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A pressure release valve? Migration and climate change in Kiribati, Nauru and Tuvalu

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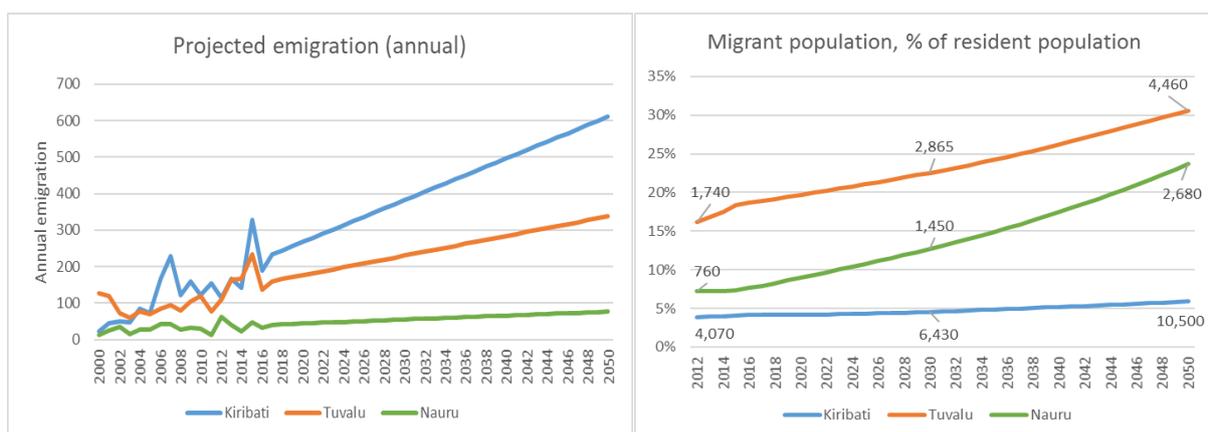
Executive Summary

This report examines likely future population movements from the microstates of Kiribati, Nauru and Tuvalu. These independent states are highly vulnerable to climate change impacts, yet their citizens have limited migration opportunities, be they domestic or international. The report explores the factors that will influence migration decisions, as well as the social and economic impacts of future migration. It also examines the implications for migration were a natural disaster, such as a cyclone, to affect the urban centre of one of these countries.

The **decision to migrate** is based on a range of push and pull factors, which can be economic, social or cultural. In a small island state with limited resources that faces overpopulation, pressures to migrate are influenced strongly by the collective actions of the rest of the population. So too are opportunities overseas, both real and perceived. The presence of an overseas diaspora is well-known to encourage migration. Pressures at home and perceived benefits and risks associated with migration ultimately determine whether an individual or household member migrates. Australia and New Zealand are clearly the preferred migration destination for I-Kiribati, Nauruans and Tuvaluans.

If past migration trends are extended into the future, one can see that, although migration will rise over time, **less than 18,000 people will have migrated from the microstates by 2050** (Figure 1). Growth in numbers will be strongest in absolute terms in Kiribati, where migration has increased in recent years (albeit from a low base), driven by ‘push’ factors like overpopulation in South Tarawa and limited domestic employment opportunities. The number of migrants from Tuvalu will also rise. But the demand to migrate in all three states will likely remain greater than the opportunity to do so.

Figure 1: Migration projections based on historical trends



The pressures faced by microstates’ populations to migrate are already considerable, and include interrelated livelihood, demographic and environmental pressures, of which climate change is one. The extent of the full pressures on Kiribati, Nauru and Tuvalu to migrate – particularly population growth, the size of different age groups, and high population density – are generally greater than that of other countries in the Pacific. In all three countries, a much larger group of people will want to migrate but find themselves without the resources to do so through normal migration channels. We estimate that by 2030, around 64% of I-Kiribati adults aged 20-44 years (61,000 people), 47% of Tuvaluan adults (4,900 people) and 10% of Nauruan

adults (780 people) will want to migrate but be unable to do so. The total number, including children and the elderly, will be larger.

A major source of pressure is population growth in a limited land area. Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) suggests that the human-carrying capacity of small islands is around 100 people per square kilometre. In 2015, Nauru and Tuvalu had 563 and 367 persons per square kilometre respectively, while Kiribati (excluding Kiritimati Island) had 251 persons per square kilometre. These figures are increasing in Tuvalu and Kiribati, and rapidly so in the case of Kiribati.

Significant population growth is projected in **Kiribati** by the UN. By 2050 it is projected that Kiribati's population will near 180,000 people. Population growth is likely to be concentrated in the main urban area on South Tarawa, as people in outer islands who largely depend on subsistence livelihoods are pushed to migrate due to population pressures and environmental changes. Resource constraints mean that South Tarawa will not be able to support this population growth.

Tuvalu's population is expected to grow modestly to over 14,000 people by 2050. A key factor preventing more rapid population growth is Tuvalu's higher migration rate (measured relative to the population). High levels of migration will also lead to a growing diaspora overseas that can support Tuvalu through the provision of remittance income. Notwithstanding modest population growth, it is expected that the population of Funafuti (Tuvalu's urban area) will continue to rise more rapidly due to internal migration, creating challenges in the absence of economic development and associated (cash-based) employment opportunities.

Nauru's population is not projected to grow significantly, unlike that of Tuvalu and Kiribati. That is a consequence of lower fertility levels, and not of migration. The future of Nauru's regional processing centre is expected to determine Nauru's future economic position.

Natural disasters are a common occurrence for Pacific island states, which are vulnerable to cyclones, tsunamis and earthquakes. A combination of a changing climate and population pressures aggravate the likelihood of natural disasters, necessitating **mass population movement**. Three responses are possible in such a scenario: (i) migration of the better resourced, (ii) movement of displaced persons who accept they must move, and (iii) stayers, who choose to remain despite dire circumstances.

Given their urban profile, half of the population in Kiribati and Tuvalu could be **displaced** in the face of a significant disaster. For such small island states, relocation in response to a disaster will in nearly all instances be to another country. In the face of a significant natural disaster, internal migration within Kiribati, Tuvalu or Nauru is unlikely to be an option for relocation, given resource and land constraints. Despite this, UN survey data suggest that only one in four or less of households in each of the three countries both see migration as an adaptive strategy to respond to environmental pressures *and* have the resources to do so. The proportion who have taken steps to migrate in Kiribati and Nauru is lower, especially in Kiribati. **A policy challenge addressed in this report is how to provide migration options for those who realise the need to migrate due to a deteriorating environment but find themselves unable to do so through normal migration channels.**

We conclude that **migration plays an important role in helping households to adapt to growing pressures**, a role which varies according to the thresholds reached when specific adaptation strategies are no longer effective. The evidence presented suggests that migration opportunities are least available to those who live in the most vulnerable locations and circumstances. The vulnerability that many households face is the result of a combination of

threats from the physical environment and the lack of access to opportunities to develop more resilience.

Future prospects for Kiribati and Tuvalu in particular will be adversely affected by high population growth trajectories, even more intense pressure on land and other natural resources, environmental degradation, and the regular occurrence of natural disasters. Migration, whether internal or overseas, has long been a key adaptive strategy for these countries. However, the options for overseas migration have been limited. For migration to perform its role in changing adaptive strategies, more migration opportunities need to be provided to vulnerable households. **Freely chosen, managed migration of a population is more effective than large-scale, reactive migration in response to a humanitarian crisis.** Such migration also benefits those who want to stay, through the development of a safety net and more general support for those with family overseas.

Introduction

This report examines migration as a response to demographic, environmental, food and water pressures in Kiribati, Nauru and Tuvalu, three small island states situated in the Pacific Ocean which are highly vulnerable to the effects of climate change. The report looks at likely future population movements from these countries, and explores the social and economic impacts of such migration.

The first part of the report discusses factors that shape the decisions of I-Kiribati, Nauruans and Tuvaluans to migrate, with a focus on growing environmental, population, and food and water security pressures. The second part of the report presents the results of modelling of migration from the three island states through to 2050. This modelling, which is based on past and current migration patterns, as well as economic projections from the World Bank and IMF, examines the potential economic and social impacts of this population movement on the source countries, including on per capita incomes, employment, social spending, and government revenue. The third part of the report analyses a hypothetical rapid mass migration from the three countries, caused by a significant one-off environmental disaster such as a king tide or a Category 3 cyclone.

Part 1: When and why do people migrate?

The decision to migrate is based on a range of push and pull factors, which can be economic, social, or cultural. Pressures to migrate include interrelated livelihood, demographic and environmental pressures, of which climate change is one. Excluding a catastrophe, this study assumes that no one set of factors is likely to predominate. Small island developing states have long faced a number of challenges to their survival, such as high population density, small economies and geographical isolation. The effects of climate change are a fairly recent addition to these challenges (Kelman 2014). Moreover, how people who are subject to these pressures respond will depend on their perceptions of the financial and wider social and cultural benefits and costs involved in moving permanently (Barnett 2017: 6).

Pressure to migrate

The pressures faced by I-Kiribati, Tuvaluans and Nauruans are already considerable. Kiribati, Nauru and Tuvalu have been described within the context of the Pacific region as land-poor micro-states (Taylor et al. 2014: 40). Kiribati and Tuvalu, together with the Marshall Islands and Tokelau, are also known as atoll countries because their populations are distributed across a number of coral atoll islands. These coral atolls have extremely constrained natural resources to sustain a subsistence livelihood. The atolls have small land areas, with little top soil to grow food crops. Nauru is a phosphate rock island, with much of its arable land devastated by strip mining, leaving only a narrow coast strip of four square kilometres. Nauru's marine life has also been reduced by contamination caused by silt and phosphate runoff and in 2009 its land was estimated to be only 60 per cent of its former productivity (Republic of Nauru 2009: 26).

Kiribati and Tuvalu have growing populations reliant on weak natural resource bases, resulting in food insecurity, and limited opportunities to earn cash incomes. The limitations of relying on subsistence livelihoods in an atoll-based natural resource base have long been recognised, resulting in efforts in the 1950s by the colonial administration to resettle some island populations to Solomon Islands and Fiji (Connell 2013: 135). A range of indicators such as population growth, the size of different age groups and population density rates based on land area and on available agricultural land all point to the extent of these pressures compared with other countries in the Pacific. Appendix 1 details these population pressures. Appendix 2 summarises the specific features of the atoll economies of Kiribati and Tuvalu and the problems

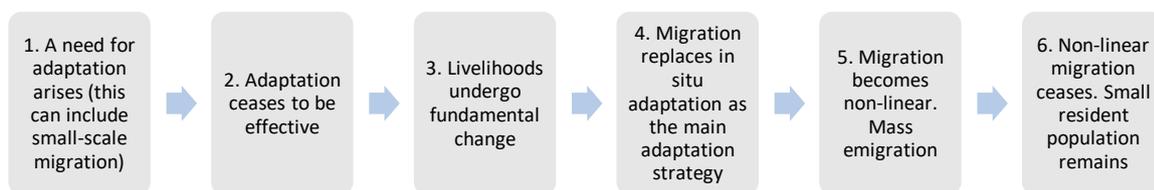
they face in supporting a growing population under tightening environmental constraints. Appendix 2 also describes the limitations of the resource base of Nauru.

Migration in response to environmental change: a framework

McLeman (2017) identifies six types of thresholds or tipping points in relation to such environmental pressures, which produce different migration outcomes. This framework is adapted by this study as a useful way of describing the different contexts or factors that may shape the decisions of I-Kiribati, Nauruans and Tuvaluans to migrate. McLeman's outline of different types of responses to environmental pressures is especially relevant to understanding the role of population movement in Kiribati and Tuvalu, as the two atoll countries under study. Nauru is a special case, given the fact it is the only Pacific island country with a population that is classified entirely as urban.

