Original Article

Escaping a Rising Tide: Sea Level Rise and Migration in Kiribati

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Abstract

The inundation of an entire nation due to anthropogenic climate change has never been seen. And the low-lying Pacific nation of Kiribati is likely to be among the first victims of such a disaster. As such, this article examines a number of strategies for the relocation of Kiribati, and finds that bilateral migration deals with Australia and New Zealand present the best policy option. First, bilateral agreements can be designed to allow for preemptive and planned migration. Second, as relatively large countries with low population densities, Australia and New Zealand are in the best place to absorb large numbers of migrants. Third, with a history of migration, and support for the Pacific islands combating climate change, there is scope for bilateral deals to be politically supportable. Fourth, as the wealthiest countries in the region, and with developed capacities in refugee resettlement, these governments are most able to implement a migration deal. Of course, the challenge of climate change migration is larger than Kiribati. Some estimates suggest that more than 200 million people may be displaced by climate change by 2050. When this is taken into account, getting policy right in Kiribati takes on added importance, as the way the international community handles this challenge is likely to set a global precedence.

Key words: Migration, climate change, Kiribati, Australia, the Pacific

1. Introduction

Pacific Island nations are among the countries likely to be most severely affected by climate change, particularly concerning sea level rise. Accordingly, there has been a good deal of postulation about the likely need for relocation as an adaptive response by these communities. However, there has been very little research into the types of relocation that might be required, and the social, cultural, political, economic and environmental implications of such an option.

One of the first countries likely to face complete relocation is Kiribati, a low-lying island nation located in the central Pacific Ocean, 8,000 and 5,500 km northeast of Australia and New Zealand, respectively. The country is composed of 32 atolls and one raised coral island, dispersed over 3.5 million square kilometres, with only 100,000 people (KNSO 2012). Kiribati is particularly vulnerable to sea level rise for a number of reasons:

• Most islands are less than 3 m above sea level and have an average width of only a few hundred metres, rendering retreat to higher ground untenable (Kay 2008).
• Regional differences in water temperature, salinity and depth, as well as differences in wind forcing, combine to suggest that sea level rise will be greater in the tropical
Pacific than in any other area of the world (Suzuki & Ishii 2011).

Kiribati also faces rising sea levels due to coral erosion and ocean acidification (Pacific Climate Change Science Program (PCCSP) 2012).

While Kiribati lies outside the main cyclone belt, it is still susceptible to storm surges and droughts, particularly during La Niña events.

Sea level rise and storm surges threaten Kiribati’s arable land and underground fresh water supplies, contamination of which would render the islands uninhabitable long before complete inundation.

Overall, moderate projections suggest that 55 per cent of the main island could be vulnerable to inundation or storm surges by 2050, and that Kiribati could face annual economic damages due to climate change of 17–34 per cent of gross domestic product (GDP) (World Bank 2000).

Currently, a range of small-scale, donor-funded adaptation projects are being implemented to limit the effects of climate change. These projects aim to curtail the effect of sea level rise only at the margin and occur concurrently with plans to relocate the population from areas that cannot be protected (Kiribati Government 2010). So far, none of the existing sea defences have been totally effective (Kiribati Government 2007).

Rapid population growth (2.2 per cent) and economic and social weaknesses amplify Kiribati’s vulnerability to climate change and the pressure to migrate. Half of Kiribati’s population lives on the main island of Tarawa, where the population is increasing even more rapidly (4.4 per cent) as people move from outer islands in search of work.1 Further, unemployment (30 per cent) and underemployment are high, educational attainment is low and the economy is highly informal. Only 12 per cent of the population have paid formal employment, most of which work in government (KNSO 2012). As such, the average annual income per capita in Kiribati is low at US$1,650 (World Bank 2012a). Other vulnerability factors include high infant mortality, geographic isolation, agricultural instability, a narrow and unstable export base, and a dependence on foreign aid. Indeed, these issues remain significant even when Kiribati is compared with other Pacific Island countries (UN 2009).

One of the most vulnerable areas of Kiribati is Betio, a small islet joined to South Tarawa by a causeway. Here, population density is greater than that of Hong Kong, although there are no high-rise apartments and few urban services. As a result, sanitation is poor and pollution is high; only 20 per cent of households have access to a sewerage system and 64 per cent do not use toilets. Septic tanks seep into the groundwater supply, which is often brackish, and the tank infrastructure is too rudimentary to keep up with population growth (McAdam 2011).

