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**Contact Address**

Fetalai Gagaeolo
laigur114@gmail.com
Ph (685) 7269912

**Permanent Address**

Lalomauga
Apia
Samoa

# ASSESSING THE SOCIO-CULTURAL IMPACTS OF CLIMATE CHANGE IN KIRIBATI AND EXPLORING THE RELOCATION STRATEGY WITH REFERENCE TO FIJI AND ITS SOCIO-CULTURAL IMPLICATIONS

by

Fetalai Gagaeolo

A thesis submitted in fulfillment of the
requirements for the degree of
Masters of Science in Climate Change



Pacific Centre for Environment and Sustainable Development
The University of the South Pacific

July, 2014

**DECLARATION**

## A Statement by the Author

I, Fetalai Gagaeolo, declare that this thesis is my own work and that, to the best of my knowledge, it contains no material previously published, or substantially overlapping with material submitted for the award of any other degree at any institution, except where duly acknowledgement is made in the text.

……..

Fetalai Gagaeolo

S11056391

Date 22 / 07 /2014

## A Statement by the Supervisor

The Research in this thesis was performed under my supervision and to my knowledge is the sole work of Ms Fetalai Gagaeolo.

……

Dr Sarah Hemstock

Principal Supervisor

Date: 22/ 07/ 2014

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**Abstract**

This thesis presents numerous emerging direct and indirect socio-cultural challenges amplified by climate change, experienced and perceived by the vulnerable communities of South Tarawa and Abaiang in Kiribati. Findings indicate that limited resources which sustain lives and livelihoods, and are significant socially and culturally are being physically threatened by climate change. Such physical threats have led to losses, changes, and transformations in people's perceptions, traditional knowledge and skills, behaviours, lifestyles, feelings, relationship status, welfare, security and community cohesion practices. Socio-cultural practices are perceived as one of the strongest pillars that support local communities of Kiribati in building momentum and resilience to endure the adverse impacts of climate change, and keys which unlock solutions that steer individuals and communities towards sustainable living and development. In this regard, the socio-cultural consequences of climate change should not be undermined but should be highly valued and highlighted in climate change policy making at all levels.

Additionally, this study features the perceived socio-cultural impacts of relocation with reference to Fiji and its different dimensions through the lens of the target communities. It is evident that Kiribati communities are zealous in the celebration of their cultures, identities, socio-cultural and spiritual values. Findings based on the perceptions of local communities and experiences of those residing in Fiji, reveal that relocation is perceived as the last 'adaptation resort' to escape and offset individual losses caused by climate change but is also an option that will compromise their socio-cultural practices and values in the long term. This study indicates that attention shouldn't be focused only on factors that drive human relocation but should also prioritize justifications of those who choose not to relocate. This approach will better serve community expectations for in-country climate change adaptation and help shape future strategies and/or policies on climate change driven relocation. Finally, policies and adaptation initiatives should be holistically framed; integrating values that are important to grassroots level such as socio-cultural values, spiritual and mobility concerns for informed decision making at all levels.

**Acronyms**

| | |
|---|---|
| CIER | Center for Indigenous Environmental Resources |
| COP | Conference of the Parties |
| ENSO | El Nino Southern Oscillation |
| EUGCCA | European Union Global Climate Change Alliance |
| IEA | International Energy Agency |
| IPCC | Intergovernmental Panel on Climate Change |
| NAPA | National Adaptation Programmes of Action |
| NCDs | Non Communicable Diseases |
| NGOs | Non-Governmental Organisations |
| NIV | New International Version Bible |
| OCHA | Office for the Coordination of Humanitarian Affairs |
| OHCHR | Office of the High Commissioner for Human rights |
| SIDS | Small Island Developing States |
| SPSS | Statistical Package for the Social Sciences |
| UNDP | United Nations Development Program |
| UNESCO | United Nations Educational Scientific Office of Education Scientific and Cultural Organization |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UNOHRLLS | United Nations Office of the High Representative for Landlocked Developing States |

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# 1.0 INTRODUCTION CHAPTER

*"I love my island dearly but there are times that love needs to be sacrificed in order to save the world and our loved ones, especially the young generations to continue carrying our Kiribati flag in the future"*

(Male, Abaiang, pers. comm., 2012)

## 1.1 Introduction

This chapter aims to give an outline of the study by providing relevant information in the literature to support its aims and objectives. The implications of this study are also highlighted. The proposed aims and objectives of the study are outlined and the chapter concludes with an outline of the thesis.

## 1.2 Overview

Anthropogenic climate change is perhaps planet Earth's most devastating environmental problem, a deadly disaster on its own because of its overarching effects. It is no longer a physical threat alone but a threat to socio-cultural values and practices of many vulnerable communities such as Kiribati. On behalf of her Kiribati people, Timon in her talk at the 18th Conference of the Parties (COP) 2012 clearly distinguished between what climate change means for developed nations and her people,

> '*For some developed nations, climate change is about the rising costs of electricity. Climate change for them is putting price on carbon emission, lack of jobs, life will become more expensive and it's about the economy. For the people of Kiribati, climate change is about human rights, right to our land and losing our land, losing our culture, losing our sense of belonging and losing our identity'* (Timon, pers. comm., COP18 2012).

This definition exemplifies that climate change is becoming dangerous to the point where vulnerable communities of Kiribati are already dreading the erosion of their socio-cultural integrity, and culture in its totality. Being in the frontline of the deadly effects of climate change seems an unfair scenario for Kiribati, because they are just a small nation who only contributes minimally to overall global greenhouse gas emissions.

Even though humans and not cultures are innate, humans are nevertheless defined by their cultures, and therefore humans will always change, through the changing of their cultures (Strauss 2012). Cultural factors combined with social welfare factors constitute socio-cultural values that identify a system or an individual as well as communities.

Socio-cultural values and practices are amongst the important factors that determine and identify the settings of many traditional communities in Kiribati. Kiribati's rich culture is founded on community and society cohesion activities based on valuable, traditional practices and values driven by family relationships, the sharing of resources and incomes which all remain relatively open and free despite its high poverty rate (Siamomua *et* al. 2002). Kiribati communities embrace the spirit of sharing and caring that benefits many unfortunate families (Kiribati National Statistics Office and United Nations Development Party Pacific 2010). It is the strong connections between families forming community ties that provide substantial support for many vulnerable families (Kiribati National Statistics Office and UNDP Pacific 2010). Namakin (2007) mentions that culture is what makes the Kiribati people unique, with strong connections to the land and ocean, from the food they eat, the clothes they wear, the crops they grow to the type of fish they fish. Their close connections with the ocean, their land and their limited natural resources and biodiversity determines who they are and their roles and therefore defines their cultural and social functions and services on a daily basis. In addition, their close relationship to the ocean and land is identified and displayed by their socio-cultural values and practices such as their customs, language and building materials (Chen *et* al. nd).

The socio-cultural values and practices are inseparable from the lives of Kiribati people, just as the culture is from the environment. The close connection of the Kiribati culture with its limited biodiversity and environment is what makes them extremely vulnerable to the impacts of climate change, which will eventually see their socio-cultural integrity either become extinct or adaptable. Chen *et* al (nd) reveals the struggle which Kiribati people are facing to maintain their rich cultural ways and practices in the midst of all changes including climate change. In this regard, Barnett and Adger (2003) highlighted the need for more analysis and studies on the complex interaction between Pacific people and the environment in order to better understand, address and support peoples' concerns.

According to Strauss (2012), climate change has the potential to impact all cultures in extreme and dramatic ways; in fact these impacts are already occurring. Cultures are fragile in the face of change, and they respond differently depending on the type of external forces acting upon them such as hostilities, pestilences, and new innovations and environmental and climate variability (Strauss 2012). However, socio-cultural values also play a significant role in building resilient capacity for vulnerable communities. Understanding the interactions of culture and climate, and in particular the role of perceptions, knowledge, and values as elements of these inter-actions, brings the international community to focus on adaptive responses (Roncoli *et* al. 2008). Culture helps to shape peoples' views of climate change, and motivates their responses in making their futures more sustainable; it unites communities together and helps them endure threats to their environments and livelihoods (Adger *et* al. 2012). The adaptive capacity within culture is the primary adaptation of the human species to such environmental and climatic changes. It is robust and connects generations while simultaneously facing changes in the environment and societies (Strauss 2012). Strauss (2012) also mentions that cultures have enabled humanity to colonise the most extreme places so that it doesn't matter where people move to; they have successfully contended with both environmental and social changes. Others have mentioned the importance of culture in framing the way people perceive, understand, experience and respond to key elements of the environments they dwell in, which is rooted on relationship systems that strengthens human relationships with the environment and natural processes (Roncoli *et* al. 2008). Socio-cultural values determine the uniqueness of a society, and these socio-cultural values deserve much attention. They are an affordable solution that supports sustainable development to offset the adverse impacts of climate change. Unfortunately, in literature and policies, less focus has been given to socio-cultural values and how they could be impacted by climate change and sea level rise. With this in mind, the importance of this study is to provide a context within which the role of culture can enable a potential successful adaptation of the people of Kiribati.

The Intergovernmental Panel on Climate Change (IPCC 2013) reports that the atmosphere and the ocean have warmed, with massive ice and snow being reduced; there

is an increase in the rise of the sea level and an accelerating increase in greenhouse gases accumulation in the atmosphere (IPCC 2013). The future on the other hand is already predicted, with further increase of warming and changes in all components of the climate system as a consequence of continued emissions of greenhouse gases (IPCC 2013). In light of such scientific information, the future of Kiribati and her socio-cultural values are now at stake; in fact they are already in the frontline of the effects of such changes. The sea level rise could have the most devastating effect, as Kiribati is a small low lying group of islands with limited land mass available for the diversity and functioning of natural systems such as places for people to settle in. According to the IPCC (2013), the global mean sea level rose by 0.19m over the period 1901 to 2010 and is projected to rise continuously during the 21$^{st}$ century (IPCC 2013). The risks such as sea level rise, sea surface warming and increased extreme events places atoll communities beyond their optimum capacity to maintain themselves in atolls which will eventually undermine their national sovereignty (Barnett and Adger 2003). This is true for Kiribati. Because of its low lying topography, any slight change in sea level rise will affect societies and livelihoods which largely determine the socio-cultural lives and practices of people.

In the worst case scenario, climate change victims will be left with no choice but to relocate and migrate to secure and viable countries and places either internally or externally. This is already happening within Kiribati itself, where people of the rural outer islands have moved to the urban central islands. This was induced by climate change and socio-economic factors (Locke 2008). Ferris *et* al. (2011) indicate that the complications of community relocation are likely to be extremely costly, where the degree of difficulty and cost will increase with increasing distance from the original home of the community. This will be the status of the uprooted Kiribati communities in the future, if they are bound to relocate to Fiji, and can be evidenced with what is already happening to the Kiribati people in New Zealand; where language for instance has been impacted as a result of the encouragement to learn English in schools and to deal with daily issues (Gillard and Dyson 2011).

### 1.3 Implications of the study

In reviewing the literature, most of the studies on the same problem are concentrated on the impacts of climate change on 'culture' itself, and studies that merge the cultural and social impacts of climate change haven't received much attention. Specifically, the socio-cultural impacts of climate change in Kiribati have received little attention, neither through the media, nor at conferences and workshops, where many have nevertheless issued general statements on the cultural impacts of climate change in Kiribati. However, there is not much specific knowledge about the different processes or effects that contribute to all of the socio-cultural losses in Kiribati. What is missing is a detailed study that investigates and assesses how climate change can contribute to socio-cultural problems, for instance the erosion of culture, and to study all aspects that determines the existing socio-cultural values and practices. The terminology socio-cultural used in this study is explained as factors that merge social and cultural aspects of people's lives. It is imperative to collect the perceptions of communities on the socio-cultural impacts of climate change, to investigate how climate change could contribute to the erosion or the transformations upon their lives socio-culturally in order to shape policies and informal discussions at all levels. Moreover, studies in Kiribati have concentrated on the physical impacts or the science of climate change, and none/little has been done on the socio-cultural impacts and the effects on people as individuals and as communities. It has to be understood that scientific studies alone are insufficient to fight for Kiribati's position if Kiribati is to be well supported in the climate change talks at all levels; hence the importance of assessing the socio-cultural impacts based on community knowledge, experiences and the perceptions of Kiribati communities. Real life experiences and problems are in fact the major concerns and have to receive the most attention.

Furthermore the additional focus of this study is to explore the relocation strategy with reference to Fiji as the host country, through the lens of Kiribati communities, and assess its socio-cultural implications by interviewing Kiribati residents in Fiji. It is clear; the relocation of Kiribati in the future is inevitable, as has been profoundly acknowledged by the Kiribati Government and throughout the media. According to the Kiribati Office of the President (2013), there is a need for advance preparations and consultations to

ensure that the communities of Kiribati are ready to move with dignity in the case of immediate relocation (Kiribati Office of the President 2013). Kiribati is doing all they can to preserve their sovereignty and identity. It has been highlighted that it would be too late and impossible to preserve the dignity of 100,000 Kiribati people in the course of immediate relocation and to avoid the burden on the host countries (Kiribati Office of the President 2013). Such concerns require more research that should gather preliminary information and the perceptions of Kiribati communities on relocation as well as the implications of relocation. This will provide insights into what has to be done, if Kiribati communities and people are to be relocated with dignity. Host countries, for instance Fiji should also be prepared to receive Kiribati communities in order to avoid unforeseen circumstances that may compromise the dignity and sovereignty of the Kiribati people. This is another gap that this research would be able to fill. Exploring relocation and its branching dimensions would feed into all of the relocation preparation strategies of Kiribati communities. When it is time for them to relocate, it will be of great advantage that policies and a consensus on migration or relocation issues are already in place, founded on the concerns and needs of communities.

The literature reveals the lack of attention and research on the socio-cultural implications of climate change. Even at the climate change talks, socio-cultural impacts of climate change are probably the least heard topics. In a regional workshop by the Pacific of the Office of the High Commissioner for Human Rights (OHCHR) and the Sub-Regional Office for the Pacific of the Office for the Coordination of Humanitarian Affairs (OCHA) held in Fiji (2011), attention was focused on human rights, climate change, migration and resettlement, and highlighted the lack of social science research to guide and direct future plans and developments in the Pacific (Ferris *et* al. 2011). According to Adger *et* al. (2012), such topics of concerns at grassroots level are undermined and ignored and are insufficiently accounted for by policy makers and scientists, importantly most governments are unaware of these problems. Adger *et* al. (2012) continues to argue that the ignorance of the cultural dimension of climate change will affect response measures to tackle climate change because of the misrepresentation of integral factors and values that are crucial in building community capacity. Thus it

should be a priority to consider the cultural impacts of climate change (Adger *et* al. 2012).

There has been a vast amount of research on the science and physical impacts of climate change, but in-depth research on the social and cultural impacts still remains minimal. It has been a growing concern that climate change research remains concentrated on other sectors, such as the economy, water, food security and infrastructure; on the physical impacts of climate change, instead of on human groups (Baird 2008). The studies of these elements are being less attended in climate change research, yet these are crucial to the lives of many indigenous resilient communities. There is a call for more understanding of human vulnerability and resilience and to avoid ignoring socio-cultural responses to climate change and extreme climatic events, such as droughts, storms, tidal waves and inundation (Kiribati Ministry of Environment and Social Development 1999). Oliver-James (2009) also highlighted that the exploration of sea level rise and its impacts on social and cultural values has just started to emerge in the realm of research, especially in the context of how resource use will be impacted upon and how these changes in turn will affect social interactions and belief systems (Oliver-James 2009). Novakzec *et* al. (2011) claim that most of the adaptation plans and strategies implemented using scientific and economic data tend to identify only the physical values, whilst undervaluing the associated social and cultural values of communities. Others have also brought to light that the cultural, together with the spiritual impacts of climate change, are big concerns which call for urgent attention (Techera nd). The relatively more numerous studies on the physical and scientific side of climate change therefore leaves room for research and policy consensus on the social and cultural consequences of climate change (Raleigh *et* al. nd). For instance, there is a need for the protection of traditional values such as communal sharing of resources and cooperative economic activity, protection of land tenure and so forth in Kiribati (Siamomua *et* al. 2002).

Therefore this study serves to dig deep into the roots of all of the socio-cultural consequences and implications of climate change affecting the communities of Kiribati,

and to bring to the forefront the unheard voices and the unattended concerns of Kiribati communities. Kiribati as a victim of climate change deserves much attention and prioritisation in climate change adaptation support initiatives, including climate research and climate change talks at all levels. Issues affecting Kiribati have to be addressed as urgently as possible, while there is still time for policy making at the national and international level. Findings will feed into policy making and for international awareness. In addition, this study will provide more accurate and specific areas of concern that will help advance Kiribati's position within climate change negotiations and policy making. It is now common knowledge that the climate is changing and the effects are undoubtedly inescapable, uncontrollable and irreversible. Thus the time to adapt to current and future change is now. In view of this, in-depth studies of the people, their lives and livelihoods should now be given a high priority. Thus this issue must be explored, researched and documented in-depth for the international and national communities to understand how far-reaching the effects climate change are, and how these effects go beyond physical and environmental issues, as they affect a person's psyche.

Assessing the socio-cultural impacts of climate change in Kiribati is the main focal area of this thesis. Data was collected from two main communities (islands), South Tarawa and Abaiang, using questionnaires to conduct interviews. Further to this objective, the perceptions of local people were captured as to why Fiji is chosen as a relocation destination, and why they assume that it would be one of the preferred relocation destinations. This reveals important information which is currently lacking in the literature, such as what changes societies and their cultures might undergo in the future if they are forced to relocate, and hence what will be necessary to address to ensure successful adaptation. The findings help prepare not only the future relocated communities of Kiribati, but also the host countries they will relocate to.

### 1.4 Research Objectives and Aims

- To evaluate the level of climate change information awareness and perceptions between South Tarawa and Abaiang islands.

- To capture the perceptions of historical climatic and environmental changes between South Tarawa and Abaiang.

- To capture the perceptions of people on the relationship between the environment and the Kiribati socio-cultural values and practices.

- To assess the socio-cultural challenges and impacts perceived and experienced by the target communities to be amplified or caused by climate change and statistically test the difference in perceptions between the two target islands.

- To collect knowledge and the perspectives of local communities on relocation in general with reference to Fiji.

- To discover and observe the cultural and societal/social changes and influences perceived by Kiribati people in Fiji and compare it with local people's perceptions.

### 1.5 Thesis Structure

This thesis is comprised of seven chapters which are detailed below.

Chapter One gives an overview of the background of this thesis, identifying evidence from the literature that reveals a lack of studies on the socio-cultural impacts of climate change. It also provides implications of this study in general and identifies the objectives for the study.

Chapter Two is the literature review which provides information on what has been done already within the same area of study. It reviews information linking Kiribati, climate change, relocation and the socio-cultural integrity of the Kiribati people.

Chapter Three briefly outlines the methodology conducted to collect the primary information and data for this study. It also outlines some of the lessons learnt, which are important for future research that deals with community engagement.

Chapter Four provides the results and discussion of the findings based on the objectives.

Chapter Five presents the perceptions and views of the target communities around relocation with reference to Fiji and its socio-cultural implications.

Chapter Six takes a deeper look to the spiritual dimension of relocation. The participants were on common ground regarding the spiritual dimension as the key to successful adaptation.

Chapter Seven summarises and concludes the key findings of this study, with a few recommendations valuable for policy making presented.

# 2.0 LITERATURE REVIEW CHAPTER

*"I do believe that climate change is one of the cause of socio-cultural problems in my community, because imagine if things had stayed as they used to be? There would be no climate change, our food crops will still give us rich and delicious fruits, we would still be able to drink from our well water. We'd never run out of provisions and there will be no problems at all in the community"*

(Male, South Tarawa, pers. comm., 2013)

## 2.1 Introduction

This review serves to bring to the forefront relevant literature that provides evidence to support the notion that climate change has the potential to impact socio-cultural values and the practices of vulnerable communities who have close connections with their environments. It begins with a general review of the different studies that claim that climate change has the ability to affect communities socio-culturally, with a specific emphasis on indigenous people. Further it provides a scientific background of the observed and future climate change impacts in Kiribati, and also reviews how these changes are expected to affect and compromise the Kiribati socio-cultural values and culture in its originality. A brief review of the culture of Kiribati is also included. Lastly the exploration of mobility issues globally is reviewed, followed by a specific look at relocation from Kiribati, using Fiji as an example.

## 2.2 Climate change, indigenous people and socio-cultural consequences.

Climate change is a diverse and dynamic phenomenon from which numerous concerns have evolved as a result of the adverse physical impact of climate change on the environment and individuals. This has further led to humanitarian consequences; socially, culturally, psychologically and spiritually as been clearly emphasised in the literature. It changes the way communities live, work, worship and interact in cultural landscapes, is influenced by migration, leading to the abandoning of their original identities and heritages (Cassar *et* al. 2006). Indigenous and traditional communities of SIDS are no exception; climate change affects their entire social and cultural way of living.

Trevitt (2012) distinguishes between the aftermath of climate change on developed and developing countries; climate change in the case of developed countries has increased the demand for economic development, which in turn has increased the demand on how and on what extent to develop and extend industries, and how to plan cities and infrastructure in the future. In the case of indigenous people of low-lying nation states, climate change has amplified cultural destruction and the eradication of their collective

identity (Trevitt 2012). Edwards (1999) stresses with reference to the Pacific region the importance of understanding climate change. Not only will it amplify the pre-existing environmental problems, but most importantly, it will increase the causes that will alter the environmental and socio-cultural conditions of communities.

It is revealed that because of the very close connections of indigenous communities with their environments, their socio-cultural lives will eventually be threatened. Their close relationship and long maintained connections with the environment are fundamental for their survival, not only in physical terms but for their social, cultural, psychological and spiritual need as local and indigenous people. Sadly, local and indigenous communities are hardly acknowledged in academic, policy and public discourses on climate change (Salick and Byg 2007). Yet the likely threats of climate change are mostly greatly felt by these people more than by others. The high reliance on local natural resources, combined with the insufficiency of financial support, high poverty issues, health risks and the lack of solid measures and a platform to deal with such problems, are some of the factors that explain the lack of capacity to adapt to environmental stresses caused by climate change (Thomas and Twyman 2005).

Since the physical lives of indigenous communities are closely tied to the environment, their socio-cultural lives are eventually threatened as climatic changes pose intense pressure on environmental resources. Numerous studies have suggested how climate change affects people's lives socio-culturally. According to Oliver-James (2009), the material physical losses echo an aftermath of economic, social and cultural losses amongst the lives of such people (Oliver-James 2009). Zellentin (2010) believes that the loss of community territories as a result of climatic changes will eventually lead to the loss of their constitution as an institutional cultural community, which calls for urgent consideration of the preservation of such cultural aspects. The changes in climate causing coastal erosion, inundation and coral bleaching will trigger changes in viable ecosystems that are the keys to their livelihoods and culture. For example, this could change fisheries distribution and abundance, involve saline contamination of freshwater, increasing risk of disease, and lead to a decline in agricultural productivity (Mortreux and Barnett 2009). Techera (nd) reaffirms the possibility of climate change to threaten

traditional lifestyles, cultures, heritage and lands, which are the origin of most cultural lifestyles. For example the impacts of sea level rise and temperature increase exacerbates the loss of land as well as their limited biodiversity, which all lead to the displacement of people. Oliver-James (2009) mentions that the social world and communities are endangered by individual losses of livelihood, such as the loss of farming sites, tools and equipment, and the loss of land or common property resources as a result of land or coastal erosion. These losses lead to a loss of human capacity for sustainable living, setting the grounds for individual social and identity problems, resulting in marginalisation and social displacement (Oliver-James 2009). Climate change does not discriminate; it affects more than infrastructure and geographical settings. It also threatens the values of people attached to the physical environment (Novakzec *et* al. 2011).

