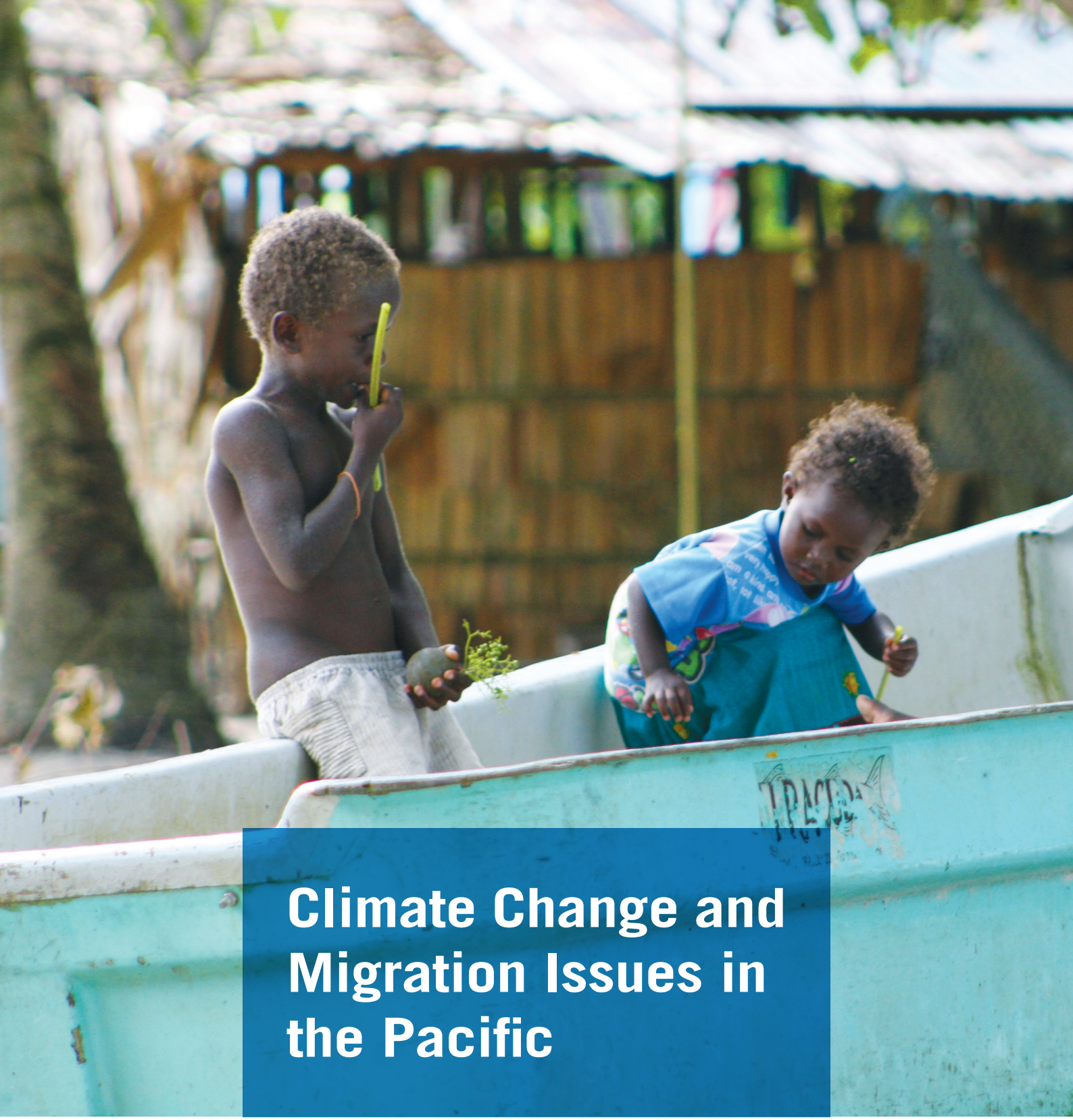

Climate Change and Migration Issues in the Pacific

UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

EUROPEAN UNION

International Labour Organization

UNDP
Empowered lives.
Resilient nations.

This report has been produced as part of the Pacific Climate Change and Migration (PCCM) Project entitled, 'Enhancing the Capacity of Pacific Island Countries to Manage the Impacts of Climate Change on Migration'. The PCCM Project is a three year project (2013-2016) funded by the European Union and implemented by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), the International Labour Organization (ILO) and the United Nations Development Programme (UNDP).

The vision of the project is to:

- To increase protection of individuals and communities that are vulnerable to climate change displacement and migration through targeted national and regional policies; and
- To increase labour mobility opportunities for Pacific Islanders, through well-managed labour migration schemes.

The Project covers the Federated States of Micronesia, Kiribati, Nauru, Republic of Marshall Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. In the 'target countries' of Kiribati, Tuvalu and Nauru the Project will have national actions aimed at institutional strengthening through developing migration indicators and sharing of information on labour migration; gathering data on community attitudes to climate change induced migration; assisting with the development of climate change responses and national action strategies to mitigate the risk of displacement; and enhancing national capacity to effectively participate in regional, bilateral and global schemes on labour migration.

ESCAP

The Economic and Social Commission for Asia and the Pacific (ESCAP) is the regional development arm of the United Nations and serves to foster cooperation between its 53 members and 9 associate members. ESCAP provides the strategic link between global and country-level programmes and issues. It supports Governments of the region in consolidating regional positions and advocates regional approaches to meeting the region's unique socio-economic challenges in a globalizing world. The ESCAP headquarters is located in Bangkok, Thailand.

The ESCAP Pacific Office (EPO) strengthens the United Nations' regional presence, development programmes and interventions in the Pacific. EPO provides focused and in-depth technical assistance to address key development challenges, including capacitybuilding activities; and serves as a catalyst to further the analytical and normative work of ESCAP in the Pacific.

ILO

The International Labour Organization (ILO) is the United Nations agency devoted to promoting rights at work, encouraging decent employment opportunities for women and men in conditions of freedom, equity, security and human dignity, and enhancing social protection. It is unique in that it brings together representatives of governments, employers and workers to jointly shape policies and programmes and strengthen their dialogue. The ILO develops international labour standards and works with members States to ensure they are respected in practice as well as principle.

The ILO Office for Pacific Island Countries based in Fiji, provides technical assistance to nine Pacific member States, as well as to non-member States in the region as required, on a wide range of areas including: labour migration; the elimination of child labour; promotion of gender equality; labour law reform; protecting seafarers; labour market statistics; occupational safety and health; HIV/AIDs in the workplace; youth employment; and entrepreneurship development.

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CLIMATE CHANGE AND MIGRATION ISSUES IN THE PACIFIC

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FOREWORD

The outcome document of the Rio+20 conference, The Future We Want, emphasized the need for inclusive sustainable development and reinforced the need for strengthening capacities and resilience of small island developing states (SIDS) so they are able to adopt a more sustainable development path and better cope with the risks of global climate change and other vulnerabilities.

Building on this recognition, the draft outcome document of the Third International Conference of SIDS - the SIDS Accelerated Modalities Of Action (the S.A.M.O.A Pathway) - further elaborates that "We [the SIDS] recognise that sea-level rise and other adverse impacts of climate change continue to pose a significant risk to small island developing States and their efforts to achieve sustainable development, and for many, represent the gravest of threats to their survival and viability, including for some through the loss of territory".

ESCAP is committed to the sustainable development of the Pacific SIDS through the improvement of regional knowledge, the building of awareness about key issues and working with our member States to address critical threats to sustainable development. This Pacific Climate Change and Migration Report presents a baseline analysis addressing one of the most pressing challenges facing the subregion: the potential impacts of global climate change on Pacific migration and the potential for mitigation as a climate change adaptation strategy.

The impacts of climate change will not be consistent across the Pacific. Different countries, islands and communities will experience varying impacts of climate change with differing levels of severity. It is expected that vulnerable populations, including women, youth, the elderly and people with disabilities will be the most vulnerable to these impacts. Climate change is likely to induce migration in certain geographic "hot-spots", including urban areas; atolls; drought prone locations; as well as in coastal, delta and river areas.

This report was produced as part of the joint ESCAP/ILO/UNDP Pacific Climate Change and Migration Project, entitled "Enhancing the capacity of Pacific Island Countries to address the impacts of climate change on migration", funded by the European Union. The objectives of the Project are to develop better understanding of the causes and consequences of climate change and its impact on migration, improve regional knowledge, initiate national actions in target countries and to develop a regional approach related to the nexus between climate change and migration in the Pacific.

The publication will provide useful reference material for participants in the Third International Conference of Small Island Developing States, and for the policy-makers of the Pacific and beyond. The report will also contribute to raising international awareness about issues related to climate change and migration in the Pacific. It does not attempt to address all the issues surrounding the theoretical aspects of climate change as a driver of migration, nor to prescribe policy solutions, but it will help to stimulate national, regional and international deliberation about climate change and its impacts on migration.

Shamshad Akhtar
Under-Secretary-General of the United Nations and
Executive Secretary, United Nations Economic and Social Commission for Asia and the Pacific

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ACRONYMS

ABM	Australian Bureau of Meteorology
ADB	Asian Development Bank
AusAID	Australian Agency for International Development (was the Australian Government agency responsible for managing Australia's overseas aid program until 31 October 2013)
CSIRO	Commonwealth Scientific and Industrial Research Organisation
EACH-FOR	Environmental Change and Forced Migration Scenarios
ENSO	El Niño Southern Oscillation
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
GEF	Global Environment Facility
GIS	Geographic Information Systems
ILO	International Labour Organization
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
PIFS	Pacific Islands Forum Secretariat
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
UNDP	United Nations Development Programme

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Climate change has significant implications for Pacific island populations, many of whom reside in coastal areas and rely on natural resources for their livelihoods and well-being. Climate change impacts may affect internal or even international migration flows as some island environments become less able to support the communities that depend on them.

The linkages between climate change and migration are only beginning to gain recognition. There have been a few studies on climate change and migration conducted in the Pacific; however, the methodology used across studies has not been consistent and the studies have also not been linked with policy interventions. This report provides a synthesis of the current information available on climate change and migration in the Pacific. It also identifies information gaps in the existing knowledge base.

Environmental change can contribute to individual's decision to migrate. Although economic and social reasons may be the primary reasons for migration, environmental change can also contribute to the decision to migrate. Climate change can cause a reduction in land, livelihood or habitat security for some Pacific communities. For example, low-lying coastal areas and river deltas may become unsuitable for physical settlement, or they remain habitable but income and food security options become marginal; or reduced precipitation or increased disease vectors could cause the deterioration of habitability. The impacts of climate change can be the tipping point which results in an individual or family deciding to migrate.

In the longer term, the planned relocation of some communities may be required, particularly in areas where population density and growth rates are high. In the shorter term, the voluntary migration of individuals and households could aid in relieving environmental pressure when coupled with improved in situ adaptation strategies, population management and climate-resilient development.

There are five 'hotspots' in the Pacific that are likely to become source areas for climate change-related migrants: (a) urban areas; (b) urban atolls; (c) non-urban atolls; (d) coastal, delta and riverine communities; and (e) communities prone to drought. As cited by the International Organization for Migration (IOM), global estimates for the number of migrants moving due to climate change range between 25 million and 1 billion people by 2050, with 200 million people the most commonly cited figure. Inherent uncertainties mean that only rough estimates can be given for the number of people likely to be involved in migration related to climate change. However, the impacts of climate change on migration will be more acute in particular habitats.

A review of the existing literature identifies five localities that are potential 'hotspots' requiring increased research into climate change impacts, in situ adaptation responses, demographic processes and community security. These include: (a) urban areas; (b) urban atolls; (c) non-urban atolls; (d) coastal, delta and riverine communities; and (e) communities prone to drought. Unmanaged rural to urban migration and population growth strains the capacity of urban areas to cope with the impacts of climate change; as urban populations continue to grow there is likely to be an increased demand from urban populations for international migration. Both urban and non-urban atolls are particularly vulnerable to climate change impacts and the impact of development pressure on the environment. It is difficult to separate many of the impacts of climate change from the impacts of development on the environment of atolls, both result in salt water intrusion, a decline in Ocean health and coastal erosion. Coastal areas have high vulnerability to the projected climate change related increased severity of coastal hazards and the degradation of ocean-based livelihoods. River deltas are highly vulnerable to flooding which is likely to increase due to climate change. Additionally, there are many drought prone areas in the Pacific where increased drought may result in increased migration demand (this includes the Highlands of Papua New Guinea, as well as atolls and coastal areas).

Climate change is likely to increase the demand for both internal and international migration opportunities. Migration is likely to follow current patterns in the immediate term. The voluntary movement of individuals and families is likely to be towards labour market opportunities, including rural to urban migration. In larger Pacific island countries, climate change may predominately impact internal migration and urbanization; however, in small countries, territories and atolls, the subsequent exacerbation of urban areas may increase interest in international migration. Some Pacific island countries have access agreements with Australia, New Zealand and the United States of America, which already host large diasporas. However, many of those countries that may have the greatest potential migration pressures, including Tuvalu, Kiribati and Nauru, have the fewest international destination options.

Voluntary migration of individuals and communities can be adaptive if it is well managed. Internal migration or international labour migration can enhance the adaptive capacity of the migrant-sending community through the generation of remittances, reduced population pressure on homeland environments, and in the case of circular migration, the transfer of knowledge and skills. Labour migration can also fill human resource gaps in the receiving community. However, unplanned migration can result in unemployed migrants, negative remittances and social problems.

There are many economic, social, cultural and psychological costs associated with climate change-related migration. Historical examples of the costs of environmental migration point to the loss of tradition, language, identity, livelihoods and community cohesion. Additionally, the viability of homeland communities may be compromised if too many people move. The costs of both displacement and voluntary climate change-induced migration are likely to increase with greater distances from traditional homelands. Social, cultural and psychological costs may be experienced even in cases of internal migration.