In addition to high population growth, outmigration from Kiribati is incredibly limited. Since 2002, New Zealand’s Pacific Access Category scheme has allowed for 75 migrants annually, although take-up of this scheme has generally been far below the allowance.2 Other forms of migration have also been negligible. As a result, the population is expected to increase by a third in the next 15 years (KNSO 2007). This, combined with the projected loss in habitable land due to climate change, will contribute to a sharp rise in population density, placing increasing pressure on already marginal land and threatening local agriculture—the main economic activity for the majority of the population.

Despite the severity of the challenge faced by Kiribati and many other low-lying nations, the migration of persons due to climate change is not recognised in any binding international

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1. As a result, population density in Tarawa is 3,184 people per km². If Tarawa were a country, it would be among the most crowded in the world (top 8 per cent) (KNSO 2012 and World Bank 2012a).

2. See Immigration NZ data, Ballot System, accessed 15 June 2013 at: <http://www.immigration.govt.nz/migrant/general/generalinformation/statistics/>. 
treaty. This means that such migrants are almost invisible in the international system: no institution is responsible for collecting data on their numbers, let alone providing them with basic services. Additionally, no individual country has yet been willing to set a precedent by unilaterally agreeing to accept climate change refugees. Consequently, forced climate migrants ‘fall through the cracks of international refugee and immigration policy’ (International Organization for Migration 2008).

Without a viable migration strategy, Kiribati is forced to consider radical measures to enable the population to stay in place. For example, in a recent address to the Pacific Islands Forum, the president noted that he had seen a plan to build a series of seawalls at a cost of nearly $1 billion, as well as a model for a $2 billion floating island. However, none of these measures would allow the population to remain in place indefinitely. Moreover, for a country with a GDP of US$151 million in 2010, projects with projected costs in the billions are clearly infeasible.

Given this situation, this article argues that migration will be an eventual necessity for the majority of the population of Kiribati, and thus explores a number of migration strategies. To begin, the most viable host nations for Kiribati migrants are its regional neighbours, with whom it already has established relationships. These include Australia and New Zealand, as well as other Pacific islands. Other developed countries, such as Japan, the United States and European nations, are not examined given the lack of evidence suggesting their interest in addressing development, climate change or migration in Kiribati.

An alternative plan would involve working towards an international agreement that made provisions for climate change refugees. Inclusion within current international refugee law, or the creation of a new agreement, would require organisations, such as the United Nations High Commissioner for Refugees (UNHCR), to provide assistance to climate change refugees. And would also require states not to return people to climate-related harms, but to grant them domestic legal status (McAdam 2011).

This article evaluates these policy options according to a number of criteria. Section 2 examines the costs and benefits of each option, Section 3 the political viability and Section 4 the administrative feasibility. Finally, Section 5 puts forward the most viable option and discusses a number of recommendations associated with its implementation.

2. Costs and Benefits

In examining the costs and benefits of each policy option, it is important to first know what an optimal migration strategy would look like, where optimal refers to minimising the costs of migration (both monetary and social costs) and maximising the benefits. To do so, the following sections provide an analysis of the optimal timing of migration flows and the required number of migrants in a given year.

2.1 Dynamic Optimisation

Determining the optimal timing of migration flows is a dynamic optimisation problem. That is, there are inter-temporal tradeoffs between migration today and migration in the future, so

3. See, for example, Perry, N (2011) Kiribati ponders floating island to fight sea rise. The Guardian (online) 29 December.

4. This article is not alone in reaching this conclusion. For example, Ray Watters (2008) concluded, in his reflections on more than 40 years of research in the Pacific, that ‘it is likely that the whole population [of Kiribati] will have to be resettled because, as a result of global warming, the atolls will be subjected to salination and later be submerged by rising sea levels’.

5. For simplicity, the analysis throughout this article will focus the largest (by population and land area) Pacific islands, including Papua New Guinea, Fiji, the Solomon Islands and Vanuatu.