Furthermore, problems such as poverty and hunger as a result of ecosystem degradation, due to gradual climate-driven environmental changes, can lead to societal breakdown and situations such as high levels of communicable diseases, conflict and adaptation, or to coping strategies that include relocation and displacement (Couldrey and Herson 2008). Accelerated sea level rise as well as extreme weather events caused by human-induced climate change will threaten all traditional ways of life, that are mostly dependent on the environment. There will be an erosion of cultural heritage, cultural landscapes, monuments and historical sites, as well as cultural practices and traditions, which in some cases leave the settlements and lands of people uninhabitable, resulting in the migration of entire communities (Zellentin 2010). According to Hundley (2008), there are many other secondary ethnic problems that could be possibly influenced by natural and socio-cultural changes. Such changes are not limited to, but include, the poor quality and conditions of water and precipitation patterns on the growth of agricultural crops, which drives food insecurity and food scarcity and as a consequence fuels government corruption and the misuse of power (Hundley 2008). Ethnic groups in various parts of the world will be uprooted, leaving families and traditional homes, and potentially the abandoning of ethnic cultural traditions and customs in the search for survival (Hundley 2008). Also, cultural diversity and socio-cultural interactions such as the transformation of working habits and ways of living, competition for resources and

the urge of communities to migrate are all likely to be an effect of climate change (UNESCO Conference 2013). A recent review of the literature by Hsiang and Burke (2013) on the links between climatic changes and conflict and social stability reveals a positive correlation of climatic variables with human violence and conflicts.

Indigenous communities like those in Africa have activities such as cultivating food crops and foraging for surrounding food resources for daily consumption, which enables them to develop an extraordinarily intimate knowledge of local weather and plant and animal life (Baird 2008). Baird (2008) reveals the importance of traditional knowledge on predictions, such as when to plant crops or where to hunt for food, which has been practiced over many generations. But, unfortunately due to the changes in climate and the frequency of extreme events, such as droughts, these unique and rich traditional understandings in Africa are proving to be no longer valuable (Baird 2008). The sharing and storage of food during disasters and climate change are essential for survival and endurance through those tough times, however due to food shortages and resulting in starvation, the rich knowledge which is still nevertheless valuable and possessed by these people in order to respond to such disasters has been lost. For example, the loss of domesticated crops, loss of water harvesting techniques and loss of dry land management (Salick and Byg 2007). Indigenous First Nations people are not spared from the threats of climate change, given that they also have intimate connections with the land. Therefore climate change on the ecosystems will also have impacts on socio-cultural activities tied to the land and hence their ability to continue practicing their rights will also be restricted (CIER 2006).

The literature gives enough evidence to suggest that climate change is nothing, more or less, than a threat to people's socio-cultural lives. Climate change and its physical impacts on the environment to which indigenous communities are closely tied will be intensely pressured, especially for younger generations in the future. In the case of Kiribati, because of such physical threats, it is believed that their social-cultural values will also be threatened. For example their traditional knowledge and other cultural assets

such as sites of worship and ritual will be threatened, for those who settle near the coasts (Mimura *et* al. 2007).

### 2.3 Kiribati and Climate Change: A brief background

Climate change is undoubtedly one of the most challenging environmental problems for atoll life. The threats posed by climate change will certainly put the future of vulnerable low lying island communities at severe risk, as their homelands will be rendered uninhabitable. Amongst these small developing states is Kiribati, identified by the IPCC on its fourth Assessment Report to be highly vulnerable to the impacts of climate change and sea level rise (Mimura *et.* al 2007). Mimura *et.* al (2007) characterizes small islands as those with poorly developed infrastructure and inadequate natural, human and economic resources, dependent on marine resources for their protein needs. In addition, they rely heavily on a limited resource base for financial support, and their adaptive capacity to climate change is generally low, despite the resilience of their efforts supported by the help of their traditional knowledge and measures. This IPCC's conclusion on the situation of small islands reflects the closeness of these vulnerable people to their environments. Hence, the wealth and health of many of these populations are significantly determined by the sustainability of their limited resource base, the ocean and the land. Unfortunately with the rising dangers of climate change and sea level rise, the relationship of these people and their environments will be subsequently threatened.

Kiribati has three main groups of islands; Gilbert, Line and Phoenix Islands, which comprise of 33 islands; one raised limestone Island with 32 low-lying atolls (Kiribati Ministry of Environment and Social Development and Country Climate Change Study Team 1999). The group includes Christmas Island, the world's largest coral atoll (Loughry and Mc Adam 2008). It has small island landmasses, poor soil and low elevation, usually less than three meters above sea level (Ferris *et* al. 2011, Loughry and Mc Adam 2008) and on average are only a few hundred meters wide (Loughry and Mc Adam 2008). Owing to its fragile small land masses, proximity and exposure to the open ocean, Kiribati is therefore certainly susceptible to any external event such as climate

change, as the environment is fragile, especially in the densely-populated urban island of South Tarawa (Siamomua *et* al. 2002). Worryingly, Kiribati has already been predicted to disappear in its worst case scenario, as a result of dangerous climate change (Siamomua *et* al. 2002). By 2050, it is already predicted, the potential economic damages will be US$8-$16 million a year, driven by climate change and sea level rise, if effective adaptation efforts to curb these impacts are not successfully achieved (Ramsay *et* al. 2008).

### 2.4 Scientific evidence: Past and future climatic changes in Kiribati

On the release of its recent report on Redrawing the Energy-Climate Map (2013), the International Energy Agency have clearly stated that the international community is slipping away from its commitment to cut down emissions of greenhouse gases, as promised in the pre-existing negotiations and policies (IEA 2013). While there are uncertainties about scientific and political matters in climate change debates, one certain unquestionable reality still remains; anthropogenic climate change is inescapable and will continue to worsen despite the combined efforts to tackle it, whether by an individual, a nation or universally. This was clearly highlighted in the UN Climate Change Body statement at the Bonn Conference (2013). It is beyond the international community's effort to slow down the pace in which the climate is changing, and their efforts to meet the target of keeping the global temperature to below 2° C are inadequate as reported by many studies. This is obviously a challenging concern for most small island states such as Kiribati; in fact it might already be too late to respond.

Science has proven that the climate has been changing in Kiribati over the years. It has been recorded that temperatures have increased since 1950, where the maximum temperature has accelerated at a rate of 0.18°C per decade; annual rainfall has increased; and with the help of technical instrument such as satellites and tide gauges, it has been measured that sea level has risen across Kiribati by 1 – 4mm per year since 1993, compared to the global average of 2.8 – 3.6 mm per year (Pacific Climate Change Science Program and Kiribati Meteorology Service 2011). According to Ramsay *et* al, (2008) the variations in monthly sea level are influenced by the ENSO by between 0.2 -

0.5m increases above normal in a strong La Niña phase. This effect has been detected in Tarawa since 1974. ENSO events can cause average sea levels to increase by up to 0.43 meters (Ramsay *et* al. 2008). Heavy rainfall variability has been regularly observed twice a year with the risks of flooding affecting health as a result of run-off affecting ground dug wells as well as settlements (Kiribati Environment and Conservation Division and Climate Change Study Team 2013). Droughts on the other hand have been severe in Kiribati, though according to the drought indices, there is no accepted definite description of drought yet. In response, Kiribati local communities have indicated droughts with the poor growths and yields of livelihoods, such as in fisheries and agriculture; their backbone for survival (Kiribati Environment and Conservation Division and Climate Change Study Team 2013).

Kiribati livelihoods are extremely vulnerable to the direct impact of climate change. Droughts are known to cause the decline of inshore fisheries due to the migration of tuna fisheries further north, especially during El Nino periods. The increase in global temperature has increased sea level, causing coral bleaching which affects coral growth. Inundation and erosion driven by storm surges risks land resource based livelihoods, destroying viable and vital areas of land; contaminates the fresh groundwater lens which is fundamental for survival; enhancing the intrusion of saltwater to water lenses, and excessive rainfall creating runoff into drinking groundwater wells. The critical situation of groundwater lens has also affected productivity and yield of crops such as the bwabwai (swamp taro) (Kiribati Environment and Conservation Division 2007).

Even the future of Kiribati is at stake, as climate is being predicted to be changing constantly, according to the Pacific Climate Change Science Program and Kiribati Meteorology Service (2011). The annual average air temperatures and sea surface temperatures are predicted to further increase under all emission scenarios; there will be more extreme rainfall; sea levels will most likely be rising in the range of 5-14cm by 2030 under a high emission scenario, and if joined with natural yearly changes, it will increase the impacts of storm surges and coastal flooding (Pacific Climate Change Science Program and Kiribati Meteorology Service 2011). Mimura *et.* al (2007) identify

with high confidence the direct adverse impacts of climate change these island nations will face in the future. For example, by 2050 a 10% reduction in rainfall will most likely cause shrinkage in the size of freshwater lenses on Tarawa atoll, hence the decrease in rainfall combined with accelerated sea-level rise will amplify threats to water resources. In addition, the predicted sea-level rise will increase inundation, erosion and other coastal hazards, which will destroy vital infrastructure, settlements and facilities. It will lead to the worsening of the water balance due to rainfall distribution, the decline in marine resources, coral reefs and fisheries; it threatens subsistence and commercial agriculture as well as human health and tourism, which will compromise the socio-economic well-being of island communities (Mimura *et* al. 2007).

### 2.5 Kiribati and socio-cultural values in the face of climate change

Kiribati is a harmonious nation with a unique and entrenched culture. The foundation of the Kiribati culture, community and societal cohesion are based on traditional practices and values driven by family relationships, the sharing of resources and incomes and a co-operative approach to economic activity, which all remain relatively open and free despite its high poverty rate (Siamomua *et* al. 2002). Similar to all Pacific Islands, Kiribati is characterised as having a close attachment to the land and particularly to the ocean (Ferris *et* al. 2011). The peoples' close connections with the ocean, their land and their limited natural resources and biodiversity determines who they are and what they do, and therefore defines their cultural and social functions and services on a daily basis. Namakin (2007) highlights the importance and value of the land and sea to the Kiribati culture; from the crops they grow, to the type of fish they eat from the sea, the local clothing they make from plant and tree species, the language and numerous important cultural activities which all add up to distinguish and define them. These daily cultural ways of living develops societal cohesion and sustains the warm bond between families and communities through sharing and loving. Kiribati's environment is very fragile and there are complications in providing services to outer islands, however despite these difficulties, Kiribati communities benefit from their strong and resilient culture (Siamomua *et* al. 2002).

Unfortunately, the interference of climate change and associated sea level rises will potentially threaten such practices and hence their culture (Namakin 2007). For the atoll communities of Kiribati, climate change affects people's entire lives, their security and rights, to the land and ocean, their culture and identities, as lamented by Maria Timon in her talk at COP18 2012 in Doha.

> *"For some developed nations, climate change is about the rising costs of electricity. Climate change for them is putting price on carbon emission, lack of jobs, life will become more expensive and it's about the economy. For the people of Kiribati, climate change is about human rights, right to our land and losing our land, losing our culture, losing a sense of belonging and losing our identity"*
>
> (Timon, Kiribati, pers. comm., 2012).

This will eventually place the lives of Kiribati communities and their livelihoods into a serious level of socio-cultural change, transformation and losses. Maria Timon laments the difficulties already faced by her Kiribati people,

> *"The coconut trees are dying and breadfruit trees are dying. Our people are struggling to survive. But they sweat, they try harder, they work harder. They are very resilient and will even try harder to survive and stay in their home*
>
> (Timon, Kiribati, pers. comm., 2012)

Kiribati President Tong also stated that some villages have already moved and there have been increasing instances of sea water contaminating the island's underground freshwater that remains vital for the survival of trees and crops (Perry 2012). Generally Barnett and Adger (2003) note the dangers of sea-level rise, sea-surface warming, and increased frequency and intensity of extreme weather events which could possibly overrule human capacity to inhabit atolls. Accordingly, Kiribati's future is on the verge of being at risk as climate change effects would make the lands uninhabitable. In the worst case scenario, climate change victims will be left with no choice but to relocate and migrate to secure and viable countries and places. Like Tuvalu, scientists have claimed that Kiribati is now at risk of vanishing altogether by the middle of the century (Loughry and McAdam 2008). Locke (2008) also asserts potential evidence of Kiribati

being on the frontline of experiencing the direct and significant threats of climate change which have widespread and far-reaching social implications.

### 2.6 Climate Change and Human Mobility Implications: A global overview.

The influence of climate change on human mobility is irrefutable and increasing (Warner *et* al. 2009). Relocation is perhaps the last possible strategy for the protection and security of vulnerable communities, but movement influences numerous other socio-cultural problems for relocated communities. There is a risk that the national sovereignty of atoll countries could be undermined as a result (Barnett and Adger 2003). The literature is clear that the mobility issues of vulnerable people, whether it is relocation or migration, will exceed the impacts that they were exposed to in their original homes. Campbell (2010) highlights that the migration of communities to new areas for opportunities to offset the risks of climate change will set the stage for more problems than the ones that they were exposed to in their original lands. Community relocation is much more complicated, and will certainly be more costly, depending on the distance from the original homes of communities to host communities (Ferris *et* al. 2011). Zellentin (2010) mentions the burdens felt by such people in their new societies, such as the feeling of being suppressed in the future. Moreover, relocation generates top-down initiatives where communities will be ignored in decision making, risking their futures; there will be conflicts over land rights as well as loss of cultural and community cohesion (Ferris *et* al. 2011). Oliver-Smith (2009) shares the same concern that relocation will have an impact on local people as they will be separated and isolated from their cultural and social resource foundation on which they relied solely as individuals and communities. They will face the disheartening task of trying to rebuild not only personal lives, but also those relationships, networks, and structures that have supported them as individuals (Oliver-Smith 2009).

Considering these losses and conflicts for relocated and displaced communities, many studies have highlighted the importance of and the urgent need to address such mobility matters in policy making at the international level. These victims are uprooted as a result of climate change induced migration and relocation, which is considered the most

permanent type of movement, and deserves international attention and moral consideration (Byravan and Rajan 2010). Burson's (2010) opinion is very poignant as well, highlighting the importance of including the critical role of land on the cultural, social, economic, and spiritual life of most Pacific communities into policy consensus and adaptation measures, and even research studies. The losses and the concerns of relocated communities must be addressed, not only to reconstitute the community in a material sense, but to support the communities in their efforts in reuniting again (Oliver-James 2009). Fedor (2012) also concludes in her dissertation that the careful and decisive management of environmental migration should prioritise cultural values, human rights and sovereignty and the environment of the victims to avoid conflict and tension. Therefore, it's important for the policies and consensus made in the national and international level to be realistic, because they all contribute into the shaping of the future of vulnerable communities like Kiribati.

Sadly though, many of the concerns and implications of human mobility and of environmental refugees are completely unrecognised and dismissed by the United Nations and the UNFCCC (Mc Namara 2007). A recent study by Kolmannskogg and Afifi (2014) states that law experts and humanitarians have identified that a considerable gap in protecting the rights and needs of displaced communities still remains. This absence or omission of environmental refugee and mobility concerns within the UNFCCCs missions in tackling climate change is a significant drawback in the efforts of the international community to cope with and address human mobility problems. This will continue until they are officially and politically recognised and considered within the UNFCCC process (Barnett *et* al. 2010).

### 2.7 Climate-induced relocation and Kiribati socio-cultural values with reference to Fiji.

Relevant studies have evidently stressed that atolls will face massive displacement of people as their homelands will be rendered uninhabitable because of their degree of vulnerability to climate change. Kiribati's future is now certainly at stake. According to

Campbell (2010) climate change effects will affect many locations of the Pacific region with atoll communities, who depend highly on very limited groundwater sources that are susceptible and sensitive to environmental changes. They will impact negatively on freshwater resource supply, health and agricultural activities negatively (Campbell 2010). This explains the situation of Kiribati.

There has been a lot of coverage in the media about the vulnerability of Kiribati as a result of the impact of climate change; indeed climate change is already putting the lives of people at a dangerous place in the scale of human insecurity, suggesting a glimpse of what the future of Kiribati holds. In response, the Kiribati government has been seeking attention from the international community for resolutions and pleading for more commitments from the leaders of developed nations to ensure that the security of their people and their livelihoods are accorded a high priority. President Tong has been an influential leader in articulating the seriousness of climate change in his country. In one of his famous quotes, he mentioned,

> *"When it's time, I think our people will evacuate the island, Kiribati, they will probably go to America or Australia or New Zealand. Can we remain nationals of Kiribati when we are living in Australia? What would be our citizenship? Do we still have sovereignty of Kiribati when there is no longer the country of Kiribati? These are issues that I think at this point nobody is ready yet to address"*
>
> (Kiribati President Tong, pers. comm., 2008)

As a result, Fiji is probably the first country to respond, taking the initiative to start paving the way to support Kiribati's appeal. The PM of Fiji has already indicated the acceptance of Kiribati communities to Fiji. In his remarks at the 9th Pacific Islands Conference on Conservation and Protected Areas in Fiji, 2013, Prime Minister Frank Bainimarama reaffirms Fiji's acceptance of the Kiribati people's ability to reside in Fiji (Islands Business Press 2013). He spoke,

> *'If the sea level continues to rise because the world won't tackle global warming, some or all of the people of Kiribati may have to come to live in Fiji'*
>
> (Fiji PM Bainimarama, pers. comm., 2013)

According to Delaibatiki (2014) of the Fiji Sun Online, the Fijian President in his state visit to Kiribati, 2014 also reiterated the address by the PM, to reassure people of the acceptance of Kiribati communities to Fiji if all else fails, he spoke,

> *"The people of Kiribati are welcome to live in Fiji if their islands are swamped by rising sea level, but I want to assure you that if all else fail, you have true friends in Fiji who will not let you down. Because only our size and topography, our mountainous interiors, prevent us from suffering the same fate" ....In a worst case scenario and if all else fails, you will not be refugees. You will be able to migrate with dignity. The spirit of the people of Kiribati will not be extinguished"*
>
> (Fijian President, Ratu Epeli pers. comm., 2014)

What has been stated by Fiji's leaders brings comfort to the Kiribati communities in their struggle against climate change. However, considering the effects of relocation as discussed, relocation is a strategy that requires effective and realistic planning before implementation. Despite the moral response supplied by Fiji, President Anote Tong believes that it's a complicated issue for Fiji, but it is even more difficult for the people of Kiribati (Island Business Press 2013). However, Kiribati has already bought 6,000 acres of land in Fiji for assistance with its economic and food security issues (Press Release Bairiki 2013; Fiji News 2014). The land known as the Natoavatu Estate is an asset of the Church of England, without any settlements but with lengths and depths of lush forestry (Press Release Bairiki 2013).

For the people of Kiribati, whose identity is determined by the land and ocean, the physical environment where they have lived over generations, the big question is who would they become if they are forced to move? If they move, will they still be given the freedom to carry their flag as Kiribati people? What will happen to their once harmonious societies and unique cultures if they are to move? Will they still be given the freedom to use resources? This study suggests that relocation therefore is not as easy as just moving people to other places. There are certain processes and requirements to address before people are required to move. The discourse and strategy of relocating to other places, is also believed to portend significant socio-cultural impacts if plans are not

in effect. Moreover, the status of the uprooted Kiribati communities in the future in places such as Fiji is uncertain. However, in some studies have been done on Kiribati communities residing in New Zealand by Gillard and Dyson (2011), it was found that practices such as changes in diet, churches and recreation contribute to the loss of culture, and the influence of these activities can result in the disruption of social relations and the isolation of Kiribati communities in New Zealand.

## 2.8 Chapter Conclusion

The literature provides evidence to support the impact of climate change on the socio-cultural integrity of vulnerable communities such as Kiribati. However there is also a strong emphasis on the lack of research and discussion on the socio-cultural effects of climate change. The literature also nevertheless stresses the importance of culture in shaping communities responses to their changing environments. Science has proven that climate change is no longer a debatable concern but a matter of human security. Kiribati is on the frontline of the impact of climate change and it is most likely that these physical changes will portend significant socio-cultural losses to the communities, and will in fact urge them to relocate. Therefore plans should be made to prepare Kiribati communities. Many studies have been done to suggest and argue that the relocation or displacement of communities to new areas will create and influence more socio-cultural challenges. Several studies have been done to determine the possibility of culture being threatened by climate change and its effects.

# 3.0 METHODOLOGY CHAPTER

*"Our foods are not nutritious anymore and we easily get sick. Sea level rise took almost 5-7 acres of our land. Most of our people have lost their homes and trees we rely on. The impacts of climate change gives people a hard time to replant everything. By understanding, it takes four to five years to grow coconuts, fig and breadfruit trees. The alternative these days is to buy rice in replacement of our local foods but the problem is money. Life is hard with all these changes; we are not planting anymore crops or other trees. What's the use of planting and they keep dying because of climate change, only when there is a resolution to the problem"*

(Male, South Tarawa, pers. comm., 2013)

### 3.1 Chapter Introduction

This chapter presents the methodological process employed in this research. The design of this study was non-experimental. Primary data was qualitative and records mainly personal experiences and perceptions of climate and environmental changes, and how such changes are perceived by the participants to be contributing to the socio-cultural changes on their lives as individuals and as communities. In addition, relocation was explored and how it will also influence socio-cultural problems with specific reference to Fiji as the host country. The first stage of the study was done mainly in Kiribati where core information and data were collected from two islands; South Tarawa and Abaiang. The final stage of the research was done in Suva, Fiji, which collected and identified the main socio-cultural problems that Kiribati immigrants and residents in Suva are experiencing as a result of relocation and migration. The perceptions and experiences of Kiribati people in Fiji were compared with the perceptions of locals. Passive observations were also carried out to identify areas of environmental degradation. This chapter concludes with a presentation of the challenges encountered, as well as some important lessons learnt from the overall study.