The planned resettlement of entire communities, either within a country or internationally, may be required in some instances; however, the cultural and social impacts of community relocation may be severe. Climate change-forced displacement is highly disruptive to livelihoods, culture and society unless proper, well-planned interventions support people in their effort to adapt to the challenges. Although migration is a normal part of life for many Pacific communities, accepting migration as an adaptive response to climate change is often associated with a threat to sovereignty and cultural identity.

There are significant information gaps in understanding the impacts of climate change on migration in the Pacific. Particular research needs include: the integration of climate change and migration policy; costs of climate change-related migration on sending and receiving communities; gendered implications of voluntary and forced climate change-related migration; and the role of remittances in adaptive capacity.

CHAPTER I
CLIMATE CHANGE IMPLICATIONS FOR THE PACIFIC

CHAPTER I CLIMATE CHANGE IMPLICATIONS FOR THE PACIFIC

THE IMPACT OF CLIMATE CHANGE ON MIGRATION IN THE PACIFIC

There is consensus in the recent literature that climate change has significant implications for Pacific island populations, many of whom reside in coastal areas and rely on natural resources for livelihoods and well-being (Mimura and others, 2007). However, considerable uncertainty remains regarding the specific physical impacts of climate change on most Pacific island countries largely because global climate models currently lack sufficiently fine resolution for the relatively small size of the Pacific island land masses. The future manifestations of climate change will depend on future global emission patterns (IPCC, 2000).

The Pacific Climate Change Science Programme (PCCSP) has published a recent analysis of the impacts of climate change on migration in the Pacific (ABM and CSIRO, 2011a).[1] The PCCSP study indicates that, regionally, the Pacific will experience an increase in the average temperature, the number of extremely hot days, the number of extreme rainfall events, ocean acidification and sea-level rise. Sea-level rise in the Pacific is expected to be in line with the predicted global average sea-level rise of 0.18 to 0.59 metres by 2080-2099. Droughts are projected to occur less often, but with increased severity. Annual average rainfall is expected to increase. Tropical storms and cyclones are expected to decrease in frequency but increase in intensity.

The physical conditions of the Pacific islands and territories are highly variable, with environments including continental islands, volcanic high islands, atolls and raised limestone islands. Accordingly, the projected impacts of climate change differ significantly between and within Pacific island countries and territories. Furthermore, the projections of the impacts of climate change depend on which models are used in the analysis and there are many recognised uncertainties in the models. The most significant climate change impacts for each of the countries studied are included in the country profiles in the Annex.

An increase in climate variability and extreme events are likely to have significant consequences in the Pacific. In particular, the El Niño Southern Oscillation (ENSO) which brings El Niño and La Niña events can result in extreme year-to-year variability in rainfall, temperature, cyclone risk and sea level. For example, Nauru experiences as much as 4,500 mm of rainfall during an El Niño year, when conditions are warmer and wetter, but can receive as little as 500 mm of rain during a La Niña year, when conditions are drier and cooler (ABM and CSIRO, 2011). Although there is a high degree of uncertainty regarding changes to the frequency, intensity and patterns of climate variability and extremes, it is generally accepted that the stresses experienced in the past will be greater as a result of climate change; for example, warm years will be even warmer. The implications of the physical impacts on the lives and livelihoods of Pacific island communities are summarized in table 1.1 in the context of community security, and in figure 2.1 in the following chapter.

[1] As this initiative builds upon the findings of the Fourth Assessment Report: Climate Change 2007 of the Intergovernmental Panel on Climate Change and compiles other relevant research undertaken since then, other literature regarding climate change impacts in the Pacific region is not cited here.

Table 1.1. Main effects of climate change on Pacific islands and implications for community security

Climate change impact	Community security impact
Sea level rise • inundation • coastal erosion • storm surge exacerbated	Land security in coastal and atoll locations may be severely reduced and there may be impacts on livelihood security through loss of agricultural land and salinisation of soils, plants and water supplies
Water resource impacts • rainfall uncertainty • increased frequency and magnitude of droughts • reduced quantity and quality of water resources • salinisation	Livelihood security may be affected by decreased agricultural productivity and habitat security may be adversely affected by water borne diseases.
Coral reef health decline • reef degradation as a result of increased sea surface temperatures and increased ocean acidity	Livelihood security may be compromised by reductions in fisheries and other marine resources dependent upon healthy coral environment. Land security may be reduced by increased exposure to high waves and storm surge.
Agricultural production decline • adverse effects from a variety of processes including temperature rise, reduced water availability, salinisation, exposure to tropical cyclones (wind, rain and wave damage)	Reduced agricultural productivity would impinge upon livelihood security and where extremely severe may render some locations uninhabitable.
Human health challenges • changing disease vectors such as malaria, dengue • increased incidence of water borne disease • increased incidence of heat related diseases	Effects on human health are likely to reduce the habitat security of island settlement locations and where severe may render some locations uninhabitable.

Source: Modified from Campbell (2014).

The sustainability of island communities is dependent not only on the nature and scale of climate impacts but also on local socioeconomic conditions. For example, in Tarawa, Kiribati, the threat of sea-level rise and drought exacerbates the existing development pressures of rapid urbanization, pollution and poor sanitation which compromises the ability of the available freshwater resources and the land that sustain the communities that depend on them (Storey and Hunter, 2010; White and others, 2008).

The future security of some island environments will be determined by the effectiveness of both climate change adaptation and development. The close links between adaptation and development are a common theme in Pacific climate change literature (Mimura and others, 2007; Barnett and Campbell, 2010a; Dumaru, 2010) and are becoming increasingly recognized by major donors who operate in the region (ADB, 2009; World Bank, 2012; SPREP, 2013).

POLICY RESPONSES TO CLIMATE CHANGE IN THE PACIFIC

Climate change adaptation has been receiving increasing support by the international development community in the Pacific region, with a growing number of projects and available funding sources (World Bank, 2012; PIFS, 2013). Most Pacific island countries have now established policies, strategies or planning tools to guide national adaptation activities, often encapsulated in national adaptation plans of action (supported by the Global Environment Facility (GEF)) or joint national action plans for adaptation and disaster risk reduction (or equivalent instruments). In recognition of adaptation as a cross-sector development priority, some of these mechanisms are increasingly being linked to national sustainable development strategies (for example, in Tonga and Tuvalu) (SPREP, 2013). Some Pacific island countries have placed coordination responsibility on high-level offices (for example, the Office of Te Beretitenti in Kiribati).

Climate change impacts are likely to affect population movement where (a) Pacific island environments become less able to provide land, livelihood and habitat security (see table 1.1) and (b) in situ adaptation responses are unable to, by themselves, offer the continued occupancy of a place. To date, most national adaptation policy instruments and the projects or programmes that they guide are predominantly focused on in situ adaptation activities that are aimed at sustaining the "life support" capability of island environments so that communities can continue to live there. Examples of in situ adaptation activities include disaster risk reduction, improved agricultural practices, improved access to freshwater and coral reef conservation. However, in some situations where climate impacts are particularly

severe, frequent or unrelenting, in situ adaptation options may be inadequate or too expensive to be practical or appropriate for affected communities, and some form of migration may be an alternative or complementary option (Barnett and Webber, 2009; Barnett and Chamberlain, 2010; ADB, 2012; Adger and Adams, 2013; Campbell, 2014).

Migration-related adaptation policy options have yet to be comprehensively addressed by most Pacific Governments (Petz, 2013). This is primarily because the issue is both culturally and politically sensitive, with many potential costs (Lazrus, 2009; Mortreux and Barnett, 2011; Smith, 2013). It is also because (a) there is a lack of data on the scale and patterns of possible climate change-related migration (or on environmental migration more broadly), and (b) migration-related adaptation policy is a cross-cutting issue requiring a whole-of-government response that can be difficult to garner (Boncour and Burson, 2010; Burkett, 2011). Furthermore, very few Pacific island.Governments refer to migration in the context of adaptation in their joint national action plans or national adaptation programmes of action.

TERMINOLOGY

Climate change-related migration will take different forms, each of which is likely to require different types of policy response. For example, community relocation due to extreme events requires considerably different kinds of support from that provided for the staggered migration of individuals or families due to slow-onset environmental pressures. Further, there are many different terms used in the literature to describe forms of climate change-related migration. The key terms used in this review included in box 1.1.

BOX 1.1. KEY TERMS USED IN THIS REPORT

Migration: A process of moving, either across an international border, or within a State. It is a population movement, encompassing any kind of movement of people, whatever its length, composition and causes; it includes the migration of refugees, displaced persons, uprooted people and economic migrants (IOM, 2011, p. 41).

Migrant: At the international level, no universally accepted definition of migrant exists. The term migrant is usually understood to cover all cases where the decision to migrate is taken freely by the individual concerned for reasons of "personal convenience" and without intervention of an external compelling factor. This term therefore applies to persons, and family members, moving to another country or region to better their material or social conditions and to improve the prospect for themselves or their family (IOM, 2011, p. 41).

Migration push-pull factors: Migration is often analysed in terms of the "push-pull model", which looks at the push factors, which drive people to leave their country (such as economic, social or political problems), and the pull factors attracting them to the country of destination (IOM, 2011, p. 49).
Environmental migration: The movement of persons or groups of persons who, for reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to have to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their territory or abroad (IOM working definition, no formal definition exists).

Forced migration: A migratory movement in which an element of coercion exists, including threats to life and livelihood, whether arising from natural or man-made causes (for example, movements of refugees and internally displaced persons as well as people displaced by natural or environmental disasters, chemical or nuclear disasters, famine or development projects) (IOM, 2011, p. 25).

Forced resettlement/relocation: Involuntary transfer of individuals or groups within the jurisdiction of a State away from their normal residence as part of a government policy (IOM, 2011, p. 25). Forced movement of individuals, households or communities due to imminent or acute extreme events or loss of habitation security at point of origin (Boncour and Burson, 2010; Campbell, 2009).

Community relocation: The forced permanent or long-term movement of an entire community (or a significant part of it) from one location to another (Campbell and others, 2007; Campbell, 2010a).This term is generally used in the literature in two ways: (a) in a positive sense, to describe the planned relocation of unified communities that maintain structure and function; (b) sudden or forced displacement, which often indicates the fragmentation of communities.

Climate change-related migration: A subset of environmental migration referring to movement in response to a long-term trend or set of trends where a return to a set of environmental conditions similar to those that existed prior to migration is likely to be unobtainable (Campbell, 2014). It is not yet empirically possible to attribute climate change (as opposed to current climate variability and extremes) to migration flows because it is either just at its onset or it is not yet possible to attribute climatic events leading to migration to climate change (Warner, 2009).

Climate change-forced migration: The movement of people because of loss of land, livelihood and habitat security of the homeland to the extent that continued settlement is no longer possible because of climatic factors (Campbell, 2014). For Pacific island countries and territories, this is likely to be a form of forced community relocation, either planned or reactive.

Climate change voluntary induced migration: The movement of people through choice in response to growing (but not yet severe) climate impacts on the security of the homeland with a subsequent reduction of population pressure at the point of origin and the possible generation of remittances at the destination (Campbell, 2014). It is important to note that the distinction between voluntary and forced migration is not a clear-cut one and in reality there is a gradient between these types of climate change-related migration (Kalin, 2013).

OVERVIEW OF EXISTING STUDIES ON MIGRATION AND CLIMATE CHANGE IN THE PACIFIC

The available literature on migration and climate change in the Pacific falls into two broad categories: "grey" literature, which largely emanates from global studies; and "academic" literature, which tends to focus more specifically on the Pacific. Prominent global initiatives with a significant Pacific component include the Environmental Change and Forced Migration Scenarios (EACH-FOR) project (United Nations University), an Asian Development Bank project on migration and climate change, and the Nansen Initiative (which is an initiative of the Governments of Norway and Switzerland). These initiatives are aimed primarily at providing policymakers with information and recommendations regarding the scale and patterns of potential climate change-related migration and possible policy responses. The majority of these initiatives consider Pacific issues from an Asia-Pacific regional perspective and as such, findings tend to be broad. Some key policy recommendations contained in the studies carried out through these initiatives and that are pertinent to this review are presented in box 1.2 (Jager and others, 2009; ADB, 2012; Petz, 2013).

BOX 1.2. KEY POLICY-ORIENTATED RECOMMENDATIONS

- More research is required regarding the impacts of climate change in different Pacific island contexts and the possibilities for migration-related adaptation strategies.
- Migration (gradual or relocation) as adaptation has not yet been widely embraced as a policy option. A lack of legal and policy frameworks and financing for relocation impedes progress.
- Long-term coordinated plans and policies for sustainable development, environmental management and adaptation (both in situ and migration-related) are required to increase the sustainability of islands.
- A lack of up-to-date data on migration patterns and trends impedes the development of policies to address climate-related migration.
- Seasonal migration is a viable coping strategy for many households and facilitated seasonal work programmes are therefore useful.
- International dialogues and networks could promote the exchange of experiences and learning among regions.
- Relocation processes need to be better planned and more participatory. The social and cultural cohesion and the human rights of those being resettled must always be considered.
- Migrants are often among the most marginalized groups in society and measures must be taken to reduce their vulnerability.
- Migration has gendered impacts but gender dimensions remain under-researched.
- Climate change-related migration needs to be considered in the broader context of development, adaptation and disaster risk management rather than as a stand-alone response to environmental pressures.
- There is a need to integrate voluntary migration, forced displacement and planned relocation into national laws and policies, such as national adaptation plans for action (NAPA), joint national action plans (JNAP), and national disaster management plans and national development plans.

