labour market focus, aiming to fill current shortages of workers (NZPC, 2021b). Prior to the 1980s, immigration policy favoured people from a narrow range of countries, particularly Britain, Ireland and some northern European countries. Policy reforms of the 1980s and 1990s removed the preferences for the traditional source countries and instead targeted skills and human capital.[2] Whereas earlier policy had sought to

[2] The new approach has not been free of nationality biases. Language requirements, educational recognition and accreditation for jobs continue to affect the selection of migrants.

fill skills gaps within the ability of the broader economy and public services to effectively absorb new arrivals, the emphasis now was on attracting "[q]uality migrants" who would "bring skills, capital and energy which will increase domestic demand and provide employment opportunities" (Birch, 1991b).

The policy shifts of the 1980s and 1990s led to significant changes in the composition of migrants to New Zealand, with large growth in migrant numbers from Asia, particularly China, India and the Philippines. From 2015 to 2019, over 10 000 people migrated to New Zealand every year from India and China each. This is slightly higher than the average 9 000 people who migrated from the UK and Australia (Figure 2-1).

Figure 2-1Permanent and long-term arrivals of non-New Zealanders by origin country, 1981-2020



Source: NZPC analysis using Stats NZ's (n.d.) data.

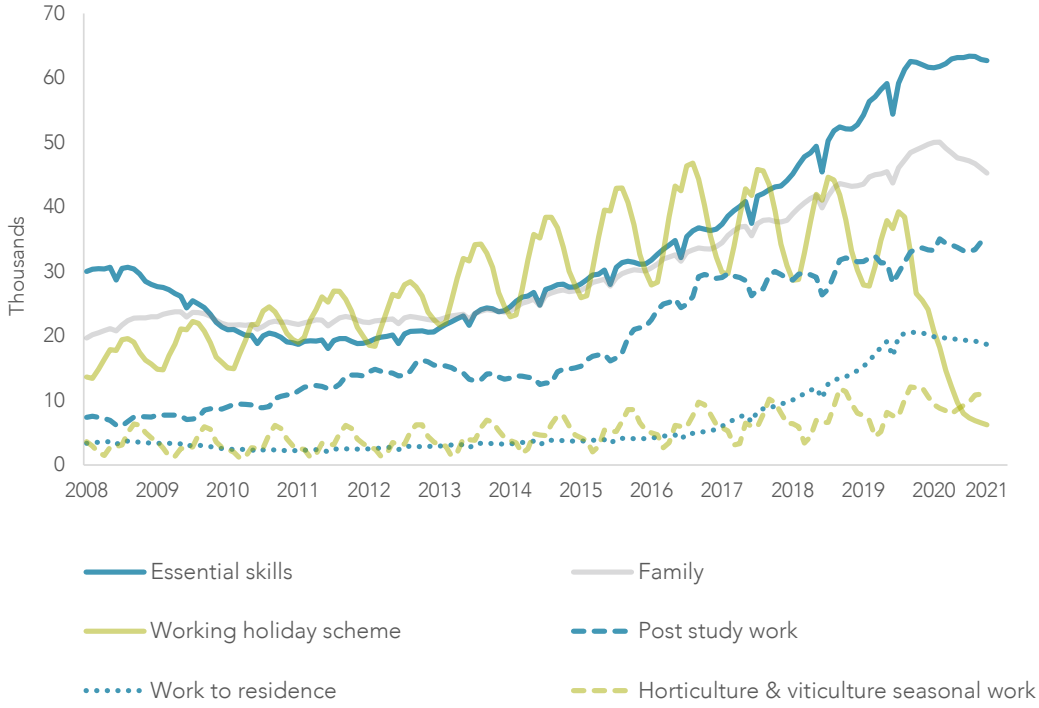
…and rising inward numbers

New Zealand has seen a large growth in the arrivals, driven largely by the number of international students and temporary workers, such as essential skills visa holders and working holidaymakers (Figure 2-2). The stock of temporary workers has almost doubled in five years, from 2015 to 2020. Figure 2-3 provides the breakdown of this by visa type.

Figure 2-2 Permanent and long-term arrivals by visa type, 2004-20 (December year)

Source: Stats NZ (2021a).
Note: For Stats NZ's purposes, 'long-term' arrivals are those who stay in New Zealand for 12 months or more.

Figure 2-3 Stock of temporary workers by visa type, 2008-21



Source: MBIE's Migration Data Explorer (2021).

International education has had a significant influence on New Zealand migration patterns. The education industry became the fifth largest export sector in New Zealand (before Covid-19). Tertiary education providers attracted tens of thousands of international students. Post-study work visas allow these students to work up to one year in New Zealand if they graduate at sub-degree (vocational) level, and up to three years for graduates at university level or higher. The ability to stay and find work helps former students to transition to residence (as they earn points due to having a job offer). This has created an attractive pathway to residence for international students.

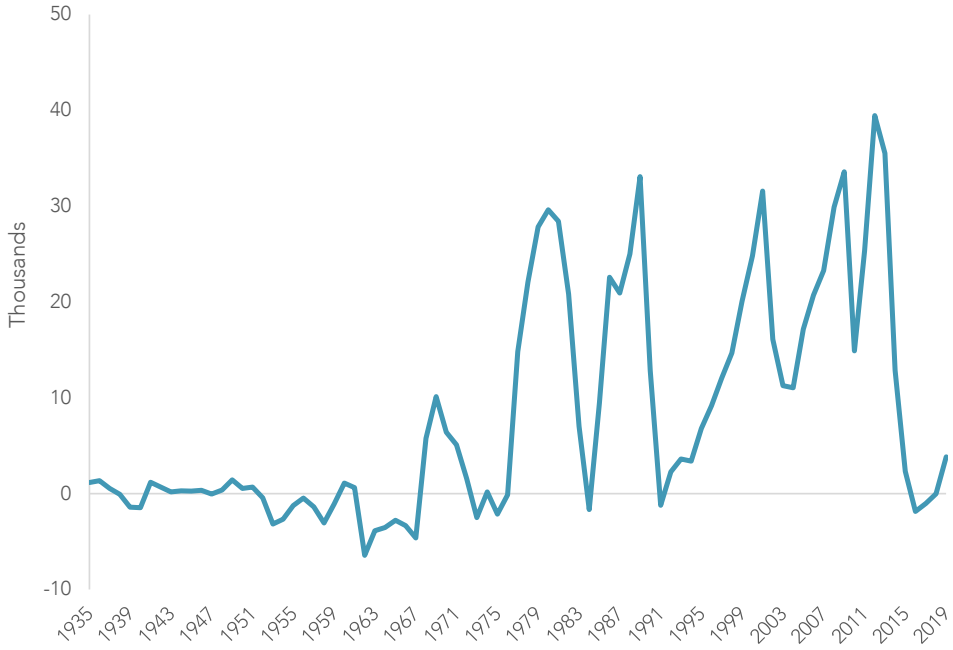
F2.2 New Zealand has experienced a large increase in the volume of inward migration over the last decade, and significant shifts in its composition over the past thirty years. Migrants now come to New Zealand from a more diverse range of countries, and recent growth in intakes has been dominated by international students and temporary workers.

F2.3 International education has influenced the age, education level and ethnic composition of New Zealand migration.

…but large-scale departures of New Zealanders to Australia, affected by relative economic performance and policy settings

Up until the 1960s, New Zealand had made small net gains from trans-Tasman migration. However, deteriorating economic circumstances in New Zealand during the late 1960s and 1970s, and stronger economic performance in Australia in general, led to a reversal of this trend and large-scale net outflows (Figure 2-4) (F. L. Collins & Nandedkar, 2020; Love & Klapdor, 2020; Poot, 2009). The post-millennium mining boom in Australia was a particularly strong drawcard, with outflows reaching an all-time high of 62 800 in the June 2012 year. Offsetting this emigration of this country's skilled workers, especially to Australia, was one reason for New Zealand embarking on a policy of higher immigration from the early 1990s (Poot, 2009).

Figure 2-4 Annual permanent and long-term net migration to Australia (year ended March)



Source: Stats NZ immigration data (Stats NZ, 2020a).

Note: All figures are intention-based except for 2019 which is outcome-based (from the Stats NZ's "Migration to Australia Halves" webpage). Stats NZ has not reported the 2020 and 2021 figures yet.

Australian immigration and welfare policy changes in 2001 affected the volumes and duration of trans-Tasman flows. The removal of automatic rights to labour-market-related social assistance and restrictions placed on the New Zealanders' access to tertiary education supports, family sponsorships and pathways to citizenship halved net migration to Australia. In addition, many New Zealanders returned home at the end of the resources boom (Australian Bureau of Statistics, 2010; F. L. Collins & Nandedkar, 2020; Poot, 2009).[3] Over half of the citizens who returned to New Zealand in 2016 had moved back from Australia (ie, 20 000 out of 39 000 total) (Stats NZ, 2021a).

As a result of successive waves of outward migration, New Zealand has a relatively large diaspora. By June 2019, 570 000 New Zealand-born people lived in Australia (Australian Government, Department of Home Affairs, 2021). This figure does not include overseas-born New Zealand citizens. In total, Stats NZ has estimated that up to 1 million New Zealanders live overseas.[4]

F2.4

Since the late 1960s, New Zealand has experienced a net outflow of citizens to Australia, driven by better economic performance over the Tasman. The volume and duration of these outward flows have fallen in recent years, partly in response to the end of the mining boom and more restrictive social assistance policies in Australia.

[3] New Zealand citizens who migrated to Australia after 26 February 2001 are not eligible for certain social security payments from the Australian Government (Australian Bureau of Statistics, 2010).

[4] Depending on how New Zealanders are defined (eg, New Zealand-born, their children, or those who have obtained New Zealand citizenship by grant).

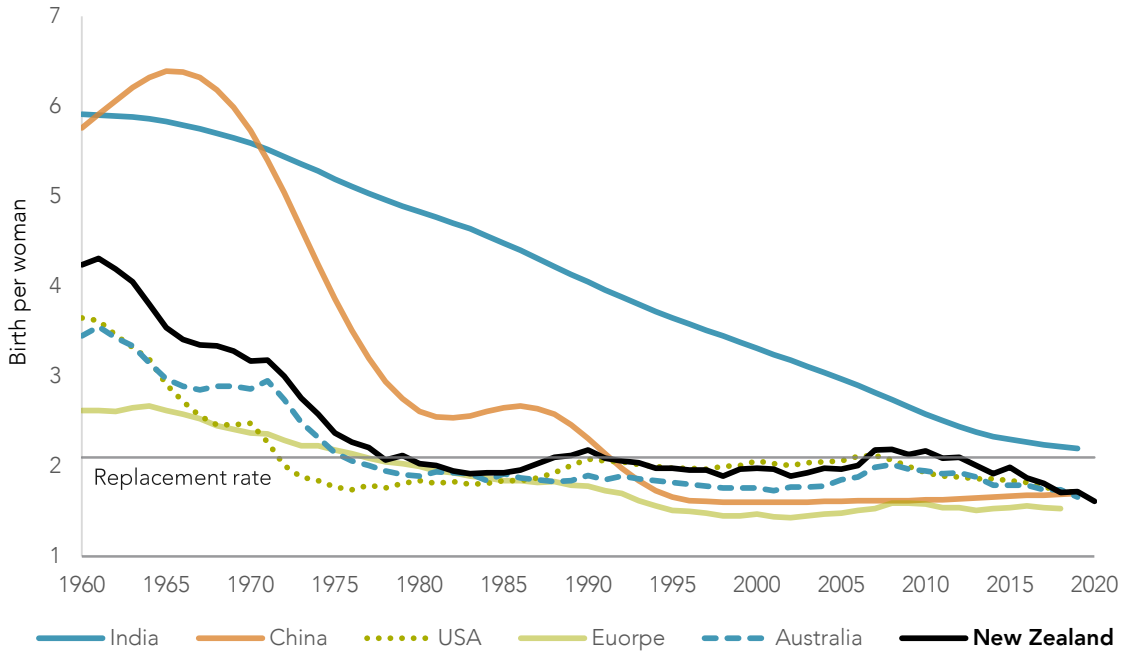
3 Major trends that will likely affect future migration

3.1 Ageing populations across the world

New Zealand's population is ageing

New Zealand has been facing an ageing population since fertility rates decreased following the baby boom of 1950s and 1960s. Total fertility rates in New Zealand and many other developed countries dropped to about two births per woman in the 1970s, due to the expanded availability of effective contraceptives and women achieving better education and work opportunities (Figure 3-1). Fertility rates dropped further to 1.8 and 1.5 in Australia and Europe by the mid-1990s, but remained relatively stable in New Zealand at a higher average of 2.02 till 2013. New Zealand's fertility rates, however, have gradually decreased again since then, reaching their lowest recorded level of 1.61 births per woman in 2020. This rate is well below the population replacement rate of 2.1 – the average number of children each woman needs to have for a population to replace itself in the long term.