6. In contrast, it has been suggested that New Zealand and Australia have ‘accepted responsibility’ for the survival of the Pacific islands, such as Kiribati (Hoadley 2005). For example, in 2011, Australia and New Zealand dispersed US$55 million in aid to Kiribati, over 90 per cent of all bilateral aid received (OECD 2013). Further, Stahl and Appleyard (2007) estimate that over 90 per cent of I-Kiribati abroad live in Australia or New Zealand.
that avoiding costs today generally implies higher costs in the future. The result being that policy decisions need to take a dynamic approach and account for both present and future impacts.

For simplicity, we consider two broad migration options:

- Act early through regular planned migration, or
- Wait and see, then evacuate, either in response to a natural disaster, or once living conditions have severely deteriorated.

We find a number of reasons to favour planned migration and discourage any reliance on evacuation. Each is worth a brief consideration:

First, the costs of relocation are non-linear and depend on the number of migrants who have already left Kiribati and established communities in host nations. That is, existing communities of I-Kiribati migrants contribute to a ‘beachhead effect’, whereby they reduce the cost to future migrants of establishing themselves in the host country (Pritchett 2006). This has been the case for other Pacific Island communities in New Zealand, where historically high levels of migration from Fiji, Tonga and Samoa have enabled the development of extensive networks that continue to facilitate current migration (Stahl & Appleyard 2007).

Second, there is option value in acting today. Planned migration today decreases the probability and cost of an evacuation occurring in the future. Without planned migration, conditions in Kiribati would approach those equivalent to a humanitarian emergency, requiring not only far higher outward migration, but a greater sense of urgency, greater social dislocation, less scope for planning and greater logistical needs. Importantly, however, emergency migration involves the establishment of temporary refugee camps. This requires moving the population to the camp and maintaining quality of life, before incurring the eventual costs of permanent resettlement as would occur under a planned migration. Thus, the costs of evacuation are very high and subsume the costs of planned migration.

Third, those that remain in Kiribati can benefit from planned migration. Migration can help reduce population pressure on the resource base by lowering the population, and perhaps more importantly, remittances from migrants can provide significant income support for those who remain at home. This will be particularly important given that climate change is likely to reduce agricultural productivity, affecting both subsistence and cash livelihoods (Campbell 2010b).7

### 2.2 Simulation of Required Outmigration

With the need for pre-emptive migration established, we then consider the required scale of this migration. While predicting the exact impacts of sea level rise and population growth is not within the scope of this article, by making some simplifying assumptions, it is possible to simulate the required level of outmigration under different scenarios. It is worth emphasising that the aim of this analysis is not to predict future trends, but to gain a broad understanding of how climate change translates into actual migration numbers.

The analysis takes a World Bank (2000) study of the impacts of sea level rise in Kiribati as a starting point. This study modelled the combined effects of the projected increase in sea level and a 1-in-14 year storm surge, and found that, under a best guess scenario, 80 per cent of the land in North Tarawa and 54 per cent of the land in South Tarawa would be affected by 2100. This analysis takes the lower estimate (54 per cent) and applies a linear trend to model the land available between today and 2100.8

7. Remittances are already important in Kiribati where they constitute 12 per cent of gross national product (although most of this income comes from employment in international shipping, not migrants) (World Bank 2012a).
8. More recent analyses do not translate sea level rise projections into percentage effects on land, and so they are not directly comparable with this study. Recent work does continue to project rising sea levels and increasingly frequent storm surges for Kiribati. Some reports (Intergovernmental Panel on Climate Change 2007; PCCSP 2012; and World Bank 2012b) project smaller increases in sea levels to those assumed by this study.
The analysis also considers population growth. Under its ‘medium’ scenario, the 2005 census projects that the population will increase from 100,000 in 2010, to 130,000 by 2025, assuming limited outmigration. Owing to a declining fertility trend, population growth is projected to decline from around 2 per cent to 0.6 per cent in 2100.

The key result is that, under the status quo, the combination of population growth and decline in land availability would cause the population density to increase fivefold by 2100, a situation that is clearly unsustainable. However, maintaining the population density at its current level would not require an unreasonable level of migration. Indeed, the simulation shows that annual migration of 2,600 people beginning in 2020 would achieve this aim (Figure 1).

The host nations targeted for bilateral deals differ greatly in terms of their ability to absorb this many migrants per annum. Large countries with low population densities, such as Australia and New Zealand, appear to have far more absorptive capacity than the smaller and more crowded Pacific islands, where I-Kiribati migration could noticeably increase the population (Table 1).