McLeman's framework (Figure 1) starts with a recognition by communities that some form of adaptive strategy or strategies are needed to respond to environmental changes. Small-scale, largely internal and some temporary international migration can form part of that initial adaptive strategy, but migration is not typically the main focus for most households. The second threshold is reached when the initial adaptive strategy adopted is assessed to be ineffective, thus forming the basis for a more significant response. The third threshold of adaptive response involves substantive changes to generate reliable livelihoods, such as moving to an urban area. The fourth threshold point is reached when (largely) domestically-focused adaptation strategies to economic and environmental pressures fail and large-scale, permanent migration overseas becomes necessary. The fifth threshold is reached when emigration increases to the point where a majority of the population leaves. The sixth and final threshold is reached when migration drops off and a small resident population remains.

Figure 1: Migration, adaptation and thresholds



Source: adapted from McLeman (2017).

First threshold: internal mobility as an adaptive strategy

The first threshold involves adaptation to a changing environment, of which mobility can form a part. Usually mobility in this context involves internal movement, much of which is temporary or circular, rather than migration overseas. However, internal mobility is a strategy that only a minority adopt.

Between 2005 and 2015 in Kiribati only one in ten individuals moved from one place to another. The nature of the movement for most individuals (four out of five) was internal, mostly to South Tarawa (Oakes et al. 2016). For Tuvalu, the proportion of individuals moving over the same period is higher at one in three, with two in five moves being internal (Milan et al. 2016). The differences between Tuvalu and Kiribati in the proportion of the population that migrated over the decade to 2015 suggest that a greater share of Tuvaluans responded to population pressure by adopting internal and international migration as an adaptive strategy. In Nauru, the number of movements recorded between 2005 and 2015 by individuals surveyed

was only a third of those recorded for Tuvalu, reflecting the lack of opportunity to migrate internally (Campbell et al. 2016).

Second threshold: mobility as an adaptive strategy ceases to be effective

The second threshold is reached when existing adaptation strategies, including limited (mainly internal) mobility, cease to be effective. More substantive change is required, which can include a minority engaging in permanent migration to urban areas and smaller numbers migrating overseas. In Kiribati, Tuvalu and Nauru, this more substantive adaptive strategy often necessitated achieving higher levels of education and wage employment. Employment opportunities are mostly available in the public sector, which usually involves relocation to the national capital. Access to education opportunities is another reason for moving to the major urban area in the first place.

Third threshold: land use or livelihoods undergo fundamental change

The third threshold involves fundamental change in livelihood strategies, often through long-term or permanent moves to live elsewhere within the country. In the case of Kiribati, Nauru and Tuvalu, internal migration involves moving to live in high-density urban areas on a permanent basis. The three Pacific microstates have a majority of their populations living in urban areas. As noted above, all of Nauru is classified as urban because 70 per cent of the land area is not habitable. Over half of the population of Kiribati (estimated at 54 per cent in 2018) lives in the urban area of South Tarawa (UN Population 2018). Also for Tuvalu, nearly two-thirds of the population (estimated at 64 per cent in 2018) lives on the islet of Funafuti in an urban concentration (UN Population 2018).

Living in an urban area in Kiribati, Nauru and Tuvalu, however, has not resulted in better living conditions for most residents (see Appendix 4). In 2006, half of the low-expenditure poor in Kiribati (i.e. those whose expenditure is in the bottom 30 per cent of the population) lived in urban South Tarawa (Government of Kiribati 2010: 35). In Tuvalu, data for 2005 shows a higher incidence of urban poverty compared with the incidence of rural poverty (ADB 2012: 39). Nauru has one in four of the population living below the national poverty line, based on 2013 data (ADB 2018).

Threshold four: international migration replaces internal adaptation

The migration response to these conditions has differed in each of the three countries, partly as a result of the differing migration opportunities that are available to citizens. Kiribati and Tuvalu have had some access to opportunities for international migration on a temporary and permanent basis. Nauru has for the most part only had access to opportunities to migrate for temporary work overseas (see Appendix 4).

Census information for OECD countries show that Tuvalu in 2011-2013 had 18 per cent of its population resident in an OECD country, with 90 per cent of these overseas residents in New Zealand and eight per cent in Australia. Nauru's emigration rate for the same period is ten per cent, with 72 per cent of Nauruans overseas resident in Australia and 22 per cent resident in the USA. Kiribati has an emigration rate of only five per cent, with 44 per cent recorded as living in the USA, 38 per cent in New Zealand and 13 per cent in Australia. The migration pathway to the USA from Kiribati and Nauru appears to be via Marshall Islands and its open access to the USA. A UN University survey which collected data on population movements between 2005 and 2015 lists Marshall Islands as a major destination for people surveyed in Kiribati and Nauru (Oakes et al. 2016: 40; Campbell et al. 2016: 38).

Threshold five: migration becomes non-linear

The fifth threshold is reached when emigration increases to the point where a majority of the population leaves. Several small island jurisdictions similar to Kiribati, Tuvalu and Nauru have experienced high rates of emigration, including Marshall Islands, Tokelau and Niue. Each of these countries has open access to a high-income economy: the USA and its territories in the case of the Marshall Islands through a Compact of Free Association; and New Zealand and indirectly Australia through New Zealand citizenship in the case of Tokelau and Niue.

In the case of the Marshall Islands, the emigration rate (including to the US Territories of Guam & Commonwealth of the Northern Mariana Islands) for the period 2010-11 was 27 per cent (Curtain 2016: 8). This means that despite open access to the USA and its territories, and despite a high population density of 294 persons per square kilometre and an urbanisation rate of 77 per cent (both higher than for Kiribati), only one in four adults in Marshall Islands have migrated to live overseas. Palau and Federated States of Micronesia, whose citizens are also eligible to migrate to the USA, have higher emigration rates of 31 and 34 respectively (Curtain 2016: 8).

The emigration rate is higher for the population aged 15 years and over for the atoll countries associated with New Zealand. For Niue, the adult emigration rate is 81 per cent, with a total estimated resident population of only 1,623 in 2013 (Curtain 2016:19; UN Population 2018). The adult emigration rate for Tokelau is 70 per cent, with a total estimated resident population of 1,187 in 2013 (Curtain 2016:19, UN Population 2018). For Cook Islands, part of which includes coral atolls, the adult emigration rate in 2011-2013 was 63 per cent, with an estimated resident population of 17,767 in 2013 (Curtain 2016:19; UN Population 2018). All are examples of states where emigration has become non-linear, increasing to such an extent that the majority of the population now resides overseas.

Threshold six: non-linear migration ceases

By definition, non-linear migration of the type described in threshold five cannot continue indefinitely. At some point, migration numbers fall and the population stabilises. This has already occurred in the cases of Cook Islands and Tokelau. These countries in 1950 had populations of 15,077 and 1,166 respectively. In 2015, the respective figures were 17,449 for Cook Islands and 1,252 for Tokelau (UN Population 2018). In other words, their populations are largely stable and have only increased slightly over a period of nearly 70 years.

In Niue the population also stabilised, though at a later date. Niue's estimated population in 1950 was 4,677, a figure that remained stable until 1971 (4,962) (UN Population 2018). However, the population then declined steadily with the opening of an international airport which enabled easier access to regular four-hour flights to Auckland (Barnett and McMichael 2018: 350). This easier access to New Zealand resulted in a drop of the estimated population to 1,629 in 2015, a figure that has remained stable for several years.

At this last threshold, migration in response to any economic or environmental pressures has already occurred, with the population left behind able to live on existing economic opportunities and with the support, in the form of remittances, from a large overseas diaspora.

In sum, decisions to migrate are made at the level of the household and individual. However, they are informed by external pressures, including (lack of) economic opportunities and environmental factors. In a small island state with limited resources that faces overpopulation, these pressures are influenced strongly by the collective actions of the rest of the population. So too are perceived opportunities overseas. The presence of an overseas diaspora is well-known to encourage migration, given network effects and the provision of information and feedback by those who have migrated. Both pressures at home and perceived benefits and risks

associated with migration ultimately determine whether an individual or household member migrates.

Part 2: International migration from Kiribati, Nauru and Tuvalu to 2050 and its impacts

International migration

Kiribati and Nauru differ from Tuvalu in terms of their more limited exposure to international migration. For Kiribati, the UN University survey results, based on movements with definite starting and destination points, showed that a third of these movements recorded between 2005 and 2015 were international, fairly evenly divided between seafaring and other international movements (Oakes et al. 2016: 63).¹ Only one in ten Nauruans (involving members from one-third of households) migrated overseas between 2005 and 2015. Labour migration made up roughly 21 per cent of migration trips, while educational migration accounted for approximately half (51 per cent) of all movements, reflecting the high number of departures to Fiji (Campbell et al. 2016: 11). In contrast, in Tuvalu 64 per cent of movements were international, comprising 20 per cent of movements to work as seafarers, and 44 per cent for other international movements (Milan et al. 2016: 49-50).

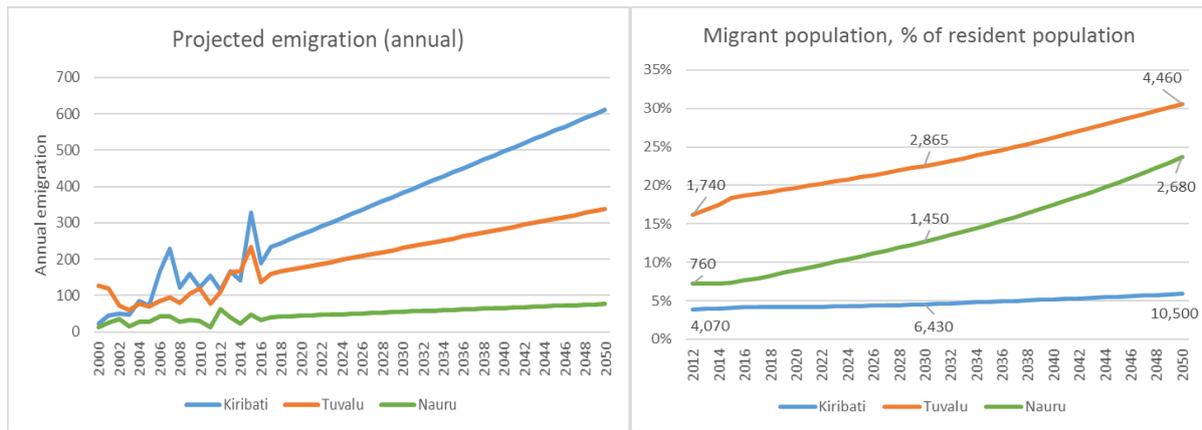
If the trend of these migration figures is extended into the future (Figure 2), one can see that migration will rise over time for all three microstates. Growth in the number of migrants will be strongest in Kiribati, where migration has increased in recent years, albeit from a slow base, driven by ‘push’ factors such as overpopulation in the urban centre of South Tarawa, and limited domestic employment opportunities. The same is true to a lesser extent in Tuvalu. A continuation of historical migration trends would see less migration from Nauru than from either Kiribati or Tuvalu in absolute terms. However, the migration rate of Kiribati (migration as a percentage of residents) will remain lower than that of Nauru, based on current trends.