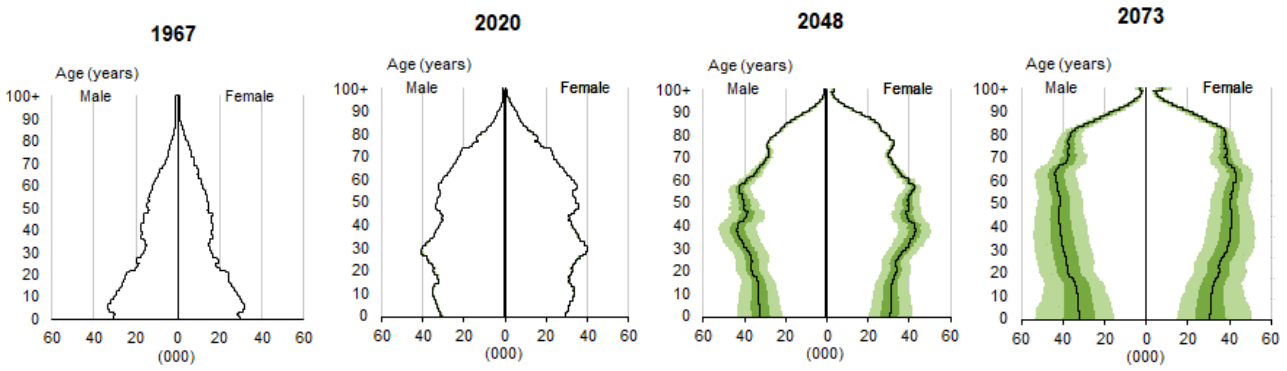
Figure 3-1 Fertility rates, 1960-2020



Source: OECD (2021).

Lower fertility rates and longer life expectancies have seen the median age of New Zealanders increase from 26 years in 1973 to 38 years in 2020 (Stats NZ, 2020b). By 2073, half the population could be older than 47 years (Stats NZ, 2020c). While future population structures depend on a range of factors, such as uncertain future fertility trends and levels of international migration, Stats NZ projections indicate that the number of people aged 65+ is likely to double by 2056 and reach the range of 24% to 34% of the total population by 2073. Within this age group, up to half a million people would be 85+ years old. The New Zealand population pyramid is expected to change from the classic pyramid shape to a much more even spread (Figure 3-2).

Figure 3-2 New Zealand's projected ageing population



Source: Stats NZ (2020c).

F3.1

Fertility rates in New Zealand dropped to their lowest recorded level of 1.61 births per woman in 2020. This rate is well below the population replacement rate of 2.1 – the average number of children each household needs to have for a population to replace itself in the long term.

Population ageing constrains economic growth and increases fiscal pressures

Population growth will slow as New Zealand's population ages, resulting in a stagnant or declining working-age population (Spoonley, 2020; Stats NZ, 2021f). Over time, a fall in fertility creates a lopsided population with more old than young people. The ratio of children and elderly (typically not in the labour force) to the working-age population (ie, total dependency ratio) in New Zealand is projected to increase from 53% in 2020 (ie, one child or elderly for every two working-age people), to between 61% to 77% in 2060 and between 65% to 83% in 2073.[5] The labour force participation rate is projected to decrease from 70% to 67% in 2043 and to 63% in 2073, even though an increasing number of elderly will continue to work after age 65 (Stats NZ, 2021d). The economically active population will face a greater burden to support and provide the social services needed by children and the elderly, exacerbated by the fact that an ageing population is also expected to lower overall saving and investment rates (The Commonwealth of Australia & The Commonwealth of Australia, 2021; The Treasury, 2021).[6]

Partly reflecting the needs of an ageing population, according to Treasury projections, health is expected to comprise the single largest component of government spending in the future. Based on historic trends and government's current policy settings, government spending on healthcare is projected to gradually increase over time, rising from 6.9% of GDP in 2021 to 10.5% in 2061. Spending on New Zealand Superannuation (NZS) will be the second largest, reaching 7.6% of GDP by 2061.[7] This spending is projected to push the net government debt to 177% of GDP by 2061, if there are no changes to current policies.

The Government will need to increase tax rates, limit public services and social security payments, or a combination of the two. The Treasury's draft statement on long-term fiscal position (2021, p. 7) noted that

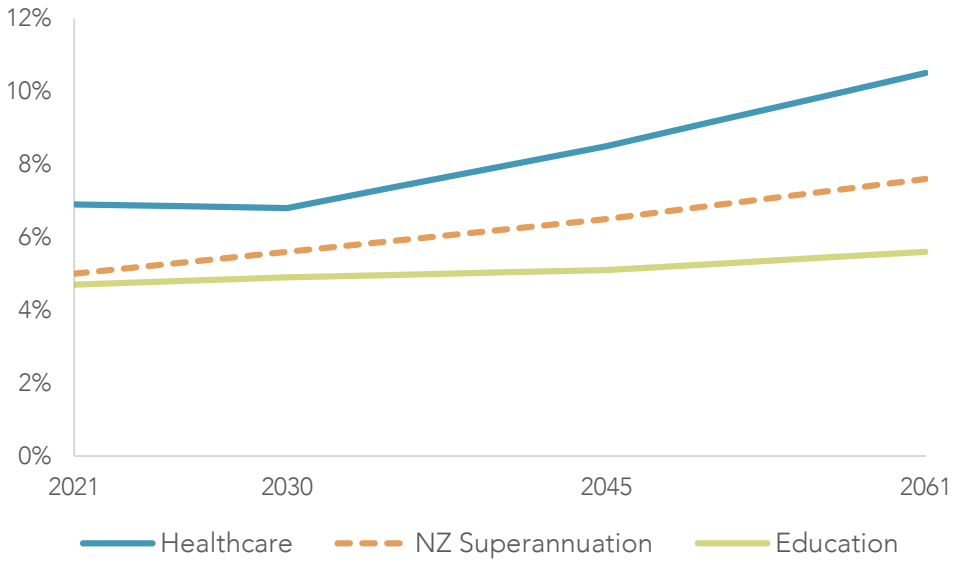
> …future governments will likely need to draw on multiple levers and consider trade-offs across different policy options in responding to our fiscal challenges.

[5] A simple measure of the number of children aged 0 to 14 and elderly aged 65 and over, compared with the total population aged 15 to 64. For those aged 65+, the term 'dependency' does not necessarily imply financial or economic dependency (Stats NZ, 2020c). Although the economic impact of an increased dependent population is more directly related to the availability of labour force and capital, the fiscal impact depends on the cost of children's health and education relative to the health and NZS costs of over-64s.

[6] Ageing will also affect productivity levels, but there is a level of uncertainty in how this impact unfolds. The Treasury, for example, assumes ageing does not affect productivity.

[7] The New Zealand Superannuation Fund (NZSF), established in 2001, provides a degree of tax-smoothing. The Treasury projected that the NZSF will contribute around 6.6% of total net of tax NZS costs in 2060 (The Treasury, 2021).

Figure 3-3 Projected public spending on health, education and superannuation (% of GDP)



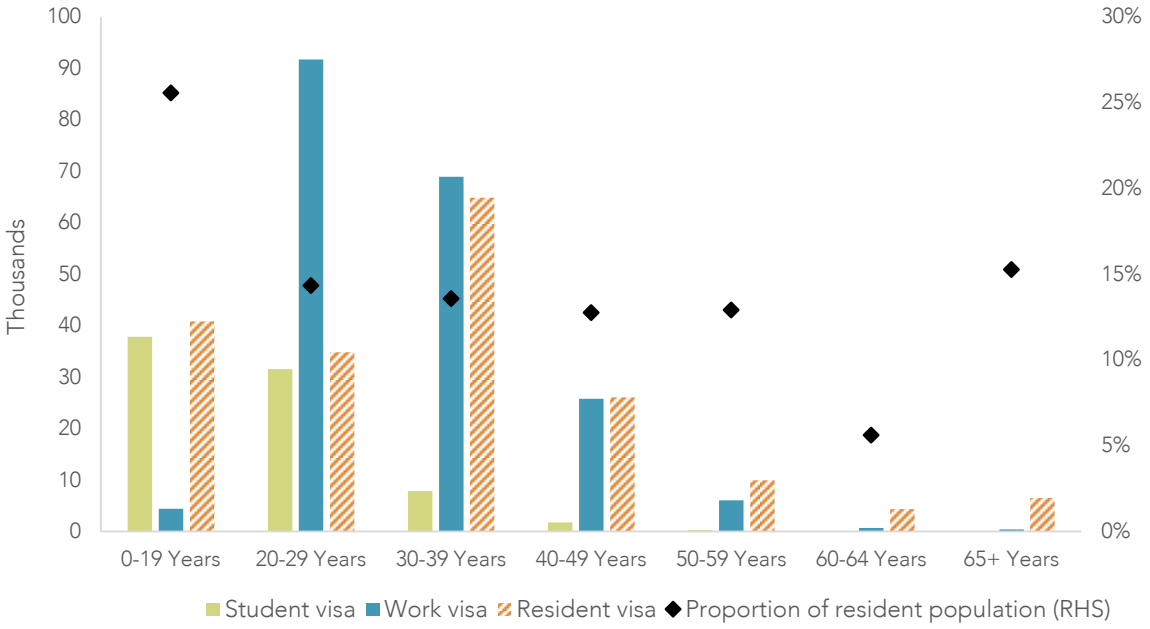
Source: The Treasury (2021) based on the Long-term Fiscal Model.

Note: The NZS figures reported do not net off the tax received on NZS payments or payments from the NZSF.

Immigration can mitigate some of the impacts of an ageing population…

As noted in a companion report on the wider wellbeing impacts of immigration (NZPC, 2021b), migrants often have a positive fiscal impact, that is, they contribute more in taxes than they use in public services. This fiscal impact is most positive when migrants are young and skilled (Carey, 2019; Coates et al., 2021; Dungan et al., 2012; Hodgson & Poot, 2010; Javdani & Pendakur, 2014; Slack et al., 2007; Zhang et al., 2020). Migrants to New Zealand have been, on average, younger than the resident population, better educated and are likely to have higher fertility rates (Figure 3-4). As a result, migrants to New Zealand make larger contributions on average to the public purse than local-born residents.

Figure 3-4 The age distribution of recent residents and temporary migrants (by visa type) in New Zealand, 2019



Source: NZPC analysis; MBIE's Migration Data Explorer (2021).

Notes:

1. 'Resident population' refers to all New Zealanders and migrants who usually live in New Zealand.
2. The figure presents the average of the 12 months of year 2019, rather than the average age of all migrants arrived throughout 2019.

Current projections assume that positive net migration will make a significant contribution to New Zealand's future population growth and will partly attenuate the rise of the dependency ratio. Stats NZ projections in 2020 compared the effects on New Zealand's population in 2073 under 'no migration' (ie, closed population), 'medium' (25 000 people each year) and 'very high' (50 000 people each year) net migration scenarios. High migration added an extra 1.7 million people by 2073, reduced median age by nearly two years, and improved 65+ dependency ratio by 10%.