3. Political Analysis

3.1 Political Viability in Kiribati

The government of Kiribati is very aware of the potential impacts of climate change on their country. President Anote Tong has been prominent in bringing the plight of low-lying island nations to attention. Additionally, the government is cognizant, to the need for migration. It acknowledges that the ‘relocation of our people may be inevitable’ and that ‘migration with dignity’ is crucial, although ‘relocation will always be viewed as an option of last resort’ (Kiribati Government 2010). To some extent, the amenable attitude of the government has affected the population, thanks to

Figure 1 Migration Simulation

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significant awareness raising and consultation activities undertaken as part of the Kiribati Adaptation Program (Kiata 2008).

As a result, a recent climate change survey conducted by the government indicated that around 9/10 of the population is aware of climate change, and at least some of the potential effects on their environment. The vast majority of respondents were also willing to do something to adapt to climate change, although most were not sure what that would be at this stage. Furthermore, the population appears receptive to international migration due to climate change. Over 74 per cent of those surveyed answered yes to the following question: ‘if necessary, in the long term, would you be prepared to move with your family to another country’. Respondents were more positive in islands with higher overcrowding. Surprisingly, less than 50 per cent of respondents were willing to move internally (Kaiteie & Hogan 2008).

However, there remain some powerful pockets of resistance to migration, particularly religious and traditional leaders. Indicative responses include ‘we’ve had problems like this before, it’s just climate trends’, ‘I don’t trust the government, maybe this is just a plan to make us relocate away from our island’, or ‘God has planned and created Kiribati, so he wouldn’t let it sink beneath the waves’ (Kaiteie & Hogan 2008).

Another formidable obstacle stems from the I-Kiribati’s strong ties to land. Case studies of relocations in the Pacific show that communities that are forced to relocate often find themselves in a state of discontent owing to the very strong relationship that exists between communities and their land (Campbell 2008 and O’Collins 1990). The disruption of the land-person bond can be expected to be even more significant when land is physically lost and emigrants do not have the option of returning. And when forced migration is seen to be ‘man-made’, or the result of government action, the population is likely to experience bitterness and hold on to memories for a longer period.

3.2 Receptivity of Potential Host Nations

Australia and New Zealand
There exists substantial political will in both Australia and New Zealand to engage with Pacific Island nations in combating the challenges of climate change. In 2006, the Labour Party proposed a Pacific Rim coalition to accept climate change ‘refugees’ (Albanese & Sercombe 2006), while in 2007, Greens Senator Kerry Nettle proposed the Migration (Climate Refugees) Amendment Bill (Australian Parliament, Migration Amendment Bill 2007). And in 2009, an enquiry by an Australian Senate Committee recommended a review of the legal and policy framework for communities forced to resettle as a result of environmental change.12

While these initiatives are not tantamount to a bilateral migration deal, they nevertheless display a willingness to engage in the issue and to commit Australian resources to dealing with climate change in the Pacific. There is also a substantial push from academia and civil society to develop a national policy framework on environmental migration from the Pacific, 12. Cited in McAdam J (2012) Climate change, forced migration, and international law, p 106.

| Table 1 Effect of Kiribati Migration on Populations in Host Nations in the Year 2100 |
|---------------------------------|-----------------|----------------|----------------|----------------|
|                                 | Australia       | New Zealand    | Fiji           | Vanuatu        |
| Migrants per annum              | 2,000           | 600            | 1,000          | 600            |
| Projected migrant population†   | 80,000          | 24,000         | 40,000         | 24,000         |
| Projected population of country | 36 million      | 6.3 million    | 1 million      | ⅓ million     |
| Projected population density (people per km²) | 5              | 24             | 54             | 63             |
| I-Kiribati migrants (% total population) | 0.22%        | 0.4%           | 4%             | 3.2%           |
|                                 |                 |                |                | 0.44%          |

†Assumes 50 per cent of migrants who have arrived since 2020 are alive in 2100.

Sources: World Bank, 2012a; UN World Population Prospects, 2011; Author’s calculations.
both for humanitarian and national interest reasons (Lawson et al. 2008; Koser 2012).

