Policy Brief 1.1

Pacific Population Dynamics in the context of climate change

Momentum-led and migration-led population change in the Pacific, 1950-2050: *implications for Aotearoa in a context of climate change*

UNIVERSITY OF AUCKLAND
Waipapa Taumata Rau
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Matikematike, marangamaranga!

Ka roko'ia koe e to pō kino

E te pō ara, e to pō tapu, 'aitu e, e ara!

Be awake to the processes of change that are

inexorably affecting our customary ways of living,

attitudes, and outlook toward our culture

- Rangitukua Moeka'a, 1988

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1.0 Introduction

This Policy Brief summarises some of the high-level findings, and their policy implications for Aotearoa, that can be drawn from a substantive review of contemporary and projected regional population dynamics and mobility trends in the Pacific.[1] The summary of population dynamics is situated in a context of climate change, but the primary focus is deliberately on the region's changing demography.

The impacts of climate change on societies and economies in small island states have been the subject of several extensive reviews in assessment reports prepared for the Intergovernmental Panel on Climate Change (IPCC). The most recent of these reviews was published in 2022 and while it does not focus specifically on the Pacific its findings have considerable relevance for the small island states in the region. Reference to some of these findings is provided in section 3.0, especially where these relate to aspects of population growth and distribution in the Pacific.[2]

While there remain significant research challenges relating to the impacts of climate scenarios and hazards on Pacific societies at a range of scales, there is a major gap in the recent research literature addressing contemporary and future demographic change in the Pacific. The research that informs this Policy Brief was commissioned to provide a deeper appreciation of the evolving demographic context at regional and sub-regional levels and the implications these changing dynamics have for Pacific populations in both the region as well as in Aotearoa. This is why population change, rather than climate scenarios and hazards per se, is the primary focus.

1.1 Content of the Policy Brief

The findings and policy implications are presented in five sections. Section 2.0 contains a summary of the key policy implications for Aotearoa of Pacific population dynamics over the next 30 years, with reference to some of the anticipated impacts of climate change. Section 3.0 introduces the context of climate scenarios and hazards that are the primary concern of MFAT's project on Climate (Im)mobility Research in the Pacific. Section 4.0 contains observations on some strengths and limitations of the evidence base that has informed the region-wide demographic analysis. Section 5.0 provides a high-level perspective on Pacific populations in the region and Aotearoa between 1950 and 2050, and some implications of the findings for policy. Section 6.0 addresses population change at the sub-regional level and

[1] The substantive review is contained in Richard Bedford, Wardlow Friesen and Yvonne Underhill-Sem (2023) Regional population dynamics and mobility trends in the Pacific. Unpublished report for the Ministry of Foreign Affairs and Trade (MFAT). Hereafter referred to as Bedford et al. (2023).

[2] Mycoo, M. et al. (2022) Small Islands. Chapter 15, pp. 2043-2121 in H.-O. Portner et al. *Climate Change 2022: Impacts, Adaptation and Vulnerability.* Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge: Cambridge University Press. See also the Technical Summary (pp. 37-118) and the Summary for Policymakers (pp. 3-33) in the same report.

introduces five clusters of Pacific countries and territories (PICTs) with different demographic histories and trajectories that have potential implications for policy in Aotearoa.

Emphasis in the discussion is placed on two processes of population change that have relevance for all Pacific populations but which are playing out in different ways in the five subregions. The first is momentum-led population change and the second is migration-led population change. The main contribution of the research that informs this Policy Brief is in providing a clearer understanding of the roles these processes are playing in contemporary and future population change in the Pacific region. This understanding is essential when it comes to scoping and developing policy responses to the increasingly diverse demographic context within which Pacific populations will be adjusting to the equally diverse impacts of climate scenarios and hazards.

2.0 Summary of Policy Implications for Aotearoa

The key policy implications that are mentioned in this report are summarised below. They are listed under the headings of the sections where they are first mentioned.

2.1 The climate change context

1. There is a greater than 50% likelihood that global warming will reach or exceed 1.5 degrees Celsius by 2040, even for the very low greenhouse gas emission scenario (IPCC 6th Assessment, 2022). This is an incredibly significant finding for PICTs, especially the low-lying coral islands in Kiribati, Tuvalu, Tokelau (all in-scope countries for this project) and for the Marshall Islands and many low-lying off-shore islands in other countries in the region.

2. Notwithstanding the existential threat that sea level rise poses for residence long-term on low-lying coral islands, there is currently little appetite in the region for government-sponsored schemes favouring relocation overseas as a solution to economic, social and environmental challenges. Voluntary migration within countries, as well as to overseas destinations, rather than planned resettlement overseas, remains the preferred approach to population redistribution in the face of climate change in the Pacific. Planned relocation within countries, however, is actively being pursued in several countries, and Fiji has well-developed guidelines and policies in this regard.

3. The current emphasis in Aotearoa's foreign policy on supporting Pacific communities to strengthen their resilience to cope with hazards linked to climate change acknowledges the reality that the great majority of Pacific people want to be able to live in the places where they have their kin, their lands, their cultures, and their spiritual connections. Strategies to support people to be resilient in their adjustments to the challenges posed by climate change in their places of preferred

residence will continue to deliver positive outcomes to the great majority of Pacific peoples over the next 30 years.

4. Reducing the costs of voluntary temporary migration to countries on the Pacific Rim will contribute to the wellbeing of both the home-based and overseas-based members of the region's growing transnational communities. Exchanges of goods, services, ideas and kinship support between members of transnational communities play very significant roles in the economic and social wellbeing of Pacific peoples. Facilitating movement between the various national "nodes" in these communities will enhance opportunities for mutual support in times of crisis both in the islands as well as in the communities based overseas.

5. Policies that enable communities to adapt to these crises, through maximising opportunities to mobilise their transnational reserves of human and physical capital, merit serious consideration. Looking ahead, this could include a visa-waiver provision for citizens of Pacific countries wishing to visit Aotearoa for stays of less than three months. Most Pacific states grant visa-waiver status to visitors who are citizens of Aotearoa. They would appreciate reciprocal rights to visa-waiver status for their citizens in a world where transnational communities, rather than national populations, are often the socio-economic entities that make sense when considering sustainable development in an interdependent world.

2.2 The evidence base for Pacific populations

6. While there is no shortage of data on Pacific populations, there are three limitations to the information that can be accessed from the repositories maintained by international agencies and the published census reports. The first relates to estimates of net migration gains and losses through international migration. The second concerns measuring and analysing internal migration. The third is the deterioration, over time, in the availability of published census data on birthplaces and ethnicities of the populations enumerated in Pacific censuses, especially data on the ethnicity of people born in different countries.

7. The major policy implication of these findings is that ongoing financial support for The Pacific Community (SPC) Statistics for Development Section, and technical support for National Statistics Offices in the region, is essential for ensuring there are robust population data for the sorts of analysis that deliver reliable assessments of demographic change and mobility trends at regional, sub-regional, national and sub-national levels. These are the sorts of data that need to be monitored and analysed over the next thirty years in the context of climate change and associated hazards.

8. The most significant deficit in the region's census databases is the absence of a recent enumeration of Papua New Guinea's population. This has policy implications when it comes to assessing the contemporary demographic context and dynamics that affect mobility in Papua New Guinea (PNG) as well as in the region. As is noted in the next section, PNG's population accounts for over 70% of the region's total residents, and 80% of the residents live in rural areas – a significant share in the context of impacts of climate change over the next 30 years.

2.3 Aotearoa and the Pacific: populations in perspective

9. Any discussion of population change at the regional level in the Pacific needs to acknowledge the distinctive and dominant contribution made by PNG's population. In 1950 PNG's estimated population (1.6 million) was slightly smaller than Aotearoa's 1.9 million. PNG accounted for 64% of the region's total population of 2.5 million. By 2000, PNG's population had increased to 5.5 million, accounting for just over two-thirds of the region's population. Aotearoa's 3.7 million in 2000 was two-thirds the size of the population of PNG. Of the Pacific's projected 19.8 million people in 2050 just over three-quarters (15 million) are likely to be living in PNG – almost 2.5 times more than the 6.3 million people that could be living in Aotearoa by mid-century.

10. In 2023 the great majority of the populations of countries in the western Pacific (PNG, Solomons, Vanuatu) are resident in rural communities where they gain their livelihoods from the use of their lands and forests or, if they are resident on or near the coast, their local marine environment as well as their lands. This situation has not changed much over the past 70 years, and it is not likely to change much over the next 30 years, despite a continuous stream of people moving from rural areas into PNG's inland and coastal towns.

11. Given the significant growth that is projected for PNG's population between 2023 and 2050 (an increase of 5.6 million – the equivalent of the country's total population in 2000 and more than Aotearoa's 5.2 million on 30 June 2023) assistance with programmes addressing critical rural health and wellbeing issues and the maintenance of resilient and sustainable village-based livelihoods will be essential.

12. Opportunities for Papua New Guineans to participate in labour migration schemes in Australia and Aotearoa have increased significantly in recent years, but these are not going to lead to the growth of the overseas-resident population of Papua New Guineans that is numbered in the millions. At best, Australia's population of Papua New Guineans might number as many as 250,000 in 2050 (more than 10 times the number present in 2021). This would be equivalent to 1.6% of Papua New Guinea's projected population of 15 million in 2050.