By comparison, the no migration scenario saw a slight increase in population in the first two decades, followed by a gradual decline till 2073 – bringing the national population back to the levels observed in June 2019 (ie, just under 5 million (Stats NZ, 2021h)). This is about 1.8 million fewer than the medium scenario. The no migration scenario also projects the median age to be four years higher, with the 65+ dependency ratio increasing by 22% (Figures 13-15).

Figure 3-5 The impact of migration on population growth, 2020-73

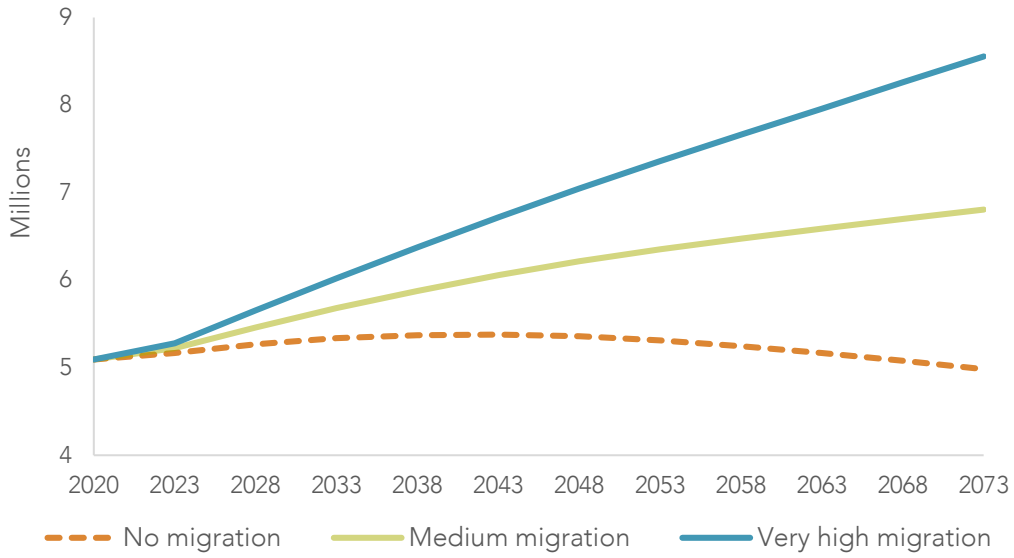


Figure 3-6 The impact of migration on 65+ dependency ratio, 2020-73

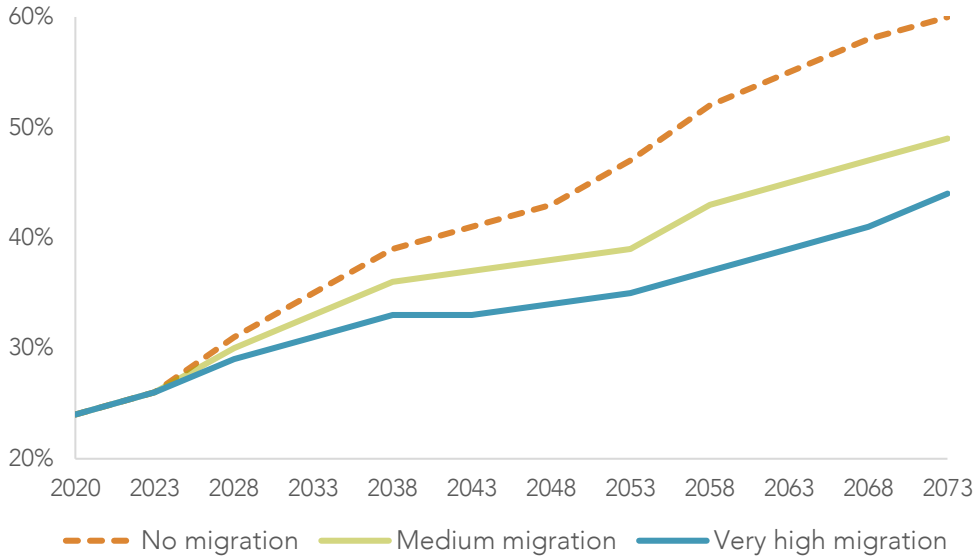
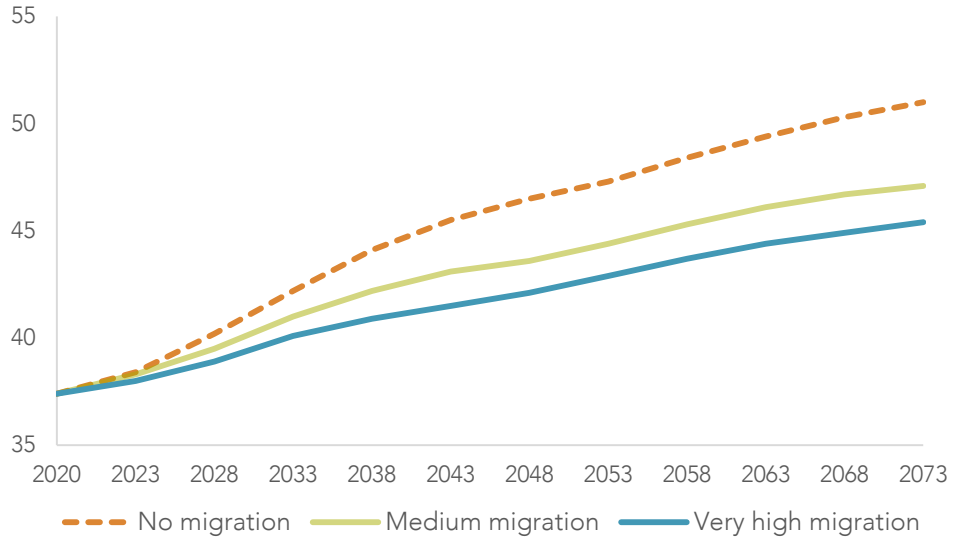


Figure 3-7 The impact of migration on median age, 2020-73



Source: Stats NZ (2020c).

…but not entirely

However, while migration can ease population and fiscal pressures, it does not resolve them. The Treasury noted that the high rates of immigration to New Zealand before Covid-19 could 'slightly' slow down population ageing but the fiscal impact is unlikely to be significant.

> While migrants tend to be younger and have more children than native-born New Zealanders, they also age and there is international evidence that over time migrant populations tend to shift towards having similar numbers of children as native-born populations. (The Treasury, 2021, p. 12)

The Treasury added that

> …increased labour supply [eg, through higher rates of immigration] does not follow through to higher wages and consequently government expenditure growth. As a result, economic growth that is driven by labour supply, all else equal, improves the fiscal position more than productivity growth.[8] (The Treasury, 2021, p. 27)

While the fiscal impacts may appear modest, immigration policy can influence the composition of migrants (notably the age and education level of immigrants) that will have flow-on impacts on New Zealand's long-term prosperity and wellbeing (Auerbach & Oreopoulos, 2000; Borjas, 1995; Kerr & Kerr, 2011; R. Lee & Miller, 2000; Picot, 2013; Storesletten, 2000).

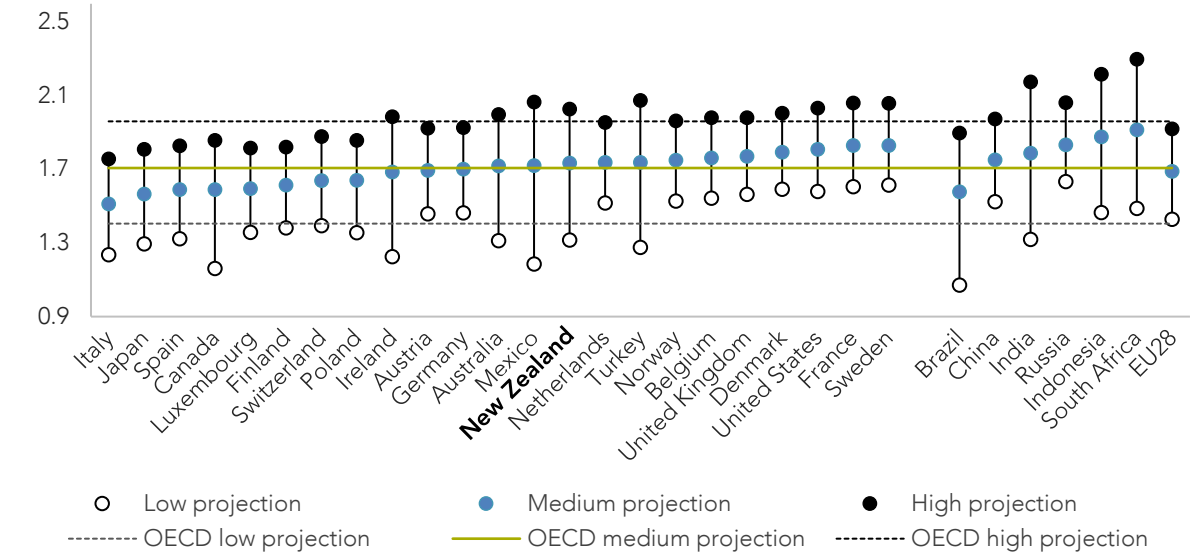
F3.2 Migration helps ease some of the fiscal and economic pressures associated with an ageing population, especially where migrants are young and skilled. However, it is not a 'silver bullet' and does not resolve these pressures.

[8] The Treasury noted that "increased labour productivity has the advantage of giving people more choices overall, including over work and leisure."

Many developed and developing countries face ageing issues

Ageing populations have become a global phenomenon, as fertility rates in many developed and developing countries have dropped over the last few decades. Future fertility levels are expected to be well below replacement rates, not only in the developed OECD countries, but also in large non-OECD countries such as China, India, Indonesia, Brazil, and Russia (Figure 3-8).

Figure 3-8 Fertility rates are expected to be well below the replacement rate, 2055 projections

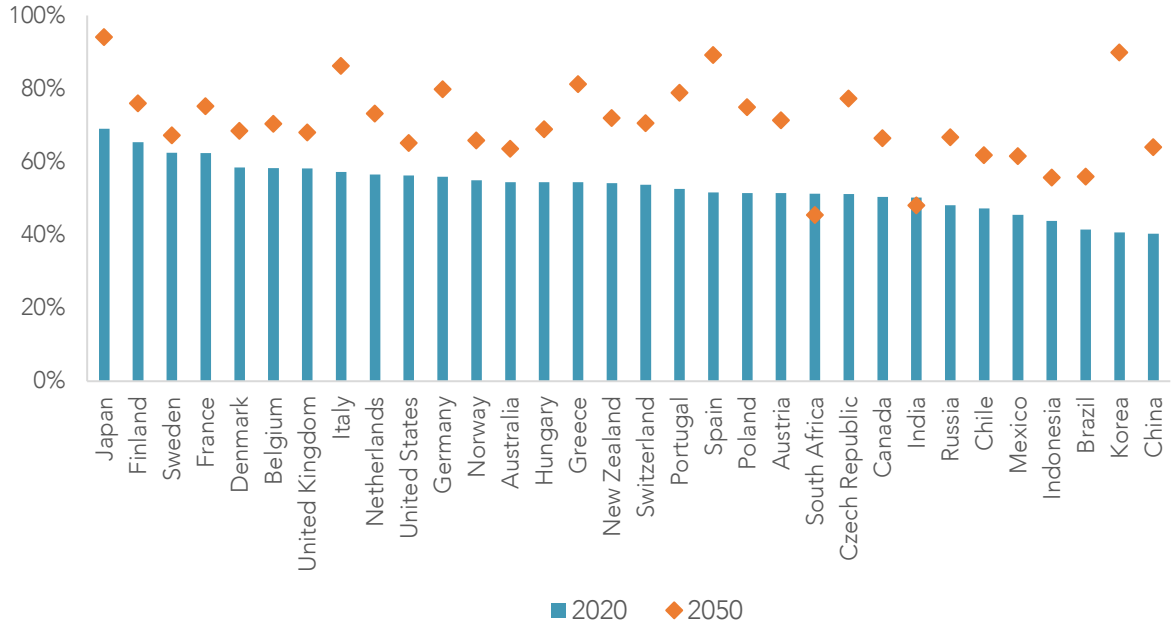


Source: OECD (2019a).