Despite these positive signs, the supportability of a bilateral migration deal among the populations of Australia and New Zealand is less obvious. At first, the fact that Australia and New Zealand, both historically and presently, receive large numbers of migrants (particularly Pacific Islanders) suggests that the population is at least somewhat amenable to the idea. Australia and New Zealand are two of the largest receivers of immigrants among developed and emerging countries. With foreign-born populations of 30.2 and 23 per cent, respectively, they have approximately double the migrant population of the United States. Additionally, these countries are already the largest receivers of I-Kiribati migrants. Migration is also on an upward trend in both countries and is increasingly focused towards developing countries. In New Zealand, in particular, a large portion of migrants are Pacific Islanders, accounting for 6.5 per cent of the population.

However, despite Australia and New Zealand’s history of migration, current public opinion towards migration is not especially favourable. A recent opinion poll examining attitudes towards population growth did not show strong support for increased immigration. Indeed, only 16 per cent of respondents wanted to see any increase in population through more immigration (about half supported population growth through higher fertility) (McAllister et al. 2010).

The poll also found that skilled migrants are seen as more acceptable than either refugees or family migrants. Of course, the majority of I-Kiribati migrants are likely to fall into the later, less preferred categories.

Additionally, I-Kiribati migrants may be less popular than the average migrant owing to the poor economic and social outcomes achieved by existing Pacific Islanders in Australia and New Zealand. Compared with other ethnic groups, they exhibit a relatively low labour force participation rate and high unemployment rate, lower levels of education and income, and higher crime rates (Stahl & Appleyard 2007).

Owing to these challenges, bilateral deals with Australia and New Zealand would have to involve extensive advocacy campaigns to create broad-based political support. Although designing such a campaign is beyond the scope of this article, it is important to note that workable strategies do exist. Three possible messages are detailed below:

**Australia and New Zealand Can Benefit Economically from I-Kiribati Migration that Addresses Labour Shortages** Indeed, Australia and New Zealand have a history of proactively seeking immigrants to meet excess demand for labour (Stahl & Appleyard 2007) and are currently seeking migrants to fulfill skill shortages (as evidenced by preferential immigration policies towards people with specific skills).

**Accepting I-Kiribati Immigration Is in Australia and New Zealand’s Interest from an International Security Standpoint** That is, the failure to secure the orderly migration of I-Kiribati could easily result in a humanitarian disaster, create hundreds of thousands of refugees and destabilise the area, with negative connotations for the security of Australia and New Zealand. Indeed, in a 2006 policy paper, the Australian Labor government explicitly acknowledges that ‘if Australia is committed to the stability and security of the Pacific as a precursor for its own security, […] it is essential that Australia adopt a proactive, strategic approach to climate change in the Pacific’ (Albanese & Sercombe 2006).

13. See Australian census data (2011), accessed 15 June 2013 at: <http://www.censusdata.abs.gov.au/>; and OECD data (2009) OECD in figures, accessed 15 June 2013 at: <http://www.oecd.org/statistics/>.
14. Where detailed information regarding I-Kiribati migrants is unknown, this article examines Pacific Islanders as a group, and generalises for the case of Kiribati. This assumption seems valid, as people in Australia and New Zealand tend to consider Pacific Islanders to be a relatively homogenous group, so that opinions and actions towards them can inform an assessment of how people would act towards I-Kiribati.

15. Efforts by Australia and New Zealand to ensure stability in the Pacific are not without precedent. During benign times, these include large flows of bilateral aid, and liberal trade and immigration policies. Additionally, when
Australia and New Zealand Should Be Regional Leaders in Addressing Climate Change and Humanitarian Crises

This is true from both a capacity and responsibility perspective. First, as discussed later in this article, Australia and New Zealand are the two countries in the region best equipped to aid in the resettlement of Kiribati. Second, as two of the world’s largest per capita carbon emitters, Australia and New Zealand have a responsibility for causing climate change. (According to UN statistics, Australia has the second highest carbon dioxide emissions per capita among the Organisation for Economic Co-operation and Development (OECD) countries.)

Some argue that this obliges Australia and New Zealand to act, especially given the paradox that most Pacific islands are low carbon emitters (Lawson et al. 2008).

Pacific Islands

Pacific islands do not have a history of receiving international migrants. Instead, almost all Pacific islands are net senders of migrants, suggesting that conditions are not attractive to migrants, or governments are actively deterring immigration. Migrant prospects in Fiji seem especially unattractive due to political turmoil and ethnic tensions. Other Pacific islands also exhibit unstable political regimes. Indeed, all of the largest Pacific islands rank lower than Kiribati in the World Bank’s measure of political stability. This implies a risk that subsequent governments could overturn any bilateral migration deal.