The ability to migrate is dictated in large part by migration pathways provided in destination countries. Australia and New Zealand are the preferred migration destinations for I-Kiribati, Tuvaluans and Nauruans. Two in five (61 per cent) TVET (technical and vocational education and training) graduates from the Australia Pacific Training Coalition (APTC) in a 2016 end of course survey of 561 respondents identified Australia as their sole preferred destination. Altogether, three quarters of APTC graduates (74 per cent) identified Australia as their preferred destination along with a second country (almost always New Zealand).

Limited migration to date from Nauru is likely to be the result of both the small number of Nauruans with skills necessary to facilitate skilled migration into Australia (or New Zealand), as well as the existence of employment opportunities domestically (see Appendix 4). In the future, the availability of employment opportunities in Nauru will depend heavily on the continuation of the Nauru Regional Processing Centre. In Kiribati, the lower migration rate is not for want of demand. Instead, this reflects (i) the limited formal skills base of Kiribati, which restricts the number of I-Kiribati who can migrate through skilled employment channels, as well as (ii) the (near) absence of long-term, unskilled or low-skilled migration opportunities that are available (New Zealand’s Pacific Access Category visa of 75 places per year is one notable exception, see Appendix 4).

¹ As these estimates include only movements with definite starting points and destinations, they are slightly different to the survey results cited earlier.

Figure 2: Migration projections based on historical trends



Note: Growth in migrant population is shown as a percentage of the sending country resident population, with actual migrant population numbers shown as data labels for 2012, 2030 and 2050.

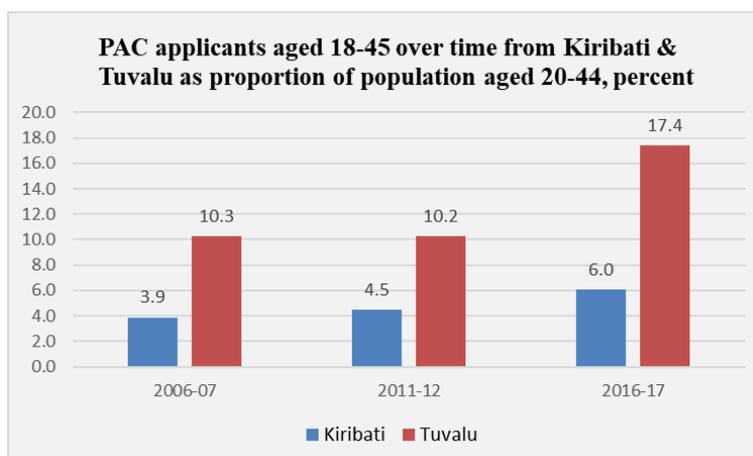
The demand to migrate

A more accurate indication of the likely demand from Kiribati and Tuvalu for access to the opportunity to live and work in another country with the right to permanent residence is the number of adult applicants for New Zealand’s Pacific Access Category (PAC) Visa. The Pacific Access Category visa quota for permanent residence was established in July 2002 (New Zealand Parliament 2008). The quota enables 75 citizens each from Kiribati and Tuvalu, as well as 250 Tongan and Fijian citizens who are selected by ballot to be offered a visa for residence in New Zealand, provided they meet the specified conditions. A separate Samoan quota of 1,100 visas, operating under the same process, is open to applicants from Samoa.

Eligible citizens of the five countries must be aged between 18 and 45 years to register as the principal applicant under the ballot. If successful, the principal applicant and the secondary applicants (i.e. partner and dependent children aged 24 and under) are entitled to apply for permanent residence visas within eight months. Three conditions need to be met to be granted a visa. First, visa applicants are required to meet health and character requirements, confirmed by a medical assessment and police check. Second, visa applicants have to show they are able to read, write and speak basic English. Third, the principal applicant or partner has to obtain a job offer of at least 30 hours a week for a duration of at least 12 months from a New Zealand employer that pays enough to support the principal applicant and his or her family in New Zealand.

Estimating the actual demand from Kiribati and Tuvalu for the opportunity to migrate to take up permanent residency in New Zealand requires referencing the number of adult applications to the total population in the same age group who could have applied. This has been done for three time periods, shown in Figure 3. Tuvalu has had much higher demand for PAC places compared with Kiribati. In earlier years the demand from Tuvalu was more than double that of the demand from Kiribati. In the 2016-17 financial year, the demand from Tuvalu relative to the adult population aged 20-44 years has reached close to three times that of the equivalent demand from Kiribati.

Figure 3: The demand for Pacific Access Category (PAC) places in Kiribati and Tuvalu as a proportion of the population aged 20-44 years



Source: Immigration NZ BI Ballots Received and Decided September 2017, UN Population Division 2018

The economic and social impacts of migration

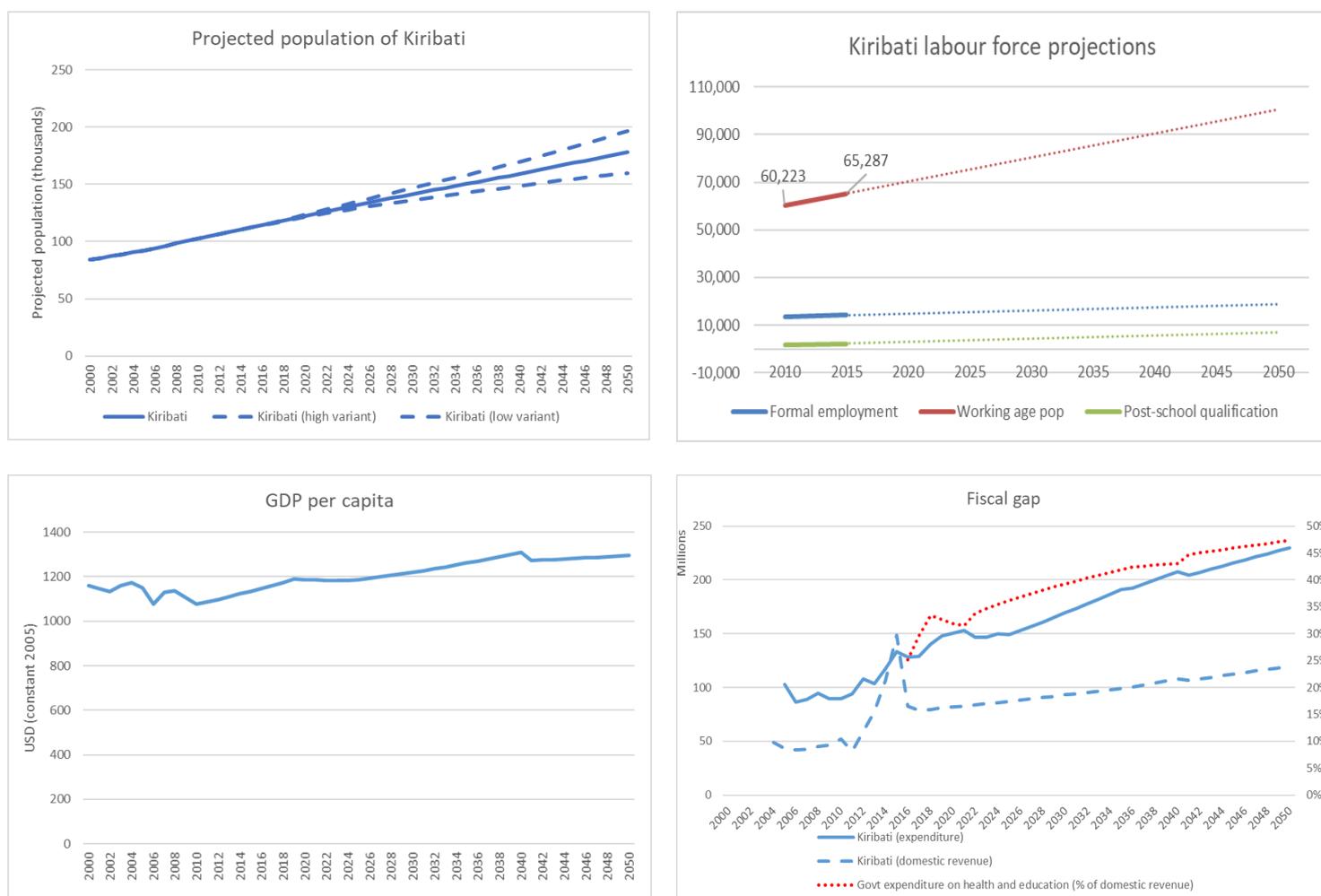
The potential benefits of migration for the Pacific are well established (Curtain et al. 2017). Permanent migration has been shown to result in large sustained benefits to the migrant’s immediate family, due to higher consumption and savings, ownership of durable assets, and dietary diversity (Gibson et al. 2015). Participation in temporary employment overseas has been shown to have similar impacts on participating individuals and their families (Gibson et al. 2013). Impacts at the sending country level are more complicated, and depend in part on the type of migration that has occurred. Notwithstanding this, there is broad consensus that expanding labour mobility is vital for the future of Pacific island states, which face economic challenges due to their geography and a growing youth population (Curtain et al. 2017).

The economic and social impacts of migration on the sending country are dependent in large part on the scale of migration. The more extensive is migration, the more significant will be its impacts on the sending economy. Economic and social outcomes, of course, are also dependent on a wide array of factors such as investment and population growth. These also in turn affect migration outcomes.

Kiribati

An extension of historical trends into the future suggests significant population growth in Kiribati, notwithstanding higher levels of out-migration. By 2050, the UN projects that the population of Kiribati will be near 180,000 people (Figure 4). Population growth is likely to be concentrated in the main urban area on South Tarawa, as people in outer islands who largely depend on subsistence livelihoods are pushed to migrate as a result of population pressures and environmental changes. Resource constraints mean that South Tarawa will not be able to support continuing population growth in an area which is already overcrowded and dependent on incomes provided by a small formal economy.