### 3.2 The research logistics.

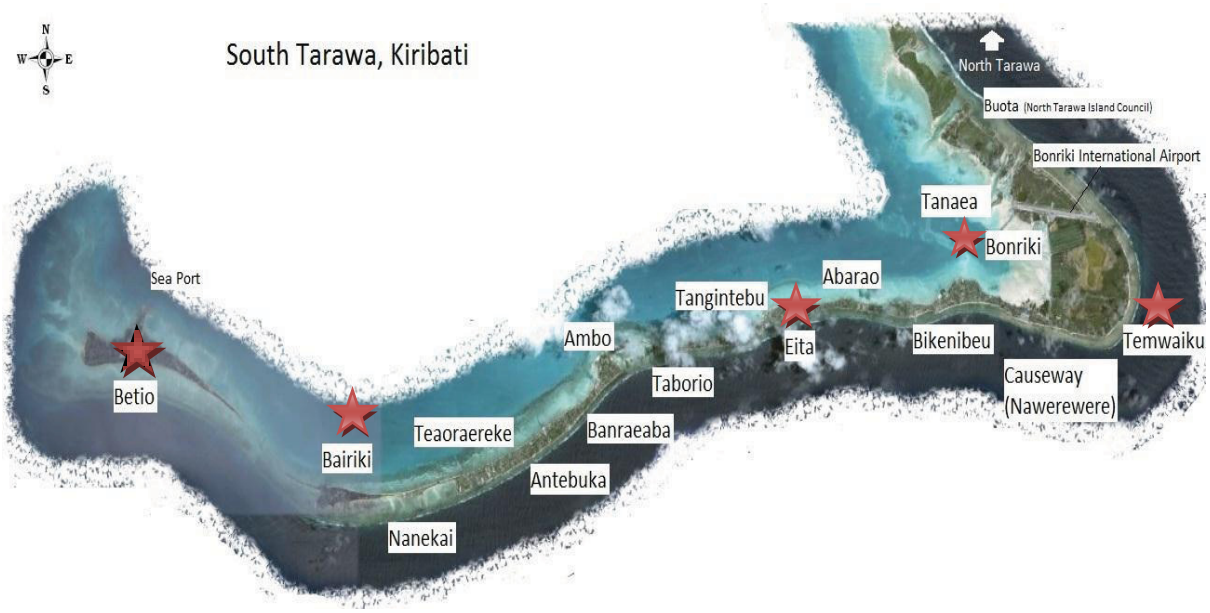
This research was approved by the University of the South Pacific Ethics committee before being conducted. The substantial purpose of the ethics approval form was to ensure that the interests of the participants involved in the research will not be violated during the process. Thus it ensures that the rules and regulations under the University's policies for research are complied with for the security and confidentiality of participants and their views. A research permit was also obtained upon arrival in Kiribati for permission to carry out the study. This was processed under the management of the Ministry of International and Social Affairs and Foreign Affairs in Kiribati.

### 3.3 Brief background of selected study sites.

The selection of the two sites in Kiribati; South Tarawa and Abaiang, for the pilot research was primarily assisted and coordinated by Pelenise Alofa, the Kiribati

European Union Global Climate Change Alliance (EUGCCA) In-Country Coordinator. The selection of Suva in Fiji by the principal researcher was because of the diverse cultures and ethnic groups associated with Western or modernized influences that co-exist therein along with the Kiribati people. This would allow clear observations and investigations on how Kiribati people identify differences on their socio-cultural lives in relation to living together with other ethnic groups. The atoll of Tarawa is comprised of two parts, North and South Tarawa. Data collection was done only in South Tarawa, together with Abaiang, an outer island located on the north of Tarawa.

### 3.3.1 South Tarawa



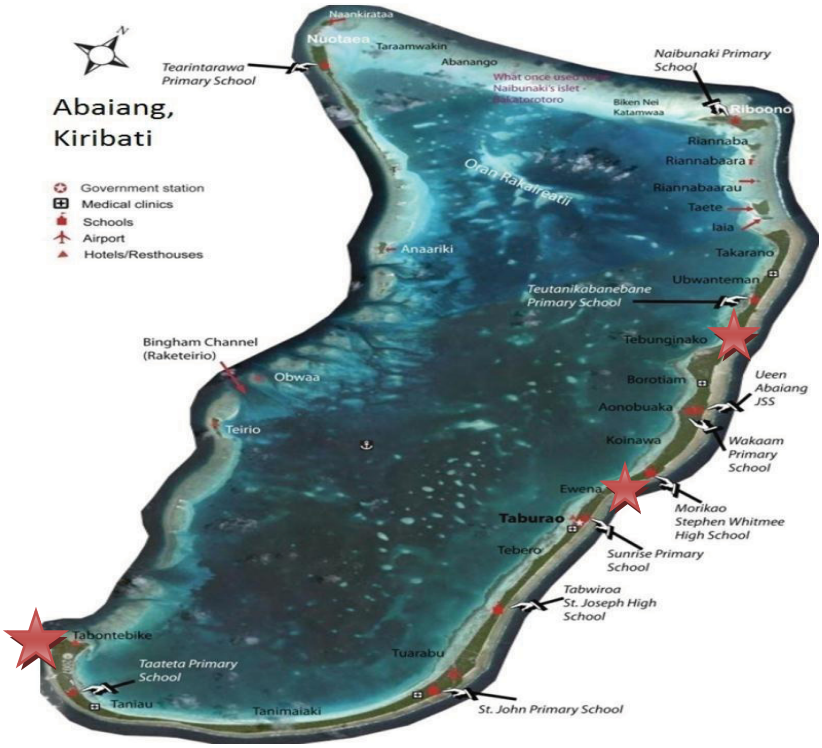

Source: Office of the President and T'Makei Services, 2012.

*Figure 3. 1The southern end of Tarawa atoll showing villages (marked by stars) in which primary data was collected from.*

According to the Kiribati Office of the President and T'Makei Services (2012), South Tarawa is by far the most densely populated island in comparison with all other neighboring atolls of Kiribati, and even more surprising when compared with overseas cities. It outnumbers the density of the populations in Auckland and Sydney cities;

where Auckland has 2,200 people per square km and 2,000 people per square km for Sydney (Kiribati Office of the President and T'Makei Services 2012). South Tarawa extends from Betio islet to Buota village which is also the home to the main capital of Kiribati (Figure 3.1). South Tarawa has a land area of 15.76 square kilometers and is less than 3m above sea level with an average width of only 450 meters (Office of the President and T'Makei Services 2012). The population of South Tarawa has been increasing at an alarming rate, with a population of 50,182, according to the 2010 Census. South Tarawa is on the frontline of increasing population growth, environmental degradation and the exploitation of scarce and fragile natural resources, which has deprived its already vulnerable physical status (Republic of Kiribati Country Assessment 2008).

### 3.3.2 Abaiang




Source: Office of the President and T'Makei Services 2012

*Figure 3. 2 Map of Abaiang Island showing villages and schools (marked by red stars) in which primary data was collected from.*

Abaiang is an outer island north of Tarawa with a total population of 5,502 people recorded in the 2010 census; it is the fourth most populated island and is home to 5.3% of Kiribati's total population. Abaiang is approximately 36.72 km long with its widest width (0.92 km) found in the village of Tabontebike and narrowest (0.07 km) in the village of Tanimaiaki. The mainland of Abaiang extends from the northern village of Takarano to the southern village of Tabontebike. Abaiang is suffering from coastal erosion specifically in the village of Tebunginako. Unlike some islands where erosion has been linked to construction of causeways, coastal erosion has been the biggest environmental problem in Abaiang over the years (Office of the President and T'Makei Services 2012).

### 3.4 The participants and selection of sites.

Most of the participants involved in this research were randomly selected with a few selected key informants irrespective of age, sex and status. They range from those who are employed in government ministries such as the Ministry of Education, Health, Agriculture, Fisheries, Youth, Culture and International and Social Affairs; to civil society members, such as NGOs; pastors of different denominations, for example Catholic, Seventh Day Adventist and Assembly Of God; students and youths who have dropped out from school, and those who were dealing with domestic responsibilities; retired elders, and the local communities. It was taken into account that the primary information collected needs to represent the entire populations of both islands. In doing so, village communities and key informants at both ends, and those located in the middle of each island, were selected for the interviews to maintain the integrity of the raw or primary data collected. Therefore, in South Tarawa, data was collected from the villages of Betio, Bairiki, Eita, Bonriki, Temwaiku and Tamoa as illustrated in Figure 3.1, marked by red stars. Similarly, for Abaiang, the interviews were conducted in the villages of Tabontebike, Ewena and Tebunginako Figure 3.2. A total of 56 interviews were conducted with 20 carried out at Abaiang, and 36 at South Tarawa, which were all completed within May of 2013. A total of 10 interviews were also done in Suva, Fiji. Participants selected in Fiji include students, men and women and elders. All interviews in Suva were completed in mid June of 2013.

*Figure 3. 3 Tebunginako, Abaiang (left) and Tamoa, South Tarawa communities in which some of the interviews were carried out.*

Upon arrival in Abaiang Island, a meeting with the council office (the Mayor, the vice and the Secretary) was scheduled to seek guidance, assistance and permission to carry out the studies in the preferred sites or villages. Consultation was done for the selection of the necessary sites for the research. The three officers were given sitting allowances. A motorbike and a truck were hired for transport because the target villages for the study were scattered from each other.

*Figure 3. 4Meeting with the Abaiang Mayor and island council upon arrival on the island.*

### 3.5 Data Collection and the Interview Process.

The primary data for this research is qualitative and was collected using the participatory methodology. This includes the utilization of questionnaires comprised of open ended questions to conduct key informants and focus groups interviews. One of the effective advantages of qualitative data as proposed by Thomas (2000) is that, it focuses on naturally occurring regular events in natural settings so that researchers and readers have a strong and realistic grip of what real life is like. Furthermore, qualitative data provides rich and hositic set of data, it has potential to illustrate complexity; but transparent information, nested in a real, true and strong context which in turn has impact on the reader or researcher. Furthermore, qualitative data also intends to place a strong emphasis on people's lived experiences, which are fundamentally suitable for locating the value people place on the events, processes and structures of their lives: their perceptions, assumptions, prejudgements, and for connecting these meanings to the social world around them (Miles and Huberman 1994).

The same questionnaire that was used for focus group interviews were used for individual interviews and dialogue. According to Akerkar (2001), participatory data collection methods are crucial because it acknowledges the importance of community expertise and knowledge that supports adaptation and mitigation measures that are suitable, sustainable and effective. The format and design of questionnaires for the interviews were semi-structured and were prepared with the support and help of the research assistants who translated the questions into the Kiribati language. The semi-structured style of interviewing was relevant for this research because it allowed the respondents to expand on their responses without any restrictions. It is highlighted by Liamputtong and Serry (2010) that semi-structured interviews are preferable, to ensure that the responses are not limited to any specific topic. The use of questionnaires was utilized also as an awareness tool for some elders who had no understanding of what physical environment meant in their own language. It also gave the opportunity to carry out awareness on climate change in the remote villages of Abaiang Island. The type and nature of the questions formulated for the interviews were based on the objectives of the study. This ranged from the perceptions of the participants on climate change, to how

climate change had contributed to socio-cultural changes on their lives as individuals and as communities. Also, participants were asked of their perceptions on relocation and its implications on socio-cultural values in the future. For the participants in Suva, they were only asked on their experiences and difficulties of staying in Fiji from a socio-cultural perspective.

Face to face interviewing is often recognized as the most cultural-friendly method of collecting data (Fedor 2012). The major set of raw data for this study was obtained through or from both historical and current experiences, knowledge and perceptions of the target participants and communities. According to Mimura (1999), an important aspect of data collection to avoid shortage of data in the literature is to use traditional knowledge and memories of local people. Indigenous people have been residing in the same places and same societies and have observed environmental changes for generations, thus the memories and real experiences of these people are an effective source of information (Mimura 1999). Data collection in Abaiang was done within one week from the 6$^{th}$ to the 9$^{th}$ of May, year 2013. Most of the data collected from South Tarawa was from the 11$^{th}$ to the 24$^{th}$ of May, year 2013. Data collection in Fiji, was done and completed by mid June, year 2013.

### 3.6 Community mwaneaba meetings for focus group's interviews.

For the purposes of respecting participant's time and domestic commitments, the mwaneaba meetings within the target communities of Eweni and Tebunginako of Abaiang and Tamoa of South Tarawa was proposed and chosen as the most suitable and convenient method to organize focus groups interviews. The mwaneaba meetings were held with each representative of all households of each village community present. All the present participants inside the mwaneaba were then organized into focus groups targeting men, women and youths which was the major methodological approach for data collection from village communities in both islands. According to Kitzinger (1995), the focus group methodology serves to gather information that could be difficult to identify through one on one discussion and interviews. It also motivates commitment of the participants and engages those who are illiterate as well as those who would feel

restricted to be interviewed (Kitzinger 1995). This was a clear observation in many of the Kiribati communities during the focus group interview sessions. It was appropriate also because it was a fast and effective way of collecting information, as the participants also had other commitments to attend to. Generally in the villages, there were protocols and cultural performances to start the programs before conducting the interviews. It was a tradition that everyone had to be present in the mwaneaba. Communities had the honor of singing and welcoming the research team. Community engagement was entertaining and people were enthusiastic and cheerful in proceeding with the welcoming program. To show appreciation, commodities such as perfumes were given as incentives.

The focus group interviews targeted men, women and youths. In Tebunginako village, Abaiang, the interviews were conducted within two days from the 6$^{th}$ to the 7$^{th}$ of May, 2013. There were four men focus groups with a total of four to six men in each group, and two women focus groups with eight in one and six women in the other group with only one youth focus group, based on the limited number of youths who were present. They were organized with the kind and persistent support and commitment of the research assistants, who were both locals and the Abaiang Island Council. All the focus group interviews were done in the village church mwaneaba. Some of the focus groups were taken care of by two research assistants and the island council secretary. They were responsible of running the interviews and recording the responses onto the questionnaires. However some of the participants were given the opportunity to write their own responses according to their preferences. This allowed them to write freely in accordance with what they understood (see Figure 3.5).


*Figure 3. 5Participants of Tebunginako village, Abaiang given the opportunity to write their own views and answers during the interview session.*

In the village community of Ewena, four men and one women focus groups interviews were carried out. The same process was done in Tebunginako village. In Tabontebike village there was no large community present, therefore interviews were done with some of the key informants of the village.

In South Tarawa, the only community in which focus groups interviews were done was in Tamoa. There were four men focus groups with only two women focus groups. One further focus group comprised of both men and women.

### 3.7 Individual or key informants face to face interviews.

Personal interviewing is the most practical way to collect primary information from Pacific participants, since face-to-face contact encourages trust-building between the interviewer and the participant, which in turn may lead to more honest responses (Fedor 2012). This approach was performed in obtaining information from key informants. One-on-one interviews were the main participatory method employed in South Tarawa. In addition, the majority of the participants interviewed in South Tarawa were government and civil society workers and experts, as mentioned in the introductory part of this chapter. Most of the interviews were done interactively face-to-face. However, a few people were not available so they were given questionnaires to answer in their own time. This was done to respect participant's time, as they were willing but their availability was constrained due to work commitments. These questionnaires were

collected after two days from the day of dissemination. In Abaiang Island, a few interviews were also done individually, which targeted key informants.

### 3.8 Positionality: Interaction and engagement with communities.

Positive interaction with communities was very crucial for the collection of data in this study. It was brought to attention beforehand that in order to engage with the communities, the researcher had to blend in with all the activities and programs the communities desired or requested. This built trust between the researcher and the participants. Having them see that the researcher was for instance eating whatever they had provided, laughed, danced and worked with them were all significant to them. As a result, trust and faith of the participants towards the researcher were strengthened. The-face-to-face interviews were done informally to ensure that people were not reserved and restricted in any way, as they actually had much information to explain. As a result, a diverse set of qualitative data was raised and recorded during the interviews. The target respondents were firstly asked to indicate whichever language they were comfortable with. For those who were not confident with English, they were given the freedom to express their opinions in their own language. They were even given the opportunity to write their responses to the questions on the questionnaires (see Figure 3.5). The research assistants guided the interviews and translated them. Questions were asked from different angles that met the level of understanding of the grass-root people in order to allow them to share their experiences freely without any restrictions. This allowed them to open up, responding from diverse angles. As a result, the participants felt happy to share views and answer the questionnaires and there was rich information exchanged and collected.

From this research, it was learned that the existence and active participation of the principal researcher helps determines the success of the study, and importantly the quality and quantity of the data collected. It was observed that throughout the interviews, engagement in an informal manner made people unrestrictedly open up in sharing with and responding to the interviews. According to Chacko (2004), one of the most informative ways in which to interact and collect data is through self-reflexivity, which

refers to active measures such as being open about all activities and protocols conducted, mutual exchange of information and acknowledging the value of the research objective and agenda, which all serves to balance the control between the research subject and the principal researcher. Therefore, the quality and quantity of information that had to be collected depends on the creativeness and innovation skills of the principal researcher. For sensitive questions, such as the relocation movement to Fiji, people were emotionally sensitive to such an extent that some were left speechless and would show signs of emotional motives. These questions were skipped through and the principal researcher had to be cautious and cheerful to get the participants back on track.

For personal visits at some of the damaged sites, a vehicle was hired. All observation and personal notes together with interviews were stored and recorded in Microsoft Excel. Certain interviews with key informants were also captured with a camera video recorder.

### 3.9 Data Coding and Analysis

The qualitative information gathered from the interviews were recorded, summarized, transcribed and coded first into excel based on the order in which the participants were interviewed. A thematic pattern analysis was performed which involved careful reading of the responses to establish key words as well as emerging themes. Themes were then organized into broad categories, and quotes selected from respondents' accounts, to illustrate the themes. The information was then imported to SPSS to perform the quantitative analysis to produce inferential statistical data to support the qualitative data and themes observed. Careful management of the themes was done so that none of the information collected was violated in the statistical analysis. The Pearson chi-square integrity of fit test was done to test and determine whether a significant difference in the prevalence of a theme exists between the two islands. The purpose of the inclusion of statistical data was to test whether the likelihood of the observed frequency counts for each theme is representative for both islands. There were small sample sizes with the responses from the selected population not representing the entire islands, thus statistical analysis at 5% level of significance is important.

### 3.10 Research challenges and limitations.

This research was challenged by some unexpected circumstances. The language barrier was one of the main challenges experienced. Communication with some participants was translated by the research assistants. However it was also noticed that to a point, some of the important information required was lost through the translation process. The translation of the questionnaires to English also generated some confusion to the participants, since the Kiribati translation was inconsistent with the English version. This problem was revealed by some participants who were fluent in English. Furthermore, with regards to the interview process, some were time consuming due to the length of questionnaires, thus some questions were skipped through to save time because the limited availability of people had to be respected.

Interviews also had to be conducted mainly by the principal researcher instead of leaving it to the research assistants. From experience, some local participants have had diverse information, knowledge and experiences to share, but their responses were only confined to a particular point because of the close connections with the local translators who were in charge of running the interviews. This was resolved by the intervention of the principal researcher, to be responsible for all interviews. Some questionnaires that were given directly to respondents for later collection were incomplete and this could be avoided by only conducting interviews face-to-face.

The importance of community engagement in all stages of community adaptation initiatives was also learnt from this study. Without communities in unity, measures taken to respond to climate change will never succeed. For example, one big challenge in Tebunginako in Abaiang was trying to get the communities together. Families of this village were all scattered as a result of sea level rise that had inundated its old village site. It took 2 hours to sit and wait in the mwaneaba or the meeting place for all the representatives to attend.

Overall the experiences from this study are very helpful to reflect on how to produce possible solutions to the difficulties encountered for the improvement of future field work. It was learned that the way forward is to engage with communities according to

their needs and not the needs of their authorities. Community engagement on all climate change projects should be a 'hats off' strategy for people to be accountable and feel more significant along the process.

### 3.11 Chapter Conclusion

The application of questionnaires and focus groups interviews for the research was a success as it was relevant to the situation and to the level of the participants. Community engagement in an entertaining way is very important in order to collect diverse information and perceptions of people. Being able to blend-in to the level which grassroots stand will make people feel significant and accountable to the needs of the principal researcher. Time and commitment of the participants has to be respected, so incentives are important to show appreciation. The confidentiality of the participants also has to be considered.

# 4.0 RESULTS AND DISCUSSION CHAPTER

*"We need a universal combined effort, climate change is occurring at a rapid rate, so one country's effort won't help. It requires a world effort to fight climate change considering the rate it is increasing, very much faster than our adaptation efforts"*

(Female, South Tarawa, pers. comm., 2013)

## 4.1 Chapter Introduction

In line with the research objectives, this chapter presents the research findings and the interpretation and discussion of the findings in light of the introduction and literature review. Most of the results are compared between the two chosen sites; South Tarawa and Abaiang. It begins with the presentation of people's perception and awareness level of climate change information and impacts, as well as livelihood changes based on historical and current experiences. This is followed by a presentation of the importance of socio-cultural practices and activities generally in Kiribati, and features the essence of the environment to such values and practices. Finally, this chapter presents the perceived direct and indirect socio-cultural impacts of climate change in the two islands with statistical data to compare the perceptions between the two islands.

## 4.2 Awareness, perceptions and historical experiences of climate, environmental and livelihood changes.

This first section was aimed to assess and evaluate the perceptions and level of climate change awareness of Kiribati communities and the civil society overall. In addition, it presents the findings on livelihoods and environmental changes based on the historical experiences of the participants and the measures people prefer to help address climate change.

### 4.2.1 The extent to which communities are exposed to climate change information and impacts.

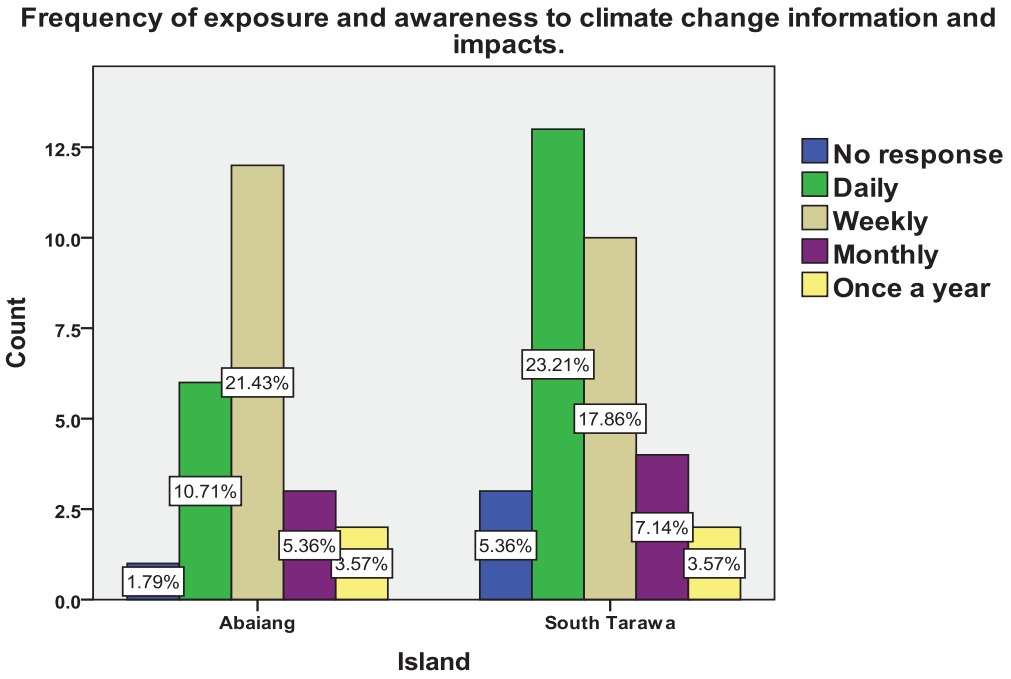



*Figure 4. 1Perceptions of the frequency of exposure to climate change information and impacts in Abaiang and South Tarawa (n= South Tarawa, 32; Abaiang, 24)*

Figure 4.1 portrays the different frequencies in which participants of the two islands are often exposed to or hear about climate change information and climate change impacts. Five options were given to the participants to choose, namely; daily, weekly, monthly, and once in a year. Few participants were reluctant to respond. SPSS descriptive analysis depicts that the level of climate change awareness seems to be higher or more frequent in South Tarawa than Abaiang. In South Tarawa, the majority have mentioned their exposure to climate change information and impacts on a daily basis. The majority in Abaiang has showed awareness of climate change on a weekly basis, but is outnumbered by those who are aware of climate change on a daily basis in South Tarawa (Figure 4.1). Few people have been exposed to climate change information on a monthly basis on either islands, though South Tarawa has the highest compared to Abaiang. It could be concluded that the frequency of exposure to and awareness on climate change information and impacts is greater and more prevalent in South Tarawa than Abaiang. A

chi square test was done to determine if any significant difference does actually exist in the different frequencies of the two islands, as illustrated in Figure 4.1. The results of the test are shown in Table 4.1

*Table 4. 1 Chi square test for the frequency of exposure to and awareness of climate change information and impacts between Abaiang and South Tarawa*

| | **Observed N** | **Expected N** | **Residual** |
|---|---|---|---|
| **No response** | 4 | 11.2 | -7.2 |
| **Daily** | 19 | 11.2 | 7.8 |
| **Weekly** | 22 | 11.2 | 10.8 |
| **Monthly** | 7 | 11.2 | -4.2 |
| **Once a year** | 4 | 11.2 | -7.2 |
| **Total** | 56 | 11.2 | |

Test Statistics

| | **Frequency of exposure to climate change information and impacts** |
|---|---|
| Chi-square | 26.679[a] |
| df | 4 |
| Asymp. Sig. | **.000** |

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 11.2.