13. The policy implications of population change in the other 20 Pacific Island countries and territories (PICTs) are quite different. Although their demographic histories, contemporary population structures, and levels of urbanisation vary, and they should not be treated as a single population for policy purposes, many of them have much higher shares of their people living in towns and cities. Most of these PICTs have sizeable transnational communities living in urban places in one or more of Aotearoa, Australia and the USA – communities which provide extensive support to their island-based kin at times of crisis such as after very destructive cyclones or tsunamis, or during the recent COVID-19 pandemic. Remittances from overseas have long played a key role in the development of island-based communities and are already making significant contributions to planned relocation schemes in countries like Fiji.

14. In 2021 at least 1.2 million people were identifying with Pacific heritages linked with these 20 PICTs in the three Pacific Rim destinations. This was equivalent to 35% of the 3.4 million people living in the Pacific, excluding PNG, in 2021. Nearly all these countries have variable levels of access to labour migration schemes and residence opportunities in Pacific Rim countries. If these opportunities increase because of changes in immigration policy linked with adaptation strategies in the face of climate change, then we might see over 3.5 million people with Pacific heritages linked with these countries resident offshore in 2050. This Pacific transnational population would be equivalent to 78% of the projected population of 4.5 million living in the 20 countries in 2050.

15. Notwithstanding this growth in Pacific transnational populations in countries on the Pacific Rim, *population momentum* rather than *international migration* is likely to remain the dominant demographic process driving change in the Pacific's population at the regional scale for most of the next 30 years at least. This is because of the very significant contribution to regional population growth that is made by three countries in the western Pacific.

2.4 Demographic prospects in five Pacific clusters

16. The research report provides a comprehensive analysis of demographic change between 1950 and 2050 in the three conventional Pacific regions: Melanesia, Micronesia and Polynesia. The report concludes with the recommendation that, looking ahead, it would be prudent to monitor population change in five Pacific population clusters, rather than focusing on the usual three sub-regions. These clusters have variable patterns of population growth and urbanisation, differences in population structure, variations in fertility and mortality levels, and differential access to work and residence opportunities in countries on the Pacific Rim.

17. The policy implications of the variable demographic histories, contemporary characteristics and prospects for populations in the five clusters range are quite diverse and are summarised, by cluster, in section 6.0 of this report. Two quite different patterns of population change are evident in the momentum-led population growth clusters in the western and central Pacific and the French overseas collectivities on the one hand, and in the migration-led population growth clusters in the eastern and northern Pacific on the other.

18. In the western and central Pacific, a focus on assisting Pacific rural communities in strengthening their resilience to climate change-related hazards that are increasing in frequency and intensity is especially relevant. Access to seasonal migration schemes that enable farmers in PNG and the Solomons to acquire capital for investment in resilient village-based activities and infrastructure is becoming more widespread. However, for the great majority of rural residents in these two countries, as well as in Vanuatu which has had much more engagement in temporary labour migration schemes in recent years than Solomons or PNG, locally conceived and led development programmes, supported by overseas aid, will be much more significant than migration overseas for increasing the resilience of their village-based economies and societies over the next 30 years.

19. In the eastern and northern Pacific, where total country populations rarely exceed 60,000, a common demographic challenge, and one which some of them have been trying to address for some time now, is population ageing and associated shortages of labour to service both their domestic economies as well as their dependent older populations. In the eastern Pacific, intra-Pacific migration has contributed some of the labour they need. Facilitating intra-Pacific migration is seen to be a possible pathway to overcoming some of the shortages of skills that they currently have. In the northern Pacific PICTs, immigration from countries in Asia has played a key role in relieving local labour shortages resulting from intra-regional and international competition for domestic labour.

20. In addition to the mentioned different cluster-specific implications for policy, there have been some significant changes relating to international migration in the region during the past five years. Three merit brief mention because they have had direct or indirect impacts on policies relating to movement between countries in the region and to and from countries on the Pacific Rim, including Aotearoa. These are: the revolution in Australia's policy concerning labour migration from the Pacific, the signing of the PACER Plus Trade Agreement and its associated Arrangement on Labour Mobility, and the impact that the COVID-19 pandemic on the development of humanitarian approaches to enforce the stay of overseas visitors and workers on temporary visas. These issues are discussed briefly in section 6.0.

3.0 The climate change context

There is substantial literature on climate change in the Pacific. While there are still major gaps in our knowledge about the impacts of climate scenarios in different parts of the world, the contributions by Working Groups I and II to the IPCC's Sixth Assessment Report make it very clear that there is a greater than 50% likelihood that global warming will reach or exceed 1.5 degrees Celsius by 2040, even for the very low greenhouse gas emissions scenario.[3]

This is a very significant finding for PICTs because it was largely due to pressure by their representatives and supporters that the Paris Agreement, signed at the 21st Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) in Paris in December 2015, was amended to include the phrase "*and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius."* That there is now more than a 50% chance that this temperature threshold will be consistently exceeded within the next decade or two is a very sobering outcome for the Pacific, especially for the PICTs comprised entirely of coral atolls and reef islands.

Climate change is having significant impacts on ecosystems and societies everywhere in the region but, like patterns of population change, these impacts are quite diverse. Communities in all PICTs are at varying levels of exposure and risk to the most cited impacts – sea level rise, loss of biodiversity, more frequent and intense adverse weather events (cyclones, extreme rainfall, drought, very cold temperatures), water scarcity and impacts on food production, heat stress and impacts on mental health, displacement, and impacts on infrastructure.

In a diagram summarising the observed impacts of climate change on ecosystems and human systems, the IPCC shows that the global group Small Islands score "high or very high levels of confidence in attribution of changes to climate change" in all of the ecosystem and species range categories listed.[4] In the case of human systems, Small Islands is one of the few clusters of countries to score "high or medium levels of confidence in increasing adverse impacts of climate change" on most of the categories relating to water security, food production, health and wellbeing and disruption to cities, settlements and infrastructure.

In their Summary for Policymakers (SPM) Working Group II (WG II) notes on p. 11 that: "Climate and weather extremes are increasingly driving displacement in all regions (*high confidence*), with Small Island States disproportionately affected (*high confidence*)." Displacement of communities caused by sea water incursion, extreme weather and other hazardous events has occurred in Fiji, Solomons, Tonga and Vanuatu during the past two years. There are plans for the relocation of at least 40 villages in Fiji within the next five to ten years.[5]

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[3] H.-O Portner et al. (2022) Summary for Policymakers, in *Climate Change 2022: Impacts, Adaptation and Vulnerability,* p. 8.
[4] Ibid, p. 10.
[5] See, for example, Fermin Koop (2023) In Fiji, villages already have to relocate because of climate change, *ZME Science*, January 3, 2023. Accessed at: https://www.zmescience.com/science/in-fiji-villages-already-have-to-relocate-because-of-climate-change/

Fiji is the first country in the region to have developed standard operating procedures for the planned relocation of communities and to have used these in specific village contexts. These procedures support the operationalisation of their Planned Relocation Guidelines (2018) which provide a framework for undertaking climate change-related relocation under their Climate Change Act (2021).[6]

3.1 Impacts on demographic processes

The Technical Summary (TS) in WG II's contribution to the IPCC's Sixth Assessment Report contains a range of observations about the impacts of climate change on two of the three drivers of population change – mortality and migration.7 How these two processes are affected by climate change also has indirect effects on fertility levels, the primary driver of population change at a regional level in the Pacific.

Mortality

Regarding mortality, the TS notes that "Observed mortality from floods, drought and storms is 15 times higher for countries ranked as highly vulnerable compared to less vulnerable countries in the last decade (*high confidence*)."[8] Several PICTs are ranked as "highly vulnerable" and, while data on mortality due to extreme climate events is not readily available in the region, deaths during major cyclones are usually reported. Even in Aotearoa, which is not subjected often to tropical cyclones, the death toll from Cyclone Gabrielle in early February 2023 (11 deaths) was the highest of any tropical storm to hit the country since records began.

The TS reports that mortality and morbidity in the most vulnerable countries are being affected by increasing temperatures and heatwaves (*very high confidence*), malnutrition and disease susceptibility (*high confidence*), climate-related food safety risks such as seafood contamination with marine toxins and pathogens (*high confidence*), and the transmission of vector-borne and water-borne diseases (*high confidence).* In their observations about these impacts, Pacific countries are not mentioned specifically in the TS. However, a recent scoping review of health risks of climate change in 21 PICTs observed that while the evidence in the Pacific is limited and largely centred on a select few states, climate change indicators are associated with a wide range of health outcomes including but not limited to diarrhoea, leptospirosis, typhoid fever, and mental distress.[9]

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[6] These documents can be accessed on the Fiji Government's climate change information hub at: https://fijiclimatechangeportal.gov.fj

[7] See, for example, sections on health and wellbeing (pp. 50-52), migration and displacement (p. 52), human vulnerability (pp. 52-53), cities, settlements and infrastructure (pp. 53-54) in H.-O Portner et al.(2022) Technical Summary in *Climate Change 2022: Impacts, Adaptation and Vulnerability.*

[8] Ibid, p. 50

[9] Hyun Kim et al. (2022) Health risks of climate change in the 21 Pacific Island states and noted gaps in scientific evidence: a scoping review. *The Journal of Climate Change and Health*, 8, 100166, p. 1. Accessed at:

In their Summary for Policymakers, WG II is unequivocal about the potential risks to health and food production from repeated climate hazards contributing to malnutrition and climate-related mortality, especially in tropical regions (high confidence).[10] They are also unequivocal about the risks to food safety from climate change further compounding the risks to health by increasing food contamination of crops from mycotoxins and contamination of seafood from harmful algal blooms, mycotoxins, and chemical contaminants (high confidence). The impacts of these changes on Pacific populations will vary depending on location, but throughout the region, there is a high dependence on locally grown foods and marine organisms for daily subsistence.