Finally, there is a history of poorly implemented forced migrations in the Pacific. Most of these forced resettlements occurred during the decades of British colonial rule (Campbell 2008). After independence, land conflicts between migrant minorities and indigenous groups arose in many states (Fraenkel 2003), and tensions continue to exist between the relocated people and the destination landowners (Campbell 2010a). In some cases, these issues developed into major focal points for political conflict and instability.

3.3 Viability of an International Agreement on Climate Change Refugees

Despite the plethora of bold speeches and elaborate commitments to refugee rights, environmental protection and sustainable development, little progress towards an international agreement on climate change refugees has been achieved. Under the United Nations Framework Convention on Climate Change, world leaders are yet to reach a comprehensive agreement on carbon emissions and have not even tabled a framework for resettling climate change migrants. Some suggest that developed countries fear that even accepting the term ‘climate change refugee’ would compel them to offer the same protections as they do for political refugees, a precedent that no country has yet been willing to set (McAdam 2011). Instead, the international community has focused its altruistic efforts on helping countries adapt to the impacts of climate change in place.

In addition, being resettled internationally as climate refugees is unlikely to be popular with the I-Kiribati as it would imply a high degree of fragmentation compared with a bilateral deal, which would allow communities to be settled in one area.

4. Administrative Analysis

4.1 Institutional and Human Capacity

A successful migration strategy depends on the provision of key services to I-Kiribati. As well as housing and employment services, resettling I-Kiribati migrants in an orderly and humane way would require the provision of regional stability...
individual case workers, orientation to life in the new country, trauma counselling services, medical care, some initial social security payments and language lessons. This is no simple task. Nevertheless, the governments of Australia and New Zealand already provide these services for 13,000 and 750 refugees per year, respectively. They also organise and pay for refugees’ travel requirements and have extensive networks of volunteer community groups who assist migrants to settle into the local community (Gray 2008).

Despite these services, an additional 2,600 refugees a year would be a significant strain on resources, and special programs to accommodate I-Kiribati migrants would be required.18 Thus, as the migrant population grows, governments should foster the development of community organisations that could sponsor future migrants and share some of the resettlement burden. Indeed, this sort of collaborative work is a large part of the I-Kiribati culture, which is built on the collective help and support of extended family members (Modell 2002).

In contrast, most Pacific islands governments have no experience with receiving refugees, meaning they are unlikely to possess the same resettlement abilities as governments in Australia and New Zealand. Case studies of UNHCR projects highlight other problems with resettling refugees in developing countries. For example, a report evaluating a pilot program to resettle African refugees in the politically stable, but impoverished nations of Benin and Burkina Faso found that:

A fundamental difference exists between resettlement to countries which rank at the top of the Human Development Index and those which rank at the bottom. The former have well tried systems and resources to facilitate the integration of newcomers and provide opportunities of employment, adequate sanitation, housing and health care, as well as a functioning education system and a social safety net. Not one of these is readily available in the latter, and the detrimental consequences were all too evident during the home visits conducted as part of this evaluation. [Sperl and Brădișteanu 2004. p. 3]

4.2 Legal Concerns

There are significant legal challenges associated with formulating an international treaty on climate change refugees. Under existing refugee law, a causal link would need to be established between the alleged harm feared (e.g. lack of food due to saltwater intrusion on agricultural land) and climate change. This alone could be problematic as scientists are yet to completely verify climate change as a cause of an event or process, as opposed to natural causes (McAdam 2011).

Even for the case of Kiribati, and other low-lying islands, the motivations for migration are not so straightforward. As highlighted previously, Kiribati is vulnerable due to a number of factors, including climate change. It is also difficult to separate the impacts of climate change from other issues as they occur slowly and incrementally, compounding existing threats. As such, from a policy perspective, it would seem both practically impossible and conceptually arbitrary to attempt to differentiate between those displaced people who deserve protection on account of climate change, and those who are victims of economic or other hardship (McAdam 2011).