Table 4.1 shows the chi square test results and depicts that the level of exposure to climate change information and impacts between the two islands is significantly different. This is because the significance value is .000 as shown in Table 4.1, which is less than 0.05, the point of significance. This supports the observed results in Figure 4.1 that South Tarawa participants are exposed more to climate change information and impacts than those in Abaiang.

A related statistical test was done to test the hypothesis whether or not the two islands are affected by climate change (see Figures 4.3 and 4.4) in different degrees, which may

have driven the differences on the frequency in which participants are exposed to climate change information and impacts and hence the high exposure of South Tarawa to climate change information and impacts on a daily basis, compared to Abaiang participants' exposure on a weekly basis. Test results are shown in Table 4.2.

*Table 4. 2 Pearson's chi square test of independence on the association between island(s) and the level of exposure to climate change information and impacts.*

| | **Value** | **df** | **Asymp. Sig. (2-sided)** |
|---|---|---|---|
| Pearson Chi-Square | 4.745[a] | 4 | **.315** |
| Likelihood Ratio | 4.788 | 4 | .310 |
| Linear-by-Linear Association | 1.877 | 1 | .171 |
| N of Valid Cases | 88 | | |

a. 4 cells (40.0%) have an expected count of less than 5. The minimum expected count is 1.64

The Pearson Chi square test was done and Table 4.2 shows the test output p value of .315, which is greater than 0.05 the point of reference. A conclusion is therefore drawn that there is no significant association between the islands in terms of physical characteristics and the differences in frequency of exposure to climate change information and impacts. Therefore, the different frequencies of exposure to and awareness of climate change information and impacts between the two islands are by chance and are not because climate change is threatening the two islands to greater or lesser extents.

### 4.2.2 Participants perceptions on the different methods of communication used to get access to climate change information.

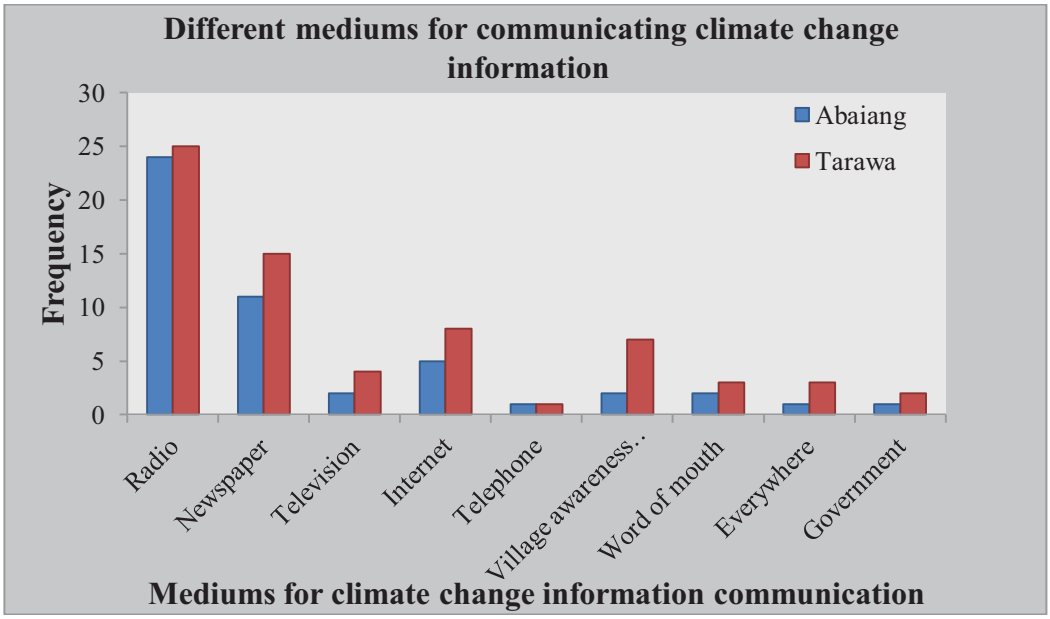



*Figure 4. 2 Difference in media used to communicate climate change information in Kiribati (n = South Tarawa, 32; Abaiang, 24)*

Figure 4.2 shows the nine mediums through which climate change is communicated or translated to the communities of South Tarawa and Abaiang. Radio seems to be the most frequently used medium for transferring and communicating climate change information in both islands. Newspaper, internet and village awareness programs respectively are other forms of coverage, though more accessible in South Tarawa than Abaiang. Therefore, it is possible that one of the underlying reasons that may have led to the differences in the frequency to which the two islands are exposed to climate change information and impacts as reflected in Figure 4.1 is due to the differences in media. Hence, on a daily basis, South Tarawa communities are exposed to climate change information and impacts and hence build a strong awareness of climate change, but by contrast, Abaiang communities and participants are only exposed to climate change information on a weekly basis. It can be interpreted that this difference could be caused mainly by the observation that South Tarawa is more advanced in terms of globalization and development than Abaiang. As pictured in Figure 4.2, the nine different mediums

assessed for the transfer of climate change information are more easily accessed in South Tarawa than Abaiang. However, Figure 4.2 also implies the importance of radio as an effective media for communicating climate change information and coverage of important climate change issues, especially to remote islands such as Abaiang.

Boykoff and Roberts (2007) consider that media together with other factors contributes significantly in the discourse of science and policies, as well as public understanding and action for climate change (Boykoff and Roberts 2007). This is true for climate change awareness and coverage in Kiribati. Media seems to play a role in the effective spreading of climate change messages and information. While other sources such as internet are less accessible and hence village awareness programs are delayed in the remote islands of Abaiang, others such as radio and newspapers are nevertheless still playing an effective role in spreading climate change related information. South Tarawa, being the urbanized island, has advantages over Abaiang in accessing climate change information through different media, as seen in Figure 4.2, although both atolls are physically threatened by climate change to a similar degree (see section 4.3).

Village awareness programs and initiatives or community based adaptations are potential methods to disseminate climate information and are an offset to the lack of resources and poor technology services to outer or rural islands. The results suggest however that there is still a need for more climate change village or community awareness initiatives or education programmes for outer island communities, and that they cannot be dependent on access to the internet.

### 4.2.3 Climatic changes based on people's historical experiences and perceptions

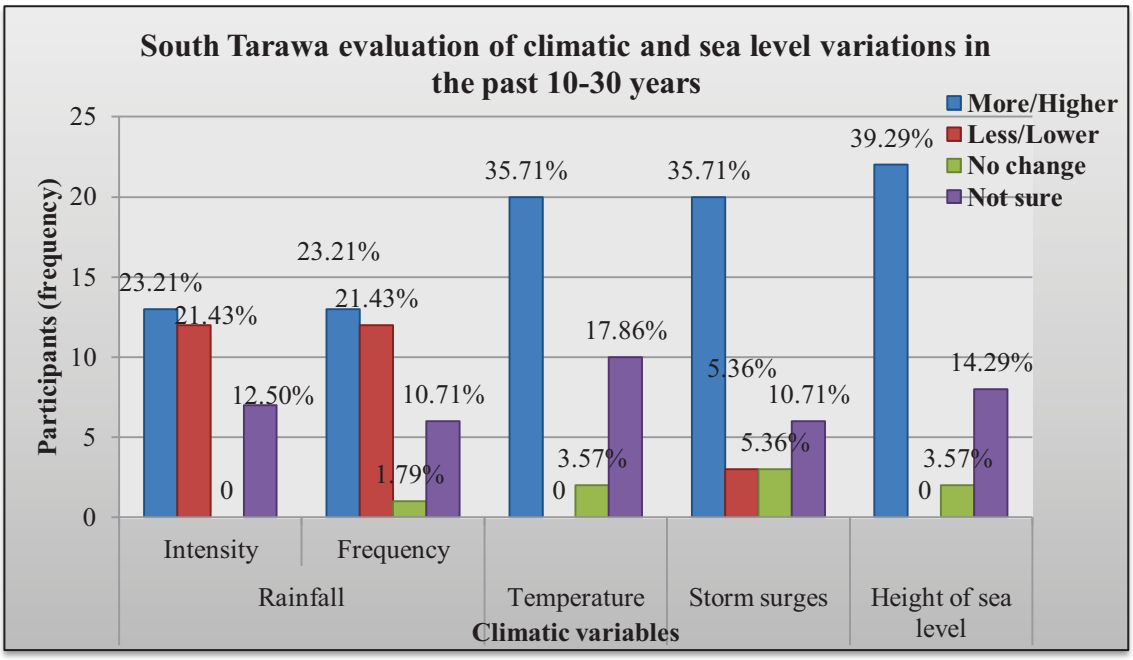



*Figure 4. 3 Evaluation of climatic changes based on historical experiences and perceptions of South Tarawa participants (n=32; 57.15%)*

Figure 4.3 shows the overall evaluation of climatic changes, particularly rainfall, temperature, storm surges and sea level in the past 10 to 30 years, based on peoples' historical observations in South Tarawa. It illustrates that the majority of the respondents have identified that rainfall in terms of both intensity and frequency; temperature; storm surges; and sea level have all increased significantly in the past 10 to 30 years.

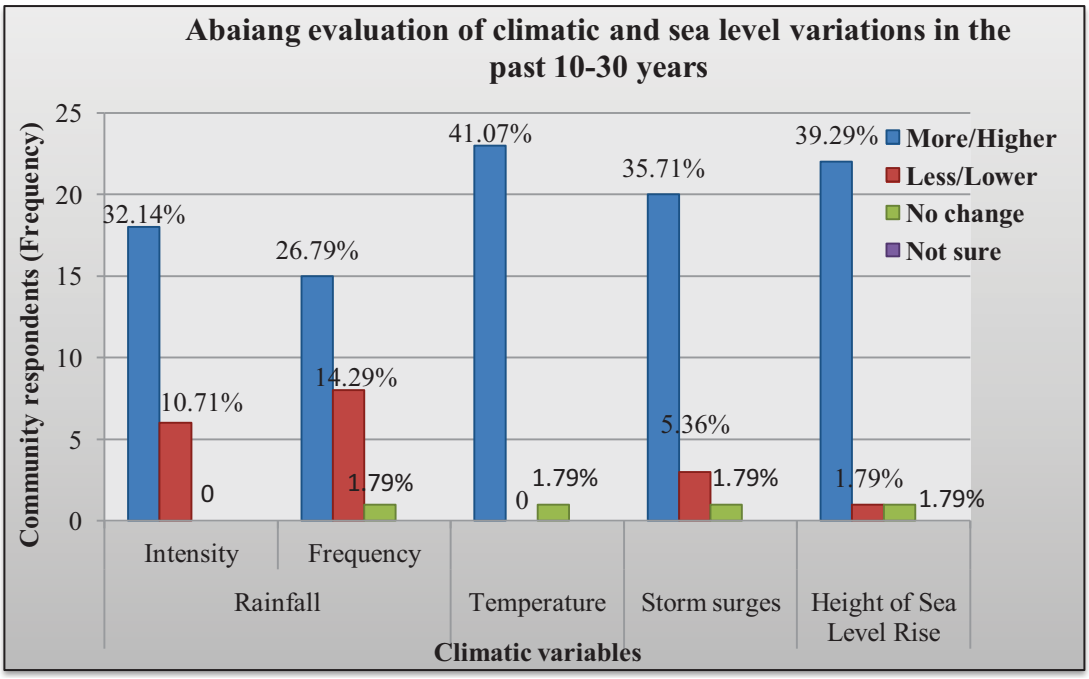



*Figure 4. 4Evaluation of climatic changes based on historical experiences and perceptions of Abaiang participants (n=24; 42.85%)*

Figure 4.4 portrays the overall assessment of climatic variables particularly rainfall, temperature, storm surges and height of sea level by Abaiang respondents based on their historical observations. Like South Tarawa, Abaiang communities have observed and indicated that all climatic variables from the intensity and frequency of rainfall, to temperature, storm surges and the height of sea level have all increased significantly within the past 10 to 30 years.

The Mann-Whitney U Test was done to compare the evaluation ratings of climatic changes and observations between the two islands. It compares if the ranks in one group is systematically higher than the other group for each climatic variable tested. Hence, the null hypothesis in this case proposes that there is no significant difference between the ranks of past climatic changes evaluation in Abaiang and South Tarawa. Test results are shown in Table 4.3

*Table 4. 3Mann-Whitney test results for the ranks on evaluation of climatic changes in the past 10-30 years between Abaiang and South Tarawa communities.*

| | Rainfall changes | | Temperature changes | Height of Sea Level | Height of storm surges |
|---|---|---|---|---|---|
| | Intensity | Frequency | | | |
| **Mann-Whitney U** | 369.000 | 349.000 | 277.000 | 289.000 | 335.000 |
| **Wilcoxon W** | 669.000 | 649.000 | 577.000 | 589.000 | 635.000 |
| **Z** | -.278 | -.637 | -2.407 | -2.198 | -1.020 |
| **Asymp. Sig. (2-tailed)** | **.781** | **.524** | **.016** | **.028** | **.308** |

a. Grouping Variable: Island

Table 4.3 shows the Mann Whitney test output for each climatic variable that was analyzed to determine whether the percentage ratings for each climatic variable by the two islands are systematically higher than the other. Results shows that rainfall intensity and frequency as well as storm surge changes show no significant difference in their percentage rankings between the two islands since their p values, .781, .524 and .308 respectively are all greater than 0.05 the point of significance, hence the null hypothesis is accepted. Temperature increase and sea level rise on the other hand have p values less than 0.05; which are .016 and .028 respectively providing enough evidence to support that the percentage of evaluation rankings of the two climatic variables are systematically different amongst the two islands. Sea level rise ratings is the same in both islands which is 39.29%, however the significant difference can be drawn from those who were not sure observed from South Tarawa only and the observation that there was no respondent in South Tarawa who evaluated sea level height to be lower (See Figure 4.3). For temperature increase, it could be demonstrated that it was significantly different, and that it was more highly perceived among Abaiang respondents compared to South Tarawa.

Results from figures 4.3 and 4.4 reflect the importance of community based historical knowledge and observations of environmental changes that will support scientific

studies in drawing conclusions about adverse climatic changes affecting vulnerable communities like Kiribati who are on the frontline of these impacts. These findings also highlight that before scientific information is available to local communities, people are still well aware that there is a problem, as indicated by one of the participants in her interview,

> *'Climate change is now a daily issue in Kiribati and no one has to remind us about it. Our own eyes have seen the changes in weather and climate and keeps us reminded that climate change is really happening, so sooner Kiribati is going to submerge which draws a conclusion to better make a move now or never'*
>
> (Female, Abaiang, pers. comm., 2013)

### 4.2.4 Community perceptions on measures to take to address climate change

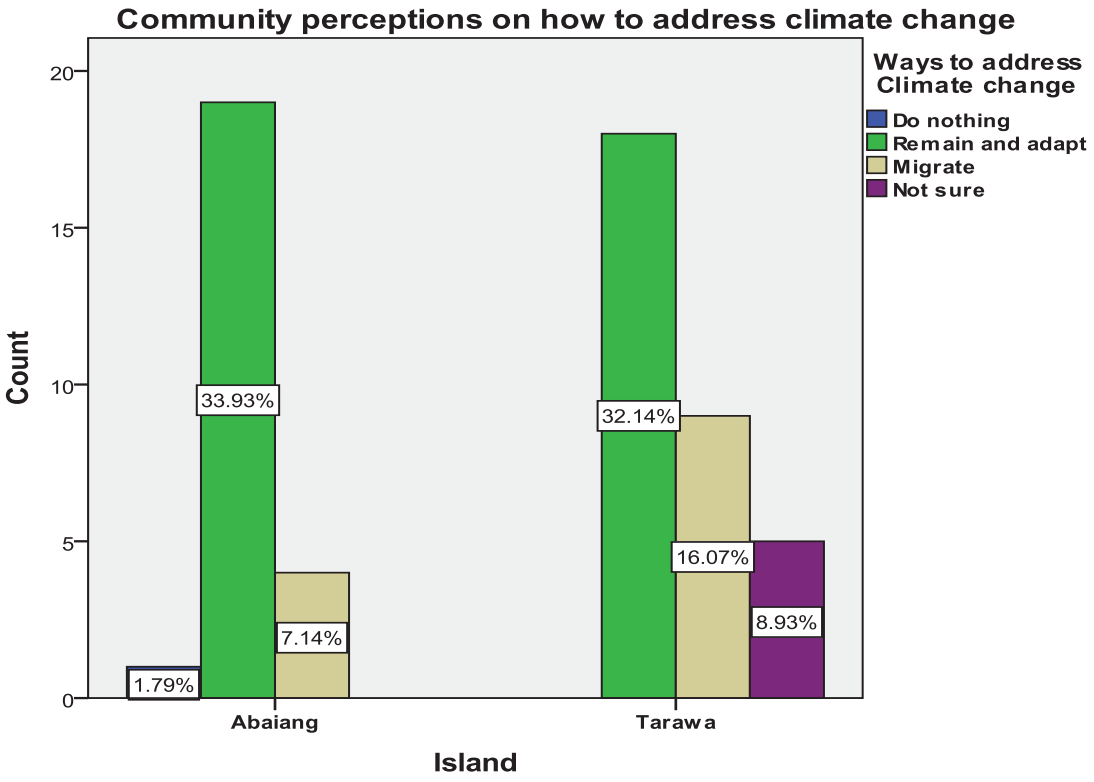



*Figure 4. 5Perceptions on how to address climate change in Kiribati (n= 32: South Tarawa; 24= Abaiang)*

Figure 4.5 shows responses of communities of ways to address climate change. There is a slight difference in the number of those who have decided to remain and adapt to address climate change between the two islands, where Abaiang has the highest percentage observed. Despite this difference, the majority of respondents in both islands agree to remain and adapt with less people favoring migration to address climate change. Another observation is that the number of those who perceive migration to address climate change is greater in South Tarawa than Abaiang. Few people in Abaiang have shown doubts that climate change can't be avoided, implied by their perception not to take any action. Some respondents from South Tarawa were not sure with their decisions and perceptions. The Pearson chi square test was done to statistically test and see whether or not there is a significant difference in the preferences to remain in homelands and adapt or migrate to address climate change between the two islands.

*Table 4. 4Pearson chi square to determine if there is any significant difference in the preferences to remain and adapt in response to climate change between South Tarawa and Abaiang.*

| | **Value** | **df** | **Asymp. Sig. (2-sided)** |
|---|---|---|---|
| Pearson Chi-Square | 3.323[a] | 2 | **.190** |
| Likelihood Ratio | 3.464 | 2 | .177 |
| Linear-by-Linear Association | 1.549 | 1 | .213 |
| N of Valid Cases | 56 | | |

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.14

The output of the test shows that statistically, there is no significant difference between the two islands on their preferences to remain in their homelands and adapt to address climate change. This is because the p value of .190 is greater than 0.05, the point of significance. A conclusion is drawn that despite the observed differences illustrated in Figure 4.5, it is statistically shown that both islands support to a similar extent the preference to remain and adapt as an alternative to address climate change.

*Table 4. 5Pearson chi square test to determine if there is any significant difference on the preferences to migrate in response to climate change between South Tarawa and Abaiang.*

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 2.634[a] | 2 | **.268** |
| Likelihood Ratio | 2.754 | 2 | .252 |
| Linear-by-Linear Association | 2.412 | 1 | .120 |
| N of Valid Cases | 56 | | |

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.14

Table 4.5 results depicts that there is no significant difference in the preference to migrate as an option to address climate change between the two islands, since the p value is .268, which is also greater than 0.05 the point of significance. Hence the preference on migration to address climate change is perceived similarly amongst the two islands. The conclusion is drawn that amongst the two islands, the perception of migrating to avoid and address climate change is similarly supported or commonly shared despite the apparent differences shown in Figure 4.5

The Pearson chi square test of Independence was performed to carry out a further test to see if there is any association between island nature and the differences depicted in people's preferences of ways to address climate change.

*Table 4. 6 Pearson Chi square test of independence to test if there is any significant association between island setting and the different responses to address climate change.*

| | **Value** | **df** | **Asymp. Sig. (2-sided)** |
|---|---|---|---|
| Pearson Chi-Square | 6.949[a] | 3 | **.074** |
| Likelihood Ratio | 9.172 | 3 | .027 |
| Linear-by-Linear Association | 6.536 | 1 | .011 |
| N of Valid Cases | 56 | | |

Table 4.6 results show that the island setting does not have any effect on the different measures articulated by the communities to cope and address climate change because the p value of .074 is greater than 0.05. Thus the null hypothesis is accepted that there is no significant association between island and the differences in perceptions given to address climate change in the two islands. This demonstrates that the different island settings are not accountable for the preferred adaptation measures.

The ultimate purpose of this statistical test was to determine whether the two different islands in nature have any effect or association on the differences revealed in the measures to address climate change. Prior to the differences in people's preferences of the two islands in Figure 4.5, another hypothesis emerged to determine whether or not the people's different observed perceptions of the measures to address climate change is affected by or associated with their respective islands. From the test results, it can be concluded that there is no significant association; that the two different islands irrespective of their differences such as location and settings are perceived to be threatened by climate change and its impacts to a similar degree. A conclusion can however be drawn from the observed findings that both islands similarly prefer remaining in their homelands and adapting there instead of migration (Figure 4.5). This is suggestive of the close connections of Kiribati communities to their original homelands.