The academic literature on migration and climate change in the Pacific is often focused more on one or two countries (most often on the low-lying atoll countries of Kiribati and Tuvalu, which receive much attention globally). The majority of these studies focus on cognitive and attitudinal aspects of migration decision-making in the context of climate change, including Pacific islander perspectives on climate change-related migration, the role of environmental issues in migration decisions, and the sociocultural implications of migration (Gemenne and Shen, 2009; McAdam and Loughry, 2009; Lazrus, 2009 and 2012; McNamara and Gibson, 2009; Mortreux and Barnett, 2009; Campbell, 2010a; Farbotko 2010; Barnett and O'Neill, 2012; Barnett, 2012; Farbotko and Lazrus, 2012; Smith, 2013). Important points from this body of work that are pertinent to this review are presented in box 1.3.

BOX 1.3. SUMMARY OF PACIFIC ISLANDER PERSPECTIVES ON CLIMATE CHANGE-RELATED MIGRATION AND THE ROLE OF ENVIRONMENTAL FACTORS IN MIGRATION DECISION-MAKING

- The media and international community often concentrate on the long-term or extreme climate impact scenarios necessitating large-scale forced relocation from some Pacific islands (that is, a "climate refugee" discourse). This image is unpopular with Pacific islanders themselves as it portrays them as helpless victims without choices and downplays their role in shaping shorter term adaptive strategies and voluntary migration responses.
- Migration (circular, permanent, internal and international) is a regular part of everyday life for many Pacific island communities. It has been a part of their culture and society for generations so they could maximize resource opportunities, expand social networks and smooth the effects of climate variability. Maintaining a connection to the "homeland" (physically by returning, and cognitively through self-identity as belonging to a homeland) is a fundamental enabler of migration.
- Younger people are more likely to want to migrate (for whatever reason) than older people. Income is also an important factor – those with lower incomes are more likely to want to migrate than those with higher incomes.
- Customary land is at the centre of identity, culture, community and livelihoods for Pacific islanders, and forced detachment from the land is perceived as one of the worst things that could happen.
- Local awareness of climate change is generally high but an understanding of realistic impacts and adaptation options is more limited. Climate impacts are not always perceived as an issue of great concern in the context of everyday lives.
- Religion plays a significant role in shaping people's perceptions of climate risks at the local level in the Pacific. Faith that God will protect the islands and their populations is common in many communities.
- Education, employment opportunities and joining family members are primary drivers of the individual or family's decision to migrate internally or internationally. Environmental degradation, including climate-related factors such as water and food security, is sometimes a secondary or indirect reason but rarely a key driver.
- The prospect of future climate change impacts is seldom by itself a primary reason for individual migration or relocation. Climate-related factors are more likely to play a role in migration or relocation decisions when people have first-hand experience of damaging climate events, such as severe flooding or tropical cyclones.
- Maintaining sovereignty, self-determination, cultural identity and territorial rights are of primary concern to Pacific islanders in any form of climate change-related migration (gradual or relocation).
- Retaining the security of homelands by offsetting the negative aspects of environmental degradation (including through in situ adaptation) is generally preferable to moving in local perspectives. Large-scale relocation is generally perceived as an option of last resort.

This review concentrates on the body of work outlined in Box 1.3. It also references key studies on climate change impacts and on population movement where relevant to the linked climate change-migration nexus but does not delve into these fields in depth.

CHAPTER II
SYNTHESIS OF FINDINGS OF KEY ANALYTICAL DOCUMENTS ON CLIMATE CHANGE AND MIGRATION IN THE PACIFIC

CHAPTER II SYNTHESIS OF FINDINGS OF KEY ANALYTICAL DOCUMENTS ON CLIMATE CHANGE AND MIGRATION IN THE PACIFIC

The linkages between climate change and migration have been considered at the global level only in the relatively recent past, as is the case for the Pacific islands. While there is increased awareness of these issues, much of the research remains speculative given the uncertainty around climate change projections and Pacific demographic futures. Nevertheless, there is a growing consciousness that climate change may force some Pacific islanders to relocate their communities and induce much larger numbers to engage in migration as a way of relieving the effects of environmental degradation. At present, there are restrictions on a number of Pacific island countries and territories regarding migration destinations and on the numbers of people that may be allowed to migrate.

One form of adaptation is migration. As climate change impacts increase, it is expected that the demand from severely affected communities for adaptive migration will grow. Such pressure may lead to changing migration regimes concerning Pacific island countries, their traditional partners and other Pacific Rim countries.

This chapter includes a discussion on the links between climate change and migration. Unless otherwise stated, the discussions in this report refer to climate change-related migration in general, including both voluntary and forced migration, and domestic and international migration.

CAUSES OF CLIMATE CHANGE-RELATED MIGRATION

In addition to environmental change, many demographic, economic, social and cultural factors influence migration decision-making. Most Pacific island countries and territories have histories of both internal and external migration that reflect these factors. Nevertheless, climate change, and the impact climate change has on the environment, may become an increasingly important driver of migration from rural to urban areas within Pacific island countries and from them to other countries. One way of addressing the role played by climate change in migration is to examine its effects upon the security of the inhabitants of various Pacific island countries.

Three possibilities may be taken into account (see figure 2.1). The first is that climate change effects (including sea-level rise) may threaten the land security of some Pacific island communities. This may result from, for example, coastal inundation or erosion, or river plain flooding or erosion. In such cases, the physical sites for settlement may be rendered marginal or, in the worst cases, incapable of supporting habitation. The second form of security that may be affected by climate change is that of livelihoods – both cash-based and subsistence livelihoods. Although localities may remain safe and secure in terms of shelter, they become less able to support the livelihoods of their inhabitants. Among other things, food security and opportunities for employment would be threatened. The third likely scenario is when, despite settlement locations remaining physically secure and livelihoods sustainable, habitat conditions deteriorate. Examples could include changing disease vectors, the loss of water supply quantity or quality, and increased incidence of exposure to, and intensity of, extreme events.

Figure 2.1 Links between loss of land, livelihood and habitat security, and migration

FORCED MIGRATION → ← INDUCED (VOLUNTARY MIGRATION

Lost land security	Lost livelihood security	Habitat security severely reduced	Land security partly lost	Livelihood security severely disrupted	Livelihood security significantly but not severely disrupted	Land and livelihood security disrupted periodically
Community relocation	**Community relocation**	**Community relocation or individual migration**	**Community relocation or individual migration**	**Individual migration**	**Individual migration**	**Short-term migration**
Atoll submerged and or eroded Coastal sites submerged and/ or eroded Delta sites eroded and/ or inundated (coastal and/or river bank)	Salinization • Water polluted • Crop failure Persistent Drought • Water reduced • Crop failure	Changes in disease vectors such as malaria, dengue, ciguatera Changes in water borne incidence Temperature related illnesses	Severely but not completely reduced land available for settlement or livelihoods	Severe reductions in • water supply • food production	Moderate reductions in: • water supply • food production Moderately but completely reduced land available for settlement or livelihood	Increased frequency and or magnitude of climatic extremes Atolls/coastal land temporarily inundated

Source: After Campbell and Bedford (2013).

Where loss of security is complete, whole communities may be required to move to new locations. Planned relocation is most likely to be required in some countries and areas within countries where population density is high and land, livelihood and habitat security are already marginal. As the next section establishes, atoll countries and urban areas face these challenges and are projected to have particularly high rates of population increases in the coming decades. This said, many Pacific island countries have relatively low population densities compared with other island countries, and population pressure is often concentrated in urban areas. In most cases, the effects of climate change on land, livelihood and habitat security could be offset by the migration of some members of affected communities. This would reduce pressure on increasingly marginal island-based life support systems, and sustain those who remain through the provision of remittances. In many cases, to be effective, gradual, voluntary migration would need to be one of a suite of measures aimed at relieving environmental pressure (Locke, 2009). Policies supporting gradual migration would need to be coupled with improved in situ adaptation strategies, population management and climate-resilient development planning, if they are to relieve environmental pressure to the degree required to increase security. For example, policies that support gradual international migration could be effectively coupled with strategies for outer island and rural development that increase livelihood security and reduce incentives to migrate to high-density urban areas. If forced relocation were to occur, early migrants could assist in identifying possible relocation sites and establishing employment and other linkages that could facilitate relocation.

An important element in many projections of climate change effects is the changing patterns of extreme events. Most Pacific island countries and territories are exposed to a variety of climatic extremes, including tropical cyclones (with extremes of wind, rain and sea; that is, storm surges and heavy seas), droughts, high wave events and episodes of climate-related disease vectors. Disasters are often followed by migration as communities seek external sources to supplement reduced in situ livelihoods. Often, this is in the form of circular migration. If extreme events were to reduce or destabilize community security more frequently or with greater intensity, the demand for temporary migration may be expected to increase. At the same time, enabling or facilitating such migration may be considered a useful adaptation strategy that would require collaboration between Pacific island countries and Pacific Rim countries. For example, one strategy may be to give people from post-disaster zones priority in labour migration streams.

LIKELY MIGRANT SOURCE AREAS

The main purpose of this section is to identify those areas that are the most likely to experience environmental degradation as a result of climate change and that might become source areas for climate change-related migration. Some rough estimates of the numbers that might be involved are provided. These should be used only as possible indicators rather than being in any way definitive; they have been included to give some sense of the possible magnitude of the future pressure to migrate.[2] Existing global estimates of future environmental migrants range from 25 million to 1 billion people by 2050, with 200 million being the most widely cited estimate (Brown, 2008). The literature establishes that estimating numbers of environmental migrants is problematic; uncertainties regarding climate impacts, the lack of a common methodology, difficulties in collecting data on internal migration and the susceptibility to sensationalism render existing estimates unreliable (Brown, 2008; ADB, 2012). Based on the impacts of climate change on community security likely source areas of migrants as a result of climate change can be identified (Table 1.1 includes the community security impacts of climate change; Figure 2.1 provides a summary of the link between community security and migration).

The majority of observations about the links between climate change and migration or relocation have focused on atolls, which is not surprising given the very low-lying nature of these coral formations. However, there is still considerable uncertainty about the physical resilience of atoll systems, which are naturally characterized by considerable fluidity in terms of sediment distribution, with some areas commonly eroding and others being formed (see, for example, Webb and Kench, 2010). This physical flexibility, however, becomes somewhat restricted when atolls become settlement sites, and this "rigidity" has increased considerably with the development of modern infrastructure on atolls in recent decades. Nevertheless, uncertainty remains about how much land, if any, will be lost from atolls (or how much will become submerged), and when, if it does eventuate, the degradation will occur. It is also important not to see the threat to atolls as solely being a loss of land security. Several atolls may lose livelihood and habitat security, especially in relation to changing patterns of climatic extremes, such as an increased incidence or severity of droughts, which may reduce crop productivity, and water quality and quantity. In combination with sea-level rise, droughts may critically impact upon atoll water quality.

There are four atoll countries in the region, of which three are included in the present study – Kiribati,[3] the Marshall Islands and Tuvalu. These atoll countries are characterized by high population densities and, in the cases of Kiribati and Tuvalu, high rates of population increase. It should be noted, however, that population density is the highest on the urban atolls within these countries, and there are relatively low population densities on most of the outer islands. Currently, the combined population of the three atoll countries is 170,000 people, with an estimated total of 298,000 in 2050 (see table 2.1). While projections over long periods are subject to considerable uncertainty, especially when dealing with small populations, it appears that population growth will place increasing pressure on the already densely populated atoll countries (see figure 2.2). In addition to these three countries, there are also populated atolls in the Federated States of Micronesia, Palau, Papua New Guinea, Solomon Islands and Tonga.[4] Campbell (2011) estimated that these populations total approximately 35,000 people, a number that may grow to almost 50,000 people if atoll populations were to increase at the same rate as that of the rest of the populations of their respective countries. Altogether, the total atoll populations in all of the countries covered by this scenario may be as many as 350,000 people, who under the worst possible scenarios would become displaced. Under even relatively moderate scenarios, and given the generally high population densities of nearly all inhabited atolls, the pressure to migrate is likely to be relatively high among this population.

Table 2.1. Current and projected atoll populations

Countries comprised of atolls only[a]		
	Population in 2013	Projected population in 2050
Kiribati	108,800	208,600
Marshall Islands	54,200	70,700
Tuvalu	10,900	19,600
Total	173,900	298,900
Atolls in other Pacific island countries[b]		
	2013	2050
Federated States of Micronesia	20,306	19,189
Palau	238	241
Papua New Guinea	9,150	17,577
Solomon Islands	5,114	11,333
Total	34,808	48,340

[a] Data Source: SPC (2014)
[b] Data Source: Campbell (2011) for 2009 figures and 2050 projections based on national growth rates (Source: SPC (2014)
Note: This table excludes atoll populations from territories not included in this study, the most notable of which is French Polynesia with an atoll population of approximately 19,000 in 2009.

Figure 2.2 Population growth and population density in Pacific island countries and territories, 2013

Source: SPC (2014).

[2] It should also be noted that many of those who comprise the estimated numbers may well be migrants in the future even if the climate change effects do not occur.
[3] Strictly speaking, Kiribati includes one island, Banaba, which is not an atoll but a raised limestone island. Most of the people of Banaba were relocated to Rabi Island in north-eastern Fiji in 1945. The island, which was mined by the British Phosphate Corporation, is largely barren and has very limited supplies of potable water. A "caretaker" population of Banabans remains on the island.
[4] This discussion and table 2.1 exclude Tokelau (a territory comprising only atolls) and French Polynesia (which has approximately 20,000 atoll dwellers). American Samoa and New Caledonia have small atoll populations.