Migration and population redistribution

There is clearer evidence in the Pacific of the direct impact of climate change on migration and population redistribution. Reference has already been made to village relocation in Fiji. There are also some well-known cases of I-Kiribati and Tuvaluans, who overstayed their temporary visas in Aotearoa and were faced with deportation as illegal immigrants, seeking asylum as refugees under provisions of the 1951 Convention Relating to the Status of Refugees on the grounds that sustainable livelihoods back home were not possible because of the impacts of climate change. Climate change as grounds for seeking asylum under the 1951 Refugee Convention has not been accepted yet in courts in Aotearoa or Australia.[11]

In Australia, over 1,500 temporary workers from Pacific countries absconded from their employment contracts during the year ended December 2021 and sought asylum via the country's Onshore Humanitarian Program.[12] The reasons for an ongoing surge in absconding in Australia are complex and should not be attributed to causes linked with climate change.[13] They are a sign, however, of a growing interest in countries, like Vanuatu, in pathways to residence in countries on the Pacific Rim – something that Ni-Vanuatu have not had ready access to, to date. There is plenty of evidence in the research literature of people from Pacific countries seeking residence overseas because of perceived opportunities to obtain better livelihoods in another country.

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https://doi.org/10.1016/j.joclim.2022.100166. For an extended bibliography of studies dealing with health-related impacts of climate change in the Pacific see Connell, J. (2023) Climate change and health: a security challenge in the Pacific Islands. *Toda Peace Institute Policy Brief No. 166*, August. Accessed at https://toda.org/policy-briefs-and-resources/policy-briefs/climate-change-and-health-a-security-challenge-in-the-pacific-islands.html

[10] H.-O Portner et al. (2022) Summary for Policymakers, in *Climate Change 2022: Impacts, Adaptation and Vulnerability,* p. 18.

[11] It should be noted that there have been cases with links to climate change won on appeal against deportation on humanitarian grounds. See for example: https://forms.justice.govt.nz/search/Documents/IPTV2/Deportation/rem_20230926_506000.pdf

[12] See Howes, S. (2022) Absconding for asylum: Pacific temporary workers in Australia. *DevPolicy Blog*, 4 February 2022. Accessed at: https://devpolicy.org/absconding-for-asylum-20220204/

[13] See Morris, D. (2023) Ni-Vanuatu workers lead in absconding cases in Australia. *Daily Post Vanuatu* 27 June. Accessed at: https://www.dailypost.vu/news/ni-vanuatu-workers-lead-in-absconding-cases-in-australia/article_33a7e454-7149-5ae7-8a71-a305fa26f4ec.html

Climate change is being mentioned more often as one of the factors contributing to decisions to move in the Pacific, and as the TS observes "One of the main pathways for climate-induced migration is through deteriorating economic conditions and livelihoods (*high confidence*)."[14] However, as a growing literature on adaptation to climate change in the Pacific is demonstrating, staying, rather than moving is the preferred option.[15] WG II acknowledges this in its Technical Summary: "Deliberate or voluntary immobility represents an assertion of the importance of culture, livelihood, and sense of place. Planned relocations by governments of settlements and populations exposed to climate hazards are not presently commonplace, although the need is expected to grow. Existing examples of relocation.

There is no question that climate change will contribute significantly to population movement within countries in the Pacific as well as to the flow of people between countries in the region and to countries on the Pacific Rim. Very high shares of Pacific populations in the central, eastern, and northern Pacific live within five kilometres of the coast, and most of the region's major towns are in coastal locations.[16] Slow-onset hazards, linked with sea-level rise, are already resulting in extensive damage to low-lying settlements in rural areas, as well as on the fringes of towns.[17] The community-level research being carried out for MFAT's Climate (Im)mobility Research in the Pacific project includes urban settlements in vulnerable coastal locations and the findings from these inquiries will provide important insights into local impacts of climate change.

In their Summary for Policymakers, WG II argue that: "Globally, population change in low-lying cities and settlements will lead to approximately a billion people projected to be at risk from coastal-specific climate hazards in the mid-term [2040-2100] under all scenarios, including in Small Islands (high confidence). ... Sea level rise poses an existential threat for some Small Islands and some low-lying coasts (medium confidence)."[18] In four of the 21 PICTs, 100% of populations live within 1 kilometre of the coast, with over 90% of their coral islands having elevations of above sea level of three meters or less. Notwithstanding the existential threat

[14] H.-O Portner et al.(2022) Technical Summary in *Climate Change 2022: Impacts, Adaptation and Vulnerability,* p. 52.

[15] See, for example, Campbell, J.R. (2022) Climate change, mobility and relocation in Oceania. Part 1: Background and concepts. *Toda Peace Institute Policy Brief No. 131*, July. Accessed at: https://toda.org/policy-briefs-and-resources/policy-briefs/climate-change-population-mobility-and-relocation-in-oceania-part-i-background-and-concepts.html. See also Campbell, J.R. (2022) Climate change, mobility and relocation in Oceania. Part 2: Origins, destinations and community relocation. *Toda Peace Institute Policy Brief Non. 132,* July. Accessed at: https://toda.org/policy-briefs-and-resources/policy-briefs/climate-change-population-mobility-and-relocation-in-oceania-part-ii-origins-destinations-and-community-relocation.html

[16] The distribution of Pacific populations within countries as well as overseas is discussed at some length in Bedford et al. (2023, 37-58). Riverine as well as coastal locations are increasingly at risk from climate change and communities in inland locations are at risk from slips and flooding following extreme rainfall events.

[17] For a review of climate change in the context of urbanisation in the Pacific, see Campbell, J.R. (2019) Climate change and urbanisation in Pacific Island countries. *Toda Peace Institute Policy Brief No. 49,* September. Accessed at: https://toda.org/policy-briefs-and-resources/policy-briefs/climate-change-and-urbanisation-in-pacific-island-countries.html

[18] H.-O Portner et al. (2022) Summary for Policymakers, in *Climate Change 2022: Impacts, Adaptation and Vulnerability,* p. 15.

that sea level rise poses for residence long-term on these low-lying islands, there is currently little appetite for government-sponsored schemes favouring relocation overseas as a solution to economic, social, and environmental challenges. Voluntary migration, as an adaptation strategy, rather than planned resettlement overseas remains the preferred approach to population redistribution in the face of climate change in the Pacific.

3.2 Policy implications for Aotearoa

The current emphasis in Aotearoa's foreign policy, on supporting Pacific communities to strengthen their resilience to cope with hazards linked to climate change, acknowledges the reality that the great majority of Pacific people want to be able to live in the places where they have their kin, their lands, their cultures, and their spiritual connections. While considerable attention is focused on migration as a process that can lead to improved livelihoods, most people are stayers rather than movers when it comes to long-term residence decisions, especially stayers in their own countries. Strategies to support people to be resilient in their adjustments to the challenges posed by climate change in their places of preferred residence will continue to deliver positive outcomes to the great majority of Pacific peoples over the next 30 years.

The dynamics of population change in the Pacific over the past 70 years and for at least the next 30 years make it very clear that policies to support adaptation to climate change in their countries, including through utilising opportunities for temporary migration overseas to further their livelihoods at home, will have positive outcomes for a much larger share of the region's population than policies that encourage permanent relocation overseas.

An important policy implication from the literature on climate change and population change in the region is that reducing the costs of voluntary temporary migration to countries on the Pacific Rim will contribute to the wellbeing of both the home-based and overseas-based members of the region's growing transnational communities. Exchanges of goods, services, ideas, and kinship support between members of transnational communities play a very significant role in the economic and social wellbeing of Pacific peoples. Facilitating movement between the various national "nodes" in these communities will enhance opportunities for mutual support in times of crisis both in the islands as well as in the communities based overseas. Climate change is going to be a major cause of such crises, irrespective of the IPCC's scenarios.

Policies that enable communities to adapt to these crises through maximising opportunities to mobilise their transnational reserves of human and physical capital merit serious consideration. Looking ahead, this could include visa-waiver provision for citizens of Pacific countries wishing to visit Aotearoa for stays of less than three months. This provision was introduced 40 years ago when a far-sighted (for the day) *Immigration Policy Review* in 1986 ushered in short-lived periods of visa-waiver provisions for Fijians, Samoans, and Tongans

(until March 1987) and longer periods for I-Kiribati and Tuvaluans (until 2003).[19] This is something that Pacific states, most of which grant visa-waiver status to visitors who are citizens of Aotearoa, would greatly appreciate as a reciprocal right for their citizens in a world where transnational communities, rather than national populations, are often the socio-economic entities that make sense when considering sustainable development in an interdependent world.

4.0 Assessment of the evidence base on Pacific populations

There is no shortage of data on Pacific populations. Most countries in the region have censuses of their populations every five or ten years and two international agencies – the Pacific Community (SPC) and the United Nations Department of Economic and Social Affairs (UN DESA) – regularly update their estimates and projections of national populations in the region.[20]

In addition, the Pacific Community's Pacific Data Hub, which contains the SPC's population estimates and projections, is an open-access platform where a large array of good quality, reliable and timely data on a wide range of topics relating to society, economy and environment in Pacific countries is stored.[21] Extensive use has been made of both the SPC's and UN DESA's data repositories in the analysis of regional, sub-regional and national populations and their trajectories between 1950 and 2050 in the region-wide analysis of contemporary and future population change that informs this Policy Brief.