### 4.2.5 Environment, natural resources and livelihood changes

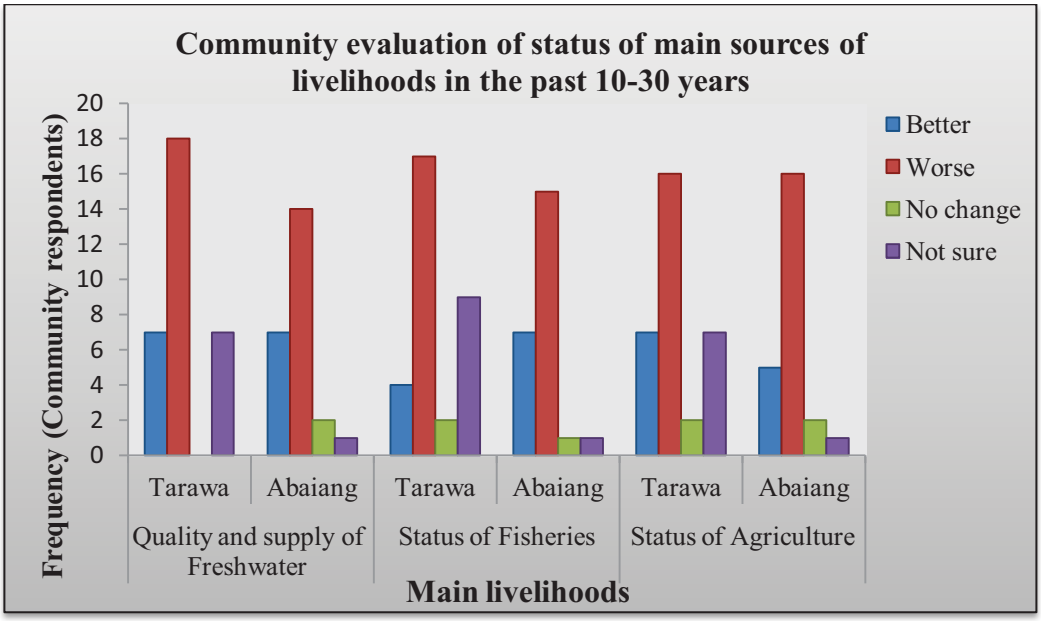



*Figure 4.6 Community evaluation on the status of their main livelihoods (n= South Tarawa, 32; Abaiang, 24)*

Figure 4.6 shows the status or changes in terms of supply and abundance of the most important sources of livelihoods, as evaluated by South Tarawa and Abaiang respondents in the past 10 to 30 years. Four key alternatives were given for participants to evaluate the status of the livelihoods, based on their historical experiences and observations. The majority of the respondents from both islands have evaluated the status of all livelihoods to be 'worse'. The most highly affected livelihood, as reported from South Tarawa, was Freshwater resources and Agriculture from Abaiang.

A Mann Whitney U test was performed for each of the livelihoods to determine whether or not the evaluation rankings for each livelihood between the two islands were systematically higher than the other. For example, the status of Freshwater resources was similarly highly evaluated as 'worse' by both islands as seen in Figure 4.6. However it is also observed that there is a difference in frequency, where South Tarawa has a higher frequency than Abaiang. Therefore this test serves to determine whether this observation is statistically different or not. The outputs for all the livelihoods tests are summarized in Table 4.7.

*Table 4. 7 Mann-Whitney test results for livelihood changes evaluation in the past 10-30 years between Abaiang and South Tarawa communities.*

| | Quality and Supply of Freshwater resources | Status of Fisheries | Status of Agriculture |
|---|---|---|---|
| **Mann-Whitney U** | 305.000 | 333.000 | 298.000 |
| **Wilcoxon W** | 605.000 | 633.000 | 598.000 |
| **Z** | -1.467 | -.944 | -1.591 |
| **Asymp. Sig. (2-tailed)** | **.142** | **.345** | **.112** |

a. Grouping Variable: Island

Results of analysis demonstrate that there are no significant differences in rankings between the two islands. This is because the p values for each are greater than 0.05 the point of significance; .142; .345; and .112 for Freshwater, Fisheries and Agriculture livelihoods respectively. Results from this statistical analysis underpins that the status of these important livelihoods are similarly evaluated to be worse in both islands over the past 30 years. Results from this study reaffirms that the direct impacts of climate change on Kiribati are excruciating as mentioned in Chapter Two. For instance, the decline of inshore fisheries, the depletion of land-resource based livelihoods, destroying viable and vital areas of land, contamination of fresh groundwater lens, enhancing the intrusion of saltwater to water lenses and excessive rainfall creating runoff into drinking groundwater wells; this has also affected the productivity of and yield of crops (Kiribati Environment and Conservation Division 2007).

### 4.2.6 Community perceptions on the causes of natural resource depletion and environmental change in Kiribati.

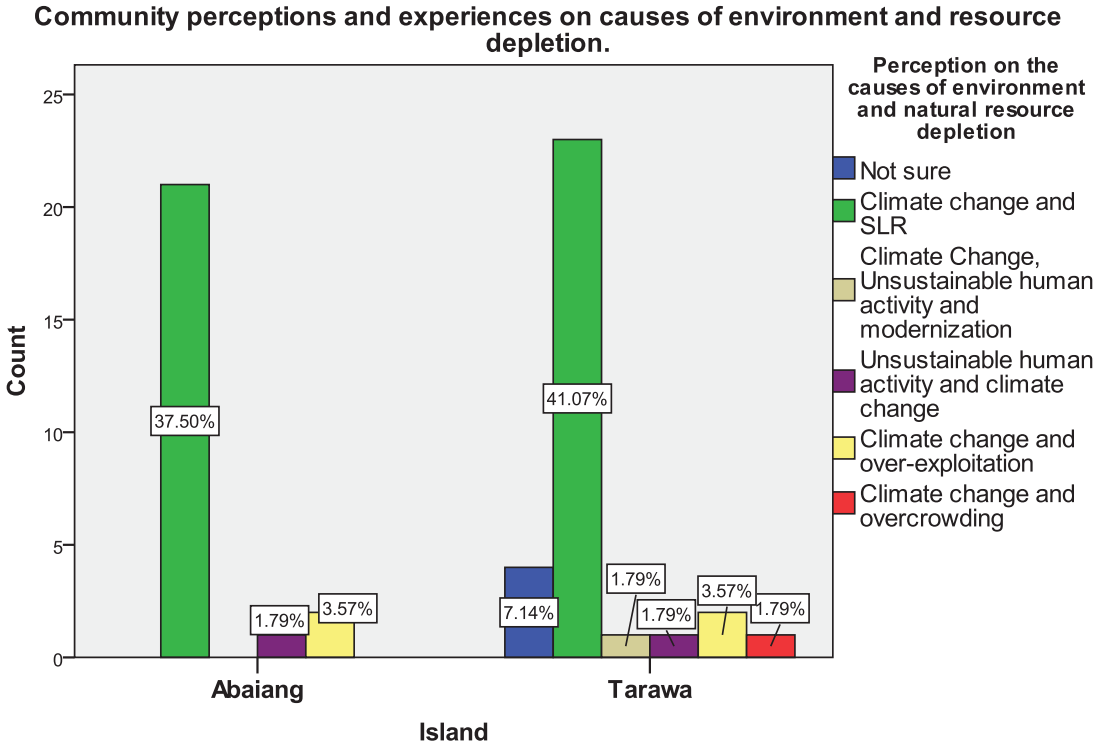



*Figure 4. 7 Community perceptions on the causes of the changes in their environment which affects their environment and livelihoods (n= 32: South Tarawa; 24= Abaiang)*

The main purpose of this question was to capture peoples' perceptions of factors that might have triggered changes to the quality and quantity of livelihoods, as shown in Figure 4.6. This was an open question for participants to freely expose their perceptions. The majority of participants for both islands have perceived that climate change and specifically sea level rise are the main causes to the changes they have observed affecting resources and livelihoods. In South Tarawa, six themes emerged, with climate change being the prevalent factor, but coupled with non-climatic factors such as unsustainable human activities like burning; modernization; over-exploitation and overcrowding. Abaiang participants emphasized the overexploitation of resources and unsustainable human activity coupled with climate change to be the causes to natural resource depletion.

The two islands held similar perceptions of historical climatic conditions as shown in Figures 4.3 and 4.4. The majority have indicated the changes in rainfall, temperature, sea level and the frequency of storm surges to be increasing from bad to worse. However, despite this convergence of perceptions of historical climatic conditions; there seems to be a great awareness of environmental degradation also caused by non-climatic factors amongst the South Tarawa participants compared to Abaiang participants. As seen in Figure 4.7, when participants were asked of their perceptions to the causes of environmental degradation in Kiribati, South Tarawa participants also raised other contributing problems such as overcrowding, unsustainable human activities, the overexploitation of natural resources and modernization. In contrast, few Abaiang participants only raised the issue of unsustainable human activities and the over exploitation of natural resources while overcrowding and modernization were not mentioned. These differences perhaps imply that South Tarawa participants have greater awareness to climate change information and other existing non-climatic problems happening on the ground compared to Abaiang respondents which in turn manifests the seriousness of not only environmental degradation but social changes and problems in South Tarawa. This is perhaps reflective of the different degrees of environmental degradation that both islands are currently facing where in South Tarawa, problems such as overcrowding, the overexploitation of natural resources and urbanization might have added pressure to the degradation of its already fragile environment with climate change to be a contributing problem amplifying the existing problems in South Tarawa. According to the Report for South Tarawa by the Office of the President and T'Makei services (2012), South Tarawa is already facing population pressures due to the migration of relatives from outer islands in search of jobs, health care and education; however though, it has been reported by the 2010 census that the rate of new born babies in South Tarawa is higher compared to other islands, contributing to 2.26% of the population yearly to South Tarawa alone (Office of the President and T'Makei Services 2012). It could be discussed that due to these population growth concerns, it is explicable why the majority of the South Tarawa participants favored migration as the best way to address climate change as seen in Figure 4.5. In contrast, Abaiang participants are culturally oriented people with strong connections to their land hence

their culture, thus the majority preferred to remain on their lands and adapt to address climate change as seen in Figure 4.5. This again is perhaps supportive of the interpretation that the differences in the perceptions of ways to address climate change between the two islands might be driven by the great awareness of South Tarawa participants of the magnitude of the existing social and environmental problems compared to Abaiang. The high population density and on-going population growth of South Tarawa are exacerbating the already serious problems of waste disposal, sanitation, and environmental pollution on South Tarawa (Office of the President and T'Makei Services 2012).

According to the 2010 census records adopted by the Office of the President report (2012), the population of South Tarawa in 2010 was 50, 182 with a population density with a population density of 3,184 people per $km^2$ with an official land area of 15.76 sq km. The population growth from 2005 to 2010 was 9,871; an annual population growth of 4.4% which makes South Tarawa by far the most densely populated island in Kiribati (Office of the President and T'Makei Services 2012). On the other hand, Abaiang's population in 2010 was 5502 with a population density of 315 people per $km^2$ with a land area of 17.48 $km^2$. The population growth was 0 from 2005 to 2010 (Office of the President and T'Makei Services 2012). There is a huge difference in terms of population size, growth and density between the two islands which therefore supports why the participants have held different perceptions of environmental change or degradation as well as ways to address climate change where South Tarawa participants are less rooted to stay and adapt as opposed to Abaiang participants. The growing number of employment in South Tarawa is still outnumbered by the alarming rate in which the population is growing.

The bases of economy in the two islands are mainly fisheries, agriculture and copra (Office of the President and T'Makei Services 2012). In the same report, it mentions the status of groundwater resources to be contaminated to the point where it is no longer suitable for human consumption. Thus rainwater is very much precious as many families rely on it for drinking and cooking. However, there is a great demand noticed for water

tanks to harvest rainwater. It is clear that in South Tarawa, the growing population is putting a lot of pressure on the limited biodiversity and fragile environment where the practice of unsustainable human activities such as the over extraction of sand, deforestation and poor waste disposal habits are continuously practiced.

### 4.2.7 Historical climatic conditions perceptions between age groups.

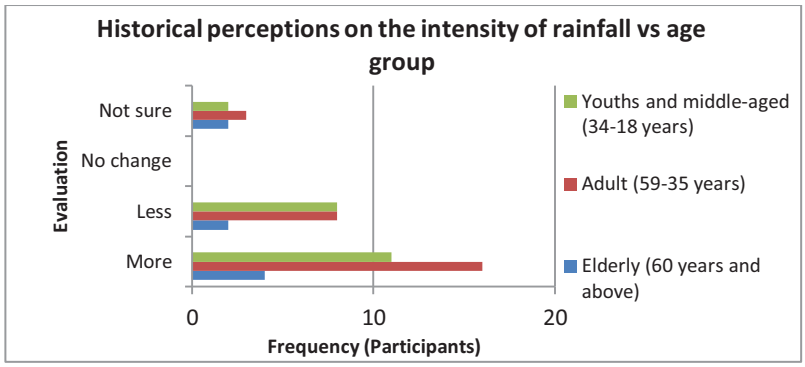



*Figure 4.8Perception status of the intensity of rainfall between age groups*

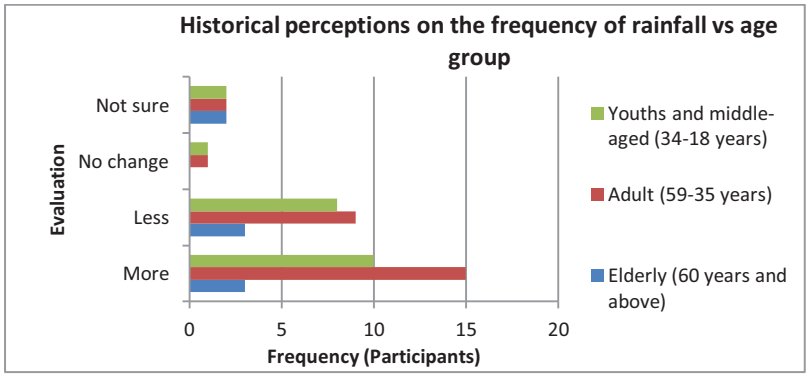



*Figure 4.9Perception status of the frequency of rainfall between age groups*

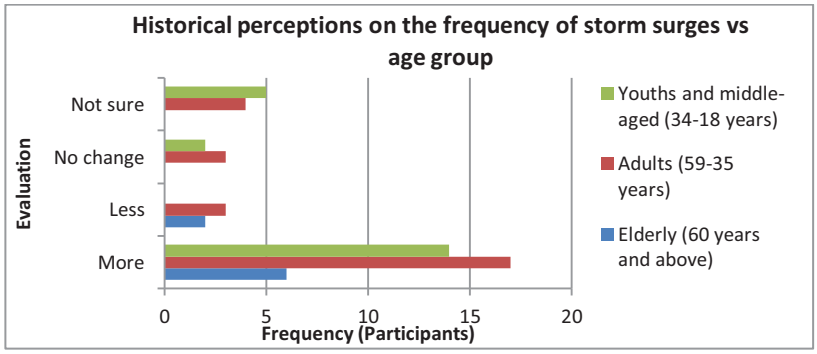



*Figure 4.10 Perception status of frequency of storm surges between age groups*

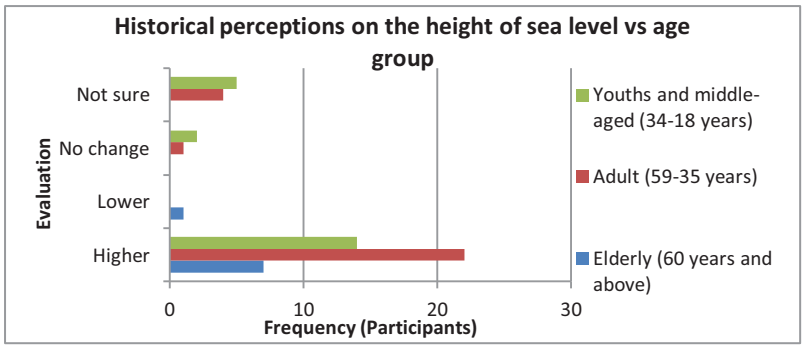



*Figure 4.11 Perception status of sea level rise between age groups*

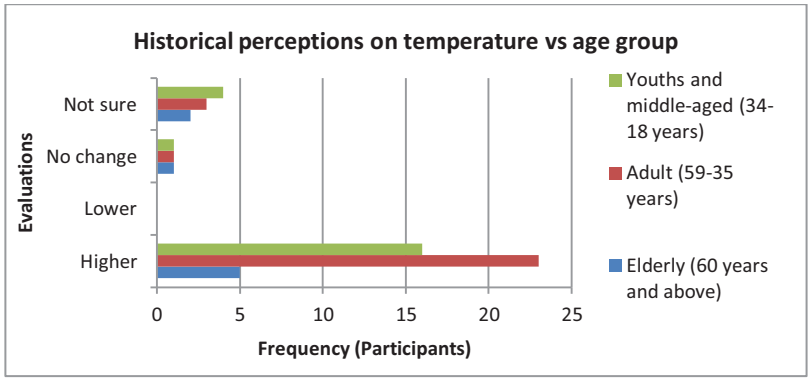



*Figure 4.12 Perception status of temperature between age groups*

Figures 4.8, 4.9, 4.10, 4.11 and 4.12 demonstrate the perceptions of historical climatic conditions held by the three age groups that the 56 participants were divided into. The three age groups were the elderly which included those who were 60 years old and above, 35 to 59 years old and 18 to 34 years old for adults and youths respectively. There were 8 elderly participants, 29 adults and 19 youths. The results shows there seems to be not much difference in the way the different age groups have perceived historical climatic changes as evaluated in both islands. The majority of each of the three age groups all share the same perception that the intensity and frequency of rainfall, the frequency of storm surges, the height of sea level and temperature have all increased significantly. This reflects the similar degree of exposure and awareness of historical climatic changes between the different generational groups.

### 4.3 Socio-cultural values and the essence of the environment.

#### 4.3.1 Overview

This section highlights the characteristics of the Kiribati culture perceived by the participants. It identifies some of the socio-cultural activities and processes that exemplify the essence of the environment in the promotion of the Kiribati culture. It also highlights the perceptions of the participants on the vital role of socio-cultural values and the Kiribati culture towards steering communities towards sustainable development and living, and how these values also contribute towards the management of resources and the environment as a whole.

#### 4.3.2 Characteristics of the Kiribati culture.

*Table 4. 8 Summary of the features of the Kiribati culture and socio-cultural values based on people's perceptions.*

| 1) Community cohesion practices, and cultural/traditional archives and practices | 2) Behaviors or lifestyles | 3) General attributes or characteristics and others |
|---|---|---|
| Feasting | Loving | Crime-free |
| Gathering | Sharing/Freely giving | Approachable |
| Extended Family living | Friendly | Freedom |
| Traditional knowledge and skills | Smiling faces | Harmony |
| Traditional entertainment | Cheerfulness | Loyalty |
| Mwaneaba system | Extra mile approach (paying or giving more than what is expected) | Hope |
| Language | Respect | Dignity |
| Ancestral connections | Obedience | Strong-environmental connections |
| Arts and crafts(handicrafts) | Kindness | Pure (uncontaminated from worldly customs) |
| Disciplinary village by-laws | Hardworking | Peacefulness |
| Identity | | Enthusiasm |

| | | |
|---|---|---|
| | | Sustainable living/efficient use of resources |
| | | Unity |
| | | Hospitality |

Summarized in Table 4.8 are the attributes which the participants of both islands have expressed to characterize their culture and socio-cultural integrity. The features were grouped into three major categories. The first group refers to the tangible cultural assets, community cohesion activities and practices that keep communities together and most of all sustains the Kiribati culture and socio-cultural values. The second group refers to the behaviors and lifestyles that characterize a Kiribati person according to the respondents. The third group includes general attributes that illustrate the uniqueness of the Kiribati cultural integrity.

The table demonstrates that the Kiribati culture is unique and is expressed in many ways, as shown by the diverse expressions reflected by the participants. The diversity supports the view expressed in an interview with Natan Itonga, (Director for Culture and Social Affairs Ministry of Kiribati) who was pleased to use his name in this thesis, who defined culture in the context of Kiribati as primarily the intangible or the unseen culture because most of the culture is associated with knowledge and skills of people. It basically refers to anything associated with knowledge and skills and the application of these skills and knowledge with objects or resources from the environment.

### 4.3.3 Relationship of Kiribati socio-cultural practices with the environment.

The environment and natural resources are essential to the foundation and existence of the socio-cultural integrity and culture in its totality in Kiribati. This was captured from all the interviews, some are quoted,

> *'The interaction between our culture and the environment is like a chain or a system which requires the interactive support of one another for the continuous functioning of the whole systems. If one factor is missing, the whole system breaks down and fails to support each factor. Culture and the environment need each other; one*

*cannot survive without the existence of the other. Our culture wouldn't exist without our natural resources around us'* (#19 Female, Abaiang, pers. comm., 2013).

Another respondent in his interview also emphasized that the health of the environment and its natural resources determines the continuous functioning of socio-cultural values and practices in Kiribati,

*'The environment sustains us and our culture, or our culture is determined by the environment. Our lives are determined by the ocean, the land, water and resources around us and all are connected and combined; without them we would not survive, and that explains the Kiribati culture. No environment, no culture, simple as that, because culture is only sustained through the good health of environmental resources we use*' (#6 Male, Abaiang, pers. comm., 2013).

Another respondent also identified,

'*Without the environment, our culture and socio-cultural values wouldn't exist, the environment and our culture are inseparable, cultural values are restricted only to our environment and limited resources'* (#8 Male, South Tarawa, pers. comm., 2013).

There was a strong emphasis on the value of the environment to socio-cultural integrity as discovered from this study. Interestingly this study also highlights that these same socio-cultural values and practices in Kiribati play also in reverse a crucial role towards sustainable living, and environment sustainability and therefore importantly helps to build momentum for communities to be able to respond the threats posed by climate change. Discussed below are some of the socio-cultural practices and services that identify the essence of the environment and how they in turn help in sustainable living and environmental resource sustainability, while keeping the socio-cultural values and practices of people afloat.

### 4.3.4 Socio-cultural activities that boosts environment sustainability.

The close interaction of the Kiribati culture and the environment was perceived by all as a two way system, hence a cultural-environment system. Most respondents have viewed that the socio-cultural practices which requires the involvement of communities and individuals supporting the sustainability of their environmental resources and sustainable living. Formulating environmental by-laws to govern and control the resource use and consumption of communities have helped towards the management of such resources. One of the interviews captured that the practice of by-laws function as a firm support for the sustainability of natural resources. The participant commented,

> *'A lot of the cultural activities are based on the health and quality of natural resources, and these resources also depend on the promotion of cultural activities in Kiribati, for example, the bechedemer extraction causes certain types of fish to disappear so it is strictly prohibited by community leaders supported and prompted by the fisheries division'* (#1 Female, Abaiang, pers. comm., 2013).