Some of the world's wealthiest economies are facing a shrinking workforce and high dependency ratios due to diminishing fertility rates (Figure 3-9). Boubtane et al. (2016) noted that the only growth in the workforce of OECD countries as a whole in the last 15 years has come from migration from outside of the OECD.

> In many developed countries, the first effects of population ageing can already be felt within the working age population as baby boomers begin to retire in large numbers while younger cohorts are still too few to replace them. In this context, labour migration will continue to play a significant role over the medium and long term. (Boubtane et al., 2016)

Figure 3-9 Projected total dependency ratios, 2020-50



Source: NZPC calculations using OECD (2012) and Stats NZ's (2021f) data.
Note: 'Total dependency ratios' include the share of the population aged over 65 and under 15.

Fertility rates are also declining in many developing countries. Population growth rates in China, for instance, have been less than 0.5% since 2018 (United Nations Population Division (n.d.) extracted from World Bank (2021)). Chinese fertility rates dropped to about 1.6 from the beginning of the century and reached a record low of 1.3 per household in 2020. China's population is expected to start declining in the next few years (Figure 3-10) (Hofman & NUS, 2021, 2021; Woo & Yao, 2021).

The main exceptions to these patterns are in Africa. Fertility rates there are higher, at 5.39 in Nigeria, 4.25 in Ethiopia and 3.33 in Egypt. The population of Nigeria is projected to grow by 200 million in the next 30 years and could grow by half a billion by the end of the century, reaching over 730 million people.

Figure 3-10 Populations are projected to decline in China and India but grow in Nigeria

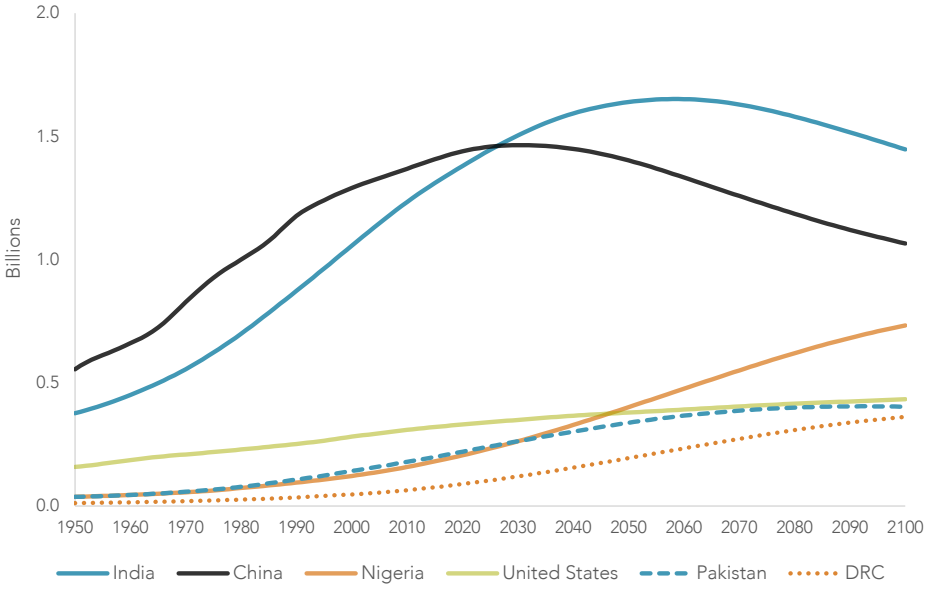
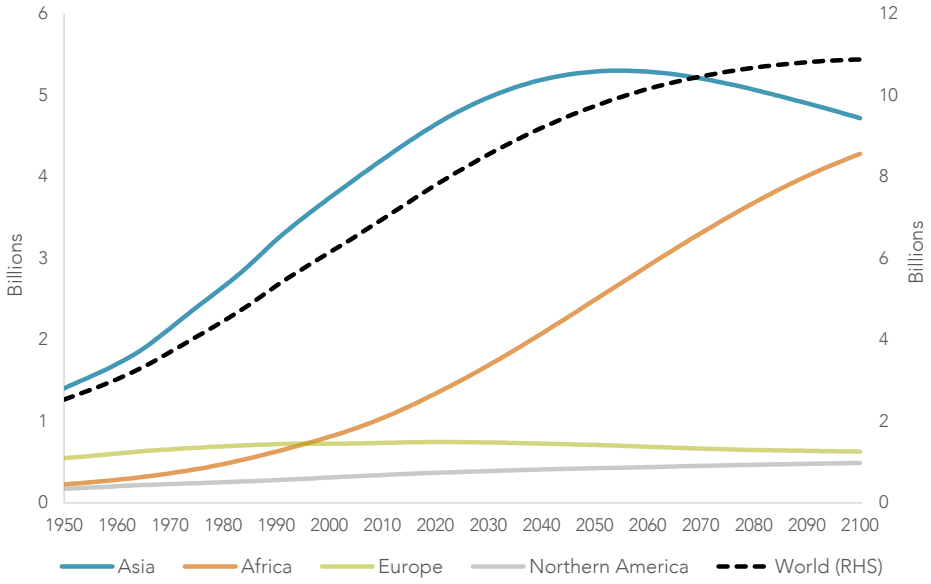


Figure 3-11 Actual and forecast population growth across the world, 1950-2100



Source: United Nations (n.d.).

F3.3 Some of the world's wealthiest economies are facing a shrinking workforce and high dependency ratios due to diminishing fertility rates. Fertility rates are also declining in large developing countries, except in Africa.

The increasing international competition for skilled workers

New Zealand will face greater competition for migrant skills, due to global ageing, increasing mobility and economic integration. Advanced economies are increasingly aware of the gaps they are facing and are using migration to fill shortages. The Germany's Federal Employment Agency, for example, recently reported that the country needs 400 000 immigrants each year to fill its skilled labour gaps (The Economist, 2021).

Many of these countries are better placed than New Zealand to pay high wages (Wood, 2020). A number of inquiry participants noted the current and growing competition for skills – including for New Zealanders as well as recent residents, temporary workers and students who are currently living in New Zealand – from countries with more aggressive policy stances such as Australia and Canada.

At the same time, the supply of skills from New Zealand's traditional source countries (eg, China and India) will come under pressure for both demographic and economic reasons. Some countries, especially those with more authoritarian governments, may be less willing to allow their younger and skilled citizens to move offshore (Fonseka, 2016). Also rising living standards, the vibrancy of larger urban centres and improving tertiary education quality in emerging economies may make outward migration less appealing, especially for some types of professionals that New Zealand seeks. Table 3-1 shows that over 40% of our recent migrants came from lower income countries, but these economies are growing fast. New Zealand has had a relatively high propensity among OECD countries to draw skilled migrants from non-OECD countries (Docquier et al., 2014, p. 1119 Table 1) (over the period 1990 to 2000).

Table 3-1 Main migrant arrivals and GDP per capita in source countries and New Zealand, 2018

	Arrivals	% of total	GDP per capita ($US)	GDP per capita, annual growth rate 2008-18
China	16 100	14.4%	15 240	7.5%
India	14 500	13.0%	6 520	5.8%
Philippines	9 100	8.1%	8 520	4.2%
United Kingdom	8 500	7.6%	46 040	0.5%
Australia	8 200	7.3%	49 150	0.9%
South Africa	7 000	6.3%	12 630	0.0%
United States	4 200	3.8%	61 590	1.1%
Total	**111 800**	**100%**		
New Zealand			**42 870**	**1.2%**

Source: World Bank (2021); OECD (2020b Table B.1); Stats NZ (n.d.).

Note: GDP per capita is measured in 2017 $USD adjusted for 'purchasing power parity'.

The Association of Salaried Medical Specialists (2017, p. 4) highlighted the possibly reducing migration interest among Indian doctors.

> In India, the world's largest exporter of doctors by a large margin and the third-largest source of New Zealand's IMGs [international medical graduates], doctors with the highest academic achievement have the greatest likelihood of migrating. Researchers suggest the desire for better training and increased access to better technology and equipment are important reasons for migration. However, this is beginning to change with the growth of India's middle-class population, which is forecast by some analysts to more than double in the next 10 years. A burgeoning private health sector is also driving the rapid growth of a $3 billion health 'tourism' industry, estimated to grow to an $8 billion industry by 2020.

This may not be limited to highly-skilled migrants. Attracting farm labour from Mexico is becoming difficult for farmers in the US due to lower fertility rates, increased educational attainment and living standards, and an expanding non-farm economy in Mexico.

New Zealand's attractiveness for suitable, talented skilled workers will become more important over time as the world's population ages and countries compete for youthful migrants. Global rankings in the past suggest that New Zealand is not as attractive as many other developed (and some developing) countries. In the World Gallup polls, conducted from 2010 to 2017, New Zealand ranks 16th, not only after the US, Canada, Australia, the UK and some western European countries, but also behind the United Arab Emirates, Singapore and China. Only 1% of potential migrants chose New Zealand as the country to which they would like to move. This means about 9 million people worldwide viewed New Zealand as a migration destination.[9] Similarly, in the World Economic Forum's Global Competitive Index, which asked people in 2015-16 if their country attract talented people from abroad, New Zealand was placed 17th worldwide, 9th in OECD countries and 7th among APEC countries.

New Zealand, however, ranks better in more recent OECD measures of talent attractiveness. OECD (2019b) found that New Zealand is relatively attractive for highly qualified workers (with masters or doctoral degrees) (ranked fourth), entrepreneurs (ranked second) and international university students (ranked 9th). Considering a range of immigration policies, OECD estimated that New Zealand will rank 7th should overall immigration policies be the most favourable on all dimensions in all countries. New Zealand ranked 10th in 2020, partly due to the successful management of the coronavirus. Kovács-Ondrejkovic et al. (2021) noted that people find New Zealand's great political stability and education system and generally high remunerations appealing. The very limited negative attitudes towards immigration (relative to some European countries, as well as the US – see NZPC (2021e)) has also had a positive impact on the attractiveness of New Zealand in recent years.

Bedford and Spoonley noted the implications of this international competition for immigration policies:

> A defining feature of the intensified global competition for talent is the close monitoring of immigration policy initiatives in countries with similar histories of international migration (Papademetriou & Sumption, 2013). Canada, Australia, and New Zealand are internationally known for their pro-active points-selection systems that favor migrants with particular mixes of skills, capital, and offers of employment. When one country changes immigration policy, either to improve the operation of its selection system, or to ensure better employment outcomes for migrants approved for permanent entry, the other two countries monitor the new initiatives closely. (Bedford & Spoonley, 2014, p. 891)

F3.4 New Zealand will face greater competition for migrant skills, due to global ageing, increasing mobility and economic integration. In such an environment, the relative attractiveness of a country's immigration policy settings will take on greater importance.

3.2 Climate change impacts

Climate change-induced migration has been a prominent research and media topic over the past decade. Many people will be forced to move due to sudden or progressive changes in the weather or climate. These changes could directly affect the hazardousness of places or indirectly influence migration patterns through economic and socio-political drivers (eg, by changing livelihoods or creating conflicts over resources) (Black et al., 2011). The World Bank (2018) estimated that growing problems like water scarcity, crop failure, sea-level rise and storm surges could displace tens of millions of people from their homes in Sub-Saharan Africa, South Asia and Latin America by 2050.

[9] This represents general interest, as these people don't necessarily intend to migrate and may not move.

New Zealand is exposed to various climate risks, but is probably less vulnerable to the impacts of climate change compared to many other countries. However, its political stability, established governance framework and economic flexibility enables efficient adaptation, while its current temperate climate, low population density and abundant land resources will give it more options for adaptation. This could provide more opportunities for improving the relative economic performance of the country and increasing its relative attractiveness to skilled workers.