4.1 Three limitations

There are three limitations to the data that we have accessed from the repositories maintained by international agencies and the published reports on recent censuses that have been conducted in the region. These limitations all relate to aspects of mobility as a demographic process. The first relates to estimates of net migration gains and losses through international migration. The second concerns measuring and analysing internal migration. The third is the deterioration, over time, in the availability of published census data on birthplaces and ethnicities of the populations enumerated in Pacific censuses, especially data on the ethnicity of people born in different countries.

[19] Burke, K. (1986) Review of Immigration Policy August 1986. Appendices to the Journal of the House of Representatives, G. 42, Government Printer, Wellington. See also Bedford, R. et al. (1987) The Immigration Policy Review, 1986: a review. *New Zealand Population Review*, 13(1): 49-70.

[20] For a brief discussion of some of the assumptions underlying the projections, and the importance of appreciating the significant differences changes in these assumptions can make to projections of populations over the medium and long term, see Bedford et al. (2023, 4-7).

[21] See Stuart Minchin (2020) The modern sharing of Pacific 'public goods', *The Interpreter* 25 December. Accessible at: https://www.lowyinstitute.org/the-interpreter/modern-sharing-pacific-public-goods

Projection of net migration rates

Unlike fertility and mortality, migration rates do not follow any consistent pattern, either between countries or through time. Migration is the most difficult of the three demographic processes, that affect the size and structure of a population at any given time, to measure and model. It became clear during the research for this project that quite conservative estimates of net migration have been used for most countries in both the SPC's and the UN DESA's medium variant population projections.[22]

Evidence for this is provided in our analyses of the UN DESA projections for sub-regional and national populations in our substantive research report.[23] The net migration rates tend to be based on recent historical trends in data relating to arrivals in and departures from the different PICTs before the COVID-19 pandemic resulted in the closure of national borders throughout the region for the best part of two years. The assumed rates tend to either reduce over time or be held constant, neither of which seem realistic assumptions in the light of climate change and associated hazards. This means that projected populations are likely to be larger than would be the case if there were much higher net losses through international migration.

There is research available that examines the impact of progressively larger annual losses through net migration on two Pacific populations through to the 2040s, and a key finding is that slowing the momentum of population growth through migration is not achieved quickly, except in very small populations.[24] Given that a very small share of the region's population lives in countries with fewer than 100,000 residents, momentum-led growth will continue to be the dominant process affecting the sizes of most national populations through to 2050 and beyond. In this context, the SPC's and UN DESA's projections of Pacific populations, while they should not be taken too literally, remain very useful for examining the region's contemporary demography and likely trends through to 2050.[25]

The absence of recent research on internal migration

Most censuses of Pacific populations contain data on internal migration. This is not an easy process to analyse based on the published data; effective analysis requires access to the

[22] See Bedford et al. (2023, 60-65).

[23] See for example, sections on net migration rates on pp. 10-11 (Melanesia), 18-19 (Micronesia), 29-31 (Polynesia) in Bedford et al. (2023).

[24] See Bedford, R. et al. (2016) Population change and migration in Kiribati and Tuvalu, 2015-2050: hypothetical scenarios in a context of climate change, *New Zealand Population Review* 42: 103-134. Accessible at https://population.org.nz/wp-content/uploads/2017/06/Vol-42-Full-document_Final.pdf

[25] There are important differences in projected national populations in the SPC and UN DESA series, especially for many of the smaller PICTs where international migration plays a major role in population growth. As noted in Bedford et al (2023, 7) migration is the most difficult of the three demographic processes to address in population projections. Unlike patterns of change in fertility and mortality, there are no regular patterns of migration that apply consistently in all populations, irrespective of location. Notwithstanding the differences in the projections and the caveat about not taking the numbers produced too literally, the two sets of projections are very valuable tools for policymakers to draw on in their assessments of future demographic trends and issues.

microdata files and extensive processing of these data to unpack what are often quite complex patterns of temporary and long-term internal relocation within countries. There has been very little quantitative analysis of census data on internal migration in Pacific countries in recent years.

The Pacific Community's Statistics for Development Division, which oversees the Pacific Data Hub, provides extensive technical support to National Statistics Offices throughout the region in the design, implementation, tabulation and analysis of census and survey data. While quite complex analysis of fertility and mortality data collected in censuses is often included in Pacific census reports, it is rare to find comprehensive analyses of internal migration data. This is a research gap that merits attention given that in most Pacific countries internal relocation is likely to be a much more significant migration response to hazards linked with climate change than relocation to another country within or outside the region.

The SPC does publish valuable data on the shares of national populations living in rural and urban areas, living at different elevations, and living at different distances from the coast. This data provides important insights into contemporary population distribution in all PICTs and they are reviewed briefly in our substantive report.[26] The distribution of the population, especially the shares living in low-lying locations close to the coast or in inland areas prone to landslides and flooding, clearly has relevance for flooding linked with high intensity rain and storm surge related hazards that may be becoming more frequent as a result of climate change.

Data on Pacific populations by birthplace and ethnicity

There has been a trend in censuses throughout the region to restrict published data to a small number of specific countries of birth and ethnic groups even though much more detailed information on these variables is collected in the censuses. This poses major problems for the analysis of migration because birthplace is the most common reference variable used when examining migrant flows between countries and the numbers and characteristics of migrant groups in particular countries.

This issue is discussed at some length, with examples, in our research report in the sections dealing with intra-Pacific migration and migration to countries outside the region.[27] The transnational dimension to contemporary Pacific populations is particularly relevant in times of crisis, such as during the COVID-19 pandemic, the recent massive volcanic eruption in Tonga and the cyclones that destroyed farms and infrastructure in Aotearoa and Vanuatu early in 2023. Consistent, detailed cross tabulations by birthplace and ethnicity are essential for establishing the sizes and characteristics of transnational populations both in countries throughout the region as well as in the main destinations for migrants on the Pacific Rim.

[26] See Bedford et al. (2023, 37-43).
[27] See Bedford et al. (2023, 45-57).

This is not a difficult problem to resolve – it simply requires a more fine-grained presentation of data on birthplace and ethnicity in the published census tables, recognising that the requirement to ensure that no specific individual in the population can be identified in the published data is met.

4.2 Some policy implications

The major implication of these findings on the evidence base is that ongoing financial support for the SPC's Statistics for Development Section, and technical support for National Statistics Offices, is essential for ensuring there are robust population data for the sorts of analysis that deliver reliable assessments of demographic change and mobility trends at regional, sub-regional, national, and sub-national levels. These are the sorts of data that need to be monitored and analysed over the next thirty years in the context of climate change and associated hazards at a range of scales, including at the level of targeted, community-oriented interventions essential for assessing wellbeing impacts of environmental change.

There is an immediate need for comprehensive and timely analysis of census data on internal migration – something that might best be achieved through technical and financial support to those National Statistics Offices in the region that need assistance with this sort of analysis. Linked with this is the need for more detailed cross-tabulations of birthplace and ethnicity data – something that can only be achieved by those with access to the unit record data files that contain the full range of codes for these variables.

There is a good evidence base for a region-wide analysis of the contemporary demographic context and dynamics that affect mobility in the region. This is thanks to the efforts of demographers and statisticians who have contributed over many years to the development of the SPC's Pacific Data Hub and the various databases produced by UN DESA's Population Division. Most Pacific countries have also maintained reasonably regular and consistent programmes of enumerations of their populations.

The most significant deficit in the region's census databases is the absence of a recent enumeration of PNG's population. This has policy implications when it comes to assessing the contemporary demographic context and dynamics that affect mobility in PNG, as well as in the region. As we show in the next section, PNG's population accounts for over 70% of the region's total residents – a very significant share in the context of the impacts of climate change over the next 30 years.

5.0 Aotearoa in the Pacific – the Pacific in Aotearoa: a population perspective

In the 1950s, Aotearoa's role in the evolving demography of the Pacific region entered a new phase characterised by extensive temporary and long-term movement of Pacific peoples to Aotearoa, especially from PICTs in the eastern and central Pacific. Over the same period, all

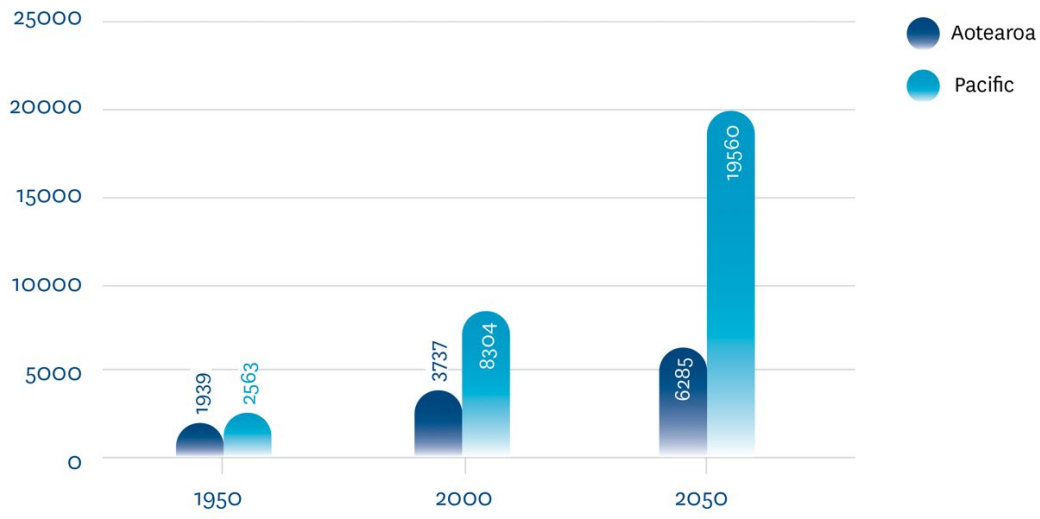
PICTs have experienced significant population growth through natural increase - the balance of births over deaths.