Another example mentioned was the annual festival called the unimware (chief) local food festival which encourages the engagement of young generations in such activities, which secures socio-cultural activities, and in turn promotes food security in Kiribati. This also encourages stewardship roles of local people and promotes environment sustainability. Another profound activity that emerged was the act of sharing and loving between one another. People have perceived that sharing of natural resources in terms of foods; water, coconut, fish and gifts not only strengthens relationships and community living, but importantly minimizes the ecological footprints of communities. It also minimizes poverty stresses faced by some families, especially those who are self employed and unemployed. This is supported in the Kiribati Poverty Analysis Report (2006) which mentions the advantage of strong family and community ties in Kiribati for families who are not well off, which traditionally contribute to the social security and welfare of these less fortunate families (Kiribati National Statistics Office and UNDP 2006). It was mentioned that in most cases, instead of buying imported products, people prefer asking others for help, and these resources are normally freely shared. The literature on the other hand also provides support to advocate and argue that culture

plays a crucial role towards sustainable living. For instance, Berenfeld (2007) highlighted that preservation of culture, specifically natural heritage, contributes to mitigation efforts or cutting down of carbon footprints; such as the use of traditional local resources that suit the environment, leaving few resources unused, but must sustained.

### 4.3.5 Traditional games and entertainment

The environment provides resources and gears for the performance of traditional games and entertainment. For example, as mentioned by some, the use of coconut husk strings. Others have also mentioned the importance of land, especially coastal areas or beaches for the performance of such activities.

### 4.3.6 Traditional medicinal plants

The environment provides cultural herbs and medicines for healing sickness. This sustains unique traditional knowledge and skills of elders, especially women, in the use of these medicinal plants. Instead of seeking help from doctors, local people have their own cultural ways of healing based on their knowledge of traditional healing. This was mentioned by some as reducing problems such as overcrowding in the hospitals. The environment also provides ingredients for making ornaments and oils for massaging; such as the coconut oil which is used with the application of traditional skills and knowledge.

### 4.3.7 Arts and crafts (handicrafts)

Kiribati is unique in its art and craft works. Most of these cultural tangible assets require environmental resources. Kiribati does not have paintings but they are well known in art works-such as weaving and dancing. One respondent mentioned,

> *'We don't have colors but we use fruits to make dyes, such as mangrove fruits, berries and the fig tree'* (#56 Male, South Tarawa, pers. comm., 2013).

Others have also mentioned the importance of the environment for the provision of costumes for cultural dances or performing arts.

*'Our environment provides us what to wear, our costumes for cultural dances'* (#5 Female, South Tarawa, pers. comm., 2013).

The marine environment also provides people with shells to make earrings, and dancing costumes.

Pandanus and coconut leaves are used for making baskets, weaving mats, and for house fencing. For others, the environment has also gifted people with innovation and creativeness knowledge and skills in performing arts such as dancing. One of the respondents mentioned,

> *'We treasure our culture so much, so we express it in the form of art and dancing. Our dances portray the value of our surroundings, the sea, fish, birds, land creatures and so forth'* (#11 Female, South Tarawa, pers. comm., 2013).

Another respondent also mentioned,

> *'Our culture develops from our environment, so there is a great connection for example, when we dance, we put our arms sideways like a bird, we move our hips from side to side like the waves and the ocean that surrounds us'* (#55 Female, South Tarawa, pers. comm., 2013).

The essence of the environment is portrayed in Kiribati performances; the environment provides people with the unique knowledge and ideas to be manifested through their dances and other forms of arts and crafts.

### 4.3.8 Traditional knowledge and skills (fishing, farming, building houses, cutting toddy).

Most of the participants have indicated the importance of the environment and resources for the invention of traditional knowledge and skills in fishing, farming, building houses and harvesting of cultural foods such as cutting toddy. One of the elders in his interview mentioned,

> *'The relationship is that our indigenous skills and knowledge and traditional ways of living have all been invented and generated through the utilization of our*

*environment and natural resources. Without the environment, we wouldn't be able to be gifted and possess the traditional knowledge and skills that distinguishes us from other cultures. For example, we cut toddy from the coconut trees; we build our homes from trees. Our traditional skills and ways of living come from natural resources around us'* (#52 Male, South Tarawa, pers. comm., 2013).

Another respondent mentioned,

*'The environment provides us the best and most suitable knowledge and skills with which to live'* (#9 Male, South Tarawa, pers. comm., 2013).

One also mentioned,

*'The environment provides resources to Kiribati culture such as fishing and building skills, which have all been invented through the environment that we survive with'* (#23 Male, South Tarawa, pers. comm., 2013).

To others the climatic seasons also control some fishing skills. One respondent mentioned,

*'The Kiribati culture is very closely knitted to the environment. Our fishing seasons, food gathering are directed by the micro-seasons that are known by Ikiribati. Any change to these seasons will also affect people and culture'* (#34 Male, South Tarawa, pers. comm., 2013)

### 4.3.9 Provision of physical resources for welfare and security.

Most families in Kiribati rely heavily on the environment for the provision of almost all of their essential physical needs. These include foods, water, land, shelter, clothes and so forth. One responded,

'*Our traditional houses, how we get our foods, what we could get for our foods, how we do our decorations and dancing customs, what we sleep on and many more are dependent on what is provided by the environment. Our knowledge and skills were born from the environment'* (#14 Male, Abaiang, pers. comm., 2013).

Land for instance was perceived by people as an important resource for the provision of customary areas for shelters, settlements and for plantations or farming, cutting toddy

and so forth. People have also mentioned the importance of trees for the supply of resources used for building shelter or homes and sleeping materials. One participant mentioned,

> '*There is a strong connection of our culture and the environment, the connection is that the environment provides local or cultural foods and houses. All our local houses are built from the contents of our environment such as the pandanus tree. The leaves are used to make local thatches out from it for roofing. The long and durable stems or trunks are used for poles of our mwaneaba; the sweet fruits are a delicacy in Kiribati'* (#47 Male, Abaiang, pers. comm., 2013).

Another respondent also mentioned,

> *'Without the environment, there would be no mwaneaba, thus no culture because the environment provides pandanus and coconut trees for building shelters. Everything for building from the roofing to the foundation is borrowed from the environment, the trees such as the pandanus and coconuts are utilized from the shoot to the roots'* (#39 Female, South Tarawa, pers. comm., 2013).

The ocean on the other hand was perceived to be the main supplier of marine resources and foods, mainly fish for most families' consumption and subsistent living. Some mentioned the importance of the environment for the supply of air or oxygen for breathing. Some also perceived their relationship with the environment as an exchange of love, as mentioned by one participant,

> '*There is an exchange of love between us and our environment. We love our environment, our natural resources, our culture and our cultural values, and they love us back in return of giving us fruits, shelter and our identity'* (#50 Female, South Tarawa, pers. comm., 2013).

Results show that the environment is perceived as providing almost everything for sustaining peoples' welfare and promotion of their socio-cultural values and practices.

### 4.3.10 Good effects on people's behaviors and lifestyles

The behaviors and lifestyles of people are perceived as being molded and shaped through their relationships with the environment. Some have also perceived that human-

environment interaction also impact on the behavior and lifestyle of people. The interaction is perceived as acting like religious culture that teaches people to live good lives and defends them from evil, for example poverty. Others have perceived it the other way around as well, that culture is consistent with sustainable development, and enables them to care for the environment. Generally, culture is perceived as maintaining peaceful living, well-being and ability to address food and drinking needs, but also that the interaction with the environment shapes or molds people's cultural ways of living or people's behaviors, for example, cleaning up their own lands to show respect for the environment and amongst others. One of the respondents mentioned,

> *'The environment determines people's behaviors. If our environment changes, peoples' behaviors are also changed'* (#16 Male, Abaiang, pers. comm., 2013).

Another participant put it this way,

> *'The environment helps to develop our cultural practices, where it has always been successful in dealing with the cultural needs and desires of the community. It shapes up people's lives and attitudes, because every day we live with the environment'* (#32 Female, Abaiang, pers. comm., 2013).

### 4.3.11 Community cohesion activities.

The spirit of caring and sharing is a normal act which keeps communities together in Kiribati. It is the close kinship ties within and between close families that allow people to share consumable resources and the use of the few things that they possess (Kiribati Ministry of Environment and Social Development and Climate Change Country Study Team 1999). Some villagers have mentioned the act of rotation in planting bwabwai, or the swamp taro, for each family in the village. It keeps communities united and importantly it strengthens their connections and relationships. Not only does it revives communities to support one another, but also contributes to resilient measures that maintain food security and sustainable use of natural resources and the environment. An example mentioned was that those who can weave, and make handicrafts, will sell or give to those who cannot, which in turn keeps people connected.

*'The environment keeps our relationships with our relatives, thus sustaining the culture of sharing and loving'* (#33 Male, South Tarawa, pers. comm., 2013).

Results show that there is a mutual relationship between the environment and the Kiribati culture and socio-cultural values and practices. Culture and socio-cultural values help Kiribati people to live sustainable lives. Living simple, traditional lives reduces their ecological footprints and impacts on the environment. Socio-cultural values and practices keep people and communities together, and without the existence of communities the journey woven towards a sustainable future would never be successful. These practices are also very important in building capacity and resilience to climate change threats. As seen, the environment sustains culture and vice versa, hence the importance of integrating socio-cultural values and practices in adaptation measures for sustainable living and climate change. On the other hand however, the close connection of Kiribati people to the environment is also one of the major reasons why they are more vulnerable to climatic changes. As perceived by many, when the environment fails, they fail too, which contributes to the changes in their socio-cultural lives as individuals and as communities.

### 4.3.12 The Mwaneaba system: The biggest cultural artifact in Kiribati

The mwaneaba system plays an important role in preserving the Kiribati culture and socio-cultural values and practices. The promotion and preservation of the mwaneaba, or the meeting place, was highlighted by many. The mwaneaba is a monumental building used for assemblies and for discussion of important village matters. To most elders of Kiribati, a mwaneaba means the heavens, because it preserves much of the culture in Kiribati. This meeting place is unique to Kiribati. It is found nowhere else in the Pacific region. It demands careful attention on ways to maintain and preserve it. It is unique in its construction to how it is been controlled and systemized by the Kiribati people. The mwaneaba is built using elders' navigation skills in sailing and voyaging and all families contribute and have different roles to play in the construction or building of a mwaneaba. Men will teach other men how to tie the husk string to hold the posts in

place and how to stack the thatches for roofing. Women on the other hand will teach other women on how to make thatches and so forth.

### 4.3.13 The role of the mwaneaba in maintaining the Kiribati culture and its essence in sustainable living and protection of the environment.

In a traditional occasion, elders or ulumwane have the honor of sitting in the frontline of the house, while family members are assigned to sit behind. The meeting is always governed by an appointed man or elder. There is an assigned family seating arrangement within the meeting house, which all families in the community have to abide by it. In terms of roles and responsibilities, families are given different roles inside the mwaneaba. In the course of a celebration for a mwaneaba anniversary, every family presents and contributes an equal proportion of products and items, foods and other important necessities for feasting. Common contributions include a pandanus juicer, woven mats from pandanus leaves, salted fish, coconut syrup, swamp taro (bwabwai), pig/pork, and sometimes eels.

The importance of these celebrations encourages and promotes the production, sustainability and management of the environment and natural resources. In addition, it also boosts the engagement of youths in cultural practices and production of these tangible cultural products through their skills and knowledge. For example, women teach their daughters to weave mats and make husk strings for building houses. Men teach their sons skills in cutting toddy and how to apply traditional fishing skills for sustainable fishing and so forth. These practices and activities promote the Kiribati culture, traditional skills and knowledge and are what mostly keeps communities united, while simultaneously sustaining the health of the environment and natural resources for continuous supply and production. At this point, both elders and young generations benefit from these unique cultural activities, where parents will relive, rekindle and maintain their unique traditional knowledge and skills and pass the same knowledge onto children. When parents move on, their young generations are left, but equipped with the same knowledge to continue living their parents' legacy. Younger generations embrace these knowledge and skills because of its uniqueness in reflecting the essence

of the Kiribati culture. These practices and village activities also encourage people to cherish and embrace their loving and sharing nature to keep their communities united. It also defines people's roles and responsibilities and their specific duties in the community.

It is observed that every act, knowledge, behavior and perspective was invented from the environment, and is maintained by the mwaneaba system. The mwaneaba system in Kiribati is very important because it maintains cultural activities which distinguish the iKiribati culture from other cultures, and helps sustain the environment, identifying peoples' roles as stewards in managing their resources and resource use. Thus the maintenance of the mwaneaba depends highly on the health and availability of their environment and natural resources.

Overall, it was discovered that the socio-cultural integrity of Kiribati people is determined by the health of their environment and natural resources. It strengthens relationships and maintains peace, happiness and love within the communities and hence their socio-cultural values and practices. The environment, the ocean, land and sky determines who Kiribati people are, not only as individuals but also as communities. This is well recognized in the Report by the Kiribati Ministry of Environment and Social Development Report for the UNFCCC (1999), which states that the unique culture of Kiribati, from the language to forms of entertainment and expression, to crafts and skills, are naturally interconnected with their environment and its resources. Once these resources are impacted upon, it also affects people behaviors and lives, affecting culture. This study provides evidence to argue that socio-cultural values are the strongest pillars that support and steer Kiribati communities towards a sustainable future. It is very important to understand the interactions of culture and climate and significantly the role of perceptions, knowledge and values as elements of these interactions leads people to focus on adaptive responses (Roncoli *et* al. 2008).

## 4.4 Perceived socio-cultural challenges and impacts of climate change in South Tarawa and Abaiang.

### 4.4.1 Overview

This section presents and discusses the heart of this study. It highlights all the socio-cultural problems and changes identified and perceived by the target communities, and how they are being amplified by climate change. All respondents persistently agreed that climate change has had a major contribution to and impact on the socio-cultural changes within their communities and their lives as individuals.

Upon analyzing people's interviews, 57 preliminary themes emerged. These themes are classified as direct and indirect socio-cultural impacts in this study. The direct socio-cultural impacts include impacts on livelihoods, resources, infrastructure and materials which people rely on for socio-cultural benefits and practices, as well as the direct effects on individuals and communities behaviors and practices. In most cases, these direct problems also affect people and communities indirectly, hence the losses, changes, and transformations in people's behaviors and perceptions, traditional knowledge and skills, lifestyles, attitudes, relationship status, welfare, security and community cohesion practices.

Forty three of the preliminary 57 emerged themes were classified to be indirect while the remaining 14 were classified to be direct. The forty three indirect themes were further narrowed down to seven major themes; (refer to Table 4.11) and six major themes out of the preliminary 14 direct problems or emerging themes (refer to Table 4.10). The wide range of problems identified from this study is a manifestation of the perceived affects that climate change might have on vulnerable communities' socio-cultural integrity. Most of the issues identified receive little attention from policy makers, who appear to be largely unaware of the issues of concern. This section fulfills the fourth objective to this study, which is to assess the socio-cultural challenges and impacts of climate change

perceived and experienced by the target participants. Table 4.9 shows the percentage count of the participants interviewed.

*Table 4. 9 Percentage count of the interviewed participants.*

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid Abaiang | 23 | 45.1 | 45.1 | 45.1 |
| South Tarawa | 28 | 54.9 | 54.9 | 100.0 |
| Total | 51 | 100.0 | 100.0 | |

### 4.4.2 The direct socio-cultural impacts of climate change in South Tarawa and Abaiang.

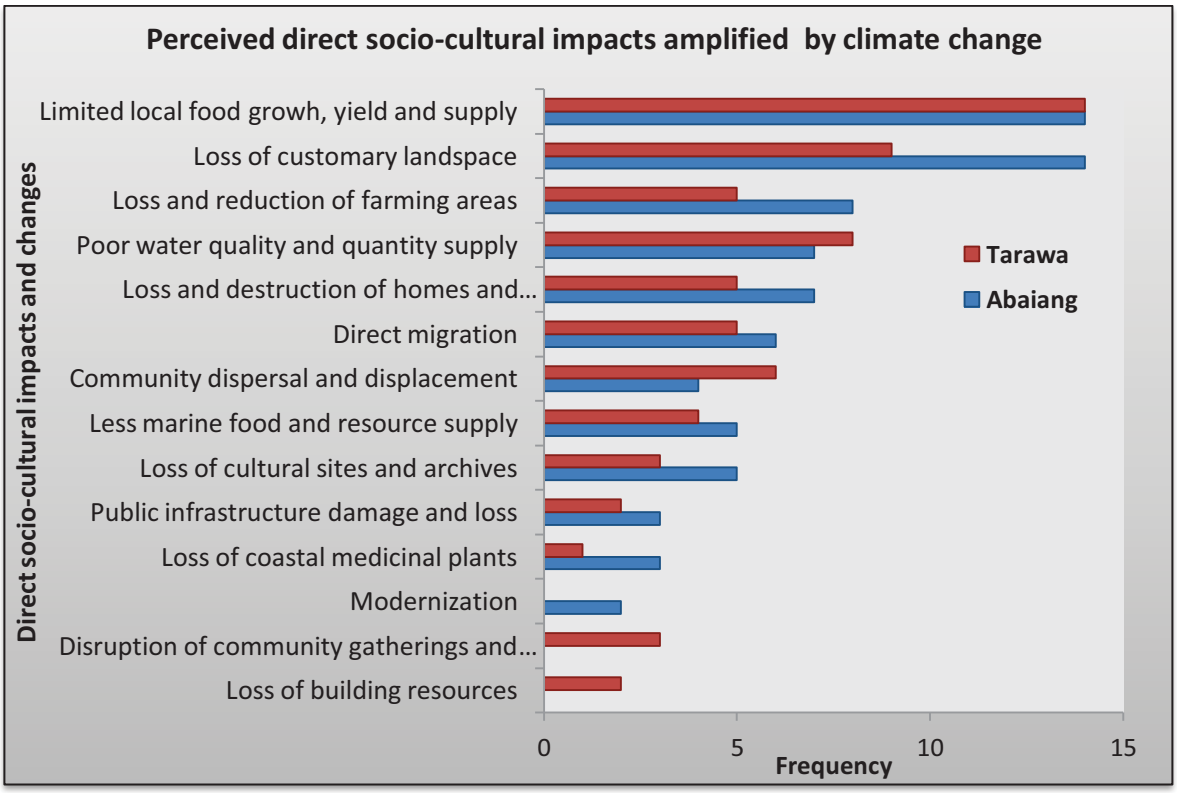



*Figure 4. 13The perceived direct socio-cultural impacts of climate change (n=South Tarawa, 28; Abaiang, 23).*

Figure 4.13 illustrates all the direct socio-cultural impacts as a result of climate change according to the experiences and perceptions of the participants. There are 14 themes

altogether; 13 themes emerged from South Tarawa and 12 from Abaiang. Modernization was perceived from Abaiang only, while disruption of community gatherings and occasions was highlighted from South Tarawa only. The highest perceived problem that emerged from South Tarawa was the loss or limited production, yield and supply of local foods (crops and vegetation) and the lowest being the loss of coastal medicinal plants. In contrast, there were two problems highly perceived from Abaiang which are the loss or limited supply of local foods, production, yield and supply and the loss of customary land, with modernization as the lowest perceived socio-cultural problem.

The null hypothesis tested in this case proposes that there is no significant difference in the frequency distribution in prevalence of a perceived socio-cultural problem or theme between the two islands. To reject the null hypothesis and accept the alternative hypothesis, the p values for each theme tested have to be less than 0.05 the point of significance. But if greater, then the null hypothesis is accepted and the alternative hypothesis is rejected. The p values for each theme tested are summarized in Table 4.10.

*Table 4. 10 Summary of the p values from the chi square goodness of fit test for each direct socio-cultural theme tested amongst the two islands: Abaiang and South Tarawa.*

| **Direct socio-cultural impacts themes** | **Direct socio-cultural problems** | **Pearson Chi square test results (p value)** |
|---|---|---|
| *1) Home, settlements and infrastructure loss and damage* | Loss and destruction of homes and settlements | .115 |
| | Public infrastructure damage and loss | .272 |
| *2) Impacts on cultural, subsistence and commercial livelihoods and services* | Limited local foods (crops and vegetation growth, yield and supply) | .297 |
| | Poor water quality and quantity supply | .843 |
| | Loss of and less marine food and resources supply | .307 |
| | Loss of environmental-based building resources | .191 |
| *3) Land Mass/Size reduction related problems* | Loss and reduction of farming areas | **.034** |
| | Limited or loss of customary land | **.003** |

| | | |
|---|---|---|
| *4) Community Mobility Problems* | Direct or forced Migration | .303 |
| | Community dispersal and displacement | .637 |
| | Modernization | .111 |
| *5) Loss of tangible cultural assets* | Loss of coastal medicinal plants | **.014** |
| | Loss of cultural sites and archives | .087 |
| *6) Impacts on community cohesion practices* | Disruption of community gatherings and occasions | .106 |

Table 4.10 summarizes the p values for each of the 14 direct socio-cultural themes that were tested. Results show that significant differences do exist in the prevalence distribution of three themes between the two islands. These are land size reduction related problems, hence the loss and reduction of farming lands; the loss of customary land areas, and the loss of coastal medicinal plants. The reason being that the p values are all less than 0.05 the point of significance respectively .034, .003 and .014, therefore the alternative hypothesis is accepted that there is a significant difference in the prevalence distribution of each of these themes between the two islands.

The remaining emerged impacts are evenly shared between Abaiang and South Tarawa communities since the p values are greater than 0.05. Therefore a conclusion can be made that statistically, most of the emerged socio-cultural themes are equally experienced and perceived by the target participants of both islands except for the loss and reduction of farming lands, the loss of customary land-space and the loss of coastal medicinal plants.

#### 4.4.2.1 Cultural, subsistence and commercial livelihoods and services impacts.

This thematic group comprises the various impacts on important livelihoods and services that are essential to the basic, cultural, subsistence and commercial needs of people. These are the loss or limited production, yield and supply of local foods; poor water quality and quantity supply, the loss and reduced supply of marine foods and resources, and lastly the loss of environmentally based building resources. The statistical analysis p value integrity of fit test results for each problem as shown in Table 4.10 are .297, .843, .307, .191 respectively which are all greater than 0.05 the point of significance. This indicates that there is no significant difference in the frequency distribution of

prevalence for each of the four problems between the two islands. The loss of or limited production, yield and supply of local foods, poor water quality and quantity supply, and loss or reduced supply of marine food and resources were the most addressed concerns from both islands, and the loss of environmentally based building resources emerged only from South Tarawa.

#### 4.4.2.1.1 The loss of or limited production, yield and supply of local foods (crops and fruit trees)

Agriculture has been the backbone for survival and economic development in many SIDS, especially those who have less land, with subsistence food production as the major support for many families (Sem and United Nations Office of the High Representative for LDC's; Landlocked Developing Countries (UN-OHRLLS) 2009). This is also true for the low lying atolls of Kiribati. From this study, local agricultural foods with respect to crops and fruit trees play a vital role in the communities of Kiribati, not only are they needed for subsistent consumption but for marketing to support them financially. The scope of this discussion is limited to local agricultural crops and fruit trees, which were commonly stressed in the interviews. Kiribati has limited biodiversity inheritance, and a lowering diversity of fruit trees and crops, as evaluated by the local communities who intimately interact with their environments on a daily basis. This is supported by Thaman (2008) who has examined characteristics of atoll biodiversities, and found them to be the poorest in both terrestrial and freshwater diversity of floras and faunas on earth, with barely any endemic species known. They are the most threatened and degraded terrestrial biodiversities in the world (Thaman 2008).