Indirect and direct impacts

Debates on climate change and migration often focus on the displacement of people due to the increase in frequency and intensity of climate hazards, such as floods, droughts, wildfires and sea level rise. Climate change, however, might influence a wide range of drivers of migration into the future.

> The environment drives migration through mechanisms characterised as the availability and reliability of ecosystem services and exposure to hazard. Individual migration decisions and flows are affected by these drivers operating in combination, and the effect of the environment is therefore highly dependent on economic, political, social and demographic context. (Black et al., 2011, p. S3)

Disruption of seasonal weather patterns, for instance, does not necessarily make a place more hazardous. But it may weaken the economy of the region (eg, by reducing agricultural production) and encourage people to move, especially when the population is more vulnerable and has a lower capacity to adapt (ibid). Much displacement associated with climate change is and will be internal or to neighbouring countries.

New Zealand is better able to adapt to the impacts of climate change

New Zealand's primary industries are likely to suffer from the adverse impacts of climate change more than the other industries. NIWA has noted that:

> Primary industries will be at risk from more frequent extreme weather events. Drought negatively impacts the productivity of the land and will present challenges to many industries including farming and fruit-growing, particularly in the far north and east of the country. Larger amounts of water may be needed to irrigate these areas. Flooding will also be a challenge for industries near rivers or in areas experiencing high amounts of rainfall. Warmer temperatures may increase the risk of pest diseases and species… salmon farms may have to move out of Marlborough Sounds to cooler parts of the ocean... (NIWA, n.d.)[10]

However, New Zealand's temperate climate, low population density and abundant land resources, together with its adaptive capacity, could improve the relative socio-economic performance of the country and make it more attractive to international migrants and the New Zealand diaspora.

International studies find that New Zealand has relatively high resilience to natural hazards:

- The WorldRiskReport (2021, p. 43) found that New Zealand has high exposure to natural hazard, but a relatively very low vulnerability as it has the capacity to prepare and respond to climate change-induced events. In total, New Zealand received a low WorldRiskIndex score of 4.96.
- The Notre Dame Global Adaptation Initiative publishes the ND-GAIN Country Index (Chen et al., 2015) that summarises a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience. Of the 192 countries ranked by the index in 2019, New Zealand ranks "the second most climate resilient country" after Norway.

The Notre Dame country profile suggests that New Zealand has vulnerable ecosystem services and its human habitat and infrastructure are at risk. But its governance (eg, control of corruption, political stability and regulatory quality), economic (eg, tax and business regulation and enforcement, access to finance) and social (eg, innovation, education and ICT infrastructure) systems and capabilities will

[10] Both NIWA and MFE draw heavily on climate model simulations from the Intergovernmental Panel on Climate Change (IPCC) Fifth assessment report. The detailed New Zealand regional climate model is run on the NIWA supercomputer (Brett et al., 2018).

enable it to adapt to expected environmental changes and alleviate their adverse impacts. New Zealand might also be able to do things differently to ensure a positive future. NIWA says "Climate change presents many opportunities for New Zealand. As our climate warms, valuable crops like avocados may be grown in areas that were previously too cold and unsuitable for growth" (NIWA, n.d.).

The impacts of climate change in Australia (eg, higher temperatures, more frequent bushfires, drought, scarcity of water resources) will be more significant as Australia is more exposed than New Zealand and has a larger population. The ND-GAIN Country Index suggests Australia is slightly more vulnerable to the impacts of climate change, and less ready to adapt, compared with New Zealand. Australia ranks 12th, scoring worse than New Zealand in all vulnerability and readiness measures, except 'ecosystem services' and 'infrastructure' exposure. Yet, Australia's scores highlight that it has high capacity (including more resources) to adapt and mitigate the impacts of climate change.

F3.5 Although the impacts of climate change and countries' ability to adapt is uncertain, New Zealand's high adaptation capacity could provide more opportunities for improving the relative economic performance of the country and increasing the country's attractiveness to local and international skilled workers.

Climate change increases the challenges of Pacific peoples

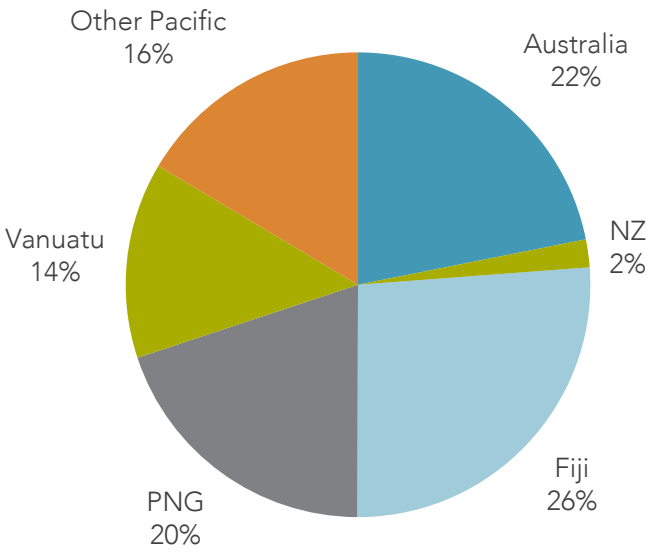
A number of Pacific Island nations are low-lying and hence face the risk of significant disruption or even inundation as a result of climate change. These impacts may be proportionately greater in the Pacific than in larger and more diversified economies:

> The availability and stability of, and access to, ecosystem services are the three primary mechanisms by which livelihood and well-being is manifest in particular localities, most starkly in resource-dependent economic systems dominated by agriculture or fisheries. Here a change in ecosystem services directly affects wellbeing and the demand for migration… Ecosystem service provision can be threatened by rapid onset events, but is more usually affected by slow onset environmental dynamics including droughts and land degradation. (Black et al., 2011, p. S7)

The IPCC (2014) concluded that there is a "high risk" of climate change impacts leading to loss of livelihoods and economic stability, and a "very high risk" of coastal inundation in small island countries (Peters, 2018).

In the Pacific, the Internal Displacement Monitoring Centre (IDMC) (n.d.) found that extreme weather events have already displaced over 50 000 people each year during the last decade. Most of these movements were internal, meaning that displaced people moved elsewhere within their own countries. (Figure 3-12). In some cases, they have been able to return home soon after disasters.

Figure 3-12 Distribution of new displacement due to weather events across the Pacific, 2010s



Source: NZPC calculations using IDMC's (n.d.) data.

Note: This figure presents total displacements (internal and cross-border) across the Pacific countries.

The scale of future impacts is unclear and varies by Pacific country

The long-term impact of climate change is unclear, and so it is hard to estimate how many people will be displaced.

- "Campbell (2009) estimated that there could be between 665 000 and 1 750 000 climate migrants in the Pacific region by 2050 when the total population is projected to reach in excess of 20 million people" (Ash & Campbell, 2016, p. 58).
- "Edwards (2013) noted that by 2050, in the worst-case scenario, 600 000 people will face resettlement associated with climate change across the Pacific" (Ash & Campbell, 2016, p. 58).
- Bedford and Bedford (2010) noted that the number of people with access to migration would need to drastically increase. They estimated that the level of net out-migration in Kiribati would need to increase to 5 000 people per year by 2030. The out-migration for the smaller Tuvalu is likely to increase to 250 people per year by 2030.
- "180 000 people living in low laying countries of Kiribati, Tuvalu and the Republic of Marshall Islands – alongside inhabitants of Tokelu and atolls in some larger Pacific countries – will be most significantly affected" (Peters, 2018).
- A climate change programme business case (2019), prepared for MFAT, suggested Kiribati, Tokelau, Marshall Islands and Tuvalu are likely to be totally uninhabitable due to climate change.

Ash and Campbell concluded that:

> While these numbers should be used with caution, it is reasonable to postulate that the effects of climate change will increase mobility across the Pacific islands. By not planning for this future challenge, there is potential for humanitarian crises to occur. (2016, p. 58)

Both climate change-induced events exposure and vulnerability vary across the Pacific Islands. The WorldRiskReport highlighted this variation:

> With 15.6 Oceania has the highest median of all continents in the WorldRiskIndex. The risk is, however, unevenly distributed: A total of five countries on the continent – Vanuatu (rank 1), Solomon Islands (rank 2), Tonga (rank 3), Papua New Guinea (rank 9), and Fiji (rank 14) – are among the 15 countries with the highest disaster risk worldwide. Australia and New Zealand show only a low risk. The heterogeneity of oceanic countries is also reflected in exposure, with

> Vanuatu also topping the list with a score of 82.55 (rank 1), while Samoa is only low exposed (11.46; rank 122). Vulnerability also varies, with half of the countries – Papua New Guinea, the Solomon Islands, Vanuatu, Kiribati, and Micronesia – having high to very high vulnerability, Samoa, Tonga, and Fiji having medium vulnerability, and New Zealand and Australia having very low vulnerability. When looking at the individual components of vulnerability, it is striking that Papua New Guinea is among the top ten countries worldwide with the greatest deficits in terms of adaptive capacities. (2021, p. 43)

The ND-GAIN Country Index also ranked Pacific Islands (with data available) in the mid to low range, with particularly low rankings for Tonga (130), Vanuatu (132), Micronesia (145) and Papua New Guinea (153) (Chen et al., 2015). Kiribati, Tokelau, Marshall Islands and Tuvalu do not appear on the index due to insufficient vulnerability data. The Asian Development Bank (2011) stressed that the situation is exacerbated, especially in the Melanesia subregion, by high population growth and a bulging youth segment.

The New Zealand Government has responded to this significant challenge through the 'Pacific climate change-related displacement and migration' action plan. The plan focuses on encouraging transparent, inclusive dialogue on Pacific climate migration, enabling the Pacific governments to decide what's best for them, supporting climate adaptation (eg, through aid and climate change research), and ensuring maritime zones (and the associated resource rights) will be secure against sea-level rise and climate change in international law (Peters, 2018).

> The commitment was confirmed through New Zealand's submission to the UNFCCC in October 2018, which added the details that at least 50 percent of our climate-related support over the coming four-year period will be adaptation-focused, and at least two thirds of New Zealand's 2019–2022 commitment (of at least $300M in climate-related support over four years) to support PICs [ie, Pacific Island Countries]. (MFAT, 2019)

In October 2021, the New Zealand Government extended this commitment to $1.3 billion, from 2022 to 2025 – at least half of which will go towards supporting climate change adaptation in the Pacific (Rt Hon Jacinda Ardern & Hon James Shaw, 2021).

Future choices and options

The question of whether and how New Zealand accepts climate change-induced migrants from the Pacific is ultimately a question for the Government. New Zealand is unlikely to be the only country facing pressures to accept people and rising global competition for young and skilled workers may make the Pacific more attractive for recruitment. Some Pacific nations have also been taking steps to insure their people against the threat of climate change. The Kiribati Government, for example, bought 20 square kilometres of land on the Fijian island of Vanua Levu in 2014 as a possible future refuge (Pala, 2021; Caramel, 2014).

However, if New Zealand is to accept climate migrants from the Pacific, it would be sensible to take steps now to promote their successful integration. For example, Bedford and Bedford (2010) have proposed slowly increasing the number of places available in the Pacific Island Category, which provides PR opportunities for people from selected Pacific nations, for those countries most at risk of inundation (eg, Tuvalu and Kiribati). This could help build networks in New Zealand that could support future arrivals. Another option would be to support training opportunities for people in at-risk Pacific Islands that align with areas of high labour demand in New Zealand. Australia has been active and innovative in this area for some time, albeit with mixed results (Box 2).

Box 2 **The Australia-Pacific Training Coalition (APTC)**

The Australia-Pacific Training Coalition is a technical and vocational education system aimed at improving "the supply of labour and alignment of skills with jobs among Pacifc Island countries" and increasing "labor mobility between the Pacific and Australia" (Center for Global Development, 2021). Founded in 2007 by the Australian Department of Foreign Affairs and Trade, APTC has five training campuses in different Pacific Islands nations and is administered by TAFE Queensland (the state public vocational education institution).