The research report that informs this Policy Brief begins with a section comparing the population of Aotearoa and the total population for the 21 PICTs around 1950, 2000 and 2050 (Aotearoa in the Pacific).[28] Reference is also made to the populations in Aotearoa identifying with Pacific indigenous heritages around these dates (the Pacific in Aotearoa). Notwithstanding the significant growth in all these populations over this 100-year period, two things stand out very clearly from these comparisons. These are addressed in the next section.

5.1 Aotearoa's total and Pacific populations in perspective

The first is the declining significance of the size of Aotearoa's population relative to the size of the population in the region's 21 PICTs between 1950 and 2050 (Figure 1).

Figure 1: Comparative populations, Aotearoa and the Pacific (000s)



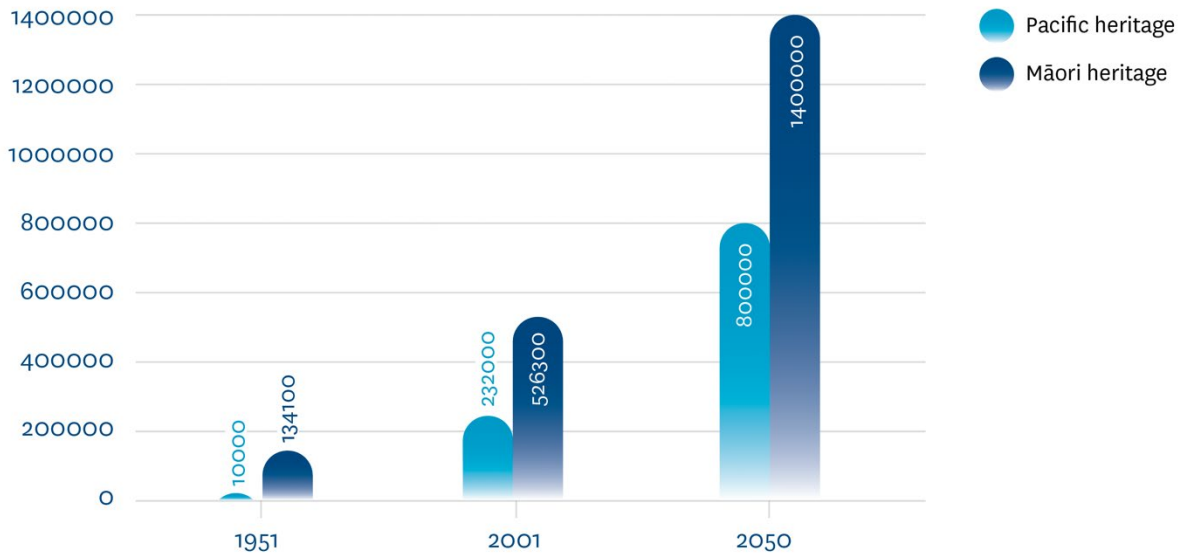
Around 1950, Aotearoa's population of 1.9 million was the equivalent of almost 80% of the Pacific's estimated 2.5 million people. Fifty years later, around 2000, Aotearoa's 3.7 million was the equivalent of under half of the Pacific's estimated population of 8.3 million. By 2050 it is projected that Aotearoa's population of around 6.3 million will be the equivalent of less than a third of the Pacific's 19.8 million.[29]

[28] Bedford et al. (2023, 1-4).

[29] The estimates and projections of populations come from three sources: the Pacific Community (SPC), the United Nations Department of Economic and Social Affairs (UN DESA), and Statistics New Zealand (StatsNZ). See Bedford et al (2023, 1 and 61-65) for further comments on these sources.

The second point is the significant growth since the 1950s of a Pacific migrant population and their descendants in Aotearoa that identifies with one or more Pacific indigenous heritages.[30] In Figure 2, the population with Pacific indigenous heritages in Aotearoa in 1951, 2001 and 2050 is compared with the indigenous Māori population, descendants of the first Pacific people to settle in Aotearoa around 800 years ago.

Figure 2: Populations identifying with Māori and Pacific indigenous heritages, Aotearoa[31]



In 1951 the transnational Pacific population in Aotearoa was around 10,000, the equivalent of 7% of the 134,100 Māori recorded in the 1951 Census of Population and Dwellings. Pacific peoples comprised 0.1% of the country's total population in that year. By 2001 the Pacific population was the equivalent of 44% of the Māori population in that year and comprised 6.5% of the total population.

StatsNZ's latest ethnic projections suggest that there could be as many as 800,000 Pacific peoples in Aotearoa by 2050, the equivalent of 57% of the 1.4 million Māori projected to be in the population by then. Pacific peoples could comprise 13% of the country's total population in 2050 – double their share in 2001. The Pacific population in Aotearoa is growing more rapidly than the Māori population, due to a combination of continuous net migration gains from the PICTs, as well as larger gains through natural increase because of higher Pacific fertility levels.

[30] The ancestors of Aotearoa's indigenous Māori population were the first people from the Pacific to settle in Aotearoa. Māori are not included in the estimates of the contemporary Pacific population of Aotearoa unless they are people who identify with both Pacific and Māori heritages.

[31] The years 1951 and 2001 in Figure 2 refer to census years in Aotearoa. The figures cited for the Pacific and Māori populations for 2050 are estimates based on StatsNZ's most recent ethnic projections which go through to 2043.

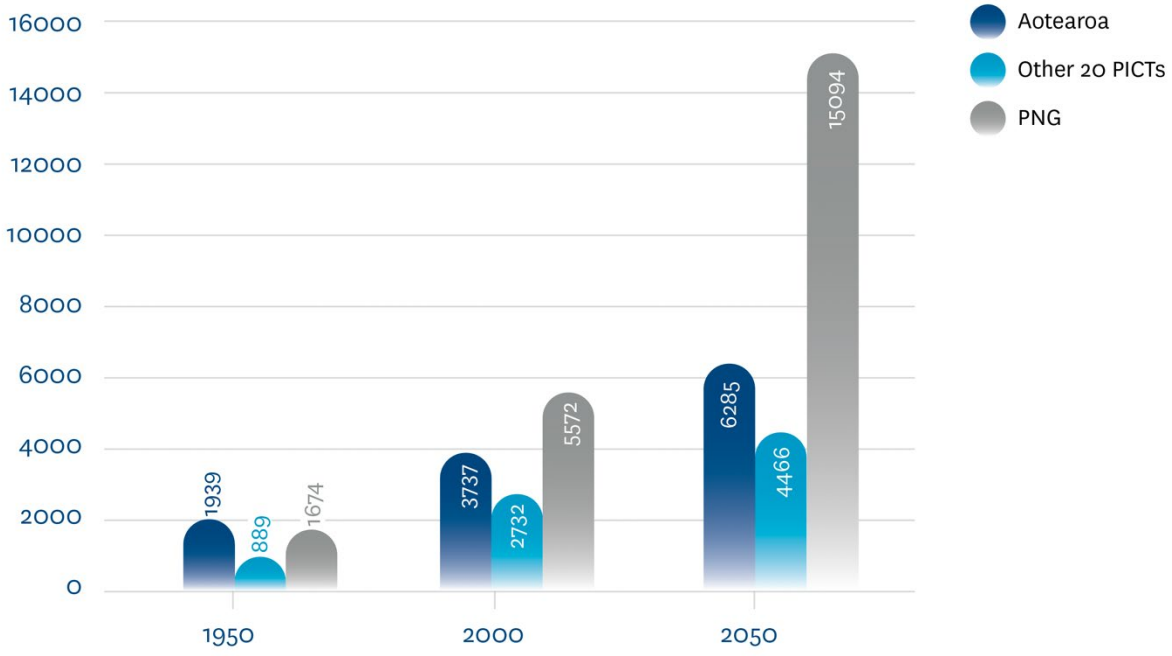
The Pacific population in Aotearoa could well exceed 1 million of an estimated 3.5 million living in Pacific Rim countries by 2050, once climate-related mobility is factored into the international migration contribution during the next 30 years. However, even if it does reach this level, the Pacific in Aotearoa will be equivalent to only 5% of the region's projected total population of 19.8 million in 2050. Momentum-led population change, rather than migration, is going to continue to have the greatest impact on demographic futures for most of the region's population.

Evidence from this high-level analysis of change in the Pacific population in the region and Aotearoa makes it noticeably clear that for most Pacific people, adjustment to different climate change scenarios and their associated hazards will be something that will be addressed within their respective countries. The main implication of this for Aotearoa is that assisting Pacific peoples to address the challenges of climate change will need to focus on in-country support in the region and to assist the transnational communities in Aotearoa to support their kin in the islands. Acknowledging the considerable diversity in patterns of demographic change in the region is essential for providing informed responses to requests for assistance with adaptation to climate change. This diversity, and its policy implications, is the subject of the next two sections.

5.2 Populations of PNG and the other 20 PICTs

Any discussion of population change at the regional level in the Pacific needs to acknowledge the distinctive and dominant contribution made by PNG's population. PNG accounts for the vast majority of the Pacific's people and a comparative perspective on the populations of this country, the other 20 PICTs and Aotearoa in 1950, 2000 and 2050 is provided in Figure 3.