Figure 4: Kiribati projections

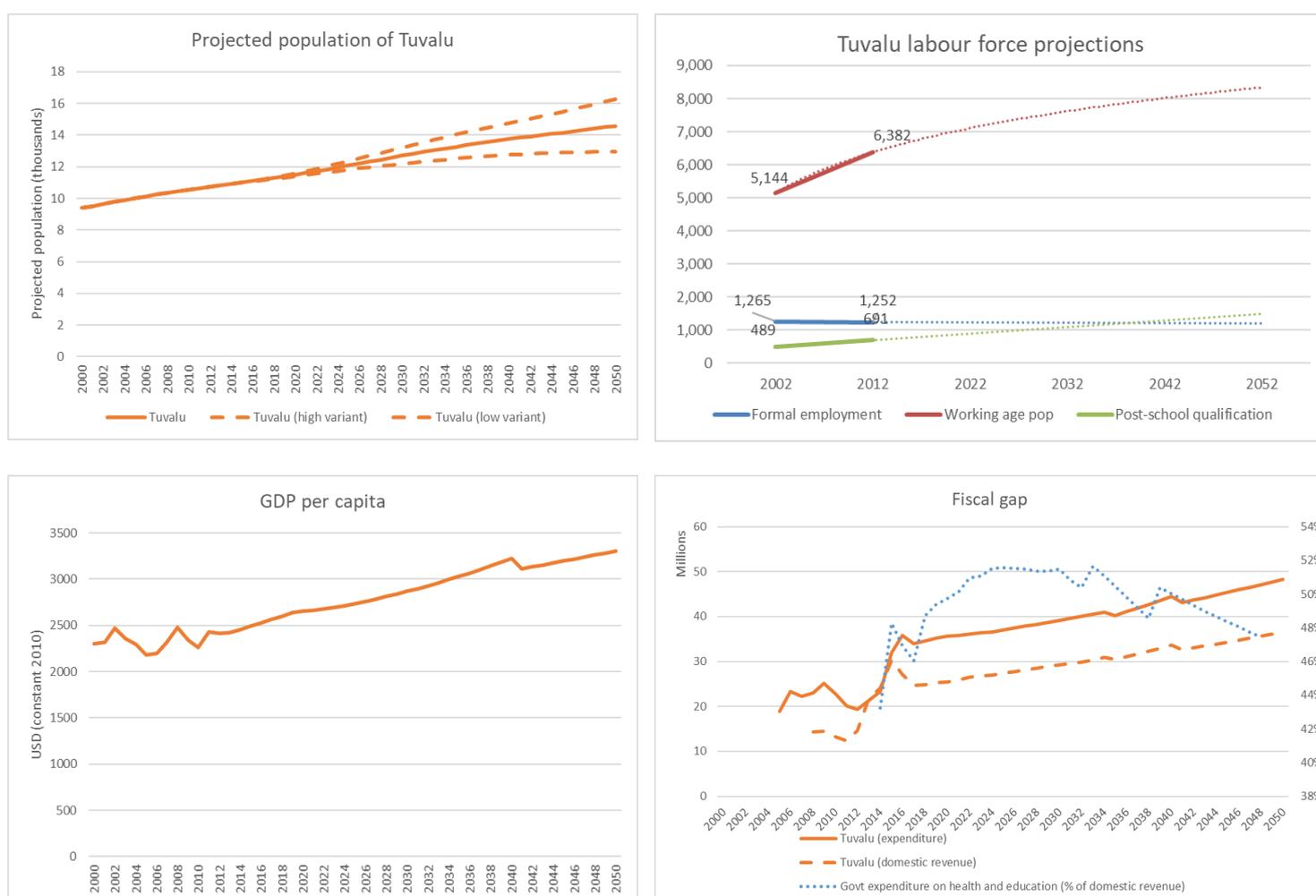


On current trends, I-Kiribati migrants as a proportion of the total Kiribati population will rise from approximately four per cent currently to 5.9 per cent by 2050 (see Figure 2). This diaspora will be too small to support an I-Kiribati population for which subsistence livelihoods are no longer an option. Domestic economic opportunities are also unlikely to provide an alternative to subsistence livelihoods for a majority of the population. GDP per capita is projected to increase modestly over the period, and this will depend on the continuation of fishing licence revenue and foreign aid. Though both formal sector employment and the number of I-Kiribati with a post-school qualification will rise, the increase will not be commensurate with growth of the working age population. As a result, expenditure on health and education will rise relative to domestic government revenue (which is linked to formal employment), contributing to a growing fiscal gap caused by a mismatch between government expenditure and revenue.

Tuvalu

Tuvalu’s population is expected to grow modestly to over 14,000 people by 2050, up from its current level of approximately 11,000 (Figure 5).² A key factor preventing more rapid population growth is Tuvalu’s higher migration rate (see Figure 2). High levels of migration, which are expected to continue to grow in the future, will also lead to a growing diaspora overseas that can support Tuvalu through the provision of remittance income (Figure 2). Notwithstanding modest population growth, it is expected that the population of Funafuti, Tuvalu’s urban area, will continue to rise more rapidly due to internal migration, creating challenges in the absence of economic development and associated (cash-based) employment opportunities. As in the case of Kiribati, internal migration will occur partly in response to resource and environmental pressures in the outer islands that threaten subsistence livelihoods. Climate change will be a contributing factor to these pressures.

Figure 5: Tuvalu projections



An extension of trends to date suggests that the working age population in Tuvalu will grow more rapidly than the number of people with post-school qualifications. Importantly, formal

² Note that SPC projections for population growth in Tuvalu are considerably higher, with a forecasted population in 2050 of 19,600 (compared to the UN ‘high’ scenario estimate of 16,290). Bedford et al. (2016) argue that this difference is the result of SPC’s assumption that high age-specific fertility rates will continue into the future – an assumption that is questionable.

sector employment in Tuvalu, as recorded by census data, has actually declined between 2002 and 2012. Were this trend to continue into the future, a significant and growing portion of Tuvalu’s working age population would be excluded from formal sector employment opportunities. GDP per capita is projected to increase in the future, but only modestly. This increase is premised on the continuation of both fishing licence revenue and foreign aid. Tuvalu will face considerable fiscal challenges in the future, given planned increases in government spending on social services that are projected in its budget forward estimates. Though these challenges are not on the scale faced by Kiribati, the government could be required to take on considerable debt or reduce spending in the future, should either foreign aid or fishing licence revenue decline.

Nauru

Nauru is distinct from the other microstates included in this study because of its higher per capita income, history of reliance on economic rents, and, linked to both of these, the near-complete disappearance of subsistence agriculture and fishing as a means of livelihood for its population. Nauru’s population is not projected to grow significantly, unlike that of Tuvalu and Kiribati (Figure 6). That is a consequence of lower fertility levels, and not of migration from Nauru, which is below that of Tuvalu in both relative and absolute terms, and lower relative to population when compared to Kiribati.

Figure 6: Nauru projections



The lack of reliance on subsistence livelihoods makes Nauru less vulnerable to climate change than either Kiribati or Tuvalu, although droughts and lack of water to support the population are a major issue (Taylor et al. 2016). However, Nauru's economy is highly vulnerable to other shocks: notably, a decline in fishing licence revenue, and more significant still, economy activity that results from the Nauru Regional Processing Centre established by Australia. Were that Centre to be disbanded in the future, the Nauruan economy – including employment – would be impacted severely. It is in this context that the Nauru government's decision to establish a trust fund should be welcomed.

This is not to say that climate change will have no impact in Nauru. An ADB report on the economic costs of climate change in other Pacific island countries identified costs associated with warmer temperatures such as droughts (the CSIRO predicts that Nauru will be affected by higher maximum temperatures in the future as a result of climate change). Fishing licence revenue may also be impacted by warmer oceans changing tuna migration patterns. In the longer-term, sea level rise also presents a risk to Nauruan households, given the fact that the majority reside on a coastal strip.

GDP per capita in Nauru is projected to increase modestly over the period 2018-2050, if past trends continue into the future. As already highlighted, whether this eventuates depends in large part on the decisions of future Australian governments. Employment that depends on the processing centre will also impact revenue collected by the Nauru government. The modest fiscal gap presented in Figure 6 is, therefore, dependent on a continuation of such economic activity: were the processing centre to close, domestic revenue would fall considerably. Migration would be unlikely to suffice as an alternative source of employment, given the limited number of Nauruans with post-school qualifications and the current underutilisation of unskilled or low-skilled migration pathways for Nauruans to Australia or New Zealand.

Part 3: Mass migration in response to a one-off disaster in the near future

The significance of a scenario of a rapid, mass migration due to a natural disaster or an environmental catastrophe is that people move who would not do so other than under extreme circumstances. According to the body that monitors displacements globally, 18.8 million people were affected by disasters in 2017, and of this number, 18 million people were affected by disasters that were weather-related (Internal Displacement Monitoring Centre, 2018).

Under less extreme settings, the decision to migrate is largely shaped by the pull factors of the destination which outweigh the push factors of the migrant's area of origin. Those who do not want to migrate are usually those who are risk averse and/or cannot see the benefits to them being greater than the financial and psychological costs of moving from a home which is known and familiar.

However, under a scenario of population movement due to a one-off significant disaster, the urgency to move and the support to do so creates a different calculus. Under extreme circumstances, who is likely to move and who is likely to stay? Three responses are possible, two involve population movement and one involves non-movement. These responses are:

1. Migration of the better resourced in terms of human, social and financial capital.
2. Displacement movement of people who accept that they need to move.
3. Stayers who freely choose to remain or who remain because they are trapped.

In the event of a significant one-off disaster in the next ten years, which necessitates a mass population movement, clearly internal migration within Kiribati and Tuvalu is not

an option for relocation. There could be various reasons for this. If the significant one-off disaster affects the outer atolls, movement to South Tarawa or Funafuti is not an option due to existing population densities, which are extremely high. Land for settlement is certainly not available in these urban atolls. Migrants from outer islands instead would have to rely on accommodation provided by family members. It is feasible that population pressures and overcrowding make staying with family no longer an option – even if this has previously been a cultural norm. In this circumstance, these urban areas, as the site for the international airport, can only be staging points for movement to another location outside of Kiribati or Tuvalu

One option in Kiribati is to relocate people affected by a one-off disaster to Kiritimati Island, a large atoll of 388 square kilometres. However, the atoll is a long distance from where the main population of Kiribati resides, and like other atolls, has limited water supply. It is difficult and expensive to get to (flying there requires travel through New Zealand). Kiritimati only has a population 6,447 people (2015 census) and limited capacity to host a large and sudden relocation of people.

In a different situation, where the disaster affects the two urban areas of Kiribati and Tuvalu, the outer atolls do not have the capacity to support a large influx of people. Nauru, of course, has no internal options for movement of its population. So the response to the significant one-off disaster involving Kiribati, Nauru and Tuvalu will require movement to another country as options involving either internal migration by individuals, or managed displacement as a group to relocate within the country are not available.

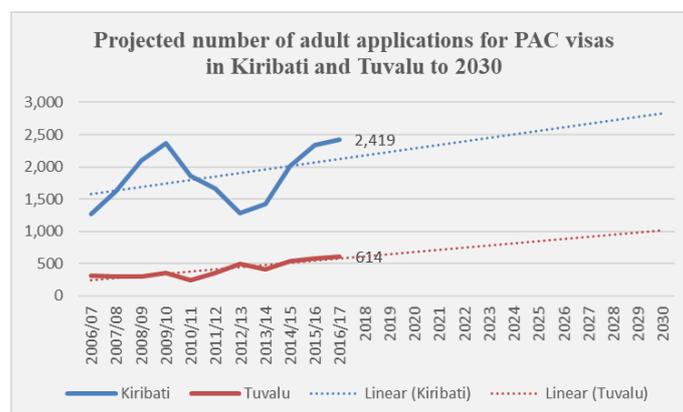
Those who freely choose to migrate

Survey results show that more than 70 per cent of households in Kiribati and Tuvalu, and 35 per cent in Nauru believe that migration would be a likely response for them if droughts, sea level rise or floods worsened. However, the same surveys show that only a quarter of households in Kiribati, Nauru, and Tuvalu believe that they will have the financial means to migrate (Oakes et al. 2017). The UN University study used the record of past population movements to forecast, under a medium climate change scenario, that by 2055 international migration trips for Kiribati and Tuvalu will increase by 35 and 100 per cent respectively (Oakes et al. 2017).

A more precise measure of the intention to migrate from Kiribati and Tuvalu is the number of adults who apply to enter for the ballot for one of the 75 places each year for a Pacific Access Category Visa for New Zealand. As noted above, for Kiribati only six per cent in 2016-17 of the adult population aged 20-45 years took steps to participate in the PAC by applying for the ballot. The share of PAC applicants in the adult population in 2016-17 was higher in Tuvalu, at 17 per cent of the population aged 20-45 years. However, these figures show clearly that the share of would-be migrants from Kiribati, Nauru and Tuvalu is a minority of the population.

The PAC applications data over an 11-year period to 2016-17 can provide the basis to project into the future the number of adults who are likely to take concrete steps to migrate to live and work in New Zealand based on a permanent residence visa. Figure 7 below shows this projection based on a linear trend to the year 2013.