APTC admits students from 14 members of the Pacific Islands Forum who train towards Australian-accredited courses in areas such as automotive repair, manufacturing, construction and electrical services, tourism and hospitality, and health and community services. The Australian Government subsidises the training. Since 2007, around 16 000 students have completed their training (Center for Global Development, n.d.).

An independent evaluation of APTC in 2014 found that employment rates for graduates were high, employers were generally satisfied with the quality of training, completion rates were high, and there was good representation in the student body of women and people from small island states. There was also some evidence of spillovers, with positive impacts on the quality of other training provision in the Pacific. However, the evaluation found weak labour market analysis and hence possible mismatches with local need, high unit costs, a lack of local country ownership and a low initial return on investment (Johanson et al., 2014).

Another study concluded that APTC had achieved its goal of "skill creation, but not its goal of skill mobility" (Clemens et al., 2014, p. 1). Less than 3% of all graduates had moved to Australia or New Zealand, which was "a very small fraction of the migration rates envisaged at the creation of the college" (ibid). The main barrier to migration was not a supply of graduates, but a shortfall of opportunities to move. Even though students were trained to Australian qualifications and standards, APTC graduates often faced "very large barriers in getting their skills and work experience recognized as the basis for employment-based visas in Australia" (pp.16-17). This suggests any training-based programmes need to be aligned with immigration policies in targeted developed nations.

Any policies would need to be developed in partnership with the governments of Pacific Islands nations, to ensure they align with local objectives and strategies and do not inadvertently create or exacerbate a 'brain drain'.

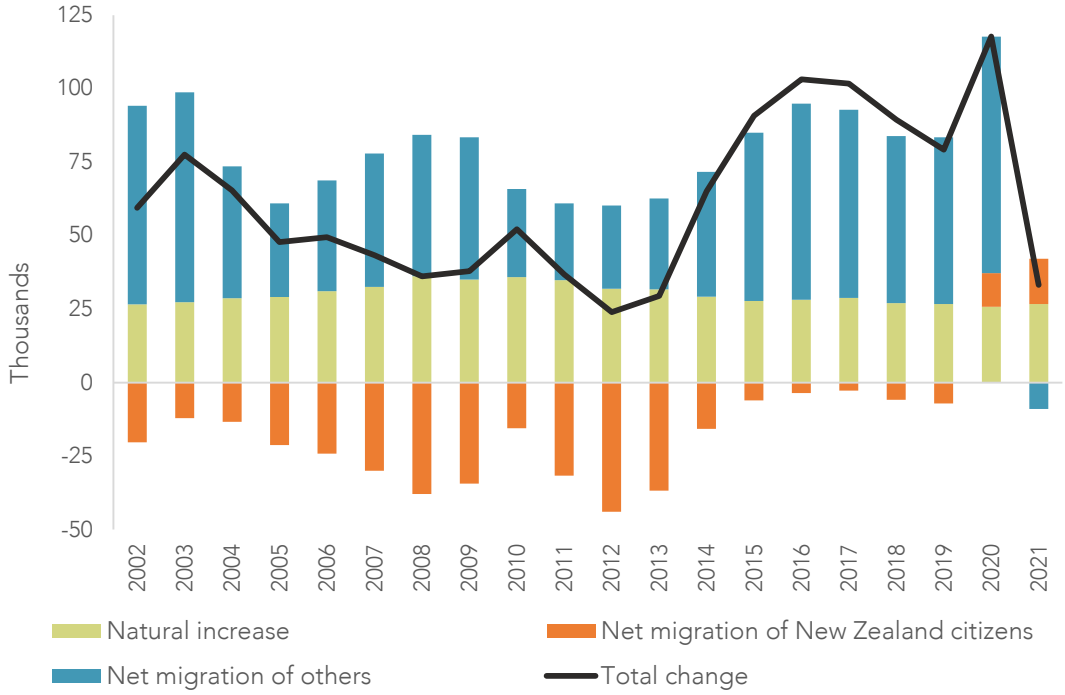
F3.6 If New Zealand is to accept climate migrants from the Pacific, it would be sensible to take steps now to promote their successful integration. Such steps could include incremental increases to immigration quotas for low-lying Pacific nations and training opportunities that align with areas of high labour demand in New Zealand, subject to the skills needs and other objectives of the countries themselves.

3.3 Exposure to global shocks

The Covid-19 pandemic has revealed New Zealand's exposure to global shocks, with the possibility that large numbers of people may suddenly wish to move here.

Over the past two to three decades, New Zealand has had some of the highest rates of both inward and outward migration in the OECD (NZPC, 2021b). Large-scale net migration (of both locals and foreigners) can lead to pressures on housing, infrastructure and public services (Figure 3-13) (Poot, 2009; NZPC, 2021e).

Figure 3-13 New Zealand population change



Source: Stats NZ (2019, 2021c, 2021e).

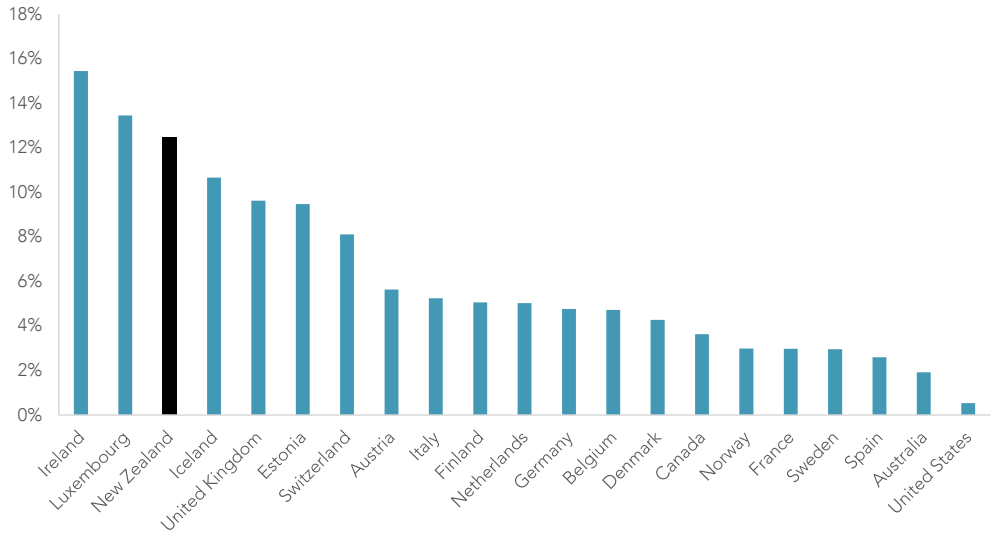
Almost 47 000 Kiwis returned home on a permanent or long-term basis in the 12 months ending March 2020, which is 25% higher than the average 2014-19. The flow of returnees stopped with the closure of New Zealand border to non-citizens/residents on 19 March 2020. In the year ended May 2021, 26 400 New Zealanders moved home, even though the arrival to the country was restricted due to Covid-19 quarantine requirements, while only 10 400 departed (Stats NZ, 2021g). A net gain from movement of New Zealanders is a reversal of historic patterns.

Large-scale movements of people back to New Zealand in the future cannot be ruled out, especially as this country has one of the largest diasporas as a proportion of its population in the OECD (Figure 3-14). A range of events could prompt such movements, although their scale and risks vary. Department of the Prime Minister and Cabinet (DPMC) (2011) analysis suggests that a global conflict is likely to happen every century and will have major consequences for New Zealand. Inter-state conflicts are more frequent (ie, every decade or so), but will have moderate impacts. Human pandemics pose the highest risk to the New Zealand's national security, considering their high likelihood and consequences (DPMC, 2011).

Unforeseen population surges, resulting from large-scale return migration, could be a significant challenge for policymakers and create wellbeing and productivity harms.

> Returning emigrants can be beneficial, but New Zealand is exposed to policy risk in a number of areas (including the Auckland housing market) should large scale return occur, and this has the potential to contribute to tensions between current residents, immigrants and returnees. (Fry, 2015, p. iv)

Figure 3-14 OECD countries' diaspora, percentage of the resident population, 2015-16



Source: OECD (2020b).

Notes:

1. Foreign-born residents are all persons who have ever migrated from their country of birth to their current country of residence, including those born abroad. This includes the children of the New Zealand diaspora who have returned to this country.
2. Data for Canada is for 2017.

New Zealand is unique in offering an unlimited right of return to permanent residents

New Zealand citizens have a fundamental right to enter and leave the country under the New Zealand Bill of Rights Act 1990, and Australians have equivalent rights under the Trans-Tasman Travel Arrangement. Leaving aside emergency measures taken in the interests of public health (eg, the quarantine requirements imposed during the Covid-19 pandemic), there are limited options to manage flows of these people.

However, New Zealand is unique in offering an unlimited right of return to 'permanent residents'. Currently, almost all New Zealand residence visas have travel restrictions for the first two years of residence. After two years, most migrants "demonstrate a commitment to New Zealand" by residing at least 184 days of each of the preceding two years in the country, and receive a PR visa, which grants them an infinite right to leave and return to New Zealand as they please.

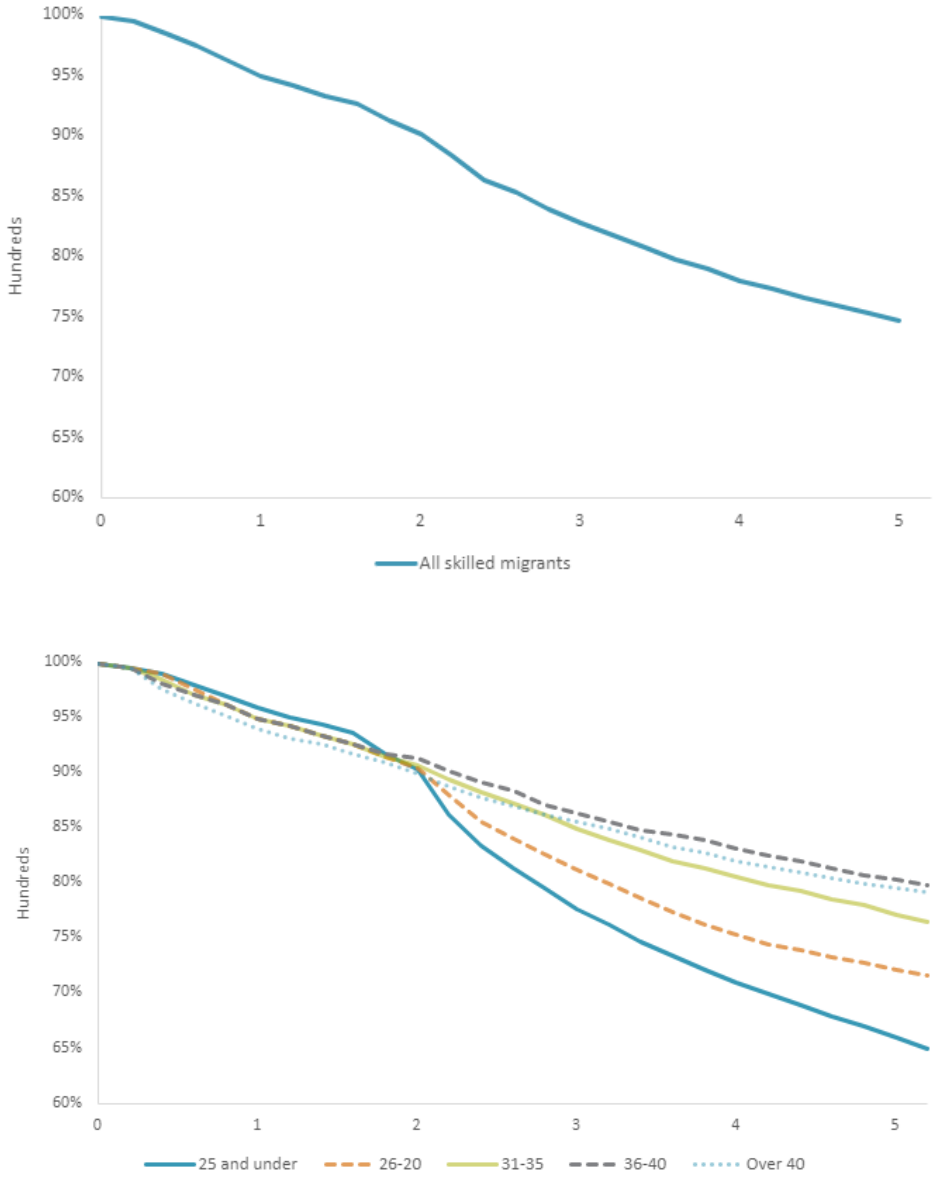
> New Zealand is unique within the English-speaking world in offering an unlimited right of return to non-citizens. Skilled migrants in Australia and Canada must renew their right of return every five years and migrants with residence and work rights in the US risk losing them if they are outside the country for more than 365 days without a re-entry permit (730 days in the UK). (Krassoi-Peach, 2013, p. 34)

Both Australia and Canada require permanent residents to reside in the country for at least 730 days to be eligible for renewing their PR (exceptions apply). Migrants only obtain an unlimited right of return when they receive citizenship. Prior to 1999, New Zealand permanent residents were only issued with time-limited visas.