Figure 3: Comparative populations, Aotearoa, PNG and the other 20 PICTs (000s)



In 1950 PNG's estimated population (1.6 million) was slightly smaller than Aotearoa's 1.9 million and this western Pacific 'giant' accounted for 64% of the region's total population of 2.5 million. By 2000, PNG's population had increased to 5.5 million, accounting for just over two-thirds of the region's population. Aotearoa's 3.7 million in 2000 was two-thirds the size of the population of PNG. Of the Pacific's projected 19.8 million people in 2050 just over three-quarters (15 million) are likely to be living in PNG – almost 2.5 times more than the 6.3 million people that could be living in Aotearoa by mid-century.

The remaining 20 PICTs

Aotearoa's population remains larger than the aggregate population of 20 PICTs, excluding PNG, on the three dates. In 1950 around 900,000 people were living in these 20 countries and territories with just under a third residing in Fiji which has had the region's second-largest population, after PNG, for many years. By 2000 the 20 PICTs had a population of 2.7 million compared with PNG's 5.5 million and Aotearoa's 3.7 million (Figure 3). Fiji's share of the 20 PICTs' population had dropped to 30% (812,000).

In 2050 the population for the Pacific minus PNG is projected to be approaching 4.5 million, the equivalent of the population of Aotearoa in 2014. By 2050, Fiji's share will have fallen back to 21%. Solomon Islands is likely to have supplanted Fiji as the country with the second largest Pacific population by then with 1.3 million residents compared with Fiji's 950,000 residents.

Three of the 20 PICTs accounted for more than half of their collective population in 2023. Just under 2 million (57%) of the 3.5 million in 2023 were resident in Fiji, Solomons and Vanuatu. By 2050, this share will be approaching 62% (2.8 million) of the projected total of 4.5 million people for the 20 PICTs. Solomons and Vanuatu, in particular, have very youthful population structures, reflecting their high fertility and mortality rates.[32] In this regard, as well as the fact that very high shares of their populations are living in rural areas (between 75% and 80% in both countries in 2022), these two countries have much more in common with PNG than with other countries in the group.

The remaining 1.7 million people in 2050 will be spread over 17 PICTs, 10 of which are likely to have populations of under 60,000.[33] Diversity rather than similarity is an important feature of the contemporary as well as the future demography of Pacific populations.

5.3 Policy implications

What are some of the policy implications for Aotearoa of this high-level regional perspective on population change? First, the great majority of Pacific peoples in 2023 live in one country

[32] See Bedford et al. (2023, 11-13) for a brief discussion of the age structures of populations in Solomons and Vanuatu.

[33] The 10 PICTs that could have populations below 60,000 in 2050 (SPC medium variant projections) are: American Samoa (57,700), Commonwealth of the Northern Marianas (57,300), Cook Islands (15,800), Marshall Islands (52,460), Nauru (14,400), Niue (1,400), Palau (16,400), Tokelau (1,400), Tuvalu (11,839), Wallis and Futuna (9,800).

– PNG. More than 80% of PNG's population are resident in rural communities where they gain their livelihoods from the use of their lands and forests or, if they are residents on or near the coast, the local marine environment, as well as their lands. This situation has not changed much over the past 70 years, and it is not likely to change much over the next 30 years, despite a continuous stream of people moving from rural areas into PNG's inland and coastal towns. This is not to deny the significance of rural-urban migration and the growth of informal settlements in urban and peri-urban areas. But momentum-led population growth of PNG's rural population will continue to be the dominant driver of demographic change in the Pacific's largest country.

With high, but declining, fertility and mortality rates, natural increase in PNG's rural population will continue to compensate for rural-urban migration as well as for an inevitable increase in migration to overseas destinations, especially Australia. The SPC estimated that in 2022, only 13% of PNG's population lived in towns and cities within the country, and recent censuses in Aotearoa, Australia and the USA suggest that less than 25,000 indigenous Papua New Guineans were usually resident in three key destinations for Pacific migrants around 2021.[34] Adaptation to climate change and associated hazards and opportunities will, by choice as well as by necessity, involve strategies developed and managed by Papua New Guineans in-country.

Given the significant growth that is projected for PNG's population between 2023 and 2050 (an increase of 5.6 million – the equivalent of the country's total population in 2000) assistance with programmes addressing critical rural health and wellbeing issues and the maintenance of resilient and sustainable village-based livelihoods will be essential. Opportunities for Papua New Guineans to participate in labour migration schemes in Australia and Aotearoa have increased significantly in recent years, but these are not going to lead to the growth of overseas-resident populations of Papua New Guineans that are numbered in the millions. At best, Australia's population of Papua New Guineans might number as many as 250,000 in 2050 (more than 10 times the number present in 2021). This would be equivalent to 1.6% of PNG's projected population of 15 million in 2050.

Second, the aggregate population of the remaining 20 PICTs has very different characteristics and associated policy implications. Although their demographic histories, contemporary population structures, and levels of urbanisation vary considerably, it can be noted that much higher shares of their people live in towns and cities. Most of these PICTs have sizeable transnational communities resident in urban places in one or more of Aotearoa, Australia and the USA – communities which provide extensive support to their island-based kin at times of

[34] See Table 11 in Bedford et al. (2023, 41) for the shares of the population living in rural and urban areas in 2022, according to the SPC. Regarding the overseas-resident populations of indigenous Papua New Guineans by far the great majority are in Australia – 22,668 in 2021 of whom 11,371 had been born in Papua New Guinea, 10,749 had been born in Australia, and 548 were born elsewhere. There are almost 1,000 Papua New Guineans in each of Aotearoa and the USA according to data obtained from their last censuses. For information on the sources of these data, see footnote 80 in Bedford et al. (2023, 52).

crisis, such as after very destructive cyclones or tsunamis, or during the recent COVID-19 pandemic.

In 2021, at least 1.2 million people identified with Pacific heritages linked with these 20 countries in the three Pacific Rim destinations. This was equivalent to 35% of the 3.4 million people living in the Pacific, excluding PNG, in 2021. Nearly all these countries have variable levels of access to labour migration schemes and residence opportunities in Pacific Rim countries. If these opportunities increase because of changes in immigration policy, linked with adaptation strategies in the face of climate change, then we might see over 3.5 million people with Pacific heritages linked with these countries resident offshore in 2050. This Pacific transnational population would be equivalent to 78% of the projected population of 4.5 million living in the 20 countries in 2050.

As we show in the next section when addressing demographic prospects for the different Pacific clusters, it is very important not to treat the aggregate population of the 20 PICTs as a single population for policy purposes. There are major differences between Pacific nations in population trends and the challenges, they face in addressing the impacts of climate change. Equally, it is important to appreciate the enormous diversity in Papua New Guinea's population. It has not been possible to address subnational population change in this high-level analysis – there are few countries in the region with consistent population data and projections at this level.

Notwithstanding the growth in Pacific transnational populations in countries on the Pacific Rim, *population momentum* rather than *international migration* is likely to remain the dominant demographic process driving change in the Pacific's population at the **regional scale** for most of the next 30 years at least. This is because of the very significant contribution to regional population growth that is made by three countries in the western Pacific. In the next section, we review some of the implications for Aotearoa of demographic change in five clusters of Pacific countries.

6.0 Demographic prospects in five Pacific clusters

The research report provides a comprehensive analysis of demographic change between 1950 and 2050 in the three conventional Pacific regions: Melanesia, Micronesia, and Polynesia.[35] The report concludes with the recommendation that, looking ahead, it would be prudent to monitor population change in the following five Pacific population clusters, rather than focusing on the usual three sub-regions[36]:

Western Pacific (PNG, Solomons, Vanuatu):

Youthful populations with sustained momentum-led population growth; international migration outlets increasing, especially in Australia but natural increase remains the key driver

[35] See Bedford et al. (2023, 6-36).
[36] See Bedford et al. (2023, 70).

of population change; small transnational populations, but likely to see considerable growth in these in Australia in the future; low levels of urbanisation (75%+ of population in communities classed as rural in 2022).

Central Pacific (Fiji, Kiribati, Nauru, Tuvalu):

Populations experiencing slower population growth as a result of a combination of declining fertility and external migration; natural increase is still the main driver of population change; long-standing migration links with New Zealand (Fiji, Kiribati, Tuvalu), Australia (Nauru and Fiji) and USA (Kiribati via Marshall Islands, and Fiji); increasing labour migration opportunities in Australia; growing transnational populations; half or more of their national populations are classed as urban; extensive use of Fiji as a hub for services and transit (Kiribati and Tuvalu; Air Nauru at times).

Eastern Pacific (American Samoa, Cook Islands, Niue, Samoa, Tokelau, Tonga):

Populations growing slowly or experiencing population decline; ageing populations, especially in the Realm countries; extensive migration to the Pacific Rim and proportionately large transnational populations; long histories of migration to Aotearoa (most countries) and the USA (some countries); more recent migration to Australia and increasing migration opportunities there; variable levels of urbanisation of national populations.

Northern Pacific (Guam, CNMI, FSM, Marshall Islands, Palau):

Populations growing slowly or declining due to low Total Fertility Rates and extensive emigration to the USA; ageing populations except in Guam; variable transnational populations in the USA where these populations have access to work and residence opportunities; variable levels of urbanisation of national populations.