As indicated, several countries in Melanesia have relatively high population growth rates, but this is countered to a certain extent by low population densities. On the other hand, Nauru and Tuvalu have both high rates of population growth and high densities. If Banaba were excluded, the crude population density for the remainder of Kiribati would also be considerably higher and place it further to the left in the figure.

By definition (with the exception of Papua New Guinea), all Pacific islands are surrounded by the sea, with large proportions of their populations living close to coastal areas. Apart from some of the large islands in Melanesia, most Pacific islands are less than 20 km across at the widest point. The issue of greatest concern for coastal communities is much the same as that of atoll dwellers: the possible effects of inundation and coastal erosion. Many coastal communities on high islands are located close to rivers, and concerns about fresh water availability may not be pressing, depending upon the impacts of climate change on island hydrology. In addition to land security, coastal communities may face threats to their livelihood security, not only from reduced crop production but also from the coral reef degradation associated with warming surface waters and ocean acidification. Some coastal communities may have options to move inland or up from their current coastal sites, but this requires suitable sites for settlement relocation, access to fresh water and perhaps most importantly, rights to the land on which they resettle.

It is difficult to estimate the number of people likely to be placed at risk in coastal locations. There is the potential to identify low-lying settlements and their populations using graphic information systems, but current elevation data are insufficiently robust. Proximity to the coast is a possible indicator, but this doesn't take into account the elevation of settlements or the role of coastal resources in cash-based or subsistence livelihoods. At this stage, it is difficult to estimate the number of people that are likely to experience the negative impacts of climate change and it is even more difficult to estimate which of those affected will become migrants.

River deltas and large river systems are also likely to experience high level of climate change impacts. River deltas are usually densely populated, reflecting the high fertility of alluvial soils and high levels of aquatic biodiversity. The major river deltas in the Pacific island countries include the Rewa in Fiji, the Sepik and Fly in Papua New Guinea and the Matepono in Solomon Islands. Large river systems in the Pacific are characterized by flood plains and fertile alluvial soils which are also densely populated. Increased flash flooding of smaller river systems, such as those found on volcanic high islands, may also cause significant losses, as many villages and urban areas are located close to rivers, which provide access to fresh water. There is limited data available on the populations in these areas or on the projected effects of climate change on Pacific hydrological systems. Nevertheless, the larger interplate islands of the western Pacific may experience hydrological disruptions which may give rise to migration. It should be noted that, with the exception of Fiji, the Melanesian countries in this survey have limited access to international migration.

Pacific island countries which are subjected to prolonged periods of drought are also likely to be a source of climate change migrants. In many ways, this could include the entire region, as different areas are affected by droughts according to the phases of ENSO. As noted above, freshwater resources on atolls are particularly fragile and the shipment of water and the use of desalinization equipment are not uncommon in the three atoll States. Another area that is particularly affected during El Niño events is the Highlands of Papua New Guinea, which is among the most densely populated areas of the country. The region suffers from both drought and severe frost, which periodically decimates agricultural production. Paradoxically, the traditional response to such events was the migration of large numbers of people to lower elevations, where Highlanders had established political, economic and social linkages that enabled them to share the livelihoods of unaffected communities. The advent of disaster relief started in 1972, curtailed the need for such linkages to be sustained. Relief is now distributed not only for the humanitarian purpose of relieving hardship but also to reduce the flows of migrants affected by the loss of livelihoods to urban areas (Waddell, 1975, 1983 and 1989; Allen, 1989; Allen, Brookfield and Byron, 1989; Allen and Bourke, 1997). Little is known about the effects of drought on mobility in the region in terms of the numbers involved or about whether or not it is temporary (circular) or permanent, or the proportions of each. However, given the widespread and pervasive characteristics of droughts, they affect much greater numbers than the other types of extreme events. More research is needed on the drought hazards in the region, their impacts on communities (including gendered impacts) and their role as a driver of migration.

To summarize, climate change may induce and force migration from a large number of Pacific island countries and territories and from a broad range of environmental settings. While much of the focus to date has been on atolls, which on the surface present a pressing case for being given priority, it is essential not to neglect other Pacific island milieu that may be just as exposed but in different ways. These may yield much greater numbers of climate change migrants.

LIKELY MIGRANT DESTINATIONS

There is a range of possible migration outcomes in response to climate change. First, it is useful to distinguish between those who move as individual migrants (voluntary climate change migrants) and those who move as entire communities from areas that no longer provide sufficient security (forced relocation). It is possible that migration will reflect existing pathways, both within countries and externally. The direction of individual mobility, however, might be towards labour market opportunities (or perceived opportunities), and in many parts of the region this will be in the form of urban migration. According to SPC (2014), taking the most recently available census data for each country in the region, about 23 per cent of the regional population is urban, which is low compared with that of many other parts of the world (see also Connell and Lea, 2002). However, the levels of urbanization in the region cover a range from as low as 13 per cent in Papua New Guinea to 100 per cent in Nauru (see table 2.2). Note that the high population of Melanesia (which includes Papua New Guinea, Solomon Islands and Vanuatu), all of which have relatively low urbanization rates, skews the rate of urbanization average for the region as a whole.

Some of the highest rates of urbanization are found in smaller countries in the region, and among those with the highest are the atoll States, where urban atolls such as Funafuti, Tuvalu; Tarawa, Kiribati; Majuro, Marshall Islands; and the island of Ebeye, Marshall Islands have some of the highest population densities in the Pacific. It is not unreasonable to anticipate that rates of rural-urban migration may be increased by climate change (see, for example, Locke, 2009) and climate change may instigate pressure for increased opportunities for people to move to urban areas, such as better transport services between rural and urban areas (see, for example, Birk and Rasmussen, 2014). While in proportional terms Micronesian and Polynesian countries tend to have higher rates of urbanization; in absolute terms, the largest number of urban dwellers will be found in Melanesia, where the number of urban dwellers may be as many as 5.45 million by 2050 (Bedford and Hugo, 2012).

While urban migration might relieve the pressures caused by climate change in rural areas, increased urbanization may well be an early pressure point in the region resulting from climate change. There are numerous problems associated with urban growth in many Pacific island countries. These problems include access to land by migrants, a lack of employment and limited opportunities for subsistence livelihoods, and the growth of squatter settlements, which have limited access to infrastructure and are often located on exposed sites, such as low-lying or steep land. Urban areas in the region tend to be neglected in terms of disaster risk reduction (Bryant-Tokalau and Campbell, 2014) and squatter settlements are often at the greatest risk. Climate change-related rural to urban migration may serve as a catalyst for increasing the demand for international migration access for countries affected by climate change.

Table 2.2 Urban populations of Pacific island countries		
	Percentage of population in urban areas	Total urban population
Fiji	51	435 973
Papua New Guinea	13	961 805
Solomon Islands	20	120 531
Vanuatu	24	64 692
Federated States of Micronesia	22	22 688
Kiribati	54	58 861
Marshall Islands	74	40 000
Nauru	100	10 500
Palau	77	13 769
American Samoa	50	28 326
Samoa	20	36 655
Tonga	23	24 234
Tuvalu	47	5 121

Source: Data are from SPC (2014).

The question remains regarding to which international destinations climate change-related migrants from the Pacific islands will be able to go. While many observers state that other Pacific island destinations would be the best options in terms of environmental and cultural similarities, it is likely that most of these islands will be facing their own climate change-initiated demographic pressures. As most migrants will tend towards urban areas, the issues noted above may become exacerbated, and opportunities to obtain livelihood security are likely to be limited and contested by domestic migrants from rural areas. While people who have experienced forced relocation may be situated in rural areas, customary land ownership regimes are likely to make the provision of sufficient land to provide settlement and livelihood security to migrants untenable (Campbell, 2010b).

Given these difficulties, it is likely that much of the demand for international migration access will be to countries beyond the Pacific island region. It is also likely that, at least in their early stages, voluntary climate change-related migration flows may increase along routes where present migration pathways are well established. There are already large numbers of Pacific peoples and their descendants living outside their country of origin, both in other Pacific island countries and in Pacific Rim countries such as Australia, New Zealand and the United States. Some of the countries that may have the largest numbers of potential migrants have the most limited access to international migration opportunities. These countries include Kiribati, Nauru and Tuvalu, as well as the Melanesian states, especially Papua New Guinea, Solomon Islands and Vanuatu. Some of these countries are included in the New Zealand Pacific Access Category (PAC), which provides a mechanism for Pacific islanders to migrate to New Zealand; and in seasonal worker schemes in Australia and New Zealand. However, the numbers of migrants in these categories have been rather low to date. Climate change-related migration may crest demand for greater numbers to be included in such schemes.

Table 2.3 Exposure characteristics of Pacific island countries with restricted access to international migration			
Country	Categories of exposure	Population 2013	Projected population 2050
Kiribati	Atoll	108,800	208,000
Nauru	Raised atoll	10,500	17,100
Papua New Guinea	Highlands (drought, frost), deltas, river flood plains, coasts, atolls	7,398,500	14,212,300
Solomon Islands	Deltas, river flood plains, coasts, atolls	610,800	1,353,700
Tuvalu	Atolls	10,900	19,600
Vanuatu	Coasts	264,700	485,000

Sources: From Campbell (2014). Population data and projections are from SPC (2014).

In terms of community relocation or forced migration, it is possible that communities would relocate to sites that are as close to the original settlement as possible, providing that such sites are available. This would enable communities to sustain most of their livelihoods, although those based on the coastal sector may become less viable. There are numerous examples of proximate community relocation throughout the Pacific region, with the least disruptive being those moves to sites that are located near the original location and are within the customary lands of the people who have relocated. However, even these movements are not without costs (see, for example, Cagilaba, 2005; Campbell and others, 2007; Bedford and Campbell, 2013).

There have been few cases of the relocation of communities across "international" borders in the Pacific region, and all of these concerned British colonies in the post Second World War era: from Vaitupu in what is now Tuvalu to Kioa in Fiji; from Banaba in what is now Kiribati to Rabi in Fiji; and from what is now Kiribati to Western Province in Solomon Islands. These arrangements, involving atoll populations, were enabled through cooperation between the British High Commission for the Western Pacific and the colonial Government of Fiji. Apart from the resettlement to Kioa, which appears to have been reasonably successful (McAdam, 2013), the other relocations have been characterized by uncertainty regarding the status of the relocated communities and rights to land in the destination country, which remain unresolved. As box 2.1 illustrates, many Pacific island communities are unwilling to leave their homeland altogether and completely relocate. For any future international relocation, the social, cultural and psychological, as well as economic, costs of relocation would have to be carefully considered. Important political issues are likely to arise over the provision of land (most of which is customary in Pacific island countries and territories) for relocated communities, nationality, and the responsibility for the costs of moving and resettlement (see box 2.2).

BOX 2.1. NAURU IN THE 1960S: REJECTING COMMUNITY RELOCATION

Nauru provides an interesting counterpoint to the relocation of the Banabans, who were relocated to Fiji following the Second World War. Like Banaba, Nauru was becoming uninhabitable because of mining activities, and relocating the population would facilitate the operations of the miners. By the 1950s, there was concern in the United Nations Trusteeship Council that the island was being rendered uninhabitable by phosphate mining and that the local community should be resettled. Initial proposals to facilitate individual migration to Australia, New Zealand and the United Kingdom of Great Britain and Northern Ireland were made, but this was declined by Nauruan representatives, who did not want their people to be dispersed. In the 1960s, a proposal was made by the Government of Australia on behalf of the Administering Authority of Nauru to relocate the people of Nauru to Curtis Island off the coast of Queensland, Australia, where land would be granted to them and a Nauru council would be established. However, the relocatees would be required to become Australian citizens. This was rejected by the Nauruans on the grounds that they did not want to lose their national sovereignty and Nauruan identity nor become a minority in a new land and subjected to discrimination. This case study illustrates the importance of national identity and perhaps the significance of having sovereignty over one's own land.

Source: Tabucanon and Opeskin (2011).

BOX 2.2. THE IMPORTANCE OF LAND

In Pacific island countries, land is critically important, not just from an economic perspective regarding livelihoods (for which it is vitally important) but also from cultural and psychological perspectives. In many Pacific island countries, the term for land is the same as the generic term for people from that place – they are considered inseparable. In the same vein, most Polynesian terms for land are the same as or similar to the word for placenta or afterbirth, so intimately is human existence linked to a person's ancestral lands (Pond, 1997).

Land then is almost totally inalienable, and this is recognized in the constitutions of nearly all independent Pacific island countries, where 95 per cent of land is held in customary forms of tenure (AusAID, 2008). It cannot be bought or sold and individuals do not have rights to do so. Where land is exchanged, it is usually under traditional arrangements (Campbell, 2010b).