Even if a treaty could be agreed upon, it is not necessarily true that this would solve the problem. There would still be numerous challenges in ensuring that the treaty was ratified, implemented and enforced. Indeed, problems of implementation are already rife within the present refugee regime. It is estimated that 10 million refugees and 43 million other displaced people have no durable solution in sight (UNHCR 2009), suggesting that the institutions currently providing for refugees are already overstretched.

4.3 Securing Suitable Relocation Sites

Another practical challenge to implementing a migration policy is finding a suitable relocation site. In Australia and New Zealand,
refugee settlement location is first determined by whether the entrant has family or friends already living in the country. When this is not the case, governments generally seek to identify regional towns that may have the capacity to settle entrants successfully. Decisions are then made following extensive consultation with communities and clear indications of support from the local government (Gray 2008).

In contrast, there are significant challenges to securing adequate relocation sites in Pacific islands as most land is communally owned or held customarily, meaning it cannot be bought or leased. This unavailability of land is currently hampering the ongoing relocation of only 1,700 people from the Carteret islands to Bougainville. Their inability to secure land in mainland Papua New Guinea does not speak well to the country’s ability to absorb at least this number of Kiribati migrants annually.

5. Policy Recommendations

This article finds that migration to Australia and New Zealand presents the best policy option. As large countries with low population densities, Australia and New Zealand are best placed to absorb large numbers of I-Kiribati migrants. With a history of migration and demonstrated support for helping Pacific islands combat climate change, there is scope for bilateral migration deals to be politically supportable. As the wealthiest countries in the region, and with developed capacities in refugee resettlement, governments in Australia and New Zealand are most able to implement a migration deal. This provision of resettlement services, and the fact that new migrants are generally resettled with existing migrant communities, will also help minimise the psychological effects of forced migration and achieve the Kiribati government’s goal of ‘migration with dignity’.

In contrast, migration to other Pacific islands is not a viable option. Forced migration within the Pacific has not been implemented effectively in the past. Migrants were relocated to marginal land, and conflicts with existing communities were common. Today, many Pacific islands are facing the same environmental vulnerabilities as Kiribati due to high population densities and climate change. Thus, they lack the carrying capacity to take large numbers of migrants. Accordingly, it is highly likely that the same tensions over land seen in the past would result following any significant immigration of I-Kiribati. Further, many Pacific islands are politically unstable, and their governments lack the capacities to successfully resettle large numbers of migrants.

This article finds that an international agreement on climate change refugees, while important for dealing with climate change migration at a global level, is not the best option for Kiribati. While an international agreement may be suitable for coordinating resources around an evacuation-style migration, it is unlikely to accommodate planned migration. Under existing frameworks, a certain threshold in distress would be required before I-Kiribati would meet refugee requirements. Further, a lack of political will means that an international agreement on climate change refugees is unlikely to allow for migration to begin in the near future, nor would it allow the I-Kiribati to settle in one location. Finally, even if a treaty could be agreed upon, there would still be numerous challenges in ensuring its ratification and implementation.

5.1 Policy Implementation

Despite the appeal of bilateral migration deals with Australia and New Zealand, implementing this policy option is not without its challenges. Nevertheless, the analysis does highlight certain recommendations that would serve to increase its likelihood of success. They include the following:

1. Pre-relocation education and training programs should be developed in order to facilitate employment of new migrants. There is likely to be a mismatch between the skills held by I-Kiribati and those skills desired by employers in Australia. Thus, large-scale training of migrants will be required in order to prevent unemployment.
and reduce the length of time migrants receive social security payments. This policy would also boost acceptance among the local population, as migrants will be seen as contributors to the economy, instead of a burden on taxpayers. To begin, the Australian government could consider scaling up existing AusAID programs, such as the Kiribati–Australia Nursing Initiative, and the Kiribati Technical and Vocational Education and Training Sector Strengthening Program. Increasing the general level of educational attainment will also be important to improve the attractiveness and employability of I-Kiribati migrants. Currently, 40 per cent of the working age population are without secondary or higher education. Yet this situation is likely to improve as younger generations enter the workforce; indeed, secondary school enrolment rates have increased dramatically over the last 15 years from 50 to over 90 per cent.