Figure 7: The projected number of applicants for the Pacific Access Category (PAC) Visa ballot to 2013



For Kiribati, the forecast demand in 2030 to migrate based on a stated intention to do so is low, little different from the rate of six per cent in 2016-17. Based on the projected population aged 20-44 years of Kiribati in 2030, the increase in the number of applicants to 2,900 will only be 5.7 per cent of this age group. In the case of Tuvalu, the demand to migrate in 2030 is higher at 23.3 per cent of the projected adult population in the same age group, an increase from 17.4 per cent in 2016-17.

So in summary, one in four or less of households in each of the three countries see migration as an adaptive strategy to respond to environmental pressures *and* have the resources to migrate. The proportion who have taken steps to migrate in Kiribati and Nauru is lower, especially in Kiribati.

A much larger group of people in these countries will want to migrate but find themselves without the resources (be they financial, education, etc.) to do so through normal migration channels. If we combine the UN survey data on demand to migrate with PAC applications (a proxy for concrete steps to migrate), we estimate that by 2030 this group in the 20-44 year age group would comprise approximately 64 per cent of I-Kiribati (61,000 people), and 47 per cent of Tuvaluans (4,900). In Nauru this group is likely to be smaller: probably only ten per cent of the working age population (780 people). In all three countries, the total number of people who wish to migrate but are incapable of doing so will be larger than the abovementioned figures, given inclusion of people outside of this age group.

What is the impact on the sending country of migration as a response to a significant one-off disaster? Migration is by its nature selective, especially in terms of the age and education levels of the migrant. There is clear evidence for the three countries that the more educated are much more likely to migrate – both through skilled visa categories, but also through migration channels like New Zealand’s PAC visa that do not require high levels of education.³ Skilled population groups have a higher migration rate than unskilled groups even in the absence of a disaster. However, a significant one-off disaster that destroys livelihoods and makes continued

³ For Kiribati, the 2013 education profile of its migrants 15 years and over in New Zealand shows that one quarter (26 per cent) have a tertiary qualification and half (49 per cent) have completed secondary school or have a post-school non-tertiary qualification. This profile is compared to a resident population aged 15 years and over in which two per cent hold a tertiary qualification and 21 per cent have completed secondary school (Form 6), have a post-school non-tertiary qualification, or have undertaken some tertiary study but not qualified. For Tuvalu, one in five migrants aged 15 years and over (22 per cent) residing in New Zealand in 2013 had a university education, compared with eight per cent of the population of the same age group in Tuvalu. One in three migrants (34 per cent) from Tuvalu in New Zealand have completed secondary education or have a post-school non-tertiary qualification. This compares with 19 per cent with the same level of education for the total population of Tuvalu.

residence in atoll states difficult would provide an added impetus for migration to groups that are able to access skilled labour markets overseas. The likely result would be a major skills deficit for the sending country.

Displacement

Displacement refers to a response to a significant one-off disaster which is itself rapid in execution, unforeseen as to the timing of its occurrence and usually seen as the option of last resort (Foresight 2011: 116). The displacement may be for a short time or it may be for a protracted time depending on whether the area affected is habitable. In some cases, it may not be possible to return. The displacement may be initially resisted and only then undertaken under sufferance, because of the pressure for all or most to leave.

The disaster and its effects may be limited to a specific location with a small population. Or the disaster may affect a large population, such as each of the two major urban areas in Kiribati and Tuvalu, or Nauru as a whole. As noted above, for the three small island countries under study, the relocation in response to a disaster will be in nearly all instances to another country. As noted above, **internal relocation which is a common response to disasters in large countries is not an option in small island countries because of the lack of suitable areas to move to, as available land is already under dense population pressure.**

The displacement of a large population will have a major impact on the area which loses the population. The effect will be the loss of specific age groups and people with the human capital needed to operate the state or private sector effectively. Where a large population has left, the local economy will be harmed, making it impossible to operate on the same scale and effectiveness as previously. Government service delivery, such as health care and education, will also suffer.

Major population displacement as a response to a significant one-off disaster that has left existing settlements uninhabitable will have major and long-term impacts beyond the immediate displacement events. These impacts will include much slower economic growth for the country as a whole, and a loss of legitimacy for the government due to the problems it may face in meeting its social contract to protect and support its citizens (Foresight 2011: 116). Not least will be the fear on the part of the government that displacement leading to relocation will mean the loss of their sovereignty as an independent nation. As one official from Tuvalu commented in 2008, “to get a property [overseas] and relocate would be to lose our sovereign right and our identity” (Mortreux and Barnett 2009: 111). Even smaller-scale displacement events can represent significant political challenges if they are unforeseen and rapid (Foresight 2011: 117).

Over half of the population or more in Kiribati and Tuvalu could be displaced in the face of a significant disaster, based on UN University survey responses. These are the households who see that they may need to migrate in the future in response to a worsening environment but do not have the resources to do so. In the case of Nauru, two-thirds of households did not see the need to migrate as only 35 per cent of households believed that migration would be a likely response if droughts, sea level rise or floods worsened (Oakes et al. 2017).

Stayers who choose to remain or are trapped

The UN University surveys of Kiribati, Nauru and Tuvalu show that about one in four households in Kiribati and Tuvalu see themselves as stayers (Oakes et al. 2017). As noted above, the proportion of households in Nauru who suggest they are stayers is much higher at two in three. These are people who do not see themselves as needing to migrate, even in the

face of a deteriorating environment (Oakes et al. 2017). Those who want to migrate but lack the finance to do so may decide to stay in the face of a disaster if they think they will be worse off if they leave due to their lack of resources. This group can be categorised as ‘trapped’.

Why do people want to stay?

How do the non-migrants in Kiribati, Nauru and Tuvalu differ from the migrants? The attitudes of stayers have been identified through an analysis of the responses of a small sample of 19 residents of Funafuti, Tuvalu who did not want to migrate in response to climate change (Mortreux and Barnett 2009). Their most common response for not wanting to migrate was ‘lifestyle’ (Mortreux and Barnett 2009:108). For Tuvalu, the authors suggest three factors shaping people’s lack of inclination to migrate in response to climate change (Mortreux and Barnett 2009: 109-110). First, stayers’ attitudes are shaped by their religious beliefs and the sense that God will protect Tuvalu. Second, many respondents did not see climate change as being of major concern to them because they had not observed any environmental changes that they thought were out of the ordinary. Third, stayers had a strong sense of home despite all the problems they faced in living in overcrowded and socially demanding conditions. Their sense of belonging and identity, summarised in their response of ‘lifestyle’, can be so strong that it overrides concerns about living conditions (Mortreux and Barnett 2009:110). This sense of home means that some people decide to never leave, even if the situation demands it. The authors note:

The profound attachment to Funafuti and Tuvalu that people feel – so much so that they are prepared to suffer at home rather than move - points to the extent to which full-scale migration would be a tragedy for most Tuvaluans (Mortreux and Barnett 2009:110).

Other evidence shows the demographic and social characteristics of the stayers. Migrants are more likely to be from better-off households, younger, and more educated than the general population. Stayers, therefore, are more likely to be older and less educated than migrants. In Kiribati, and Tuvalu, lower income households are less likely to migrate (Oakes et al. 2016: 50; Taupo et al. 2016:17). Importantly, households in Tuvalu that cannot afford to migrate are more likely to reside in areas that are more vulnerable to climate change, such as the ‘borrow pits’ that were created when the island’s runway was constructed (Milan et al. 2016: 49; Taupo et al. 2016: 1).

Conclusion and policy recommendations

The need for change

This paper has noted the range of economic, social pressures and environmental pressures on the three countries studied, which are often further exacerbated by climate change. A major source of pressure is population growth in a limited land area. The CSIRO, based on research in Papua New Guinea, suggests that the human-carrying capacity of small islands is approximately 100 people per square kilometre (Foale 2005; Butler et al. 2014b). UN population density estimates show that in 2015, Nauru and Tuvalu had 563 and 367 persons per square kilometre respectively, while Kiribati (excluding Kiritimati) had a population of 251 persons per square kilometre. These figures are increasing in Tuvalu and Kiribati, and rapidly so in the case of Kiribati.

Migration plays an important role in helping households to adapt to these pressures, a role which varies according to the thresholds reached when specific adaptation strategies are no longer effective.

The evidence presented in this paper has shown that migration opportunities may be least available to those who live in the most vulnerable locations and circumstances. The vulnerability that many households in these three countries face is the result of a combination of the threats from the physical environment and the lack of access to opportunities to develop more resilience.

For migration to perform its role in changing adaptive strategies, more migration opportunities need to be provided to low-income households. **Freely chosen, managed migration of a population is more effective than large-scale, reactive migration in response to a humanitarian crisis.** The major constraint on migration for Kiribati, Nauru and Tuvalu is the limited opportunities that exist to migrate to Australia and New Zealand for low-skilled workers. These limited opportunities have generated low migration rates which are likely to continue into the future unless the scale of migration increases significantly.

The current reality and future scenarios presented for Kiribati, Nauru and Tuvalu show they are largely closed societies, with limited scope for households to spread their risks by engaging in migration to cope with the range of pressures they face. A key policy challenge is to work out how to achieve a ‘step up’ or major lift in Kiribati’s low emigration rate, given the small size of its diaspora populations in New Zealand and Australia, and limited demand for migration. Similar challenges exist for smaller Tuvalu and Nauru, which also have low emigration rates, small diasporas and little demand to migrate – especially in the case of Nauru – compared to other similar Pacific countries such as Samoa and Tonga.

Limitations of current policies

Policies supporting migration from the three microstates are disjointed and operate in silos. In the case of Kiribati, the sending government has its own migration policy *Migration with Dignity*. The governments of the major destination countries, Australia and New Zealand, have their separate agreements with the Government of Kiribati and their own programs to provide access to migration opportunities. Programs such as the Seasonal Worker Programme (SWP), the Australia Pacific Training Coalition (APTC), TVET funding for the Kiribati Institute of Technology, as well as the new Pacific Labour Scheme, operate largely independently of each other with some linkages orchestrated from outside the country. These initiatives also for the most part focus on circular labour mobility to Australia, unlike New Zealand’s Pacific Access Category visa which offers permanent residence.

Policies are likely to be ineffective if they focus on short-term or intermediate targets rather than genuine strategic objectives. Clear identification of the strategic objective of a policy relevant to migration in the context of environmental change is essential for the benefits to be realised and for problems to be addressed effectively (Foresight 2011: 124).

Need for a strategic approach to achieve a quantum increase in long-term migration

A strategic approach is needed to work out ways to significantly lift the long-term emigration rate of each country. The ‘step-up for migration’ strategy needs to be bold and broad in its scope, going beyond merely a focus on circular labour mobility. The ‘step-up for migration’ strategy needs to address ways to ensure that the benefits are being achieved at national, community and household levels, that harmful effects are minimised, and that linkages are made to other relevant policies to extend the benefits. In particular, attention needs to be given

to ways that short, medium and long-term migration can support households to adapt to environmental change by building their resource base to withstand unexpected shocks and otherwise reducing their vulnerability.

The strategy needs to be developed in an inclusive way, and have buy-in from both sending and receiving governments, as well as from affected stakeholders. The strategy needs to be open to experimenting with different options and learning from what works and what does not. A strategy group of key stakeholders who reside in-country, including both sending and receiving government representatives, could help to ensure that such experimentation occurs.