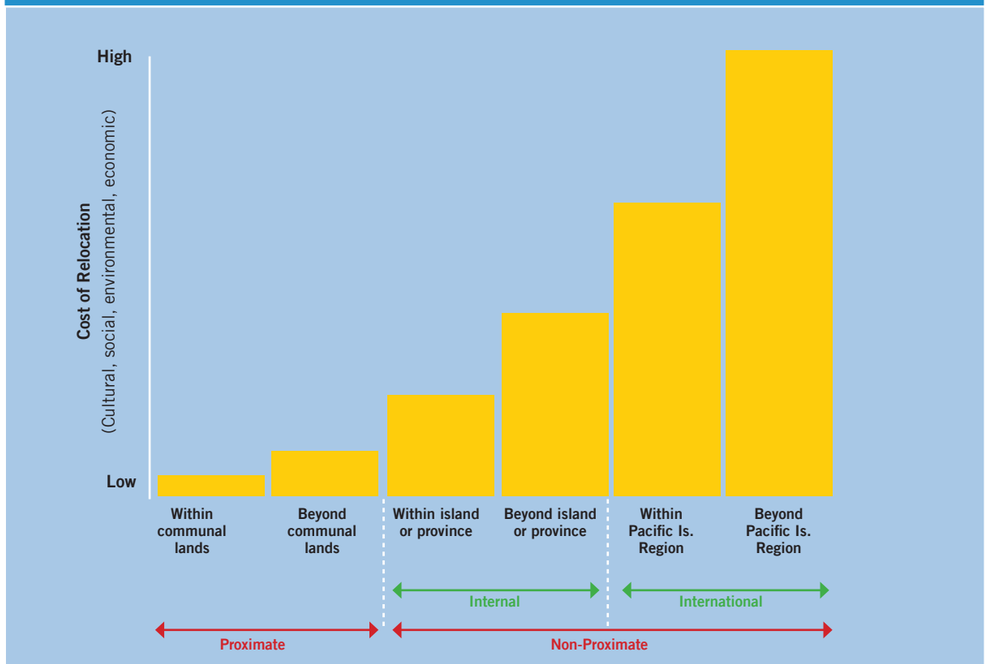
This irreducible connection between people and their land does not necessarily restrict population mobility. For example, in the context of Vanuatu, Bonnemaison (1985) wrote of "the tree and the canoe", with the tree representing an indispensable embeddedness in the land, but also providing the means by which people may migrate. Jolly (2001), also in relation to Vanuatu, similarly wrote of "routes" and "roots". People's roots to the land enable them to migrate with the knowledge that they always will have a home to which to return. However, the total removal of a community from its land may remove these links, breaking the critical connection.

From this perspective, forced community relocation, where the community can move as a group to new land, is extremely problematic. It involves rupturing the essential person-land connection at the place of origin and requiring a destination community to make land available for the community being resettled.

THE COSTS AND IMPLICATIONS (CULTURAL, SOCIAL, PSYCHOLOGICAL AND ECONOMIC) OF CLIMATE CHANGE MIGRATION

There are a number of implications of voluntary and forced climate change-related migration. In figure 2.3, the increasing costs of forced relocation associated with distance, both as a physical measurement and as a social construct, are illustrated. Important barriers may include moving (a) across a community's customary land boundaries, (b) from one island to another island (most likely with an urban centre) within a country or territory, (c) to another province or state, or (d) across an international boundary. These thresholds may have spiritual, psychological, cultural, social, demographic, political, economic and environmental dimensions. Simply moving uphill has costs associated with making potable water available (carrying, often a gendered exercise, or pumping, which may contribute to greenhouse gas emissions). Relocating a community to another country may require relinquishing traditional lore for destination country law, the maintenance of language and other cultural mores, finding meaningful livelihoods and acquiring status as citizens in a new country, to name but a few implications.

Figure 2.3 Conceptual costs of forced community relocation with increasing social, political and actual distance



Source: Campbell (2010a).

For voluntary migrants, similar problems may also arise. Unlike the case of relocated communities, migrants may disperse to different destinations, with a resultant loss of community cohesion. There also needs to be a careful balancing of the numbers of migrants with those who remain in terms of numbers and the age-sex structure. Barnett (2012) found that the viability of Niue was threatened by the large-scale outmigration that took place after Cyclone Heta. Often, the population structure of those who remain is distorted, with shortages of males, and both males and females in the economically active parts of the population. While the community at the place of origin may benefit from reduced pressure on degraded resources because of outmigration and from remittances received from migrants, they may be less well placed to sustain local livelihoods. Conversely, migrants may find themselves encountering financial pressures at their places of destination as they face unemployment, underemployment or low paying jobs. Struggling to make ends meet, they may find themselves under pressure to provide those who remain at "home" with remittances. McLeod (2010) highlighted that receiving families in host communities in New Zealand often face an additional financial burden and other social costs when relatives join them from the Pacific islands. Following tropical cyclones in Pacific island countries, expatriate communities in New Zealand have been found to suffer considerably in providing their kinfolk with assistance, and cases of borrowing from loan sharks to support their relatives have been reported.

The role of climate change in inducing migration also has to be considered as a continuing and perhaps cumulative process. If reductions in land, livelihood and habitat security increase through time, as is likely, even if significant reductions in greenhouse gas emissions are achieved, then the demand for international migration is likely to increase. In addition, population growth in the region is also likely to increase demand for migration access. These possible implications of climate change for migration and for sustainable local futures are not well understood, and further research is required to provide a better understanding of these processes.

OPPORTUNITIES PRESENTED BY MIGRATION IN THE CONTEXT OF CLIMATE CHANGE RESPONSE

The global and Pacific-focused literature on climate change and migration shows that voluntary climate change-related migration offers some opportunities to enhance the security of Pacific island communities if it is managed by careful policy responses. However, the forced relocation of entire communities due to the potential or actual total loss of homeland security is a long-term option of last resort and is not generally considered in the Pacific-focused literature to be an adaption strategy (Barnett and Adger, 2003; Barnett, 2012). This section discusses some of the ways in which climate change-voluntary migration, and in a few cases individual community relocation (by choice), can be a positive component of a suite of adaptation responses. Climate change displacement, whether of households or of entire communities, is not adaptation but rather an impact of climate change.

Migration has long been a common strategy used by Pacific islanders to spread environmental and economic risks. The existing literature contains many historical examples of population movement in response to extreme events or resource pressures. In "Our sea of islands", Hau'ofa (1993) emphasized that mobility to expand social networks is an ingrained part of Pacific history and culture. Movement within and between islands was – and in some places remains – a common strategy for reducing the risks associated with climate pressures, such as tropical cyclones and the conditions associated with ENSO (Campbell, 1990; Campbell and others, 2007; Mercer and others, 2007; Tacoli, 2009). In a contemporary setting, migration is an ingrained part of everyday life in many countries (particularly those in Polynesia), enabling risk spreading and greater economic opportunity (Connell and Conway, 2000). In a study of Tuvaluan migrants residing in New Zealand, Shen and Gemenne (2011) found that most of the migrants interviewed had moved between Tuvalu and other countries many times during their lifetime – some as many as eight times.
Migration may enhance adaptive capacity in homeland communities, thus reducing some of the risks associated with climate change, in the following ways:

(a) *Remittance provision.* Remittances (transfers of cash or goods from diaspora to homeland communities) are already a significant source of household income in some Pacific island countries and territories. Most of the analysis has focused on countries and territories in Polynesia, although the measurement of flows is difficult. It has been estimated that the economies of Samoa and Tonga receive a higher proportion of money in the form of remittances than from any other revenue source, and it appears that these transfers are relatively stable over time due to Pacific kinship ties (Bertram and Watters, 1985; Brown, 1997; Connell and Conway, 2000; Connell and Brown, 2005). Remittances diversify household incomes and can therefore aid in meeting basic needs when natural resource-based livelihoods are less productive, such as seasonally, during ENSO-related events, over the long-term due to climate trends or due to natural disasters (Barnett and Webber, 2009). For example, remittances to Samoan households increase significantly following cyclones (Paulson, 1993). Remittances can increase development opportunities in homeland Pacific island economies by increasing access to education and health services, improving assets (such as housing) and enabling investment (Connell and Brown, 2005; ADB, 2012). For example, seafarers' remittances are fundamental for meeting basic needs and paying school fees on outer islands in Kiribati, where other income-generating activities are few (Borovnik, 2006). However, more research is required on the nexus between remittances, development and adaptive capacity in the Pacific, particularly from a gender perspective (ADB, 2012).

(b) *Skills, knowledge and technology transfer.* The periodic or permanent return of migrants can move new social capital into homeland communities by increasing the transfer of ideas, innovations, knowledge, information and skills. For example, return migrants can increase financial literacy skills or increase the understanding of climate change and adaptive responses used elsewhere (Barnett and Chamberlain, 2010). In this sense, migration can offer a "brain gain" rather than merely result in a brain drain (ADB, 2012).

(c) *Reduced pressure on resources at origin.* Migration can act as a "pressure release valve", reducing demands on resources in sending regions, particularly where these may be compromised by both environmental degradation and increasing population pressure (Barnett and Webber, 2009; Barnett and Chamberlain, 2010). On the other hand, where international migration opportunities are limited, internal migration to urban areas can increase pressure on resources. This is the situation in South Tarawa, Kiribati, where the usable land area is 12 km^2 and the total population is 50,182 people, with a population growth rate of 4.4 per cent (2010 census). Only 22 per cent of South Tarawa residents identify themselves as being from South Tarawa (statistics are from Office Te Beretitenti, 2012). The increased population has put significant pressure on freshwater resources and sanitation systems (Storey and Hunter, 2010).

Although migration can be adaptive, a number of recent studies have shown that many Pacific islanders do not easily accept the notion of migration as an adaptive response to climate change. Studies examining the reasons for migrants leaving their homelands in Kiribati and Tuvalu have shown that environmental factors are rarely a direct cause and climate change is even less so (Mortreux and Barnett, 2009; Farbotko and Lazrus, 2011; Shen and Gemanne, 2011; Smith, 2013).[5]

The predominant reasons for migration are economic and social – to maximize economic opportunities and access to services and to strengthen kinship ties – rather than climate change or environmental pressures per se (see Barnett and Webber, 2009; Barnett and Chamberlain, 2010). All studies have revealed some degree of psychological or political resistance to climate change-related migration. This is related to the Pacific islands resistance to be seen as "climate refugees" which many Pacific islanders feel would threaten the Pacific identity which is linked to land and community (McAdam and Loughry, 2009; McNamara and Gibson, 2009; Barnett and O'Neil, 2012).

These factors have important implications for policy that supports migration as an adaptive strategy. First, in order to maximize development opportunities, any planned, gradual climate change-related migration should build upon how and why Pacific people historically have migrated. . For example, increasing voluntary labour mobility options would enable Pacific islanders to meet their own needs in accordance with their values (Barnett and O'Neil, 2012). Farbotko and Lazrus (2012) argued that any consideration of climate change-related migration in Tuvalu must consider how people ordinarily move between national borders while maintaining their culture and sense of community: "For Tuvaluans, migration is…a collectively negotiated means of participation in transnational networks, a way to meet family obligations and desires" (Farbotko and Lazrus, 2012, p. 387). An example of a climate change-related migration policy response is given in box 2.3.

Second, planned large-scale relocation (either to international destinations or to non-customary land) in anticipation of climate impacts comes with many risks. Landlessness, unemployment, homelessness, social marginalization, reduced access to common-property resources, food insecurity, increased morbidity and community disarticulation are some of the risks commonly associated with relocation globally (Cernea, 1997). In the Pacific, the most significant risks discussed in the literature relate to land: a loss of identity, culture, family ties and community for communities leaving homelands, and conflict and governance issues arising where resettlement is in others' customary land (Boege, 2011; Campbell, 2010b). Impacts are expected to be fewer where relocation is voluntary and well planned (Locke, 2009); however, as outlined above, research has shown that there is reluctance to move in order to avoid environmental impacts (see, for example, McNamara and Gibson, 2009; Mortreux and Barnett, 2009; Kuruppu and Liverman, 2011), indicating that a shift in perspective would be required before relocation could safely be considered entirely voluntary. Further, planned relocation to avoid climate impacts may reduce incentives to sustainably manage island homelands – including investment in improved in situ adaptation measures – to prolong their habitability (Barnett and Adger, 2003; Barnett and O'Neil, 2012).

[5] These studies have highlighted some important methodological considerations. Shen and Gemanne's (2011) results (using a survey tool adapted from a global study as part of the Environment Change and Forced Migration Scenarios project) indicated that there is a stronger influence of climate change on migration decisions than have other studies using ethnographic and in-depth interviewing methods. These other studies have indicated that, although local people are aware of climate change risks, attachment to "home" generally overrides any concern regarding climate change.

Given the uncertainty about the timing and effects of climate impacts, in situ adaptation remains extremely important. There are also fears that accepting large-scale planned relocation as a realistic policy option may reduce the imperative to address the root causes of climate change (McNamara and Gibson, 2009).

In certain instances, some form of proactive planning for relocation may be required (McAdam and Loughry, 2009). The many risks indicate that planning and policy for relocation should (a) be highly participatory, involving Pacific communities in choices of destination, planning for the maintenance of culture, identity and self-determination, and in the processes of movement, (b) be pursued in conjunction with sound in situ adaptation policy and linked with gradual migration initiatives, (c) be a long-term process aimed at an appropriate timescale, and (d) include culturally appropriate education and awareness regarding possible climate change futures and adaptation responses in the short and long terms.

BOX 2.3. MIGRATION WITH DIGNITY

Kiribati is currently the only country in the Pacific region that is planning for staged, international migration in response to climate change. Kiribati has one of the fastest rates of population growth in the region. South Tarawa, the site of the national capital, has one of the highest population densities in the world but limited opportunities for its population to pursue sustainable livelihoods. The strategy focuses on the concept of "migration with dignity" and has two key components:

(a) creating opportunities to enable the migration of those who wish to do so now and in the coming years, including supporting the establishment of expatriate communities of I-Kiribati

(b) raising the levels of qualifications able to be obtained in Kiribati to those available in countries such as Australia and New Zealand to make qualified I-Kiribati more attractive as migrants and to improve the standards of services available locally.

Examples of such projects are merchant seamen being trained at the Maritime Training College, and the Kiribati Australia Nursing Initiative, which has involved 84 people in nursing training in Australia.

Gradual resettlement is included as a key pillar of the soon-to-be-released national framework for climate change and climate change adaptation.