2. **Measures to help preserve Kiribati’s cultural heritage should be considered.** This is not only important from the perspective that maintaining a culture is an end in and of itself, but also in order to minimise the psychological harm to migrants from losing their homeland. A number of methods have so far been proposed to do this. Importantly, relocation services in Australian and New Zealand should ensure that migrants are co-located to the greatest extent possible. This will create I-Kiribati communities in host nations and facilitate the continuation of cultural practices.²⁹

3. **The government of Kiribati should be encouraged to implement population policies that would reduce the need for migration.** As discussed, Kiribati’s rapid population (2.2 per cent) and urbanisation (4.4 per cent) growth increase its vulnerability to climate change and the urgency for migration. Such growth is driven by persistently high fertility. Yet the fertility transitions of other countries in the region show that more rapid declines in fertility are possible (Figure 2). As such, given the significant costs involved in migration, policies to reduce fertility may be more cost-effective in the long run. This will also

²⁹. Despite the clear benefits to co-locating migrants, there is the risk that such a policy would create pockets of poverty and inhibit the integration of I-Kiribati in the new country. The provision of social services and training programs, as previously discussed, would mitigate this risk to a certain extent.

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make it more feasible for Australia or New Zealand to accept I-Kiribati migrants. First, because their absolute numbers are lower, and second because lower fertility makes them more culturally similar to the domestic population.

4. **External sources of funding should be explored**. This would increase the political viability of the deal within Australia and New Zealand. It would not only mean less of a strain on government resources, but it would also indicate international support for the migration policy, and limit the appearance that Australia and New Zealand were acting unilaterally.

5.2 **Implications for Other Climate Change-Induced Migrations**

The challenge of climate change migration is much larger than Kiribati. According to some estimates, more than 200 million people might have to give up their homes due to climate change by 2050 (Stern 2006). A useful tool in identifying which countries may require a migration strategy is a climate vulnerability index developed by the non-governmental organisation Dara. Among other factors, this index examines a country's vulnerability to habitat loss (due to desertification or sea level rise) and extreme weather events. Table 2 shows that half the countries most likely to be severely affected by habitat loss are low-lying islands like Kiribati. Other countries that will require migration strategies include those African nations particularly vulnerable to desertification, and many countries in Asia and the Caribbean that are vulnerable to extreme weather events.

Thus, there is an ongoing challenge in identifying host nations to accommodate this expected rapid increase in climate change migrants. Clearly, many will be accommodated through internal migration, but the need for international migration, particularly from low-lying islands, will nevertheless be in the tens of millions.

The analysis in this article has identified a number of criteria for identifying suitable host nations, including large countries with low population densities, politically and economically stable, and a history of migration. Other commentators have argued for the inclusion of ethical criteria (Marshall 2011), namely that major carbon-emitting nations have the most responsibility to accommodate climate change refugees. Combining these criteria, the most viable host nations include the United States, Canada, Australia, New Zealand and Western Europe.

While a complete analysis of the suitability of these nations is beyond the scope of this article, it is possible to make some initial comments about these countries’ ability to absorb significant numbers of climate change migrants.

### Table 2 Countries Most Vulnerable to Habitat Loss and Extreme Weather

| Island states | Africa | Asia | Latin America |
|---------------|--------|------|---------------|
| Kiribati      | Equatorial Guinea | Afghanistan | Dominican Republic |
| Maldives      | Eritrea | Bangladesh | Grenada |
| Marshall Islands | Guinea Bissau | Myanmar | Haiti |
| São Tomé & Príncipe | Mauritiana | | Honduras |
| Solomon Islands | Mozambique | | | 
| Timor-Leste | Namibia | | | 
| Tuvalu | Niger | Rest of world | | 
| Vanuatu | Somalia | | | 

*Source: Adapted from Dara (2010).*
refugees. In particular, below-replacement fertility in the countries identified means that, without migration, social security and pension schemes will face significant economic stress as the population ages. This would force cuts in benefits, as increasing government debt would not be a sustainable option. Thus, accepting climate change migrants is in these countries’ economic interest.

6. Final Comments

This article argues that the failure to create a viable migration strategy for Kiribati presents an imminent disaster in which the population gradually loses their land, livelihoods and agency, and are eventually forced to abandon their homeland as humanitarian refugees. This sort of catastrophe has never been seen. Thus, the way the international community handles this challenge is likely to set a global precedent. Further, it is important to note that even the most successful policy cannot fully mitigate the psychological and cultural trauma to the I-Kiribati associated with the loss of their homeland. When these additional factors are taken into account, the importance of a well-designed and implemented relocation strategy is even more critical.

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