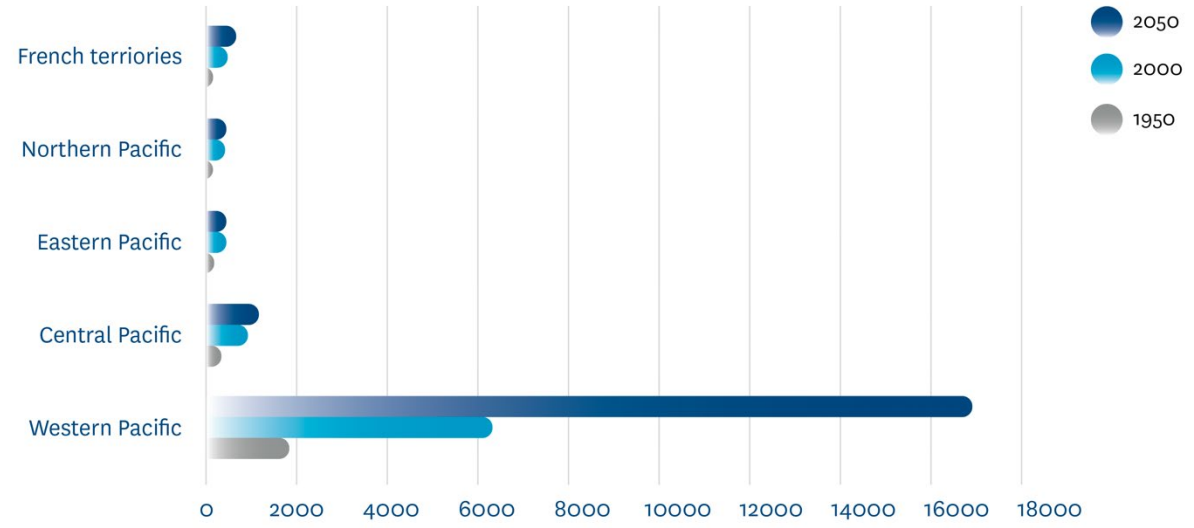
The French territories (French Polynesia, New Caledonia, Wallis and Futuna):

Variable levels of population growth; a high degree of interdependence where the indigenous populations have French citizenship and citizens can move freely between the three overseas collectivities; limited migration to Pacific Rim countries; small transnational populations; variable levels of urbanisation in the three overseas collectivities.

6.1 Population change in the five clusters: a summary

The trajectories of population change in the five clusters are summarised in Figure 4. The complete dominance of the western Pacific cluster is obvious, thanks to the inclusion of PNG in this cluster. Variations in the trajectories of population change in the other clusters become more obvious when the western Pacific is excluded (Figure 5).

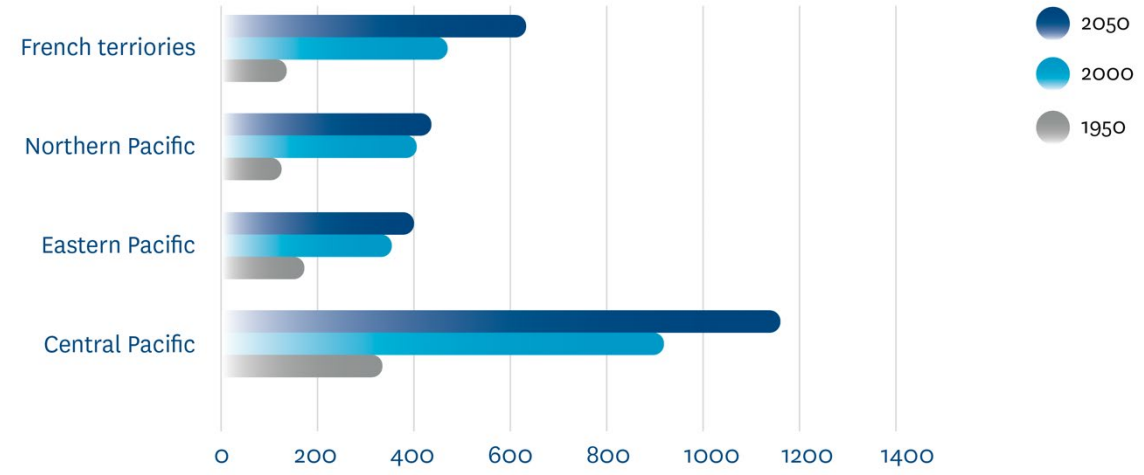
Figure 4: Populations of the five clusters in 1950, 2000 and 2050 (000s)



The demographic trajectory for the western Pacific illustrates very clearly the impact of momentum-driven growth in youthful populations where fertility and mortality rates are still reasonably high and net international migration makes a minimal contribution to population change. This is the only cluster where the number of people added to the population between 2000 and 2050 (10.6 million) is greater than the number that was added between 1950 and 2000 (4.5 million) (Figure 4).

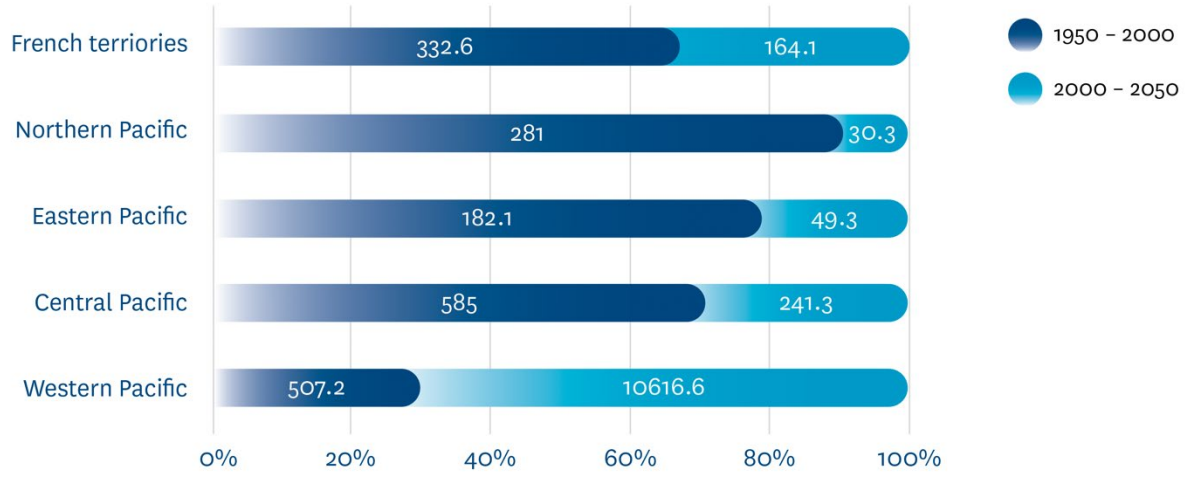
In the other four clusters, the graphs in Figure 5 show that the quantum of population growth during the first half of this century is likely to be significantly less than the numerical increases that occurred in the cluster populations during the second half of the 20th century.

Figure 5: Populations in four clusters (excluding the western Pacific) in 1950, 2000 and 2050 (000s)



Another way of showing this basic difference in the distribution of population growth between the two 50-year periods is provided in Figure 6. Here, the shares of growth are shown as percentages of the total growth in each cluster's population between 1950 and 2050.

Figure 6: Shares of population growth in two periods: 1950-2000 and 2000-2050



There are two reasons for the differences: declining fertility and the impact this has had on natural increase, and the impact of net migration losses to overseas destinations.[37] The two clusters where international migration has had the greatest effect on population growth are the eastern and northern Pacific clusters, which have the smallest numerical growth between 2000 and 2050 relative to the overall change in their population sizes between 1950 and 2050.

In the northern Pacific, the SPC's projections suggest that between 2000 and 2050 only 30,000 people will be added to the population of 403,000 in 2000 over the subsequent 50 years. In the eastern Pacific, the numerical increase is larger (49,000 of the 352,000 people present in 2000), but these are both minute increases by comparison with the 10.6 million that is projected to be added to the 6.5 million people in the three western Pacific countries between 2000 and 2050.

6.2 Policy implications

Some of the policy implications for Aotearoa of the different demographic trajectories for the five clusters of Pacific countries are summarised below.

[37] A considerable amount of evidence relating to differences in population growth, levels of fertility and mortality, net migration rates, and age-sex structures at the sub-regional and national levels is provided in Bedford et al. (2023).

The western Pacific

This cluster, and its in-scope countries of Solomons and Papua New Guinea, have very different demographic profiles, growth trajectories and challenges from the other population clusters in the region. Policies that will assist governments and communities in addressing these challenges will be very different from the policies that will be priorities in other clusters.

A focus on assisting Pacific communities in strengthening their resilience to climate change-related hazards, that are increasing in frequency and intensity, is especially relevant for the rural-based populations of the western Pacific. Access to seasonal migration schemes, that enable farmers in PNG and the Solomons to acquire capital for investment in resilient village-based activities and infrastructure, is becoming more widespread. However, for the great majority of rural residents in these two countries, as well as in Vanuatu, which has had much more engagement in temporary labour migration schemes in recent years than Solomons or PNG, locally conceived and led development programmes, supported by overseas aid, will be much more significant than migration overseas for increasing the resilience of their village-based economies and societies over the next 30 years.

Large cohorts of citizens, resulting from higher fertility rates in the past, are seeking ways to lead meaningful lives. This can impact various aspects of society, including education, employment, and social services, and it underscores the importance of creating opportunities for these cohorts. Investments in education, healthcare, infrastructure, and job creation are vital for ensuring that the growing youthful populations can achieve rewarding livelihoods at home and contribute positively to their countries' development.