Source: www.climate.gov.ki/category/action/relocation (accessed 14 March 2013)

CHAPTER III
DISCUSSION AND RECOMMENDATIONS

CHAPTER III DISCUSSION AND RECOMMENDATION

There is considerable uncertainty related to how climate change will impact migration in the Pacific. Delaying policy development and other decision-making until the impacts of climate change on migration are more clearly understood or actually eventuate could result in hasty arrangements for emergency migration and relocation. This scenario is likely to result in poorly managed migration, "trapped populations" that are unable to migrate and increased human rights concerns for Pacific people. Alternatively, a proactive approach could incorporate the likely influences of climate change into policy development for both internal and international migration. Moreover, given that changing international migration policies to incorporate climate change would involve considerable bilateral and multilateral cooperation, a lengthy lead-in period would likely be necessary, rendering the timely consideration of climate change-related migration an important activity.

LIKELY HOTSPOTS

Based on the available literature, there appear to be several localities (places and their populations) that could require priority in understanding the likely effects of climate change, the effectiveness of in situ adaptation, demographic processes and community security (land, livelihoods and habitat) and their interactions. These hotspots are characterized by significant impacts upon human security as a result of climate change and are often also characterized by increasing population pressure – especially as a result of urban migration but also through increasing fertility – on declining environmental resources.

URBAN AREAS

Pacific island towns and cities are likely to experience a considerable climate change-generated growth in numbers above the numbers of migrants that might have been expected given population growth and perceptions of urban possibilities for improved livelihoods. Current rates of urbanization are expected to increase throughout the region. While the independent western Melanesian countries (Papua New Guinea, Solomon Islands and Vanuatu) have low levels of urbanization, they also have some of the most rapid national population growth rates in the region. In terms of absolute numbers, the largest urban centres are already found in Melanesia and these may expand considerably. With only a few exceptions, the urban areas are in coastal locations and are likely to be exposed to the effects of sea-level rise, as well as other climate change effects. It may also be that future urban growth will place considerable pressure on land resources, infrastructure and employment opportunities, with many of the urban dwellers facing threats to land, livelihood and habitat security in their new locations.

While urban areas in other parts of the region, including in the Federated States of Micronesia and Polynesia, are not as large as those in Melanesia in terms of absolute numbers of inhabitants, many of them account for much greater shares of the national populations. Similar to those in Melanesia, these urban areas are likely to experience increases of in-migration, above the already growing flows, as a result of climate change. It is also noteworthy that most (but not all) work on disaster risk reduction and climate change adaptation in the region has tended to focus on rural areas.

URBAN ATOLLS

Among the most pressing problems, even if climate change were not to be taken into account, are those facing the urban atolls – Kwajalein (and particularly Ebeye Island) and Majuro, Marshall Islands; South Tarawa, Kiribati; and Funafuti, Tuvalu. These locations already have high population densities and the related problems of fresh water supply and quality, waste disposal and the provision of housing. They also have high rates of in-migration, which are likely to be increased by climate change as livelihoods on outer atolls become more difficult to sustain. These locations are also likely to experience greater pressure (housing, infrastructure) near their coasts, which might be affected by sea-level rise. This group of locations in particular would appear to be highly vulnerable not only to the physical effects of climate change but also to the demographic, social and economic responses of people from other islands affected by climate change. Accordingly, they will need (and to a certain extent already need) to be given priority in adaptation planning, including that related to migration.

ATOLL COMMUNITIES (NON-URBAN)

While this report has focused on urban atolls, a key element driving their growing exposure is migration from outer atoll communities. To date, most of this migration has been identified as economic migration, although some has been attributed to environmental degradation. It is anticipated that climate change will induce increased flows of migrants to the urban areas if suitable and effective adaptation actions are not implemented at the outer atoll community level. There is a need to identify those atoll communities where the effects of climate change have, are becoming, or are likely to become the most pressing and to assess appropriate adaptation strategies for them.[6] This applies not only to atolls in the Kiribati, Marshall Islands and Tuvalu but also to those that are predominantly in high island countries.

SOME URGENT CASES

There is a group of atolls in Melanesia whose populations form a very small proportion of their national populations, and that are facing what appear to be rapid rates of erosion and inundation with significant losses of land and livelihood security. These atolls – the Carteret Islands and Takuu (both in Papua New Guinea off the cost of Bougainville) and Ontong Java (Solomon Islands) – are highly vulnerable due to converging environmental hazards, such as subsidence caused by geological processes, which is potentially exacerbated by sea-level rise and other climate change impacts. These locations are likely to need urgent consideration. Several attempts to relocate communities from the Carteret Islands have struggled to succeed; although finding sufficient land to build housing has been possible (using non-customary church land) finding sufficient land to sustain livelihoods has been difficult.

COASTAL, DELTA AND RIVERINE COMMUNITIES

As noted above, very large numbers of Pacific people live close to the coast and their livelihoods and social and cultural practices are strongly connected to the ocean and marine resources. As noted, there is not a good understanding of exactly which coastal communities are the most at risk, although some are already responding to erosion and inundation events. As is the case with atolls, coastal erosion is likely to induce urban migration and place additional strains on urban areas, increasing pressure for international outmigration. There are similar issues in riverine communities and those located in deltas.

DROUGHT-PRONE LOCATIONS

Most Pacific communities experience droughts relatively frequently and it is usually only under severe events that major problems arise. This is especially evident in the western Pacific under El Niño Southern Oscillation conditions. In particular, the effects of severe droughts and frosts in the Papua New Guinea Highlands have the potential to induce the movement or cause the displacement of very large numbers of people. As noted above, the provision of relief after the last major event was at least partly to discourage urban migration. If such events occur with greater frequency in the future, and taking into account the rapid population growth of Papua New Guinea, they may place considerable pressure on the disaster relief system and give rise to large pulses of outmigration, much of which would likely be to urban areas.

[6] Successful adaptation at the community level is dependent upon full community participation, and any planning for adaptation must take community needs and aspirations into account. Such planning at the local level would need to incorporate communities in any decision-making regarding migration, including possible destinations. Similarly, communities at points of destination would also need to be involved in consultations regarding their roles as "hosts" to climate change-related migrants.

RECOMMENDATIONS

There are several recommendations derived from this report, which are related mostly to gaps in research that have been identified in this study. They include the following:

Migration policy development

There is a need for the initiation of national policy development on climate change and migration in Pacific island countries and territories. Additionally, there is a need to increase the dialogue related to climate change and migration among Pacific island countries and territories, and between Pacific island countries and territories and other countries, including Australia, New Zealand and the United States, which are currently the favoured destinations for most international migrants from the Pacific islands.

It is necessary for climate change-related migration (both gradual and planned relocation) to be considered as part of national development planning. Achieving this would require a whole-of-government approach that would include a wide range of the relevant sectors. This is required so that sectoral policies and plans could account for potential changes in migration trends related to climate change and support migration as an adaptive response where appropriate (both internal and international).

Coherence between sectoral policies and plans is fundamental. The relevant sectors would include economic planning, environment, land management, urban planning, agriculture, fisheries, immigration, foreign affairs, education, health, labour, social development and local affairs/rural development.

To date, climate change-related migration (domestic and international) has not been included in climate change adaptation or disaster risk management policy, and climate change has generally not been included in migration policy (Petz, 2013). It is not enough to simply integrate migration considerations into climate change and disaster policy. The nexus of issues among climate change, population dynamics (population growth, fertility rates, and trends in internal and international migration) and sustainable development is complex. Thus, climate change-related migration needs to be carefully considered and integrated into appropriate national development plans. Climate change-related migration policy should be seen as part of fostering overall sustainable development rather than as a separate endeavour.

A key challenge is that migration, climate change and development often have separate institutional, legal and policy frameworks with weak links between them. The recent movement to better integrate climate change, disaster risk management and development in the region may offer some useful lessons on how to foster better coherence between disparate policy frameworks and institutions (see, for example, SPREP, 2013; World Bank, 2012). Lessons may include the following:

- Coordination within a central ministry, such as the ministry of finance and economic planning, is required to anchor climate change-related migration in national planning processes. Placing lead responsibility in line ministries, such as the ministry of environment or the ministry of immigration, is unlikely to enable sufficient sectoral policy coordination or to influence development investment.
- The sustained effort required to sufficiently tackle climate change-related migration as adaptation may be difficult to achieve because of short electoral cycles. This is particularly the case since climate change migration is a highly politically sensitive issue in the Pacific. This highlights the need for strong public education and participation to increase pressure on politicians to consider the issue.
- Using existing mechanisms, such as budgetary processes and strategic planning, is more efficient than creating new mechanisms

Gradual, individual migration and community relocation, although linked, may require different policy approaches. Climate change-related individual migration may be best addressed, in part, through mainstreaming it into existing sectoral policy and plans, but planned relocation may require the generation of new policy and laws.

Although the entry points for the integration of climate change, migration and development policy will be different in each country, some useful lessons on how to engineer a whole-of-government response may be emerging from Kiribati, where climate change-related migration is visible on the political agenda and appears to have high-level support.

Information needs

There is a pressing need for information. This includes an improved understanding of climate change effects on Pacific island countries and territories, of adaptation options, and of how adaptation, population and migration policy development could be integrated. Currently, the probable local-level effects on Pacific island countries and territories are poorly understood (on livelihood, land and habitat security), which are likely to be quite variable across the region, including within countries. It follows that the understanding of adaptation options also remains limited and most "adaptation" projects to date have focused on existing environmental problems, such as coastal erosion and water supply. The consideration of voluntary migration as a form of proactive adaptation, and indeed as part of an integrated adaptation strategy, is in its infancy, and there remains an understandable reluctance among Pacific islanders to investigate forced relocation. In addition, there needs to be research on the economic, social, cultural, psychological and environmental costs of climate change-related migration both for migrants (including forced as well as voluntary migrants) and for those who remain.

Gender

The gender implications of climate change-related migration are not well understood. Most migration data are not disaggregated by gender and there have been limited analyses of the gender implications of climate change-related migration. Most insights into the gendered characteristics of migration within, among and beyond the Pacific have come from ethnographic and qualitative research. There is a strong need to incorporate this information into adaptation and migration planning in Pacific island countries and territories and in destination countries.

Research methodologies

As noted, there is a dearth of data on both migration and climate change in Pacific island countries and territories. This includes a lack of information on current migration trends, the economic and social characteristics of migrants, and vulnerable populations.

Many countries in the Pacific are unable to gain sufficient information from departure and arrival cards. This is due to a combination of outdated forms and a lack of analysis of the existing forms. Migration information collected in the census and other surveys is often not analysed. Additionally, many statistical offices in the Pacific have limited experience in using mirror data from migrant-receiving countries to better understand international migration.

In terms of collecting household-level information on migration decision-making, the lack of a common methodology to evaluate environmental migration in the region makes it particularly difficult to obtain comparable data from across countries. However, these household-level surveys have had some success in providing information for decision-making, particularly when applied at the community level. Recent approaches using methodologies that have emerged in the region (see, for example, Talanoa (Vaioleti (2006) and Storian (Warrick, 2009)) have had considerable success in providing insights into local concerns and understandings.

There is a need to consider more efficient mechanisms for generating data. For example, metadata gathered from mobile telephones could provide information related to mobility if certain safeguards related to the anonymization of data are in place. The mining of data from mobile telephones would present an inexpensive method of collecting big data.

It is important that open-ended approaches are not neglected in further research on climate change-related migration and in other adaptation responses at the community level. Such approaches are also likely to be beneficial when used with Pacific diaspora communities.

Remittances and adaptive capacity in the Pacific

Adaptive capacity relates to the ability of a system to deal with climate-related exposures and risks (Adger and others, 2007). It is defined in the Working Group II contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change as "the ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences". Adaptive capacity is determined by the availability of resources (for example, economic, natural, infrastructure, and information and technology) and the ability to access and use resources (for example, social and human capital, belief systems and values) (Yohe and Tol, 2002). Some research has been undertaken on the impact of remittances on socioeconomic development in Pacific island countries. Less has been undertaken on the role of remittances in resilience to natural disasters. It should be noted that much of the published research on these themes is fairly dated, and most focuses on Samoa and Tonga, with limited attention given to seafarers' remittances in Kiribati (see, for example, Paulson, 1993; Brown,

1997; Connell and Conway, 2000; Borovnik, 2006). While these two areas of research provide useful proxies for understanding the contributions that remittances can make to adaptation strategies, little empirical research has been undertaken regarding the interactions between remittances and adaptive capacity specifically, including:

- remittance flows in Pacific island countries other than those mentioned above (such as Tuvalu), particularly where these may be from urban to rural areas internally;
- how remittances are used at the household and community levels in different settings, particularly the degree to which remittances increase resilience to environmental stress and are put towards investments in community-wide benefits;
- impacts of reduced available labour on livelihood practices of households in homeland communities, particularly gendered impacts;
- access to migration opportunities/remittances of the most vulnerable households; and
- instances where remittances may have negative effects on adaptation by enabling people to stay in very high-risk locations.

Policy formulation for encouraging and managing remittances in the context of adaptation to climate change requires an improved knowledge base including the above.

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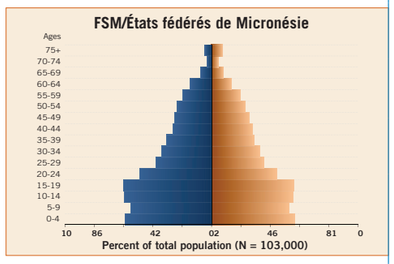
ANNEX
COUNTRY PROFILES

The Annex presents country profiles for the eleven pacific island countries which are included in the Pacific Climate Change and Migration Project: Federated States of Micronesia, Kiribati, Nauru, Republic of Marshall Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. Each country profile outlines the vulnerabilities that the country is expected to experience as an impact of climate change and how climate change may impact migration. Demographic characteristics and existing migration trends are also included in the profiles.