For example, the strategy group could set up and monitor migration pathways which link together existing opportunities to migrate. There are several examples of potential pathways. APTC graduates could build up their financial resources and gain valuable experience by working in low-skilled jobs in tourism and hospitality available under the Seasonal Worker Programme. With this background, they could then apply to work in Australia under the Pacific Labour Scheme for one to three years. Similarly, people who have completed secondary school could work on the Seasonal Worker Programme to build up their financial resources and gain relevant work experience to enable them to undertake a qualification at the APTC, relevant to job opportunities under the Pacific Labour Scheme.

Key issues the ‘step-up for migration’ strategy should address are:

- create linkages between existing opportunities to migrate to enable individuals to achieve better migration outcomes in a step-wise fashion;
- specify the role for Australian and New Zealand-based resident coordinators, seeking funding for the position and working closely with community leaders and officials to coordinate as the liaison with the selection process for workers;
- improve the chances of poorer, more vulnerable households being selected for work overseas by providing access to training and other forms of support,
- identify linkages to other policies to extend the benefits of migration, for example policies relating to credit, insurance and promoting forms of productive investment;
- identify, monitor and seek ways to maximise the benefits for governments, employers, and source and destination communities, as well as the benefits sending households receive; and
- develop and publicise appropriate and simple indicators of migration outcomes and the costs and benefits.

Planning for displacement

More attention needs to be directed towards the possible displacement of populations due to sudden onset natural disasters. In a changing climate, the likelihood of such events are increased, as is their likely impact, aggravated as it is by existing population and environmental pressures.

The UN's Global Compact for Safe, Orderly and Regular Migration, released on 11 July 2018, makes some timely recommendations in this area, which are relevant to the microstates. Recommendations under Objective 2 of the Compact⁴ include:

⁴ Objective 2 is focused on population movements related to natural disasters, the adverse effects of climate change, and environmental degradation. Objective 4, which urged governments to “ensure that all migrants have proof of legal identity and adequate documentation” is also relevant.

- Strengthen joint analysis and sharing of information to better map, understand, predict and address such migration movements.
- Develop adaptation and resilience strategies to both sudden-onset and slow-onset natural disasters, taking into account the potential implications on migration.
- Integrate displacement considerations into disaster preparedness strategies and promote cooperation with neighbouring and other relevant countries.
- Harmonise and develop approaches and mechanisms at subregional and regional levels to address the vulnerabilities of persons affected by sudden-onset and slow-onset natural disasters, by ensuring they have access to adequate humanitarian assistance.

Two more detailed guides are recommended. These are the [*Agenda for the Protection of Cross-Border Displaced Persons in the Context of Disasters and Climate Change*](#), and the [*Platform on Disaster Displacement*](#).

Conclusion

Future prospects for Kiribati and Tuvalu will be adversely affected by high population growth trajectories, resulting in even more intense pressure on land and other natural resources. Environmental deterioration, and the regular occurrence of natural disasters, will have adverse impacts in both countries, as well as in Nauru. Migration, whether internal or overseas, has long been a key adaptive strategy for these countries. However, the options for overseas migration have been limited. The challenge for the future is to work out ways that managed migration pathways can be fostered for more vulnerable households – pathways that will benefit those who want to migrate but lack the resources to do so. Such pathways, combined with a larger diaspora residing overseas, will help those who are prepared to migrate in the face of a catastrophic disaster by giving them the resources to do so, without resorting to displacement. Such migration can also benefit those who want to stay through the development of a safety net and more general support for those with family overseas.

References

- ADB 2018, Basic 2018 Statistics, May, Core Indicators: proportion of population living below the national poverty line. Asian Development Bank, Mandaluyong City, Philippines.
- Asian Development Bank, 2012, The state of Pacific towns and cities: Urbanisation in ADB's Pacific developing member countries. Asian Development Bank, Mandaluyong City, Philippines.
- Barnett, J & McMichael, C; 2018, 'The effects of climate change on the geography and timing of human mobility', *Population Environment* Vol 39: 339-356.
- Barnett, J; 2017, 'The dilemmas of normalising losses from climate change: towards hope for Pacific atoll countries', *Asia Pacific Viewpoint*, 58 (1), 3-13.
- Bedford, Richard, Bedford, Charlotte, Corcoran, John, & Didham, Robert. (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.
- Bevege, Alison 2018 'People evacuated from Papua New Guinea island after volcano explodes', 14 January, Reuters (Sydney).
- Black, R; & Collyer, M; 2014, 'Populations 'trapped' at times of crisis', *Forced Migration Review*, vol. 45 (February), pp. 52-56.
- Campbell, J., Oakes, R., and Milan, A. (2016). Nauru: Climate change and migration – Relationships between household vulnerability, human mobility and climate change. Report No.19. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS).
- CSIRO, 2018, Kiribati, Nauru and Tuvalu Climate Change Impacts Issues Paper, CSIRO Climate Science Centre, Canberra, 26 July.
- Curtain, R. 2016a. "Pacific migration pathways and employment outcomes: barriers and opportunities", paper presented at Workshop on New Research on Pacific Labour Mobility, Development Policy Centre, Crawford School of Public Policy, ANU 2 June.
- Curtain, R., Dornan, M., Doyle, J. Howes, S. 2017. Pacific Possible. Labour Mobility: The ten billion dollar prize. ANU and World Bank
- Florance, L; 2015, 'Puckapunyal: How a place of refuge for East Timorese in 1999 could assist Syrians in need today' 10 September 2015, ABC News.
- Foresight: Migration and Global Environmental Change, 2011, Final Project Report. The Government Office for Science, London.
- Geddes W H, Anne Chambers, Betsy Sewell, Roger Lawrence and Ray Watters, 1979, Atoll Economy: Social Change in Kiribati and Tuvalu Islands on the Line: Team Report. Development Policy Centre, ANU No 1.
- Gibson, J., McKenzie, D., and Rohorua, H. 2013. "Development impacts of seasonal and temporary migration: a review of evidence from the Pacific and Southeast Asia", *Asia and the Pacific Policy Studies*, vol. 1, no. 1, pp. 18–32.

Gibson, J., McKenzie, D. Rohorua, H. and Stillman, S. 2015. “The long-term impacts of international migration: evidence from a lottery”, Policy Research Working Paper 7495, Development Research Group, Finance and Private Sector Development Team, World Bank November.

Government of Kiribati, 2010, Analysis of the 2006 Household Income and Expenditure Survey: A report on the estimation of basic needs poverty lines, and the incidence and characteristics of poverty in Kiribati. Kiribati National Statistics Office and UNDP Pacific Centre Suva, Fiji.

Hiroya Yamano, Hajime Kayanne, Toru Yamaguchi, Yuji Kuwahara e, Hiromune Yokoki, Hiroto Shimazaki, Masashi Chikamori, 2007, ‘Atoll island vulnerability to flooding and inundation revealed by historical reconstruction: Fongafale Islet, Funafuti Atoll, Tuvalu’, *Global and Planetary Change* 57 :407–416

Immigration NZ, 2017, B1 Ballots Received and Decided, Statistics Immigration New Zealand website.

Internal Displacement Monitoring Centre, 2018, Global Report on Internal Displacement 2018. Available at: <http://www.internal-displacement.org/global-report/grid2018/>

Kelley, C; Shahrzad Mohtadi, Mark A. Cane, Richard Seager, and Yochanan Kushnir, 2015, ‘Climate change in the Fertile Crescent and implications of the recent Syrian drought’, *Proceedings of the National Academy of Sciences* Mar 2015, 112 (11) 3241-3246; DOI: 10.1073/pnas.1421533112

Kelman, I, 2014, ‘No change from climate change: vulnerability and small island developing states’ , *The Geographical Journal*, Vol. 180, No. 2, June 2014, pp. 120–129.

Milan, A., Oakes, R., and Campbell, J. (2016). Tuvalu: Climate change and migration: Relationships between household vulnerability, human mobility and climate change. Report No.18. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS).

Mortreux, C & Barnett J; 2009, ‘Climate change, migration and adaptation in Funafuti, Tuvalu’, *Global Environmental Change* 19: 105–112

New Zealand Parliament, 2008, ‘Immigration chronology: selected events 1840-2008’, 15 April.

Oakes, R., Milan, A., and Campbell J. (2016). Kiribati: Climate change and migration: Relationships between household vulnerability, human mobility and climate change. Report No. 20. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS).

OECD 2018 International Migration Database: Inflows of Foreign population by nationality for Kiribati, Tuvalu and Nauru

Republic of Kiribati, 2012, Island Report Series 21. Tabuaeran, p 9. Available at: http://www.climate.gov.ki/wp-content/uploads/2013/01/21_TABUAERAN-revised-2012.pdf

Republic of Nauru, 2009, 'Climate Change Response National Communication under the United Nations Framework Convention on Climate Change'.

Shaw, L. Edwards, M., Rimon, A. 2014, KANI Independent Review: Review Report, Department of Foreign Affairs and Trade, Canberra. Available at: <http://dfat.gov.au/about-us/publications/Documents/kiribati-australia-nursing-initiative-independent-report.pdf>

Taupo, T; Harold Cuffe and Ilan Noy, 2016, 'Household vulnerability on the frontline of climate change: The Pacific atoll nation of Tuvalu', SEF Working Paper 20/2016 Working Papers in Economics and Finance, School of Economics and Finance, Victoria Business School, Wellington.

United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

United Nations, Department of Economic and Social Affairs, Population Division (2018). World Urbanisation Prospects: The 2018 Revision, custom data acquired via website.

Appendix 1: Population Pressures

Population growth: The pressure of population growth on a limited resource base in the three countries has long been acknowledged. A 1979 report based on extensive fieldwork in Kiribati and Tuvalu before independence noted that “population pressure remains a problem of overriding importance, for land resources are constant and employment opportunities overseas or within the region are either stable or declining” (Geddes et al. 1979: 160). In the case of Nauru, at least three-quarters of the island is deemed uninhabitable and unsuitable for any kind of livelihood, due to phosphate mining (Nauru 2011: 1). The result is that only four square kilometres are suitable for agriculture (WDI 2018).

Over a period of some 65 years, from 1950 to 2015, the population of Kiribati has increased from an estimated 33,048 to 112,407, which is a change of 240 per cent. Over the same period, the population of Nauru has increased from an estimated 2,954 to 11,260, a growth in percentage terms of 281 per cent.⁵ Tuvalu’s population over the same period increased from an estimated 5,166 to 11,001, a percentage change of 113 per cent (see Table A1).

Table A1: UN estimates of the population of Kiribati, Nauru and Tuvalu in 1950 and 2015, and percentage change

	1950	2015	Percentage change
Kiribati	33,048	112,407	240
Nauru	2,954	11,260	281
Tuvalu	5,166	11,001	113

Age structure: Kiribati, Nauru and Tuvalu have a population age structure in which children and youth dominate. The most recent census age data for each country show that over half of the population is aged under 25 years of age. Nauru has the youngest population, with a median age in 2011 of 21.5 years, or 57 per cent of its population aged under 25 years. Kiribati has a median age of 21.3 or 55 per cent of its population aged under 25 years. Tuvalu has a higher median age of 24.2 with 51 per cent of its population aged under 25 years.