The central Pacific

The five PICTs in this cluster, which includes Kiribati and Tuvalu, have strong historical links and connections both with Fiji as a key provider of services, as well as with Aotearoa and Australia as destinations for temporary and long-term migrants.

The cluster includes two of the Pacific states that are frequently referred to in the literature on climate change-related hazards. The low-lying coral atolls and reef islands, that comprise most of the landmasses of Kiribati and Tuvalu, are highly vulnerable to sea level rise and any storm surges associated with cyclones. Parts of their archipelagos are also at risk of severe drought. The populations of these two coral countries, along with their neighbours to the east (Tokelau) and north (Marshall Islands), experienced planned resettlement schemes during the latter years of colonial administration. In the cases of Kiribati and Tuvalu, these resettlement schemes involved the acquisition of islands in Fiji, which are now the homes of people from Banaba (Kiribati) and Vaitupu (Tuvalu).

The links and connections between PICTs in this cluster provide opportunities for cluster-specific strategies for addressing some of the challenges associated with climate change. In terms of links with countries outside the region, Fiji has long-established transnational communities in Aotearoa and Australia dating back to the 1950s. Kiribati and Tuvalu have

transnational communities in Aotearoa, linked with former work permit schemes and visa-waiver arrangements following a major review of immigration policy in 1986.[38] These two countries also have emerging communities in Australia. There is a small Nauruan population (around 600) in Australia. Fiji and Kiribati have transnational communities in the USA.

Fiji's role as a hub for service provision and as a supplier of skilled labour to other countries in the cluster, as well as to the western and eastern Pacific clusters, will increase in significance over the next 30 years. Aotearoa has provided support for Fiji's major tertiary training enterprises for many years, and opportunities to continue assisting the regional university based in Suva, with its campuses in the western, central, and eastern Pacific clusters, will be ongoing. Building the capacity of local institutions to train people for employment in sectors facing major skill shortages in the Pacific (such as nurses, doctors, teachers, specialist aged care workers, and a range of occupations in the tourism and hospitality sectors) will continue to make an important contribution to strengthening the resilience of Pacific communities in the face of climate change-related challenges.

The eastern Pacific

All countries in this cluster, including the in-scope countries of Cook Islands, Niue, Samoa, Tokelau, and Tonga, are facing challenges arising from extensive migration-led population change over the past 70 years. These countries all have large transnational populations living in Aotearoa, several of them have major communities in the USA, and all of them have growing populations resident in Australia.

A common demographic challenge, and one which some of them have been trying to address for some time now, is population ageing and associated shortages of labour to service both their domestic economies as well as their dependent older populations. Other Pacific countries have been providing some of the labour they need and facilitating more intra-Pacific migration is seen to be a possible pathway to overcoming some of the shortages of skills that they have. In this context, the PACER Plus Implementation Unit (PPIU), based in Samoa, is providing valuable technical advice, especially around strategies for managing labour supply for domestic industries and services in the face of increasing opportunities for temporary labour migration to Australia.

An important initiative by the PPIU has been policy advice about greater intra-Pacific mobility as a way of addressing critical labour shortages in two of the Realm countries (Cook Islands and Niue) that have experienced extensive net migration losses to Aotearoa since the 1970s. Support for implementation of the PACER Plus Trade Agreement's Arrangement on Labour Mobility will continue to be a valuable contribution to a contemporary dimension of Pacific demography that is often under-appreciated: intra-Pacific mobility to increase the resilience of populations experiencing skills shortages.

[38] There has been some assessment of the extent to which different levels of net migration loss to Aotearoa might impact population growth in Kiribati and Tuvalu through to 2050. See Bedford et al. (2023, 30-31).

The northern Pacific and the French territories

The distinctive demographic trajectories of countries in these two clusters are of less relevance to Aotearoa than the other three clusters. There are no in-scope countries in the northern Pacific or the French overseas collectivities. The clusters have distinctive histories and contemporary political alliances with the USA (northern Pacific) and France.

Depending on the pathway to decolonisation, the indigenous peoples of French Polynesia especially may seek much stronger associations with Aotearoa given the customary links they have with Cook Islands Māori and historical links they have through their navigator, Tupaia, with early European contact with Māori in Aotearoa. In the northern Pacific, the one PICT that might seek links with Aotearoa is the Marshall Islands via customary and historical links they have with the I-Kiribati and their transnational community that has been developing in Aotearoa since the mid-1980s.

A rapidly changing policy context

In addition to these different cluster-specific implications for policy, there have been some significant changes relating to international migration in the region during the past five years. Three merit brief mention because they all have had direct or indirect impacts on policies relating to movement between countries in the region and to and from countries on the Pacific Rim. These are:

1) Development of the Pacific Australia Labour Mobility (PALM) scheme and the promise of an Australian version of Aotearoa's Pacific Access Category (PAC) visa – the Pacific Engagement Visa (PEV). Australia's immigration policy in the Pacific has undergone a major transformation since the introduction of its Seasonal Work Program (SWP) in 2012. Australia is now recruiting thousands of temporary labour migrants from the Pacific in what can only be termed a game-changer in terms of its relationships with Pacific countries.

2) In Aotearoa, the Pacific Agreement on Closer Economic Relations (PACER) Plus Implementation Unit's efforts to deliver on the key objectives of the Arrangement on Labour Mobility that sits on the side of the PACER Plus Trade Agreement, including assuming responsibility for coordinating the Pacific Labour Mobility Annual Meeting (PLMAM) that MFAT played a major role in getting established in 2017 at the 10th PACER Plus Intersessional Meeting.

3) The Coronavirus (COVID-19) pandemic and the impact border closures throughout the region have had on the development of humanitarian approaches to enforced stay of visitors and workers on temporary visas for much longer periods than were planned or permitted by the visas. Reflections on policy responses to the plight of people who could not return home because of border closures and the absence of international

> flights during the pandemic have contributed significantly to discussions about a regional framework that provides a pathway for entry and/or stay on humanitarian grounds, underpinned by a common understanding of need.

A paper for MFAT's project on "Climate mobility in the Pacific: regional population dynamics and impacts of mobility" that addresses these recent developments in immigration policy was completed in early July.[39] The contents of this paper have contributed to these reflections on the policy implications, for Aotearoa, of momentum- and migration-led population change in the context of climate scenarios and hazards in the Pacific over the next 30 years. MFAT's Climate (Im)mobility Research in the Pacific project is situated within a context of ongoing discussions about a regional framework for climate mobility as well as a rapidly evolving policy environment for labour mobility between Pacific states and countries on the Pacific Rim.[40]

In concluding this Policy Brief, which has placed a lot of emphasis on appreciating diversity in the contemporary demography of the 21 PICTS that comprise the Pacific region, it is useful to recall some comments made by Burson and Bedford (2013, 48) in their report for the Nansen Initiative on the role of clusters and hubs in a regional architecture for voluntary adaptive migration in the Pacific:[41]

> In the Pacific, immigration laws sit within and reflect a multiplicity of partially overlapping sub-regional clusters of states, giving rise to a highly textured migration landscape. The textured nature of this landscape allows for potential leverage to better enable states to respond to various forms of mobility linked to natural disasters and climate change. The dynamic process of cluster formation and development provides opportunities for the enhancement of regional mobility.

They argued that existing and emerging sub-regional clusters should be encouraged and supported in their attempts to promote inter and intra-cluster mobility – something that has become a major focus of the work of the PACER Plus Implementation Unit as it seeks to operationalise the trade agreement's Arrangement on Labour Mobility. This is also an issue that has relevance for any agreement, at a regional level, on some sort of harmonisation of approaches to humanitarian entry and stay which would represent a major achievement in

[39] See Richard Bedford (2023) Recent developments in the immigration policy context for the project on 'Climate mobility in the Pacific: regional population dynamics and impacts of mobility.' Unpublished Report by Bedford Consulting for the University of Auckland's MFAT Project Research Team, 9 July.
[40] The Pacific Framework on Climate Mobility, endorsed by the Pacific Leaders Forum in November 2023. Accessible at: Annex-C-Pacific-Regional-Framework-on-Climate-Mobility-1.pdf (forumsec.org)
[41] Burson, B. and Bedford, R.D. (2013) *Clusters and hubs: toward a regional architecture for voluntary adaptive migration in the Pacific*. Technical Report, The Nansen Initiative, Geneva. Accessible at: https://www.researchgate.net/publication/274254810_Clusters_and_Hubs_Towards_a_Regional_Architecture_for_Voluntary_Adaptive_Migration_in_the_Pacific?ev=prf_pub

terms of removing many of the uncertainties surrounding cross-border mobility in the context of both rapid and slow onset climate change.

Authors

This Policy Brief is an outcome of research on regional population dynamics and mobility trends in the Pacific, with a focus on implications for Aotearoa. The Brief is informed by three papers completed by Bedford Consulting Ltd between June and September 2023.[42] The team which contributed to the development of the Policy Brief is as follows: Richard Bedford, Roi Burnett, Wardlow Friesen, Tina Newport, Roannie Ng Shiu and Yvonne Underhill-Sem.

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[42] Bedford Consulting Ltd was contracted to provide three reports in addition to this Policy Brief:

1) An assessment of regional population dynamics through to mid-century drawing extensively on SPC and UN databases and projections (completed 3 June)
2) A desk-top review of developments relating to voluntary migration in the Pacific during the past decade (completed 9 July)
3) A report on regional population dynamics and mobility trends, with a focus on implications for Aotearoa (completed 3 September).