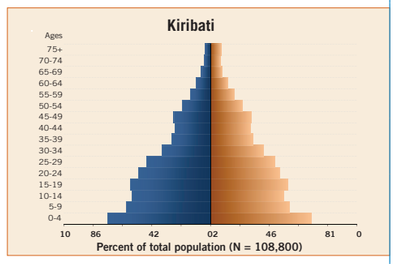
FEDERATED STATES OF MICRONESIA		
Population Statistics (SPC, 2014)	Annual Population Growth Rate (%)	0.0
	Crude population Density (Persons/km^2)	147
	Population (2013)	103,000
	Projected Population (2050)	97,300
	Per cent Population Increase (2013-2050)	-5.5
	Per cent urban	22
Physical Characteristics	Highest Elevation (m)	791
	Total Land Area (km^2)	701
	Number of inhabited islands or atolls	n.a.
	Dominant Island Types	Volcanic High Islands, Atolls



Major CC Impacts	
Sea Level Rise	Coastal areas and atolls
Drought	During El Niño events. Atolls exposed.
Tropical cyclones	Exposed to tropical cyclones
Likely Hotspots	Atolls, coastal areas
Adaptation Activities	Participation in regional projects. Focal sectors include coastal zone management, agriculture, water and conservation: Enhancing coastal community resilience through traditional knowledge and ecosystem strategies (as part of the subregional Micronesia Challenge project), Kosrae coastal road strengthening (as part of the regional PACC project), improved climate change projections and adaptation planning activities (under the Pacific Australia Climate Change Science and Adaptation Planning Program), enhancing government capacity for mainstreaming (EU GCCA regional project), Climate Adaptation Disaster Risk Reduction and Education project (Government of Australia, IOM).

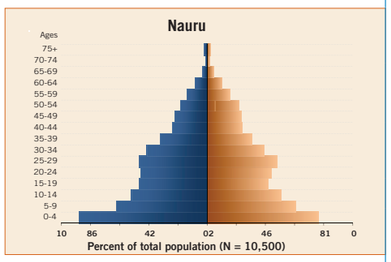
Migration Information	
Crude Net Migration Rate	-18.5
Access to international migration	Access to USA, including Guam and Hawai'i
Labour migration schemes	none
Community relocation experience	Community from Kapingamairangi based in Pohnpei
Relevant information	No reference to migration in the National Climate Change Policy (2009) Federated States of Micronesia stretches over a very wide area of ocean from Yap in the west to Kosrae in the east. Wide range of island types (from atolls to high islands) and island sizes. Federal system of government with four states.
Relevant National Studies	Nationwide Climate Change Policy (2009), First National Communication to the UNFCCC (1997), Strategic Development Plan 2004-2023 (2004), FSM Census of Population and Housing (2010)

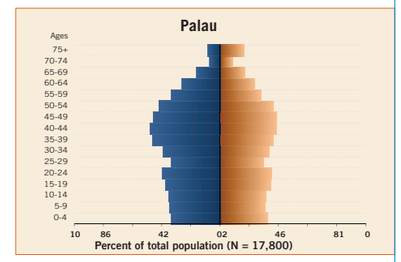
KIRIBATI		
Population Statistics (SPC, 2014)	Annual Population Growth Rate (%)	2.1
	Crude population Density (Persons/km^2)	134
	Population (2013)	108,800
	Projected Population (2050)	208,000
	Per cent Population Increase (2013-2050)	91
	Per cent urban	54
Physical Characteristics	Highest Elevation (m)	81
	Total Land Area (km^2)	811
	Number of islands or atolls	33
	Dominant Island Types	Atolls (Banaba is a raised limestone island)



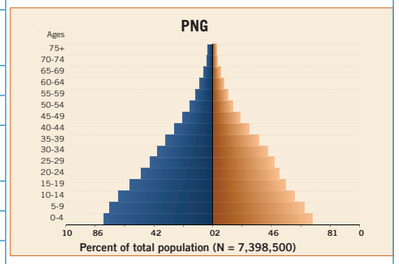
Major CC Impacts	
Sea Level Rise	Loss of land, loss of agricultural productivity, settlements at risk, health effects
Drought	Water supply deterioration (quantity and quality), decline in agricultural productivity, nutritional and health effects
Tropical cyclones	Possibly increased frequency, risks to housing, agriculture, coastal resources, water supply, health
Likely Hotspots	South Tarawa (high population density; coastal erosion, inundation, water supply issues)
Adaptation Activities	Adaptation projects focus on several sectors, predominantly: coastal zone management, water resource management, disaster risk reduction, fisheries and food security. The Kiribati Adaptation Program (KAP) Phase 1 (World Bank) was one of the first adaptation implementation projects to occur in the region and is now in its third phase. KAP focusses on integrating climate change into policy and planning and has implemented coastal defense and water resource management measures.

Migration Information	
Crude Net Migration Rate	-0.7
Access to international migration	Limited international access, merchant seamen, New Zealand Pacific Access Category (PAC) (75 persons per year to NZ); NZ census 2013: 2,115 people identified as I-Kiribati (cf . 645 (in 2001) and 1,116 (in 2006)).
Labour migration schemes	none
Community relocation experience	Significant component of Vaitupu population relocated to Kioa, Fiji in 1940s
National Migration Policies	Migration with dignity; Fiji land purchase
Relevant information	Gradual migration is a pillar of the National Framework for Climate Change and Climate Change Adaptation (draft). The NAPA does not mention migration (Petz, 2013). Government policy to is encourage urban growth on Kiritimati to reduce population pressure on Tarawa
Relevant National Studies	NAPA (2007), National Framework for Climate Change and Climate Change Adaptation (draft), Kiribati Development Plan 2012-2015 (2012), National Disaster Risk Management Plan (2012), Census of Population and Housing (2010). See http://www.climate.gov.ki/resources/information-library/ for KAP documents. Kiribati 2011 Census, KAP documents, etc.

NAURU			
Population Statistics (SPC, 2014)	Annual Population Growth Rate (%)	1.7	
	Crude population Density (Persons/km^2)	499	
	Population (2013)	10,800	
	Projected Population (2050)	17,100	
	Per cent Population Increase (2013-2050)	58.3	
	Per cent urban	100	
Physical Characteristics	Highest Elevation (m)	61	
	Total Land Area (km^2)	21	
	Number of inhabited islands or atolls	1	
	Dominant Island Types	Raised Limestone	
Major CC Impacts			
Sea Level Rise	While Nauru is a raised atoll the majority of the population and infrastructure is located on a narrow coastal strip.		
Drought	Exposed to drought during La Niña events.		
Tropical cyclones	Located close to the equator and not exposed to tropical cyclones. Coastal locations, including the heavily populated coastal plain may be affected by storm waves generated by nearby cyclones.		
Likely Hotspots	Coastal zone		
Adaptation Activities	Adaptation activities are generally as part of regional initiatives including: PACC, PACSAP, GCCA, CCCPIR. Water supply management including solar water purifiers is occuring under the PACC project. The Pacific Islands Forum Secretariat implemented a case study project concerned with assessing options for improved access to climate change resources, ending in 2012.		
Migration Information			
Crude Net Migration Rate	-9.4		
Access to international migration	Limited		
Labour migration schemes	none		
Community relocation experience	In the 1950s and 1960s there were proposals to resettle the population of Nauru in Australia but this was rejected by the Nauruans in 1964 who wanted to retain sovereignty.		
National Migration Policies			
Relevant information	A sub-report on the National Sustainable Development Strategy (revised in 2009) funds emigration options to be limited, compounded by low education standards. The plan mentions the developm ent of a NAPA by 2015. No mention is made of migration in the context of climate change or disasters in this or in the National Disaster Management Plan (2008) (Petz, 2013).		
Relevant National Studies	First National Communications to the UNFCCC (1999), National Disaster Management Plan (2008), National Sustainable Development Strategy 2005-2025 (2009), Population and Housing Census (2011)		

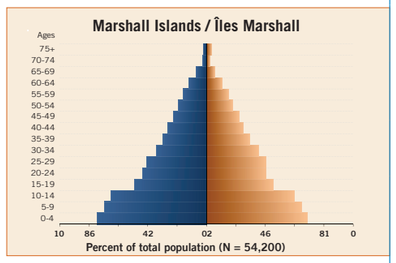
PALAU			
Population Statistics (SPC, 2014)	Annual Population Growth Rate (%)	0.5	
	Crude population Density (Persons/km^2)	40	
	Population (2013)	17,800	
	Projected Population (2050)	18,000	
	Per cent Population Increase (2013-2050)	1.1	
	Per cent urban	77	
Physical Characteristics	Highest Elevation (m)	242	
	Total Land Area (km^2)	444	
	Number of inhabited islands or atolls		
	Dominant Island Types	Volcanic High Islands, Atoll	
Major CC Impacts			
Sea Level Rise	Palau is composed of mostly small islands and most of the population has a relatively high level of exposure to coastal conditions.		
Drought	Drought conditions tend to be experienced during El Niño events.		
Tropical cyclones	Exposed to tropical cyclones.		
Likely Hotspots	Coastal zone		
Adaptation Activities	Involvement in regional projects including PACCSAP, PACC, GCCA, CCCPIR, Micronesia Challenge. Major sectors focussed on include coastal and marine resources, agriculture, water, forestry and tourism. Salt resistant taro and other sustainable farming methods are being developed under the PACC project. Integrated land and marine resource management and water resource management is being supported under the CCCPIR.		
Migration Information			
Crude Net Migration Rate	0.0		
Access to international migration	Access to USA including Guam and the State of Hawaii		
Labour migration schemes	none		
Community relocation experience			
Relevant information	No mention of migration (including relocation) in the National Disaster Risk Management Framework (2010)		
Relevant National Studies	First National Communications to the UNFCCC (2002), National Disaster Risk Management Framework (2010), Palau 2020: National Master Development Plan (1996), Census of Population and Housing (2005)		

PAPUA NEW GUINEA		
Population Statistics (SPC, 2014)	Annual Population Growth Rate (%)	2.3
	Crude population Density (Persons/km^2)	16
	Population (2013)	7,398,500
	Projected Population (2050)	14,212,300
	Per cent Population Increase (2013-2050)	92.1
	Per cent urban	13
Physical Characteristics	Highest Elevation (m)	4,509
	Total Land Area (km^2)	462,840
	Number of inhabited islands or atolls	
	Dominant Island Types	Plate Boundary Islands

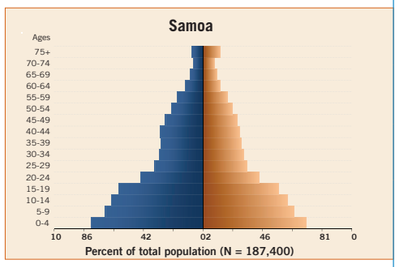


Major CC Impacts	
Sea Level Rise	Compared to other PICs PNG has a small proportion of its population located along the coast but absolute numbers are very high and are exposed to SLR and other coastal hazards
Drought	Particularly during El Niño conditions when frosts in the Highlands may also destroy crops.
Tropical cyclones	Much of Papua New Guinea is too close to the equator to be affected directly by tropical cyclones but the south eastern parts of the country are exposed.
Likely Hotspots	Drought prone areas, river flood plains, delta areas, atolls -- Carteret and Takuu
Adaptation Activities	Many projects underway across a variety of sectors with particular emphasis on agriculture, disaster risk reductin and coastal zone management. The PACC project in Papua New Guinea focusses on drought resistant crops and farming methods at the village level. The Pilot Program for Climate Resilience is supporting community-based adaptation , food security and strengthening the design of infrastructure.
Migration Information	
Crude Net Migration Rate	0.0
Access to international migration	Limited
Labour migration schemes	none
Community relocation experience	Several attempts at resettlement from Carteret's to Bougainville have struggled to succeed, Manam Islanders located in mainland care centre following eruption
Relevant information	Migration to lower areas was a traditional response to El Niño droughts/frosts. The DRR and DM Framework for Action does not mention migration (including relocation). However, the Strategic Program for Climate Resilience (one of the first stage outputs of the PPCR) notes displacement resulting from coastal flooding and risks to low lying atolls and highlights the potential need for resourcing for relocation. It also emphasizes the political and cultural costs of relocation resulting from traditional land tenure (Petz, 2013).
Relevant National Studies	First National Communications to the UNFCCC (2000), Interim Action Plan for Climate-Compatible Development (2010), PNG Development Strategic Plan 2010-2030 (2010), Disaster Risk Reduction and Disaster Management National Framework for Action 2005-2015 (2005), Population and Housing Census (2011)

MARSHALL ISLANDS		
Population Statistics (SPC, 2014)	Annual Population Growth Rate (%)	0.8
	Crude population Density (Persons/km^2)	299
	Population (2013)	54,200
	Projected Population (2050)	70,700
	Per cent Population Increase (2013-2050)	30.4
	Per cent urban	74
Physical Characteristics	Highest Elevation (m)	
	Total Land Area (km^2)	181
	Number of inhabited islands or atolls	
	Dominant Island Types	Atolls