A measure of the youth bulge is the proportion of the youth population in the total population aged 15 years and over. This measure shows the extent of the pressure the youth cohort is exerting on the economy to provide viable livelihoods for them. Young people aged 15-29 years face the most challenging years of their transition to adulthood. Table A2 shows that for Nauru, nearly half of the population aged 15 and over (47 per cent) are in the youth age group 15 to 29 years. Kiribati also has a significant youth bulge with 44 per cent of its population 15 years and over in the 15-29 age group. Tuvalu has a slightly lower but still significant youth bulge of 40 per cent of the population aged 15 years and over.

⁵ This increase is influenced by the fact that Nauru’s population after the Second World War was historically low due to the Japanese occupation and exile of Nauruans to Chuuk in FSM.

Table A2: Number and proportion of young people aged 15-29 years, Kiribati, Nauru and Tuvalu

Age group	Kiribati 2015	Nauru 2011	Tuvalu 2012
15-29	31,667	2,909	2,885
15+	71,698	6,221	7,311
Percentage	44.2	46.8	39.5

The youth bulges of Nauru and Kiribati are larger than the youth share of the population aged 15 and above in all less developed countries, excluding China (39 per cent in 2015).⁶ Within the region, UN population estimates for 2015 show that Kiribati has a greater youth bulge than Papua New Guinea (43 per cent), and Solomon Islands (44.7 per cent). Only the Federated States of Micronesia, with 50 per cent of its working age population aged 15-29 years, has a greater share (UN Population Division 2017).

Population density: The number of people per land area highlights in a stark way the environmental pressure on a country's capacity to provide subsistence livelihoods or cash crop opportunities for its population. Kiribati, Nauru and Tuvalu have the highest population density rates in the Pacific region and have population densities which are among the highest in the world. The pressure of a growing population with access to limited resources has been noted for some time.

UN population density estimates show that in 2015 Nauru and Tuvalu had 563 and 367 persons per square kilometre respectively, placing them at first and second place in the rank order of country population densities in the Pacific region (UN 2017). Next in the rank order of population density come Marshall Islands, Federated States of Micronesia (FSM), and Tonga. Kiribati is ranked sixth after Tonga, with 139 persons per square kilometre. However, this rank order does not reflect actual conditions for most of Kiribati's population. Kiribati's territory includes the large raised coral island of Kiritimati. This island has an area of 388 per square kilometre but only has a population of 6,447 in 2015, resulting in a very low density of 17 persons per square kilometre. This large land area is near to half of Kiribati's total land area. If this area, with its small population, is excluded from the calculations for the population density for Kiribati, its population density rate rises to 251 persons per square kilometre which more accurately reflects the reality for the rest of the population. This adjusted higher population density rate places Kiribati in fourth place in the Pacific region, behind Marshall Islands.

These populations densities are among the highest in the world. A ranking of all countries in the world in terms of population density places Nauru at 22nd, behind Lebanon and ahead of the Republic of Korea. Tuvalu ranks in 34th place behind Israel and ahead of Martinique. Kiribati, with Kiritimati excluded, ranks 54th in the world, behind Trinidad and Tobago and ahead of Cayman Islands (UN Population Division 2017).

Population density based on agricultural land: The World Bank's WDI measure of the area of agricultural land refers to the share of land area that is arable, under permanent crops or under permanent pastures. Land abandoned as a result of shifting cultivation is excluded.

⁶ United Nations, Department of Economic and Social Affairs, Population Division, 2017, World Population Prospects: The 2017 Revision, custom data acquired via website.

Using this measure, the population density for Nauru increases to 2,815 persons per square kilometre as only four kilometres are defined as arable. The population density for agricultural land in Tuvalu is 611 persons per square kilometre and for Kiribati it is 331 persons per square kilometre. These population densities based on agricultural land are among the highest in the region.

Kiribati is estimated to have a large increase in its population density by 2050. UN projections, based on the medium variant, show that by 2050, Kiribati, excluding Kiritimati, will increase its population density from 251 per square kilometre in 2015 to an estimated 410 persons for square kilometre in 2050. Nauru, on the other hand, is projected to not increase its population density, remaining at virtually the same level as in 2015. Tuvalu has a projected increase in population density from 367 persons in 2015 to 486 per square kilometre in 2050.

Appendix 2: Natural Resource Base

Kiribati and Tuvalu, together with the Marshall Islands and Tokelau, have their populations distributed across a number of coral atoll islands.⁷ These coral atolls have extremely constrained natural resources to sustain a subsistence livelihood. The atolls have small land areas, with little top soil to grow food crops. They also lack surface water which means that swamp taro, the most important food staple on the outer atolls, has to be cultivated in permanent compost pits to access the thin fresh water lenses floating over the seawater. Some types of taro grown this way are particularly vulnerable to seawater intrusion from high tides and storm surges (Taylor et al. 2016: 125-126). Salinisation of groundwater, brought on by droughts, storm surges and land lost due to coastal erosion, will make it even more difficult for this cropping method to supply food to growing populations (Taylor et al. 2016: 127). It is likely that increasing salinisation could result in swamp taro production declining in importance in the short term by 2030 and disappearing as a source of food entirely in the medium term by 2050 (Taylor 2016: 127).

Water scarcity is a major issue. Atoll communities rely completely on either rainwater harvested from roofs, thin and fragile groundwater reserves, or a combination of both. Taylor et al. (2016) note that the relatively small reserves of freshwater associated with household tanks and thin groundwater lenses are highly susceptible to the impacts of drought. They also note that near-shore aquifers are also particularly vulnerable to the impacts of saltwater intrusion caused by the combination of sea-level rise, increased risk of storm surge, and over-extraction (Taylor et al 2016: 146).

Fish are the main source of protein in the outer atolls in Kiribati and Tuvalu as well as Nauru, sourced from inshore fishing. The sustainability of this food source is affected by a growing population, resulting in overfishing due to limited alternative sources of protein. The other major threat is climate change. Bell et al. (2018: 318) have noted that small-scale coastal fishing underpinning food and livelihoods across the Pacific have a moderate to high vulnerability to climate change. They attribute this vulnerability to a reliance on catching fish from coral reefs, increases in sea surface temperature pushing many fish species to higher

⁷ The main atoll-based economies of the Pacific are Kiribati, Republic of the Marshall Islands, Tuvalu, Tokelau, the northern Cook Islands and the Tuamotu Archipelago of French Polynesia (Taylor et al. 2016: 385).

latitudes; and the degradation of coral reefs resulting in lower numbers of fish species remaining on reefs.

The combined direct and indirect effects of climate change, such as increasing sea temperatures, ocean acidification, and changes to the growth in fish numbers and species distributions, is projected under a high emissions climate change scenario to lower the production of coral reef fish in the Pacific by up to 20 per cent by 2050 and up to 50 per cent by 2100 (Bell et al 2018: 316).

The main cash crop is copra, a product of coconuts, which provides low and unreliable returns and are often subsidised in the atoll countries to support rural livelihoods (Taylor et al. 2016: 242).

The CSIRO, based on research in Papua New Guinea, suggests that the human-carrying capacity of small islands is approximately 100 people per square kilometre (Foale 2005; Butler et al. 2014b). Above this level of population density, food and fresh water security cannot be guaranteed, and shocks such as natural disasters and climatic events, such as El Nino droughts, may have a major effect on livelihoods. Applying this likely threshold to Kiribati and Tuvalu reveals that all outer islands were at least double the 100 person per square kilometre threshold. In Tuvalu in 1991 the average population density of all outer islands was 228 per square kilometre. With internal migration, the average density has fallen somewhat over time, but in 2012 the population density of the outer islands – at 203 persons per square kilometre – was still was still double the likely threshold (Tuvalu Census 2012a: 6).

Kiribati has a similar profile of most of the non-urban population living on small islands with high population densities. The population pressure on these constrained livelihoods environments will continue to push people to migrate to the urban areas of Kiribati and Tuvalu. The UN projected urbanisation rate for Kiribati by 2030 is 65 per cent and by 2050 is projected to be 71 per cent. For Tuvalu, with a higher urbanisation rate at present, the projected rate by 2030 is 71 per cent and by 2050 is projected to be 78 per cent.

The 2010 and 2015 census results for Kiribati show the population density for each island. In 2010, aside from the two urban areas of Betio and South Tarawa, 15 out of the 21 outer islands had population densities of 100 or more and two islands had densities of 97 and 91, which together accounted for 83 per cent of the non-urban population. Of the total non-urban population, 41 per cent of Kiribati's population are living in outer islands with population densities of over 200 persons per square kilometre, with a weighted average of 295 persons per square kilometre. In 2015, there were 14 outer islands with population densities of 100 or more, with two islands at 97 and 94, which together account for 79 per cent of the total non-urban population. Six islands have a population density of 200 and above, with a weighted average of 288 persons per square kilometre.

Appendix 3: International migration

Opportunities to work abroad on a temporary basis: Migration to work abroad on contract has been another element of the adaptive strategy of the residents of Kiribati and Tuvalu. In the 1970s, it was reported based on extensive fieldwork in Kiribati and Tuvalu that “people on all the islands surveyed favoured employment on the phosphate islands of Nauru and Ocean [Banaba] or on ships because of the security of contract employment, the low living expenses and the availability of useful items to purchase” (Geddes et al. 1979: 24). Nauru’s 2002 census showed that 1,259 residents were Kiribati nationals and 423 were Tuvalu nationals working in the phosphate mine. These workers accounted for 17 per cent of the resident population at that time (Nauru 2011: 61). In 2006 more than 1,200 workers, mainly from Kiribati and Tuvalu, were repatriated home due to the decline in mining (Nauru 2011: 50).

Work as seafarers has also been an important source of income in the form of remittances for Kiribati and Tuvalu. From 1959, seafarers were recruited to work on international merchant ships, first by the British, then by a consortium of German shipping companies. Since the 1960s, employment as seafarers has been important for Tuvaluan men, with 250 to 300 trainees contracted to work on ships each year. In the mid-2000s, about 400 to 500 seafarers were working at any one time (Tuvalu Census 2012: 9). However, since 2008 the numbers of seafarers from Tuvalu has declined significantly, due to competition from countries that are cheaper to recruit from. As a result, the numbers employed by German shipping companies has declined from 147 in 2008 to 27 in 2012, falling to near zero between 2013 and 2015 (OECD 2018).

For Kiribati, seafarers were recruited first in 1967 to work on German merchant ships, and later other seafarers were recruited to work on Japanese tuna vessels. Between 2002 and 2010 men and women were employed on Norwegian and US American cruise liners. Periods of work varied from six months to one year or more (Borovnik 2007: 226; Republic of Kiribati 2012: 9). In November 2006, a total of 1,433 registered seafarers were working overseas (Borovnik 2007: 226). However, data for Germany show that visas approved for Kiribati citizens peaked in 2005 at 358, then fell significantly in 2009 to 269 visa approvals, and has continued to fall, down to 146 visa approvals in 2015 (OECD 2018).

The economic benefit of work overseas is the remittances sent home. About 40 per cent of all households enumerated in Tuvalu in 2012 had received some remittances over the previous year, with just over one in four households receiving remittances from outside of Tuvalu and one in five households receiving remittances from within the country (Tuvalu Census 2012: 11). However, the share of households receiving remittances had declined over the previous decade when in 2002 half of Tuvaluan households had received remittances, reflecting the fall in seafarer numbers over this decade.

Seasonal work: For Tuvalu, seasonal work has not offered the same amount of work as seafaring provided. The total number of seasonal work jobs in Australia gained by workers from Tuvalu between 2012-13 and 2017-18 has only been about 30, with no jobs gained in the last two financial years. Tuvalu has fared a little better in gaining RSE jobs in New Zealand but has achieved only an average of 68 jobs per year over the decade to 2016-17.