The infinite right of return may help make New Zealand more attractive to international talent who would like to maintain their high mobility, particularly if this country faces tougher competition in the future. The higher mobility of these skilled workers helps New Zealand's innovative firms and research institutions to improve their international connections, which is key in growing innovation ecosystems. The vibrancy of these ecosystems will in turn improve New Zealand's ability to attract and retain overseas and local talent and enables this country to offer competitive living standards. On the other hand, introducing residency requirements to maintain PR, or placing limits or additional conditions on the right to return, would help manage potential future volatility and risks.

While many young, skilled workers leave New Zealand in pursuit of better opportunities and higher incomes overseas, stricter conditions on re-entry for permanent residents could encourage some migrants to stay and make a longer-term commitment to New Zealand. Krassoi-Peach (2013) found a spike in the number of New Zealand's recent migrants departing after the second year of obtaining a residence class visa. Figure 3-15 (left graph) shows that about 15% of recent migrants who received residence visas through Skilled Migrant Category between 2004 and 2011 left between years two and five years. Other studies, such as from the Ministry for Business, Innovation and Employment (MBIE) (2018), have suggested that re-migration rates of all migrants between years two and five is closer to 10%.[11] These migrants are eligible for gaining unlimited right of re-entry through PR. Wood (2020) argued that this right of re-entry "greatly lowers the opportunity cost of leaving or seeing New Zealand as an insurance policy or back up plan for someone with PR status. It also eliminates the incentive and urgency for someone to [stay longer in the country and] consider becoming a New Zealand citizen."

Figure 3-15 Retention rates of skilled migrants after receiving New Zealand residence



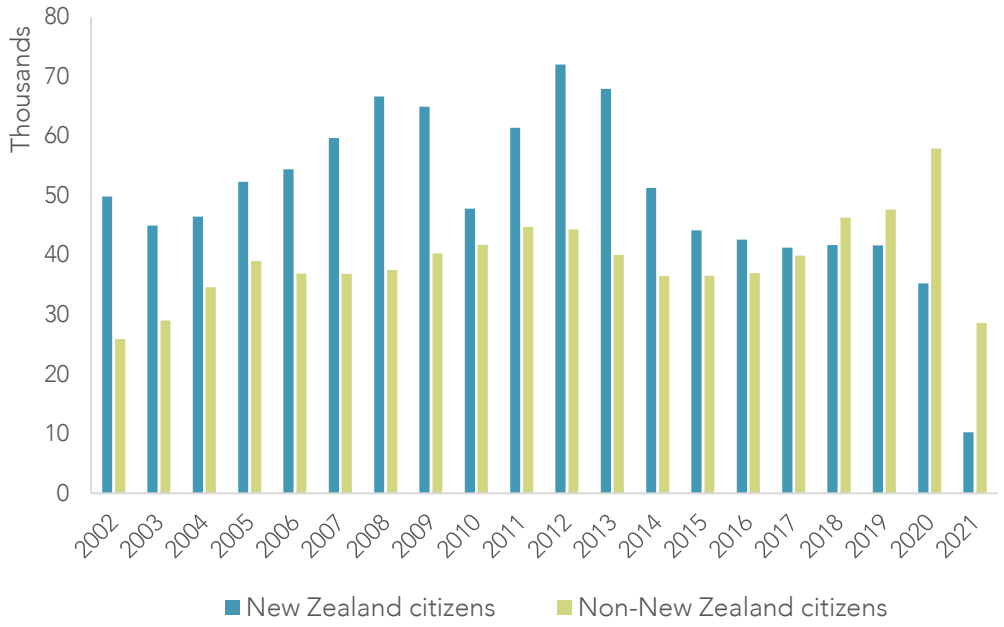
Source: Krassoi-Peach (2013).

[11] Skilled migrants are more likely to re-migrate. McLeod, Henderson and Bryant (2010) found that four years after taking up residence, 30% of skilled migrants with an advanced qualification had experienced a long-term absence, while only 20% of migrants with no qualifications or basic qualifications had one. MBIE (2018) estimated the retention rates of all migrants two and five years after arrival for years 2001 to 2012. They suggested that more than 90% of new residents live in New Zealand after two years. This suggests about 10% of new residents leave between years two and five, which is lower than previous estimates.

Krassoi-Peach (2013) illustrated that migrants aged under 30, singles without children, former students and migrants from Asia (excluding India) are more likely to leave two years after receiving residence (ie, once they are eligible to and will likely receive PR) (Figure 3-15).[12] Introducing residence requirements to maintain PR may encourage more of these young, skilled workers to stay longer in the country. A number of these people could stay long term, even after receiving New Zealand citizenship, as the probability of re-migrating decreases as migrants age, establish work and personal relationships, and advance their careers.

The Government does not record the number of foreign nationals with New Zealand PR who live overseas. Yet, it is likely that tens of thousands of people live overseas with this. New Zealand issued over 40 000 residence class visas every year (average 2011-19). If the recent trends continue, 1.2 million people will obtain New Zealand residence over a 30-year time period. As noted above, between 10% to 15% of them (120 000 to 180 000 people) will leave after year two (once they are eligible to obtain PR) but before year five (when they can apply for citizenship). This is a very rough estimate. The number of residence visas issued, and the rate of re-migration vary over time (Figure 3-15).[13] Administrative data (available through Stats NZ's Integrated Data Infrastructure database) could help policymakers better understand re-migration rates, patterns and drivers.

Figure 3-16 Estimated long-term departures by citizenship, March 2002-21



Source: Stats NZ (2021b).

F3.7 Introducing residency requirements to maintain permanent residence (PR), or placing limits or additional conditions on the right to return, could help manage potential future volatility and risks. It may also encourage more of the young, skilled workers to stay longer in New Zealand as it increases the opportunity cost of leaving.

[12] The study showed that migrants from China are more likely to leave after receiving PR, which might be partly due to the surge in the number of Chinese students in the 2000s.

[13] Nana and Sanderson (2008) noted that re-migration decreased in times of economic buoyancy.

3.4 A technology driven upswing in productivity is possible

Prior to the Covid-19 pandemic, productivity growth rates across the developed world had slowed to very low levels. New Zealand's productivity performance has been particularly poor, starting from a very low base in international comparisons (Figure 3-19).

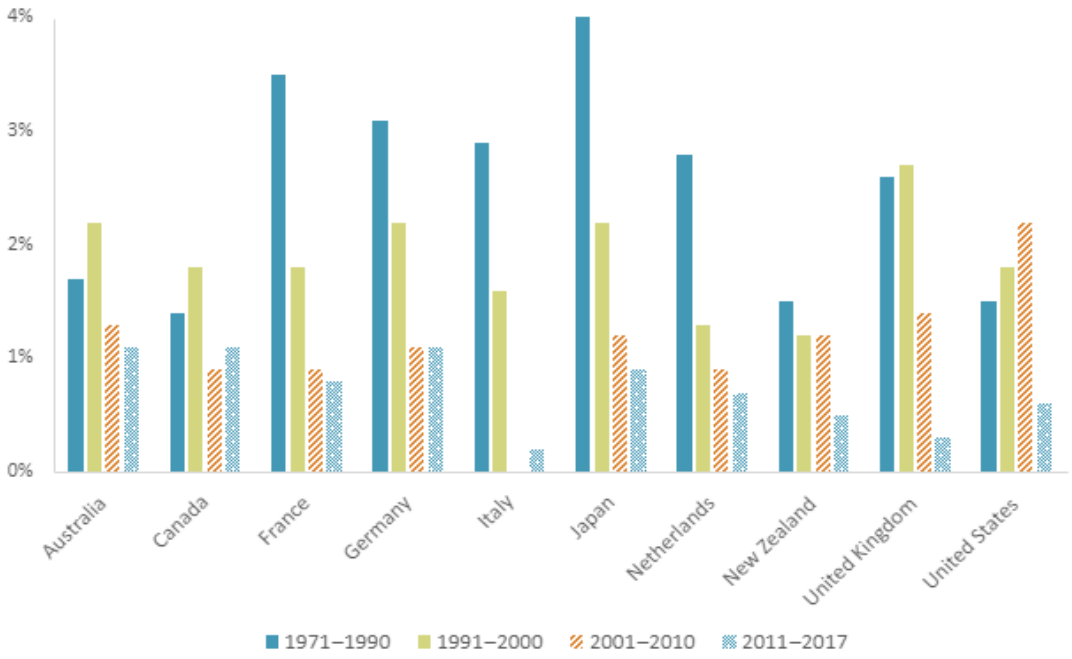
New Zealand's poor productivity levels and growth rate has been well canvassed by the Productivity Commission (Conway, 2018; NZPC, 2021d, 2021c). These focus on New Zealand's slow pace of diffusion of existing technologies and innovations, including process innovations and management expertise seen in firms operating at the productivity frontier.

Andrews, Ciscuolo and Gal (2016) explored productivity performance at the global frontier. Their analysis suggests that the productivity slowdown is not so much due to slowing innovation at the global frontier but to increasing productivity divergence between the global frontier and laggard firms.

Divergence could have arisen from two factors.

> To the extent that these developments reflect structural changes in the global economy driven by digitalisation, globalisation and the rising importance of tacit knowledge, MFP divergence could arise from two factors: winner takes all dynamics or stalling technological diffusion. In practice, it is difficult to distinguish with the data at hand the relative importance of these two factors, but a number of smoking guns emerge to suggest that both factors may be relevant (Andrews et al., 2016, p. 20).

Figure 3-17 Labour productivity: annual growth rates, selected countries, 1971-2017



Source: NZPC, 2020.

Notes:

1. Labour productivity is the output per unit of labour input.
2. Growth rates are based on averages of annual changes in real GDP per hour (Purchasing Power Parity-adjusted) for each year of the span.

Prospects at the global frontier

Over the decade since global productivity growth has slowed, there has been spirited debate amongst economists about the causes of the slowdown, but also about prospects for a technology-fuelled productivity upswing.

Box 3 **The battle of the Techno-pessimists and the Techno-optimists**

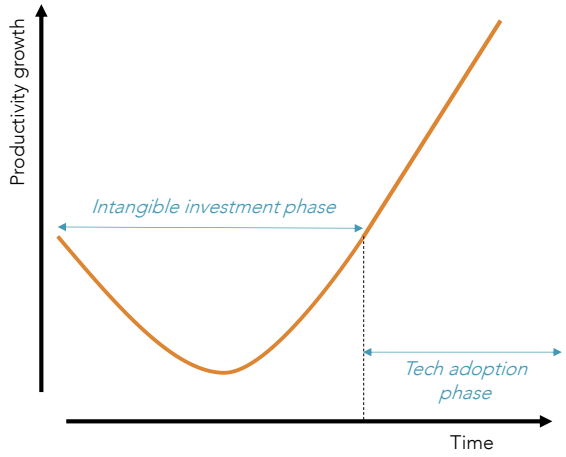
Techno-pessimists like Robert Gordon have argued that the types of innovations that took place in the first half of the 20th century such as electrification are far more significant than anything that has taken place since, including the ICT revolution, or anything that might transpire in the future. It's not that technology won't continue to advance and productivity won't improve, it will just be a slow grind into the future.