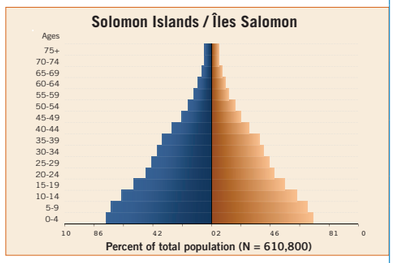


Major CC Impacts	
Sea Level Rise	Loss of land, loss of agricultural productivity, settlements at risk, health effects
Drought	Water supply deterioration (quantity and quality), decline in agricultural productivity, nutritional and health effects
Tropical cyclones	Possibly increased intensity, risks to housing, agriculture, coastal resources, water supply, health
Likely Hotspots	Majuro, Ebeye (high population density, coastal erosion, inundation, water supply issues)
Adaptation Activities	Adaptation projects are generally part of regional initiatives and focus on the sectors of water resource management, policy and planning, agriculture and tourism. Projects include: Enhancing water storage and conservation (PACC project), coastal resource management (Micronesia Challenge project),education and awareness (Pacific Islands Climate Education Partnership), improved climate projections and adaptation planning (Pacific-Australia Climate Change Science and Adaptation Planning Program), supporting mainstreaming (EU GCCA)
Migration Information	
Crude Net Migration Rate	-17.1
Access to international migration	Access to USA, including Guam and Hawai'i
Labour migration schemes	none
Community relocation experience	Communities relocated from Bikini and Eniwetok for nuclear testing in the 1940s and 1950s
Relevant information	No reference to migration in the National Action Plan for DRM (2008) (Petz, 2013)
Relevant National Studies	First National Communications (2000), National Climate Change Policy Framework (2011), National Action Plan for DRM (2008), Strategic Development Plan Framework (2003), Census of Population and Housing (2011), First National Communication to the UNFCCC (2000)

SAMOA			
Population Statistics (SPC, 2014)	Annual Population Growth Rate (%)	0.0	
	Crude population Density (Persons/km^2)	64	
	Population (2013)	187,400	
	Projected Population (2050)	238,200	
	Per cent Population Increase (2013-2050)	27.1	
	Per cent urban	20	
Physical Characteristics	Highest Elevation (m)	1,857	
	Total Land Area (km^2)	2,934	
	Number of inhabited islands or atolls		
	Dominant Island Types	Volcanic High Islands	

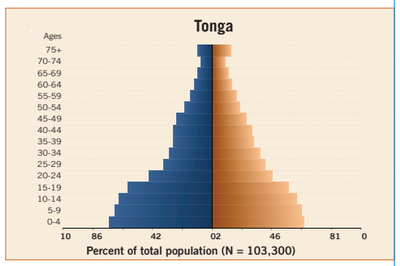
Major CC Impacts	
Sea Level Rise	Coastal areas are likely to be exposed to sea level rise and the effects of storm surges, high tides are likely to be exacerbated. Most settlement is close to the coast.
Drought	Exposed to drought in El Niño events.
Tropical cyclones	Exposed to tropical cyclones and has. If intensity of such events increases losses are likely to be greater and recovery will take longer.
Likely Hotspots	Apia is located near to rivers that are liable to flooding and areas are close to sea level.
Adaptation Activities	A large number of adaptation projects are underway, some national, some as part of regional projects. Sector foci include: Forestry, agriculture, coastal zone management, human health, disaster risk reduction, infrastructure, water resource management and policy and planning. Many projects identified in the NAPA have a community component. The PACC project is supporting community-based integrated coastal protection and the PPCR is supporting a project called Enhancing the Climate REsilience of Coastal Resources and Communities Project. Integrated coastal management.

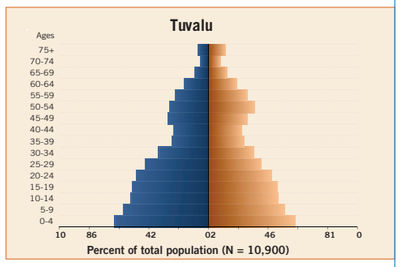
Migration Information	
Crude Net Migration Rate	-24.1
Access to international migration	“Access to New Zealand through Samoan Quota (1,100 persons per year), NZ census 2013: 144,138 people identified as Samoan (cf . 115,017 (in 2001) and 131,103 (in 2006).
Labour migration schemes	none
Community relocation experience	A number of communities have partially or fully relocated inland following the 2009 tsunami.
National Migration Policies	Treaty of Friendship with NZ -- includes migration quota.
Relevant information	Within the NAPA, projects related to coastal infrastructure management entail internal relocation of roads and communities inland. Gradual relocation of communities and government assets farther away from the coast is anticipated although land tenure issues are raised (Petz, 2013)
Relevant National Studies	NAPA (2005), National Policy on Combating Climate Change (2008), National Policy Statement on Climate Change (2007), Strategy for the Development of Samoa 2012-2016 (2012), National Disaster Management Plan 2001-2014 (2001), Population and Housing Census (2012)

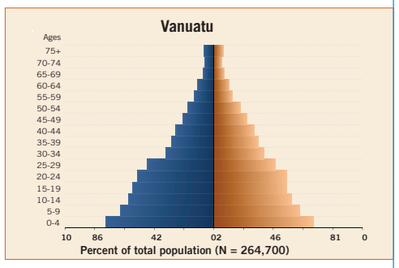
SOLOMON ISLANDS			
Population Statistics (SPC, 2014)	Annual Population Growth Rate (%)	2.5	
	Crude population Density (Persons/km^2)	22	
	Population (2013)	610,800	
	Projected Population (2050)	1,353,700	
	Per cent Population Increase (2013-2050)	121.6	
	Per cent urban	20	
Physical Characteristics	Highest Elevation (m)	2,447	
	Total Land Area (km^2)	28,370	
	Number of inhabited islands or atolls		
	Dominant Island Types	Plate Boundary Islands	

Major CC Impacts	
Sea Level Rise	Coastal communities, atolls and artificial island (Malaita) communities exposed. Marine resources, especially coastal at risk from acidification and coral damage.
Drought	Drought significant during El Niño events. Atolls are highly exposed to drought.
Tropical cyclones	Solomon Islands is exposed to tropical cyclones with river flood plains, deltas, agriculture and food security at risk.
Likely Hotspots	Atolls and reef islands (e.g. Ontong Java, Sikaiana), coastal and delta populations
Adaptation Activities	Enhancing food production and food security in low-lying islands is currently being addressed under the Pacific Adaptation to Climate Change project (regional project supported by UNDP/GEF and implemented by SPREP). The EU through its Global Climate Change Alliance is supporting capacity development of government for mainstreaming climate change in national development. The World Bank is supporting integrated climate and disaster resilience projects at the community level.

Migration Information	
Crude Net Migration Rate	0.0
Access to international migration	Limited
Labour migration schemes	none
Community relocation experience	Large Sikaiana community in Honiara
Relevant information	Internal relocation is included in project proposals in the NAPA. Severe political, economic and socio-cultural implications of internal relocation (related to land tenure) are recognised and project proposals include developing a legislative relocation framework (Petz, 2013)
Relevant National Studies	NAPA (2008), National Climate Change Policy (2012), National Disaster Risk Management Plan (2009), Population and Housing Census (2009), First National Communication to the UNFCCC (2004)

TONGA			
Population Statistics (SPC, 2014)	Annual Population Growth Rate (%)	0.0	
	Crude population Density (Persons/km^2)	64	
	Population (2013)	187,400	
	Projected Population (2050)	238,200	
	Per cent Population Increase (2013-2050)	27.1	
	Per cent urban	20	
Physical Characteristics	Highest Elevation (m)	1,033	
	Total Land Area (km^2)	749	
	Number of inhabited islands or atolls		
	Dominant Island Types	Volcanic High Islands, Atolls	
Major CC Impacts			
Sea Level Rise	Coastal areas are likely to be exposed to sea level rise and the effects of storm surges, high tides are likely to be exacerbated. Most settlement is close to the coast.		
Drought	Exposed to drought in El Niño events.		
Tropical cyclones	Exposed to tropical cyclones and has. If intensity of such events increases losses are likely to be greater and recovery will take longer.		
Likely Hotspots	Coastal zone		
Adaptation Activities	Involvement in a number of national and regional adaptation projects. Sector focui include: agriculture, water resource management, coastal zone management, and policy and planning. Regional projects inlcude participation in PACCSAP, CCCPIR, GCCA,. The ADB is supporting mainstreaming of climate change considerations into economic development policiies and plans. The PACC project is improving water systems and infrastructure in Hihifo. Tonga was the first country to develop a Joint National Action Plan for Disaster Risk Reduction and Climate Change Adaptation.		
Migration Information			
Crude Net Migration Rate	-19.3		
Access to international migration	Some access to New Zealand (PAC - 250 persons per year) NZ census 2013: 60,333 people identified as Tongan (cf . 40,716 (in 2001) and 50,481 (in 2006).		
Labour migration schemes	none		
Community relocation experience	Following 1946 volcanic eruption in Nuia Fo'ou population evacuated to 'Eua. Large share of population returned in the 1950s. Others remained on 'Eua.		
Relevant information	Internal relocation from coastal areas was discussed during consultations for development of the JNAP. Consultations also noted relocating to an overseas country as an adaptation option in response to tsunami risk. However, relocation and other forms of migration are not mentioned under any of the six goals within the JNAP (Petz, 2013).		
Relevant National Studies	JNAP (2010), National Climate Change Policy (2006), Tonga Strategic Development Framework 2011-2014 (2011), National Disaster Plan, Population Census (2011).		

TUVALU				
Population Statistics (SPC, 2014)	Annual Population Growth Rate (%)	1.6		
	Crude population Density (Persons/km^2)	420		
	Population (2013)	10,564		
	Projected Population (2050)	19,600		
	Per cent Population Increase (2013-2050)	86		
	Per cent urban	47		
Physical Characteristics	Highest Elevation (m)	5		
	Total Land Area (km^2)	26		
	Number of inhabited islands or atolls	9		
	Dominant Island Types	Atolls		
Major CC Impacts				
Sea Level Rise	Loss of land, loss of agricultural productivity, settlements at risk, health effects.	Loss of land, loss of agricultural productivity, settlements at risk, health effects	Loss of land, loss of agricultural productivity, settlements at risk, health effects	
Drought	Water supply deterioration (quantity and quality, health effects)	Water supply deterioration (quantity and quality, health effects	Water supply deterioration (quantity and quality, health effects	
Tropical cyclones	Possibly increased frequency, risks to housing, agriculture, coastal resources, water supply, health	Possibly increased frequency, risks to housing, agriculture, coastal resources, water supply, health	Possibly increased frequency, risks to housing, agriculture, coastal resources, water supply, health	
Likely Hotspots	Funafuti (high population density; coastal erosion, inundation, water supply issues)			
Adaptation Activities	Adaptation projects are generally part of regional projects including PACSAP, PACC, GCCA,CCCPIR . Priority sectors include: coastal zone management, agriculture and water resource management (including Lofeagai (Funafuti) water cistern). The Increasing Resilience of Coastal Areas and Community Settlements to Climate Change in Tuvalu is funded by the LDCF and implemented by UNDP.			
Migration Information				
Crude Net Migration Rate	0.0			
Access to international migration	Limited. PAC (75 persons per year to NZ). NZ census 2013: 3537 people identified as Tuvaluan (cf . 1968 (in 2001) and 2625 (in 2006).			
Labour migration schemes	none			
Community relocation experience	Group from Vaitupu relocated to Kioa in northern Fiji in 1944. Regarded as a successful relocation.			
Relevant information	Post-disaster resettlement is addressed within one of the projects outlined in the NAPA. Otherwise, the NAPA mentions relocation as an option of last resort. (Petz, 2013)			
Relevant National Studies	NAPA (2007), Te Kaniva Tuvalu Climate Change Policy (2012), Tuvalu National Strategic Action Plan for Climate Change and Disaster Risk Management 2012-2016 (2012), Te Kakeega National Strategy for Sustainable Development 2005-2015 (2005), Census of Population and Housing (2012)			

VANUATU			
Population Statistics (SPC, 2014)	Annual Population Growth Rate (%)	2.5	
	Crude population Density (Persons/km^2)	22	
	Population (2013)	264,700	
	Projected Population (2050)	483,000	
	Per cent Population Increase (2013-2050)	82.5	
	Per cent urban	24	
Physical Characteristics	Highest Elevation (m)	1,879	
	Total Land Area (km^2)	12,190	
	Number of inhabited islands or atolls		
	Dominant Island Types	Plate Boundary Islands	
Major CC Impacts			
Sea Level Rise	Coastal communities exposed to sea level rise -- may be exacerbated by subsidence		
Drought	Often extended during El Niño periods		
Tropical cyclones	Exposed to tropical cyclones -- one of the most exposed in the region		
Likely Hotspots	The great majority of ni-Vanuatu live in coastal locations and may be exposed to sea level rise and associated affects, urban areas, particularly Vila are coastal		
Adaptation Activities	A high level of adaptation activity is happening in Vanuatu at present, mainly as part of regional programmes. Sectors most frequently targeted include coastal zone management, agriculture, disaster risk reduction and policy and planning. The ADB, GEF, World Bank, and governments of Australia and Germany are financing multiple adaptation projects. A list of climate change projects can be found at http://www.nab.vu/project-search. An extensive list of sectorial climate change impacts and current adaptation strategies employed by ni-Vanuatu communities can be found at http://www.nab.vu/adapatation-actions-search		
Migration Information			
Crude Net Migration Rate	0.0		
Access to international migration	Limited access		
Labour migration schemes	none		
Community relocation experience	A community on the island of Tegua was relocated inland from the coast in a 2005 climate change adaptation project funded by the government of Canada and implemented by SPREP		
Relevant information	Internal relocation of coastal communities and infrastructure is mentioned among the NAPA priority strategies. Migration is not significantly addressed in Vanuatu's National Action Plan for DRR and DM (2006) (Petz, 2013).		
Relevant National Studies	NAPA (2007) , National Climate Change Adaptation Strategy for Land-Based Resources 2012-2022 (2012), Priorities and Action Agenda 2006-2015 (2006), National Census of Population and Housing (2009), Supplementary Priorities and Action Agenda on DRR and DM (2006), DRR and DM National Action Plan (2006), Capacity Building for the Development of Adaptation Measures for Pacific Island Countries (2005) (relocation of a coastal community). See http://www.nab.vu/document-search for a comprehensive list of policies, plans and reports related to climate change.		

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