Kiribati, on the other hand, has gained 567 SWP jobs over the same period, with a large rise from 124 jobs in 2016-17 to 364 jobs in 2017-18. Tuvalu has gained an average of 120 RSE jobs over the decade to 2016-17, rising from an average of 52 in the first three years to reach 189 jobs in 2016-17. Nauru has gained only 27 SWP jobs over the same period and 57 RSE jobs which were in the three years to 2016-17.

New Zealand's 2013 census recorded 3,537 Tuvaluans in residence, an increase of 80 per cent from the 1,965 recorded in 2001. Only about 40 per cent (1,419) had been born in Tuvalu, showing a long-established pattern of migration to New Zealand (Tuvalu Census 2012: 9). The main pathway available to Tuvaluans is the Pacific Access Category quota of 75 places per year.

Temporary skilled migration including APTC graduates

Temporary skilled migration to Australia over the five-year period to 2016-17 attracted 57 migrants from Kiribati, 35 from Nauru and 31 from Tuvalu. Of the migrants from Kiribati, half (54 per cent) were primary applicants (i.e. the skilled workers), with near to one in three primary applicants from Nauru and Tuvalu respectively. In all, 50 or two in five (41 per cent) migrated to Australia as skilled workers from the three countries. Their occupations and number are as follows: registered nurse (aged care) (17); aeroplane pilot (6); minister of religion and religious assistant (6); welder (first class) (5); general practitioner and resident medical officer (5); medical diagnostic radiographer (4); motor mechanic (3); registered nurses (not elsewhere classified) (2); and transport operations inspector (2).

Temporary skilled migration to New Zealand over the five years to 2016-17 attracted 386 migrants from Kiribati, 187 from Tuvalu and six from Nauru. One third of this number were essential skills workers and the remainder were partners and dependent children. Kiribati accounted for the most of the temporary work occupations (150), Tuvalu with 34 and Nauru with one worker. The most important occupations are as follows: deck and fishing hands (49); aged and disabled carers (37); nursing support and personal care workers (20); crop farm workers (14); nurserypersons (6); commercial cleaners (5) livestock farm workers (5); welfare support workers (5) and miscellaneous labourers (4). The profile of workers from Kiribati is different to that of the workers from Tuvalu. The most important occupations for the temporary work migrants from Kiribati are: deck & fishing hands (49); aged & disabled carers (36), nursing support & personal care workers (11) and crop farm workers (11). The occupations of temporary work migrants from Tuvalu are: nursing support & personal care workers (9); commercial cleaners (4); crop farm workers (3); miscellaneous labourers (3) bar attendants & baristas (2) meat boners & slicers, and slaughterers (2).

Permanent migration to Australia and New Zealand

Over the five years to 2016-17, Australia accepted as permanent migrants 99 people born in Kiribati, 106 born in Nauru and 39 born in Tuvalu. In the case of Kiribati, the numbers migrating for permanent settlement have increased from seven and eight the first two years to 29 and 34 in the last two years over this five-year period. The marked increase in skilled migration from Kiribati in the years 2014-15 to 2016-17 is due mostly to applications from registered nurses. It is most likely that these skilled migrants are from a contingent of 68 who trained and graduated in Australia under the Kiribati Australia Nursing Initiative (Shaw et al. 2014). This initiative was a scholarship program operating in Australia between March 2006

and June 2014 to fund and support students for Kiribati to obtain Australian nursing qualifications up to Bachelor of Nursing and related qualifications.

In the case of Nauru, the flow of permanent migrants has declined from a large intake of 70 in 2012-13 to five or less each other year. Permanent migration in Australia from Tuvalu has ranged from 15 to nine.

Further analysis shows that the main pathway to permanent settlement in Australia for Nauru and Tuvalu is an indirect one via New Zealand and New Zealand citizenship. This applied to three in five permanent migrant arrivals (62 per cent) for those born in Nauru and for close to nine out of ten migrants born in Tuvalu (87 per cent). This pathway was insignificant for those born in Kiribati over this five-year period, with only six per cent migrating to Australia this way.

Apart from the access granted through the Pacific Access Category (PAC) Visa, few citizens from Kiribati, Nauru and Tuvalu have migrated permanently to New Zealand in the five years to 2016-17. Over this period, only five citizens from Kiribati migrated as a skilled worker (nursery person, prison officer, ship's officer, social worker and religious worker). Only one skilled migrant (security consultant) came to New Zealand from Nauru as a permanent resident. Only two skilled permanent migrants came from Tuvalu (finance broker and ship's officer) over the same period.

This analysis shows that Kiribati, Nauru and Tuvalu have not established a direct migration pathway to live and work in Australia.

Appendix 4: Demand for international migration

International migration

Kiribati and Nauru differ from Tuvalu in terms of their more limited exposure to international migration. For Kiribati, the UN University survey results based on movements with definite starting and destination points showed that a third of these movements recorded between 2005 and 2015 were international, fairly evenly divided between seafaring and other international movements (Oakes et al. 2016: 63). The main international destinations were New Zealand (24 per cent), Fiji, (21 per cent), and Marshall Islands (16 per cent) (Oakes et al. 2016: 40).

Only one in ten Nauruans and one-third of households migrated overseas between 2005 and 2015. The main destinations were Fiji, which accounts for almost half of all international movements (45%), followed by Australia, (24 per cent). Labour migration made up roughly 21 per cent of migration trips, while educational migration accounted for approximately half (51 per cent) of all movements, reflecting the high number of departures to Fiji (Campbell et al. 2016: 11).

In contrast, Tuvalu, based on the same measure of movements with definite starting and destination points, showed that 64 per cent of these movements were international, comprising 20 per cent of the movements to work as seafarers and 44 per cent for other international movements, mostly to Fiji (63 per cent of international destinations), New Zealand (16 per cent) and Australia (five per cent) (Milan et al. 2016: 61, 41).

Demand to live and work in New Zealand

A more accurate indication of the demand from Kiribati and Tuvalu for access to the opportunity to live and work in another country with the right to permanent residence is the number of adult applicants for New Zealand's Pacific Access Category (PAC) Visa. The Pacific Access Category visa quota for permanent residence was established in July 2002.⁸ The quota enables 75 citizens each from Kiribati and Tuvalu, as well as 250 Tongan and Fijian citizens who are selected by ballot to be offered a visa for residence in New Zealand, provided they meet the specified conditions. A separate Samoan quota of 1,100 visas, operating under the same process, is open to applicants from Samoa.

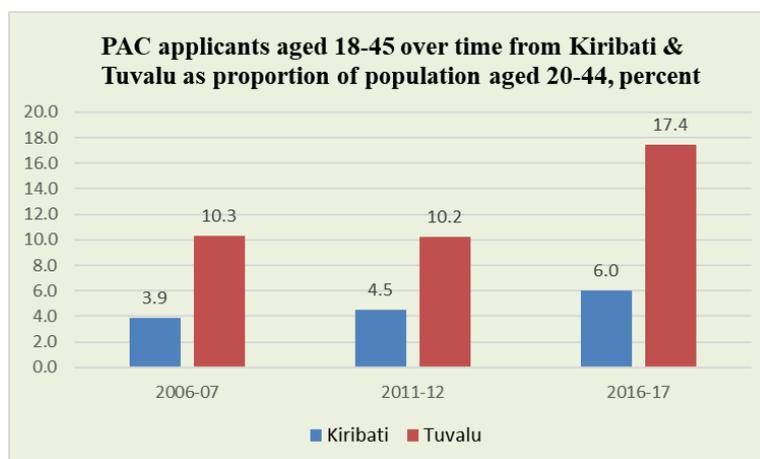
Eligible citizens of the five countries must be aged between 18 and 45 years to register as the principal applicant under the ballot. If successful, the principal applicant and the secondary applicants (i.e. partner and dependent children aged 24 and under) are entitled to apply for permanent resident visas within eight months. Three conditions need to be met to be granted a visa. First, visa applicants are required to meet health and character requirements, confirmed by a medical assessment and police check. Second, visa applicants have to show they are able to read, write and speak basic English. Third, the principal applicant or partner has to obtain a job offer of at least 30 hours a week for a duration of at least 12 months from a New Zealand employer that pays enough to support the principal applicant and his or her family in New Zealand.

The adult demand for the 75 places in Kiribati and in Tuvalu over the 15 years to 2016-17 can be gauged by separating out the number of dependent children from adult primary and secondary applicants. Data from Immigration New Zealand show a steady increase in the numbers of principal and secondary applicants applying since July 2002, especially from 2005-06. For Kiribati, the trend reaches two peaks: one peak of 2,361 adult applicants in 2009-10 and another peak in the most recent year reported 2016-17 of 2,419 adult applicants. The decline in applicants after 2009-10 may have been due to the onset of the global financial crisis from 2010-11 and the effect this had on the perceived availability of jobs in New Zealand. For Tuvalu, the trend is a steady increase, almost doubling from 314 adult applicants in 2006-07 to 614 adult applicants in 2016-17.

Estimating the actual demand from Kiribati and Tuvalu for the opportunity to migrate to take up permanent residency in New Zealand requires referencing the number of adult applications to the total population in the same age group who could have applied. This has been done for three time periods in Figure A1. The graph shows that Tuvalu has had much higher demand for PAC places compared with Kiribati. In the earlier years, the demand from Tuvalu was more than double that of the demand from Kiribati. However, in the 2016-17 financial year, the demand from Tuvalu relative to the adult population aged 20-44 years has reached close to three times that of the equivalent demand from Kiribati. The other feature of the graph worth noting is that only a minority of adults in both countries have taken a specific step to migrate to live and work overseas with the right to permanent residence.

⁸ New Zealand Parliament, 2008, '[Immigration chronology: selected events 1840-2008](#)', 15 April.

Figure A1: The demand for Pacific Access Category (PAC) places in Kiribati and Tuvalu as a proportion of the population aged 20-44 years, per cent



These findings are consistent with the results of the UN University Surveys in Kiribati and Tuvalu in 2015. In Kiribati, the survey found that only 24 per cent of households surveyed who have a desire to migrate (70 per cent of all households) believe they have the finance to do so (Oakes et al. 2016: 12). These survey results in relation to the total population surveyed suggest that less than one in five households (17 per cent) are both open to migrating in the future due to environmental stress and believe they have the resources to do so. However, the same survey for Tuvalu showed that the share of this group in the population is much larger (Milan et al. 2016). Of the three in four household respondents who believe they may need to migrate in the future due to environmental pressures, half think they have the financial resources to do so (Milan et al. 2016: 54). This means for the total population, two in five households are interested in migrating and believe they have the resources to do so. This share of the population is twice that of the share of households with the same view and capacity in Kiribati and is consistent with the results shown by the differences between Tuvalu and Kiribati in the demand for PAC places.

How does the demand from Kiribati and Tuvalu for migration for places to gain residency in New Zealand compare with the demand in Fiji, Samoa and Tonga? Figure A2 reports the rank order of demand relative to population by country, showing that Samoa has the highest demand with one in three of the source population, double that of Tuvalu in second place. Tonga comes in third place with just over one in two in the source population taking a concrete step to migrate. At the top of the rank order are Kiribati and Fiji with only six per cent and three per cent respectively of their populations aged 20-44 years applying in 2016-17.

Figure A2: The demand for Pacific Access Category (PAC) and Samoan quota (SQ) places in 2016-17 as a proportion of the population aged 20-44 years, 2015, per cent