According to the respondents, there are only six important crops and fruit trees known to be aboriginally introduced in the entire Kiribati archipelago; the *coconut,* known and being famous in Kiribati as the tree of life; *pandanus,* the second tree of life; the bwabwai or the *swamp taro*; *breadfruit tree*; *fig tree*; and *pumpkin*. Other foods were more recently introduced, such as cabbages, tomatoes, cucumber and crops such as cassava, bananas, fruit trees like pawpaw, and fruits such as watermelons which require compost and technical assistance. The Kiribati Office of the President and T'Makei

Services (2012), reports that these plants are grown by many households who could only afford it with the assistance and technical support from the Taiwan Technical Mission and the Ministry of Agriculture (Kiribati Office of the President and T'Makei Services 2012). However despite the support provided, the continuous availability and supply of agricultural crops and trees on fragile atolls depend highly on the favorable natural conditions of climate and the surrounding environment. The sustainability of agricultural activities depends importantly on climatic conditions for the production of crops, for marketing, as well as for the diversity of all agricultural plants and crops of different varieties and species used for food consumption (Kuhnlein and Receveur 1996). According to people's responses, climate change is a big threat to the growth, yield and supply of their limited crops and fruit trees, particularly the coconut, pandanus, breadfruit, and the swamp taro or the bwabwai. Changing rainfall patterns and seasons, droughts and extreme high temperatures, as well as sea level rise and storm surges, were perceived to have affected these limited local food resources, and even worse have caused extinction to some of these local foods.

Several studies have previously discovered similar influences affecting agriculture in atolls. For instance, Barnett and Adger (2003) have mentioned the susceptibility of agricultural output on atolls to threats posed by increased heat stress on plants, the fluctuations in rainfall and soil moisture content and the intrusion of saltwater from increasing sea level. The report by Sem and UN-OHRLLS (2009) also outlines the significant losses in crop agriculture for both subsistence and commercial agriculture due to the losses in agricultural lands located on coastal plains, as well as salinization induced by climate change and sea level rise, and also droughts that have damaged agricultural crops affecting the economies of SIDS (UN-OHRLLS 2009). Local reports such as the Kiribati Island Report Series for Abaiang (2012) have even assessed and addressed the complications of food yield in the island due to the threatening changes in weather patterns, namely long periods of droughts and rise in sea level (Kiribati Office of the President and T'Makei Services 2012).

Sea level rise and storm surges have impoverished the growth, and have led to the immediate loss of many local food crops and fruit trees, which are the most prominent

cultural and nutritional delicacies for all communities in Kiribati. For example, breadfruit trees, which was stressed by one respondent,

> *'Essential local food sources have been affected. For example, breadfruit trees have been out of sight and cannot even grow properly. We used to have breadfruits growing and flourishing in our lands but it has been extinct from some certain places due to sea water intrusion affecting the soils, yet breadfruit has been one of the most wanted staple foods'* (#12 Male, South Tarawa, pers. comm., 2013).

It can be interpreted from this respondent's perception that sea level rise has directly and indirectly affected the growth, yield and supply of local foods. They are directly impacted in the sense that sea level rise has inundated massive coastal lands, which had uprooted these local foods. On the other hand, they are indirectly affected when these local foods are chemically affected by sea water intrusion that influences the salinity content, hence changing the soil quality, and thus limiting their growth, yield and supply. According to Mimura (1999), agriculture in small atolls of the Pacific is heavily impacted by saltwater intrusion, because of saltwater that seeps into freshwater lens. The Kiribati Office of the President and T'Makei Services (2012) also supports the view that the poor soils in Abaiang have been a limiting factor for agriculture investments and practices. They limit the growth of their only crops and fruit trees, predominantly coconuts, breadfruits and pandanus trees (Kiribati Office of the President and T'Makei Services 2012).

Coconut trees have also been chemically affected by poor soil quality. Figure 4.9 shows some of these devastating sights. The Kiribati National Adaptation Programme of Action (NAPA) Report by the Kiribati Environment and Conservation Division (2007) identifies the prevalence of coastal erosion which has affected coconut and pandanus trees, which are water-stressed and so wither on the soil surface because of the inability to hold soil moisture, coupled with brackish groundwater lenses (Kiribati Environment and Conservation Division 2007). One of the farmers stressed,

*'Food insecurity has been an increasing threat to most of these foods, due to the poor quality of soils. Crops cannot be grown in plain soil unless compost is used'* (#8 Male, South Tarawa, pers. comm., 2013)

*Figure 4. 14 Coconut trees physically and chemically affected by sea water intrusion according to key informants from Tebunginako village, Abaiang, Kiribati (2013).*

In addition to the direct impacts of sea level rise, the removal of coastal lands was noticeable in the village of Temwaiku at South Tarawa. According to one of the key informants, approximately 100 m acres of land which used to be an extensive area for coconut plantation and farming has been eroding since 2004, and its current state is no longer accessible and usable for any plantation measures, due to inundation as shown in Figure 4.15. These lands in Temwaiku could only be reclaimed by filling or upgrading before being available for any sort of development (Kiribati Office of the President and T'Makei Services 2012).

*Figure 4. 15 Outlook to the original farming lands approx. 100m acres significantly inundated in Temwaiku village, South Tarawa (2013).*

The bwabwai or the swamp taro is adversely impacted by inundation, not only from sea level rise but also during intense rainfall periods, where saltwater is experienced by local communities to have burned the crops down,

> '*Food crops are affected through the changes in rainfall seasons, for example bwabwai pits will get flooded with saltwater intrusion, changing the salinity into that which these foods cannot grow in'* (#15 Male, Abaiang, pers. comm., 2013).

Another respondent from Abaiang also shared his experience,

> *'The bwabwai is mostly affected because of sea level rise, killing them. When tides flood the bwabwai pits, they will be killed'* (#6 Male, Abaiang, pers. comm., 2013).

The impacts posed by droughts, perceived by communities as long dry spells and more prevalent extreme high temperatures, are not an exception. People have stressed that droughts and extreme temperatures have caused heat stress and have evaporated water rapidly from swamp-taro pits, which has caused huge losses to these crops (see Figure 4.16). This also affects fruit trees such as coconuts and breadfruit trees when there is an insufficient supply of quality groundwater. One of the respondents from South Tarawa, a geography teacher, shared her perception that the growth and health of their food crops and trees have always been deprived by the geological features of atolls. Atoll soils

which are mainly sand have high porosity. Therefore in rainy seasons, much water would be lost again into the ocean leaving less water for the survival and growth of such crops.

*Figure 4. 16 Abandoned bwabwai pits in Abaiang (2013).*

Other respondents have stressed that due to heat pressures, swamps for taro pits are also threatened,

> '*The growth of crops has been very poor, where extreme drought seasons sucks up water rapidly limiting the growth, yield and supply of such crops'* (#5 Female, South Tarawa, pers. comm., 2013).

Another respondent from South Tarawa in anguish said,

> *'The rise in temperature has killed plants and crops so we can't rely on food crops alone. Food crops grow no longer because it is too hot in the southern side of Kiribati'* (#52 Male, South Tarawa, pers. comm., 2013).

It is also highlighted in the Kiribati NAPA Report (2007) that the loss of fruit trees and the bwabwai could be due to the changes, particularly temperature increase and sea level rise (Kiribati Climate Change Study Team 2007).

The South Tarawa respondents have also perceived that non climatic factors may have contributed to the loss of the local foods. The loss of lands due to erosion is coupled by the rapid rise in population growth and the increasing number of people migrating from the outer islands to resettle in Tarawa, which outgrows the limited land space shared for

growing these foods, especially the swamp taro which requires large areas of lands to be cultivated in. The aftermath of both climatic and non-climatic problems are excruciating. They have decreased the fruiting possibility of these trees and have affected the quality and taste of these foods. People have claimed the insufficient production and supply of these foods. Many of these trees have disappeared; some have produced none or less fruits. Fruits have become tasteless, the size of coconut fruits has been reduced and leaves of such trees like the pandanus and coconut have dried instantly. One respondent mentioned,

> […] '*If it wasn't for these climate changes, our food crops and trees will still give us rich and delicious yields and fruit, we could've still drunk from our well water. We'd never run out of provisions and there would be no social problems in the communities'* (#47 Male, Abaiang, pers. comm., 2013).

According to the Kiribati Country Series Report for Abaiang (2012), droughts have affected the size of coconut fruits and subsequently affecting production and income earnings.

Food crisis is a global concern and results from this study supports that the nation of Kiribati is not spared, as communities have characterized the situation as devastating compared to the past. There is a loss of food production, yield and supply together with poor water supply, impacting the communities in Kiribati, impoverishing families and compromising the socio-cultural values of people. Food shortage is not confined to one specific place such as in Kiribati. Food shortage is prevalent everywhere, domesticated crops and water harvesting techniques have been lost (Salick and Byg 2007). Parry *et* al. 2005 also have mentioned the consequences of hunger that will arrive as global food supply will be affected as a result of extreme temperatures affecting crops, especially non-irrigated areas. Hence any slight changes in climate will decrease the yields of crops and those who depend very much on livelihoods such as farmers and pastoral people would be the most negatively affected (Parry *et* al. 2005). The future of crop yield and harvesting is also at stake, supported by a recent study from the University of Leeds, led by Ruitenberg (2014), which supports with high degree of confidence that climate

change will be a huge threat to the yield of main crops such as corn, wheat and rice by 2030, a period much earlier than expected. Much of these impacts are predicted to be at its greatest in the second half of the century, and stronger in tropical regions (Ruitenberg 2014).

**4.4.2.1.2 The loss and limited supply of marine foods and resources.**

The supply of marine resources and foods has been insufficient, and in most cases, fish size and catch has declined in both islands. One fisherman responded,

> *'It's hard to catch fish compared to 10-20 years back; during stormy days, catch from the sea is also minimal'* (#23 Male, South Tarawa, pers. comm., 2013).
>
> '*Fish in the olden days were easy to catch, but nowadays it's hard to catch fish, you have to look for them'* (#50 Female, South Tarawa, pers. comm., 2013).

Many of the respondents perceive that the loss and limited supply of fish is related to the loss of coral reef ecosystems due to coral bleaching caused by increased temperatures and very hot days. The Kiribati NAPA Report (2007) indicates that corals in Kiribati are affected by intense sunlight, and that dying corals have been observed around the atolls; in addition the movements of fish are also affected which causes low productivity of inshore fisheries (Kiribati Climate Change Study Team 2007). Coral bleaching was perceived to be a major setback for the sustainability of fisheries livelihoods and especially families who depend on fisheries for subsistent living. The loss of coral reefs leads to the loss of numerous important local marine fish and other sea food resources that only thrive when these ecosystems are in good health. In addition, some respondents have mentioned the shortage in supply of shell fish such as clam shells which used to be abundant in the past, as a result of sea level rise.

> *'The life span of shell fish depends on the sea tides, we used to collect plenty in the olden days and nowadays, there are a few due to the impacts of climate change particularly sea level rise'* (#20 Male, Abaiang, pers. comm., 2013).
>
> *'In terms of sea food catch, sea shells used to be abundant but not anymore, however new shells have been appearing, but some shells have long disappeared'* (#6 Male, Abaiang, pers. comm., 2013).

Some respondents have also mentioned the importance of coral reefs in the production and formation of sand and their ability to function as barriers to avoid high tidal waves and storm surges. Respondents have stressed that the huge depletion of coral reefs has been one major cause triggering severe coastal erosion. Because of the poor health conditions and degradation of coral reefs, less sand is produced and their failure to withstand high energetic tidal waves becomes a huge problem causing shrinkage in land mass. Sand is no longer enough to compensate for the loss of coastal lands.

> *'Because of coral bleaching, coastal erosion has been severe because the health of coral reefs has been degraded and hence cannot withstand high tidal waves coming inland causing coastal erosion leading into the loss of lands'* (#5 Female, South Tarawa, pers. comm., 2013).

Other problems reported include the destruction of mangroves, the health of marine creatures disturbed by strong waves and sea level rise, and droughts that have caused death to fish. Some respondents mentioned that some fish have lost their good taste. Others expressed concern at the high growth in population, which has led to the over exploitation of fish catch in South Tarawa.

> *'Too many people go fishing at the same time every day and then there are times that we do not have enough fish for the family. I'm not sure, I'm not an expert on fisheries but I think that people must take into consideration that they must not fish everyday otherwise we'll lose all our fish'* (#50 Female, South Tarawa, pers. comm., 2013).

#### 4.4.2.1.3 Poor water quality and quantity supply

The supply of sufficient quality groundwater resources stored in wells, in both islands has been curbed by the increased impacts of sea level rise, and dry seasons with very low rainfall, according to the respondents. As shown in Figure 4.6, the status and quality of freshwater resources has been evaluated as 'worse' by all respondents of both islands. The increase of seawater intrusion into freshwater lens as a result of high sea level has resulted in water becoming brackish, risking the security of water for consumption.

Water insecurity has been a serious issue to the point, that even when it's boiled, people cannot consume or utilize it for cooking or washing. One respondent mentioned,

> '*In the past well water was used for bathing and for laundries and now its unusable because of its salty content. Increased saltiness of water from the well is also due to hot temperatures, and even too much rain. Water quality from wells is deteriorating due to pollution and general warming of land and saltwater intrusion'* (#35 Female, South Tarawa, pers. comm., 2013).

Sea shore erosion has also caused damage to underground wells that collect water. Freshwater has become saltier compared to the past years and it has increased the demand for water tanks for rainwater collecting. Many families in both islands now depend highly on rainwater. Unfortunately only families who could afford water tanks have access to it. Most families in South Tarawa depend on treated water supplied by the Public Utilities Board (PUB) of the Water Supply section. Others have switched to drinking coconuts, or fetching water from other families. Perry (2012) also highlights the increasing contamination of Kiribati's underground freshwater that remains vital for the survival of trees, crops, and importantly people which is also supportive of what is been assessed and found from this study.

**4.4.2.1.4 The loss of environment-produced building resources.**

The loss of building resources was mentioned by a few respondents from South Tarawa only. People have noticed that the supply and availability of these building resources has been dramatically reduced. These resources are sand, lime-stone, pandanus and coconut trees. It could be interpreted that perhaps the situation in South Tarawa is worse due to other factors particularly population pressures where the demand for these resources becomes high exceeding the carrying capacity of its limited landmass. The reduction of sand and lime-stone relates back to the loss of coral reef ecosystems, as a result of rising temperatures and intense heat during most days. They are also physically impacted by storm surges, which according to some, has led to many of these corals and rocks to have been washed inshore. One respondent mentioned,

'*Storm surges used to reach about 60m inshore from the coastline. For example a big storm surge in 2005 brought trees and huge coral stones into the coastal area*s' (#1 Female, Abaiang, pers. comm., 2013).

The direct and indirect effects of climate change on coral reefs have also affected the availability of sand and lime-stones for the construction of their local meeting places known as the mwaneaba. One respondent summarizes the entire problem in her interview,

*'Coral stones or lime-stones were commonly used to build sea walls and for foundations for Mwaneaba houses, but is unfortunately becoming scarce and has been difficult to locate and collect due to the rapid loss of coral reefs which are the only source of provision for building materials and resources. Worsening is the insufficient supply of sand for the beautification of beaches and for the protection of coastlines'* (#5 Female, South Tarawa, pers. comm., 2013).

The loss of coconut plantations and pandanus trees due to extreme temperatures and coastal erosion has also affected the availability of these resources for building. The meeting house or the mwaneaba is completely made out of these trees; from the leaves to the stems. The loss of lands because of sea level rise had led to the loss of numerous coconuts and pandanus trees, and hence the insufficient supply and provision of these resources. Droughts and extreme temperatures have also caused death to many coconut trees and have caused some pandanus trees to wilt and die.

#### 4.4.2.2 Home, settlements and infrastructure loss and damage (Loss and destruction of homes; public infrastructure damage and loss)

Sea level rise, coastal erosion, rising temperatures and unpredictable weather disturbances such as intense rainfalls or direct winds have destroyed houses and public infrastructure and services such as power lines that provide electricity to communication systems namely phones, internet and television. These problems have even caused electric shocks to some family homes. Coastal erosion triggered by sea level rise and storm surges has completely wiped away some homes as one respondent with misery shared,

*'My family's 100m of land has been washed and eroded, we are currently in our third house thus we have to rebuild our lives and homes three times, our old house and land is now under seawater, we have lost everything, our land and plantations, and now we have to struggle and think of the best measures to take in response to the huge loss we have experienced. Our lives were peaceful when climate and sea level was still normal* (#33 Male, South Tarawa, pers. comm., 2013).

Power cuts have been common, school buildings have been flooded and others have mentioned the uprooting of coconut trees which played important roles as buffers to avoid the effects of high tides.

The remaining direct problems in this section as shown in Figure 4.13 and Table 4.10; are discussed in the upcoming section/discussion (4.4.3) together with the indirect problems they contribute to. Many of the indirect problems discussed next are the results of these direct problems. For community cohesion practices impacts, please see discussion 4.4.3.3, for community mobility problems see discussion 4.4.3.4; for tangible and intangible cultural assets problems see discussion 4.4.3.5, and for land based problems please see discussion 4.4.3.6.

### 4.4.3 The emerged indirect socio-cultural impacts of climate change in Abaiang and South Tarawa.

As indicated in the overview of this section (4.4.2), most of the socio-cultural problems identified and perceived by participants were indirect, which refers to the aftermath of direct climate change impacts on resources and on individuals and communities. Hence the transformations, losses, changes and hardships observed in peoples' lives, behaviors and socio-cultural practices. Forty three of the 57 emerged and perceived problems caused by climate change were indirect effects. These problems were grouped into seven major themes summarized in Table 4.11. SPSS was used to quantify and analyze the qualitative data or themes that had emerged. The Pearson chi square test was used to test for any significant difference in the prevalence distribution of each theme between the two islands. Results of the tests are outlined in Table 4.11.

*Table 4. 11 Summary of the p values (Pearson chi square goodness of fit test for each indirect socio-cultural problem tested amongst the two islands; Abaiang and South Tarawa.*

| **Indirect socio-cultural problems major themes** | **Perceived Indirect socio-cultural problems** | **Pearson Chi-square test results (p values)** |
|---|---|---|
| *1) Cultural lifestyle and behavior transformation* | Foreign culture adoption | **.022** |
| | Change of food choices | .263 |
| | Modernized clothing | .718 |
| | Indoor modernized cooking methods | .191 |
| | Modernized fishing methods | .111 |
| | Language effects and loss | .547 |
| | Modernized housing | .111 |
| | Heavy reliance on compost for farming | .360 |
| | Clash between parents and youths | .754 |
| | Disruption/loss/transformation of normal routine activities and chores | .235 |
| | Agriculture shift/relocation | .111 |
| | Loss of copra production | .185 |
| | Behavioral and lifestyle changes | .534 |
| *2) Psychological and effects and welfare challenges* | Loss of sense of belonging and willingness to work or labor | .444 |
| | Loss of sense of belonging and hope (loneliness) | .670 |
| | Living fearful and doubtful lives against the environment and others | .235 |
| *3) Community cohesion practices impacts* | Loss of community social gatherings and entertainments | .301 |
| | Community resource sharing constraints, complexity and conflicts | .718 |
| | Loss of extended family living, connection, interaction and relationships. | .285 |
| | Community tension and disunity | .637 |
| | Loss of village community gatherings and church meetings | .301 |
| | Ethnicity clashes | .360 |
| | Influences on community governance and structure | .360 |
| *4) Land ownership community problems and conflicts* | Community land-based disputes/loss and issues (loss of human rights) | .953 |
| *5) Intangible and tangible cultural assets* | Erosion and loss of the Mwaneaba system and practices | .360 |

| | | |
|---|---|---|
| *losses* | Loss of cultural foods and delicacies | **.022** |
| | Loss of traditional knowledge and skills (farming, fishing and medicinal) | .547 |
| *6) Community Mobility Impacts* | Internal relocation or resettlement | .786 |
| | Forced Migration | **.009** |
| *7) Health and other socio-cultural related impacts* | Malnutrition | .360 |
| | Food poisoning | .106 |
| | Starvation | .111 |
| | Elders skin health effects | .185 |
| | Food insecurity problems | .772 |
| | Tourism effects | .360 |
| | Modernization | .754 |
| | High transport costs | .360 |
| | School drop-outs increase | .360 |
| | Road accidents and injuries risks | .191 |
| | Overcrowding | **.000** |
| | Unemployment stresses | .865 |
| | Family financial stresses | .301 |
| | Youth and community crime scenes | .099 |

According to Table 4.11, four indirect problems were found to be perceived differently between the two islands: Foreign culture adoption, loss of cultural foods and delicacies; forced migration, and overcrowding. These are discussed along discussing the respective themes they are categorized under.

#### 4.4.3.1 Cultural lifestyle and behavioral transformation and impacts.

This thematic group represents the perceived and observed changes and transformations in people's behaviors, and lifestyles, indicated by the transformation and replacement of their usual and main cultural activities by modernized and social practices to respond and adapt to the direct impacts of climate change.