In contrast, techno-optimists like Erik Brynjolfsson have argued that the current slowdown is a temporary pause as firms try to find the right investments and organisational changes that will realise the full benefits of new technologies like artificial intelligence (AI).

The techno-optimists argue that the current productivity slowdown is the result of firms making large intangible investments and rethinking business and production models to realise the full potential of the new technology. This pattern leads to a productivity 'J curve' whereby real resources are committed, and real output is foregone to build the inputs that complement the new technology, depressing measured productivity growth. Many of these investments will fail to pay off, further depressing productivity growth. But once firms discover and implement the right types of investments and organisational changes, productivity growth increases – the upswing of the 'J'.

Source: NZPC (2020a)

Figure 3-18 The productivity J curve



Source: NZPC (2020a)

Brynjolfsson & Petropoulos (2021) suggest that most OECD countries have now passed through the lowest point of the productivity J curve. Driven by advances in technology, productivity growth is now headed up. They attribute the upswing to technological breakthroughs such as AI, and the cloud computing market, which has made many innovations accessible to smaller firms. There have also been significant innovations in the energy sector, and in biomedical sciences in the wake of Covid-19. Major innovations have reduced the price of solar energy, and new technologies and discoveries have led to new drugs and vaccines.

Implications for New Zealand

If global productivity growth from new technology is imminent, then what are the implications for New Zealand and migration flows?

The implications of a global technology boost in New Zealand will depend on the rate of technology uptake and diffusion in this country (NZPC, 2021c). If uptake is rapid and diffused through the economy, the demand for skilled workers will likely increase. But, at the same time, skilled New Zealanders will be in demand in other parts of the world. New Zealand will, along with other countries, be competing in a global market for skills and talent.

We cannot say with any certainty what the impact of new technologies will have on New Zealand overall. However, the three advances cited by Brynjolfsson and Petropoulos (2021) – AI, biomedical technology and energy – could see rapid technological advances in horticulture and agriculture. What will be important is the *rate of diffusion of new technologies,* and complementary investments in skills, in these sectors in New Zealand.

To date, technology has had a significant impact on the production and productivity of horticulture and agriculture in New Zealand, and importantly, on the composition of skills in these sectors. For example, the technology used in pack-houses in horticultural industries requires highly skilled workers, but expansion in production has also increased the demand for workers in the field.

New Zealand has attracted migrants for the full range of skills needed in the horticultural industry (NZPC, 2021a). New technologies with applications in the horticultural and agricultural sectors are likely to result in continued demand for highly skilled workers in these sectors.

F3.8 Rapid and widely diffused uptake of new technology will result in New Zealand competing in a global market for skills and talent. Low rates of diffusion of new technology in New Zealand, compared to the rest of the world, could see skilled New Zealanders being attracted to other countries.

4 Responding to uncertainties

4.1 Future migration scenarios

The various factors discussed in the previous sections – ageing populations in the developed and developing world, climate change, external shocks and technology change – have different effects on migration. New Zealand's adaptive capacities to climate change offers opportunities that will be helpful in making the country a relatively more attractive location for skilled workers. On the other hand, increasing global demand for skilled workers may see New Zealand lose ground. The relative strengths of these factors cannot be determined in advance and there will almost certainly be other drivers and events that change the future of migration. It is hard to develop 'future ready' policies, as it is impossible to accurately estimate future migration flows. Even the most sophisticated modelling cannot capture all the relevant drivers (OECD, 2020c).

In the absence of certainty, one way of thinking ahead and considering policy options is to develop scenarios which lay out possible futures and their impacts. Figure 4-1 outlines four plausible future scenarios and sets of immigration policy choices.

Figure 4-1 The plausible scenarios

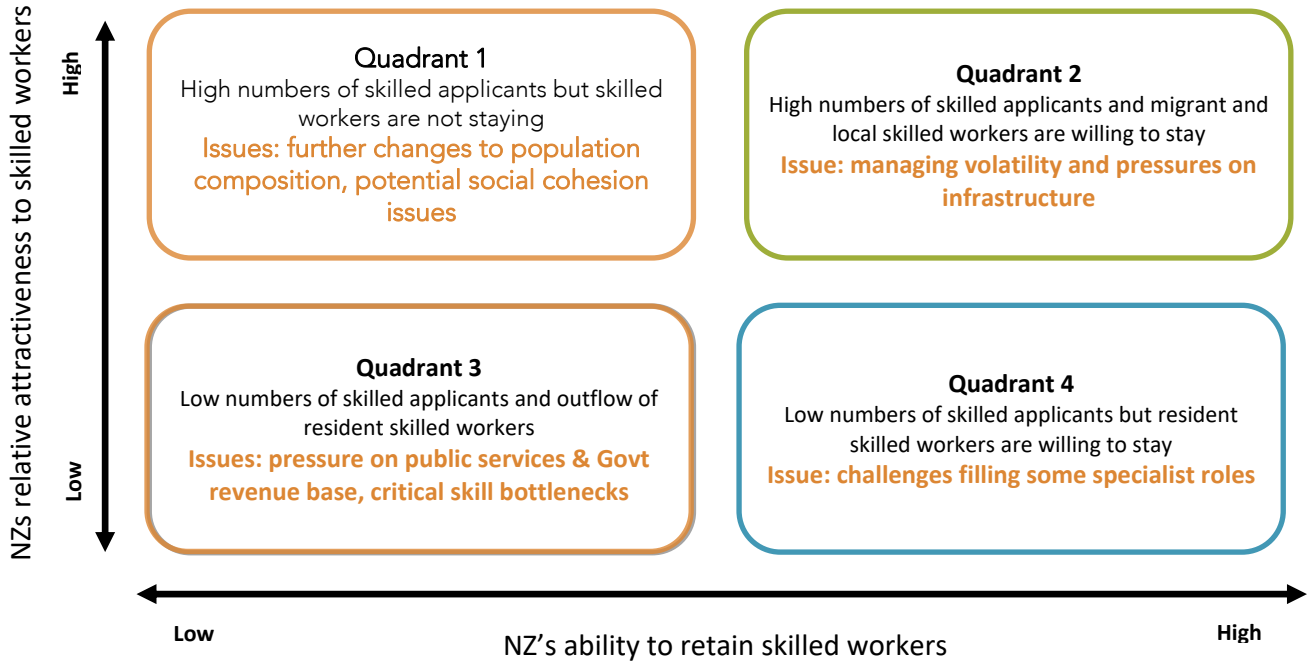


Table 4-1 Plausible scenarios - signals and policy responses

Scenario	Indicators	Possible policy responses
Quadrant 1 NZ is attractive to international skilled workers, but unable to retain local and migrant skills.	- NZ has better socio-economic performance than some source countries - High global mobility, economic openness and integration - Unaffordable living costs in NZ (eg, very high house prices) - The rise of remote working, the gig economy, and the use of online platforms to connect freelance workers with employers - Overseas economic and non-economic crises (including climate change-induced migration)	- Raise immigration thresholds and improve selection of migrants (eg, target migrants with potentially better integration outcomes, enhanced economic contribution and social cohesion, using statistical and big data models) - Reduce rights of re-entry for permanent residents - Improve job matching and integration of migrants (eg, by investing in settlement support for migrants and their families) - Ensure we have enough absorptive capacity (eg, housing available to new migrants at reasonable cost)
Quadrant 2 NZ is attractive and able to retain suitable local and international skilled workers.	- NZ's relatively better socio-economic performance (due to, eg, relative climate change impacts, high-tech adaptation, development of frontier firms, reduced inequalities) - Increased demand for skills due to an ageing population - Overseas economic and non-economic crises (including climate change-induced migration)	- Raise immigration thresholds and improve selection of migrants (eg, target migrants with potentially better integration outcomes, enhanced economic contribution and social cohesion, using statistical and big data models) - Reduce rights of re-entry for permanent residents - Promote brokering/smooth re-entry for returning New Zealanders - Ensure we have enough absorptive capacity (eg, housing available to new migrants at reasonable cost)
Quadrant 3 NZ's ability to attract and retain international and local skilled workers is significantly compromised.	- NZ's relatively poor socio-economic performance (due to, eg, an ageing population, low uptake of new technology) - Unaffordable living costs in NZ (eg, very high house prices) - Better economic prospects in emerging economies with quality universities and science hubs	- Lower thresholds and remove immigration barriers - Attract temporary migrants (eg, by facilitating intra-company mobility) and improve residence pathways - Increase training responsiveness and quality - Use active skill attraction methods such as talent recruitment agencies - Establish stronger international links (eg, through firms) - Expand settlement support and offer incentives to skilled workers - Ensure we have enough absorptive capacity (eg, housing available to new migrants at reasonable cost)
Quadrant 4 NZ is not attractive to international skilled workers, but residents are happy to stay in the country.	- Low global mobility, economic openness and integration - Rise of nationalism in NZ	- Increase training responsiveness and quality - Expand settlement support and offer incentives for selected skills - Attract temporary migrants, and improve residence pathways - Use active skill attraction methods such as talent recruitment agencies - Establish stronger international links eg, through large/multinational firms - Promote brokering/smooth re-entry for returning New Zealanders - Ensure we have enough absorptive capacity (eg, housing available to new migrants at reasonable cost)

4.2 There are some 'least regrets' policy responses

There are some 'least regrets' policies that should be pursued, regardless of whichever scenario eventuates.

New Zealand's ability to attract and retain overseas and local talent depends in part on our ability to adopt new technology (NZPC, 2020a) and grow innovation ecosystems that enable its leading firms to operate at the global frontier (NZPC, 2021c). These ecosystems provide attractive working environments for talented, skilled workers, and help New Zealand offer competitive living standards. The *Frontier Firms* inquiry noted that it is hard to provide this in all areas, particularly in a small remote economy. So New Zealand has to identify areas of strength and focus on developing innovation ecosystems in those areas (NZPC, 2021c). Success in this requires strengthening international partnerships in education, research and innovation as well as established infrastructure (Lewis et al., 2021).

The second 'least regrets' policy is to improve the quality and responsiveness of the education and training system (NZPC, 2019b, 2020b). The Commission heard concerns expressed from a number of inquiry participants about the performance of the training system, including inadequate provision of core skills, weak links to the needs of industry and workplaces, and unresponsive and slow delivery methods. Having a high-quality and effective training system matters, regardless of the level of immigration, as it creates better mobility and job-matching options for New Zealanders. But if New Zealand faces difficulties attracting foreign talent in the future, ensuring that New Zealanders are well-placed to fill critical skills gaps will be even more important.

The Government should take steps to improve the responsiveness of housing and infrastructure supply (NZPC, 2012, 2015, 2017, 2019a). These steps should be taken regardless of the immigration scenario New Zealand faces, as they have significant benefits for the wellbeing of New Zealanders. But infrastructure and housing supply also matters for the ability of this country to attract, retain and successfully settle talent. Housing costs and quality are one of the major areas of dissatisfaction with life in New Zealand identified by migrants (Palmer & Varcoe, 2021).

Finally, in an environment of more intense competition for talent, the relative attractiveness of a country's immigration settings will take on greater importance. New Zealand has a number of strengths, including the environment – both social (eg, social cohesion, tolerance) and natural – which are potential attractors for migrants and benefit New Zealanders. However, New Zealand will need to keep abreast of competitors' offerings and ensure that our settings are comparable, or better, opportunities for the skills the country seeks.

F4.1

There are some policy options that should be pursued, regardless of the immigration scenario New Zealand faces in the future. This includes:

- efforts to strength economic performance in New Zealand by developing areas of focus and growing innovation ecosystems that enable leading firms to operate at the global frontier;
- improvements to the quality and responsiveness of the education and training system; and
- reforms to improve the responsiveness of housing and infrastructure supply.

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