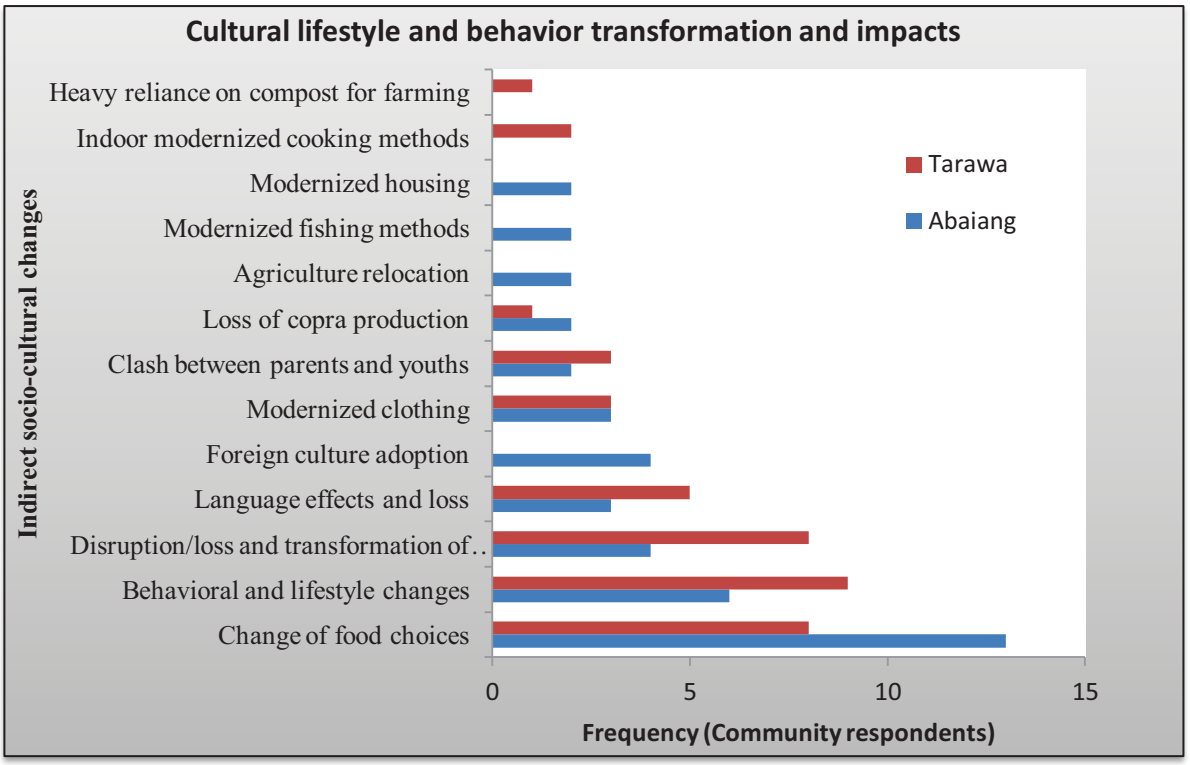



*Figure 4. 17 The perceived cultural lifestyle and behavior transformation and impacts (n=51; South Tarawa, 28; Abaiang, 23)*

Figure 4.17 shows 13 problems to this thematic group and 11 of these problems emerged from Abaiang and only nine from South Tarawa. Four of the 13 problems did not emerge from South Tarawa which are, agriculture relocation; foreign culture adoption; modernized fishing methods; and modernized housing. The highest to the least perceived problems are; change of food choices; behavioral and lifestyle changes; disruption, loss and transformation of normal routine and chores; language effects and loss; and the clash between parents and children. In Table 4.11, most of the socio-cultural problems in this thematic group show no significant difference in prevalence between the two islands except for the problem of foreign culture adoption which only emerged from Abaiang participants (see Figure 4.17). All of the p values were greater than 0.05 the point of significance as shown in Table 4.11, however the p value depicted for 'foreign culture adoption' was .022 which shows that there is only a significant difference in the prevalence distribution of this theme between the two islands. Statistical results therefore demonstrate that both islands are similarly exposed to or

challenged by such problems to a similar extent as similarly perceived, except for the perception on foreign culture adoption, which was only perceived by Abaiang respondents. These problems are discussed in detail below.

#### 4.4.3.1.1 Change of food choices

The change of food choices was one of the prevalent socio-cultural changes perceived by most respondents of both islands as illustrated in Figure 4.17. The p value from the Pearson chi square integrity of fit test as shown in Table 4.10 is .263 which is greater than 0.05 the point of significance, indicating that there is no significant difference in the prevalence of this theme between Abaiang and South Tarawa.

The nature of the problem indicates the replacement of locally grown foods specifically the swamp taro, breadfruit, coconuts and marine foods with imported or processed foods supplied by foreign markets. These foods were made available at all times with crops and fruit trees growing and yielding in abundance. Unfortunately these local foods are no longer abundant due to changes in climate and the environment, (refer to discussion on section 4.4.2.1.1 on the loss of or limited production, yield and supply of local foods crops and fruit trees). Salick and Byg (2007) highlight that what were previously common seasonal foods have already become famine foods because of climate change affecting the diversities of crops and so forth. This is true for Kiribati. People have opted to buy and consume canned and processed foods, such as tin fish, corned beef, rice, and flour; where fish could be replaced by meat, and the swamp taro and breadfruits replaced by flour and rice. Some of the responses were,

> '*The rise in temperature has killed plants and crops so we can't rely on food crops alone. We are now depending on tin foods imported from overseas'* (#21 Male, South Tarawa, pers. comm., 2013).

> *'When I was young, I used to depend on my parents for traditional food but now they depend much on rice and flour due to short supply of food (bwabwai and breadfruit)* (#15 Male, Abaiang, pers. comm., 2013).

*'Our lives are affected culturally through the change in food types we eat; we have no choice when our local crops and foods die* (#38 Female, South Tarawa, pers. comm., 2013).

*'Yes, there are a lot of socio-cultural changes recently here in my community, we have lost our local foods* (#42 Male, South Tarawa, pers. comm., 2013).

*'At this moment all we depend on are imported foods'* (#10 Female, South Tarawa, pers. comm., 2013).

These problems are not limited to Kiribati. McNamara and Togahai (2012) have exemplified the same problem in Niue where people have resorted to consuming imported foods such as tinned goods, flour, meat, rise and so forth after a noticeable drought in mid-2012 which concerned some community elders.

**4.4.3.1.2 Behavioral and lifestyle changes and clash between parents and youths; the disruption, transformation and loss of normal routines and chores.**

The change or transformation in people's behaviors and lifestyles was one socio-cultural problem perceived by Kiribati communities influenced by climate change impacting on their livelihoods. For instance, the behaviors of youths towards parents has transformed as a result of the loss or insufficient supply of livelihoods. Some of the elders interviewed have shown concerns that youth respect for their elders has been weakening, and they have been influenced by dramatic changes in climate. For example, homeless boys who face hardships at their homes, with fewer supplies of resources, will plan to commit crimes such as stealing from other families. This has affected their relationships with other families and especially their parents.

*'Boys combine and plan for crimes when family homes are been affected and do not have enough supply of resources. They would not occupy homes but just roam around and are separated from parental guidance'* (#5 Female, South Tarawa, pers. comm., 2013).

Some young people have become rascals as mentioned in the interviews. They no longer want to be involved or stay with families. Furthermore, climate change problems have

also caused disputes amongst people, especially between the old and young, where youths and mid-aged people have seen fighting for land with elders. This transition has been perceived by many as one of the biggest socio-cultural change seen in peoples' lives, especially in youths.

The disruption and transformation of normal routines was prevalent in both islands. This transformation was indicated, for instance, by the continuous building of sea walls alongside the coastal settlements. Building sea walls is in fact one of the immediate measures to respond and adapt to sea level rise impacts. However, to the communities of Kiribati, it is a big socio-cultural change which has replaced normal routines that people were used to in the past, like fishing and gardening. According to Oginni and Adebamowo (2013), rural communities are those who first see and know changes and problems, where they struggle to survive and make adjustments to such changes. This is true for Kiribati people. According to many respondents in South Tarawa, sea walls were out of sight in the past years, but due to sea level rise, people are constantly building sea walls to combat the risks posed by sea level rise and storm surges. One man responded,

> *'Yes, A big cultural change especially in the relocation of dwelling houses away from the seashore and construction of sea walls that were non-existent ten or more years ago'* (#13 Male, South Tarawa, pers. comm., 2013).

Another interview with one of the respondents stressed with agony that the loss of his land as a result of sea level rise has put pressure on him every day. He mentioned that he started building his family sea wall in 2007 when he started to see changes in the level of the sea. As a result, his personal time used for planting has been occupied by building sea walls, hence the disruption and transformation of his normal fatherly duties. He mentions

> '*Loss of land due to erosion has given me more pressure and labor every day. I have to keep an eye on my family's security from sea level rise. In response, I have been building our family sea wall since 2007. I cannot do anymore planting as my time is been occupied now with building our seawall to fight against sea level rise and*

*storm surges that has already washed away my old house'* (#33 Male, South Tarawa, pers. comm., 2013).

Furthermore, climatic changes has also disrupted daily activities like planting, farming, fishing and so forth by directly affecting people's abilities to perform such activities. Some respondents have mentioned that the significant and rapid rise in temperature has made it tiring for them to work. As temperatures keep rising, people have been restricted from carrying out such activities in the mid-day. This affects people socio-culturally because for instance, men couldn't afford to go fishing during day time. Instead they will have to resort in buying tin fish foods from shops in substitution of fresh fish they normally have for lunch meals. As a result, most families are highly dependent on imported foods. Unfortunately they therefore need more money, compelling them to look for paid employments, which is very complicated in South Tarawa according to the respondents. Therefore people will neglect fishing and gardening, leading to the abandonment of gardening and fishing skills. Another concern emerged was the change in rainfall that affected coconut trees, making toddy less sweet. In response, people have gone for lower and younger coconut trees for toddy cutting.

#### 4.4.3.1.3 Language effects

Language loss was perceived by local communities to be a potential indirect long term effect of climate change induced mobility to foreign places and countries. However it was also observed to be happening in South Tarawa as well, by some participants. For example, in schools in South Tarawa, children from outer islands who move to South Tarawa are encouraged to communicate in English. A study by Gillard and Dyson (2011) mentions also the same problem amongst the Kiribati communities in New Zealand, where language for instance has been impacted as a result of the encouragement to learn English in schools and to deal with daily issues. Moreover the relations of Kiribati people with foreign people which has also exposed people to more language influences. This was perceived by people of both islands, but mostly from South Tarawa communities, seeing that those who have moved from outer islands to

South Tarawa have changed their ways of living, including the language they are speaking. One respondent mentioned,

> '*Through migration and buying lands overseas, language can be affected*' (#29 Male, Abaiang, pers. comm., 2013).

#### 4.4.3.1.4 Modernized clothing

A few people perceived that climate change has also had a great influence on the way people have dressed. The transformation from cultural to modernized clothing has been observed as a socio-cultural change in Kiribati influenced by these extreme changes. For example, the increase in extreme temperatures has led some people to change from their normal wear to modernized ways of clothing. Elders are feeling the effects of extreme hot temperatures, thus they need to buy clothes that suit the changing environments. Some young girls who have been split from families and moved to South Tarawa have also changed their clothing to cope with climatic changes, according to some key informants.

#### 4.4.3.1.5 Abandonment of traditional methods of fishing and application of modernized fishing methods

The changing patterns of climate and environment have affected traditional methods and skills of fishing in Kiribati, hence the revolution of these methods with modernized fishing gear. Those who rely on fishing for cash economies and for subsistence living are the most affected. Sea level rise was perceived to be one major effect. An interview with one key informant described the big difference in their current costly methods of fishing compared to their easier and efficient cultural ways of fishing in the past when the environment conditions were better for survival. He mentioned,

> *'Our skills and knowledge in fishing has been abandoned and transformed, for example we used to use coconut shells and stack them in layers to get fish, but since sea level has increased, it destroyed and spoiled everything. It's beyond our control and capability to withstand sea level rise, thus we have to apply modern fishing spheres and nets which suit the rising seas'* (#15 Male, Abaiang, pers. comm., 2013).

Another fisherman also mentioned how he used to cut a stick, use a hook and husk string from the coconut husks to get fish. Moreover at night they use the dry coconut leaves to give them light and direct them. Others have also mentioned the impacts of strong cyclonic winds which amplify the influence of strong tides and storm surges changing their directions and have led to the loss of canoes they used for fishing. In response, modern engine boats are now more often used.

#### 4.4.3.1.6 Modernized housing

The loss of homes and settlements as a result of land erosion and direct effects of sea level rise has led to the transformation of houses that people have built. Local houses are eroded together with lands; hence a switch into modernized European houses in South Tarawa and a big socio-cultural change. People have shared the slow disappearance of mwaneaba houses, their local and cultural meeting places, which used to be seen in numbers. Other families have perceived that the root to the problem was the loss of building resources such as coconut trees and sand (Refer to discussion 4.4.2.1.4). Numerous coconut trees had been lost, thus there are not enough coconut trees to cater for the whole country, so people have switched to European houses which could stand climate change. One respondent mentioned,

> *'Yes, all the trees at the coastal areas have been washed away. The number of coconut and pandanus trees has been decreasing so the government stops people from deforestation to keep and maintain the environment. So what is happening is that when we build our homes, we buy timber and now most of the buildings here in Kiribati are beginning to be modernized, and there are no more mwaneaba houses'* (#5 Female, South Tarawa, pers. comm., 2013).

#### 4.4.3.1.7 Indoor modernized cooking methods

Climate change has changed people's ways and methods of cooking and preparing foods. One of the respondents shared her story,

> '*Life in the atolls is not as easy as it was in the past. I used to enjoy cooking outdoors using firewood which was readily made available from the environment. Unfortunately, I'm not anymore because of the changes. Before I used to collect*

*firewood for cooking outdoors but have now have resorted to cooking indoors using electrical appliances, ovens and stoves, seeing that climate change is real causing heavy rainfall seasons, flooding our habitual lands'* (#5 Female, South Tarawa, pers. comm., 2013).

The declining supply of firewood and the switch to kerosene stoves is reported by the Kiribati Office of the President and T'Makei Services report (2012), particularly in a few villages such as Betio, Bairiki and Bikenbeu, while coconut oil waste from the Copra Mill has been used by many families who cannot afford kerosene (Kiribati Office of the President and T'Makei Services 2012). According to the participants, the scarcity of firewood is mainly driven by the extreme changes in climate; for instance sea level rise that has flooded lands together with trees that have been the main source of firewood. In addition, the changes in rainfall and storm surges have flooded areas where they used to have their outdoor kitchens. The families who have fewer sources of income to buy kerosene are facing these socio-cultural impacts. Cooking outdoors is no longer affordable due to limited land space and rainfall seasons that have spoiled cooking preparation areas, thus they have switched to buying kerosene for ovens and stoves to cook indoors. When kerosene runs out, families are left with no choice but to eat whatever food is available. This affects their feeding habits. Before, they relied on food readily made available from the environment, but now they have switched to buying processed foods from the shops.

**4.4.3.1.8 Heavy reliance on compost/ Loss of copra production /Agriculture relocation**

The significant impacts of climate change on agricultural activities have forced some farmers to use compost. Those who rely on agriculture for subsistence living are the most affected. They have seen a transition from growing crops naturally to the use of compost. Growing plants on soil has been replaced by using compost to enhance the growth and production of agriculture. One farmer responded,

*'Our behaviors have been changed; where we cannot cultivate crops due to heavy rains and extreme hot temperatures thus we have to make compost in order for our foods to grow well'* (#37 Male, South Tarawa, pers. comm., 2013).

In addition, another concerned respondent from Abaiang commented,

> *'Life is hard with all these changes; we are not planting food crops anymore, or any other plants or flowers. What's the use of planting and they keep dying because of climate change; only when there's a solution to this problem'* (#20 Male, Abaiang, pers. comm., 2013).

The production of copra has significantly declined, thus less income has been earned by families who rely heavily on copra. People have mentioned declining income they have earned because of the significant loss in coconut trees, which used to support and sustain their families. One respondent from South Tarawa shares his story,

> '*There are not enough coconut fruits as there were long ago where we could get 3 to 6 bags of copra. Nowadays, we can only get 1 or half a bag (rice sack) of copra'* (#25 Male, South Tarawa, pers. comm., 2013).

The Kiribati Office of the President and T'Makei Services report (2012) mentions the reduction in copra cutting in South Tarawa in few villages such as Buota, while it is no longer practiced in Bikenibeu and Temwaiku due to the limited number of coconut trees. Communities have stressed that the loss of these coconut trees is mainly caused by coastal erosion that have washed away lands together with coconut trees.

Coconut trees are also prone to droughts according to the respondents. Coconut fruits are smaller in size and cannot produce enough juice for copra. One responded,

> *'We earn our money from the copra but as the coconut trees died, we no longer get profit so we all migrate to Tarawa, the capital island, which is slowly being overcrowded to find opportunities there. We have left the work of our fathers' and our ancestors' (copra production) because of the impacts of climate change. Climate change sometimes is too harsh on us; it destroys us with our community and our environment'* (#47 Male, Abaiang, pers. comm., 2013).

The communities of Abaiang are not spared. Copra has been severely declining. This problem was highly emphasised by respondents from Abaiang. It is supported by the Kiribati Office of the President and T'Makei Services report (2012), pointing out that

copra is one of the main sources of income for most families. However it has been declining over the years.

The shifting and relocation of agricultural activities to other favorable areas for shade and environmental cooling was one of the very few concerns addressed. This is due to the loss of lands due to coastal erosion as well as extreme temperatures that have affected areas for farming. Communities have to relocate to other areas to replant and restart their plantations.

**4.4.3.1.9 Foreign culture adoption**

The adoption of foreign culture was perceived by a few to be an indirect socio-cultural change as a result of climate-induced migration or relocation to other countries. This was the only problem from this thematic group that showed a significant difference in the prevalence distribution between the two islands with a p value of 0.22 (see Table 4.11). It was only perceived by Abaiang participants (see Figure 4.17). It could be discussed that the emergence of this socio-cultural problem from Abaiang respondents only was a representation of their awareness of migration of outer island people to South Tarawa. Furthermore it was an illustration of the traditional ways of living that were still predominant in Abaiang compared to South Tarawa, the urbanized island of Kiribati. The adoption of foreign culture was a big concern as Abaiang respondents have perceived that many will adopt other countries cultural ways of living if they are bound to resettle in other countries. One respondent commented,

> *'Climate change leads people to migrate to other countries where culture will be changed by adopting other foreign cultures*' (#27 Female, Abaiang, pers. comm., 2013).

Another respondent also agreed and said,

> *'Social changes will be influenced by overseas traveling because of the damaging of our lands and homes'* (#31 Female, Abaiang, pers. comm., 2013).
>
> '*Through Migration and buying lands overseas, culture can be affected'* another respondent mentioned, (#30 Male, Abaiang, pers. comm., 2013).

Furthermore, one lady agreed and said,

> *'Climate change has opened a gateway for and exposed Kiribati people to the outside world. Migration to other areas as a result of climate change would have a great impact on culture'* (#41 Female, South Tarawa, pers. comm., 2013).

#### 4.4.3.2 Psychological and welfare changes and impacts.

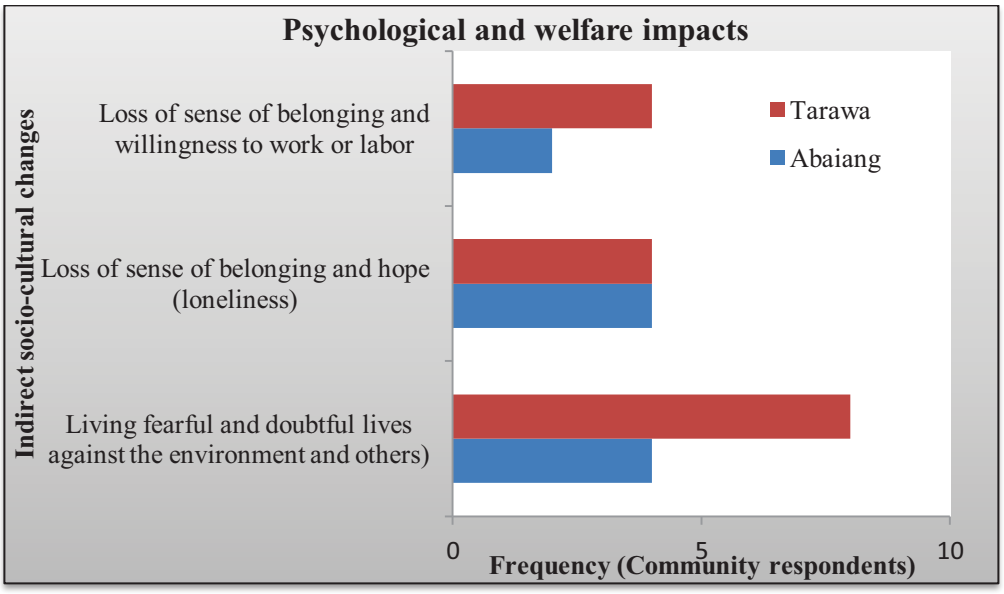



*Figure 4. 18 The perceived psychological and welfare impacts (n=51: South Tarawa 28, Abaiang 23).*

This thematic group presents three indirect socio-cultural problems that highlight the internal stresses that local communities in South Tarawa and Abaiang are battling with in the face of direct harsh environmental and climatic changes, as presented and discussed in section 4.4.2 of results. These psychological effects are the loss of self-willingness to perform usual routines such as farming and planting, the loss of hope and the feeling of loneliness, and living fearful and doubtful lives, not only towards the environment but towards other people as illustrated in Figure 4.18. Results of the Pearson Chi square test (see Table 4.11) indicates that there is no significant difference in the prevalence of each theme between the two islands as their p values were all greater than 0.05 the point of significance. This demonstrates that these indirect psychological effects are similarly felt by people of both islands.

According to Fritze *et* al. (2008), climate change can directly affect people socially and psychologically, as a consequence of natural disasters and environmental changes. Furthermore it also disrupts social, economic and environmental resources and factors that promote wellbeing in individuals and communities (Fritze *et* al. 2008). This study affirms that Kiribati people and communities are also psychologically challenged by such effects of climate change.

The direct effects of sea level rise, storm surges and extreme temperatures and droughts have discouraged some people from performing their normal socio-cultural domestic duties. It has affected the way people feel about their lives, leading to a lack of motivation to do such activities. The increase in temperature has posed heat stress on people, and many elders are at risk, affecting their daily jobs. People have experienced that working under extreme hot temperatures has been very difficult and sometimes impossible these days, compared to the past. Others have mentioned that the depletion of natural resources and livelihoods as a result of climate change has hindered their effort and willingness to work, to farm and fish. Some have become lazy and have lost interest to carry out such activities. For example the loss of crops and fruit trees mainly coconuts and swamp taro due to droughts and saltwater intrusion. Many people have shared their real experiences. One man with agony responded,

> *'These impacts of climate change give people a hard time to replant everything, by understanding, it takes four to five years to grow coconuts, fig and breadfruit trees. Life is very hard with all these changes; we are not planting anymore food crops or any other plants. What's the use of planting and they keep dying because of climate change, only when there is a solution to the problem*' (#20 Male, Abaiang, pers. comm., 2013).

Another respondent mentioned,

> *'Nowadays it's very difficult to grow vegetables because of poor soils and floods, marine resources are hard to find. In response we cannot stop climate change; however we're looking and moving for good soil. With fishing were going deeper into the depths of the ocean and lagoon. For agriculture we have to plant on higher grounds'* (#35 Male, South Tarawa, pers. comm., 2013).

Some women from Abaiang communities have also shared the real hardships they are fighting against.

> '*The supply of freshwater resources has been poor, water has been saltier, yet we still have to drink it. When it is boiled, it becomes more salty so we have to drink it raw better than boiling it and it gives a taste that affects our health'* (#6 Male, Abaiang, pers. comm., 2013).

Another concerned respondent mentioned,

> '*We are responding to the changes in whatever way we can, we have built sea walls, replant and promote agriculture unfortunately the environment keeps changing so how can our lives and livelihoods be sustained? The only choice left is to switch to buying foods from the shops'* (#3 Female, Abaiang, pers. comm., 2013).

To others the poor supply of resources such as water has however enabled them to use resources efficiently. One participant mentioned,

> *'I have to look after water by keeping it in buckets, also when there's plenty fish I have to preserve it. But these problems are affecting us, we have lost hope and trust in our own environments, we've been slack and we don't want to plant anymore'* (#5 Female, South Tarawa, pers. comm., 2013)

These hardships have caused changes in the way people have behaved and reacted with their environments. Resources in the past were always available; for instance, plants, crops and trees and they were easier to grow. However, people are struggling to plant such plants due to changes in the environment. As a result, people have abandoned their normal socio-cultural activities such as planting and fishing. These problems have psychologically affected people, where some have lost hope and their sense of belonging; some have become lonely. One respondent stressed,

> *'There's a sense of loneliness and fear now, there are difficulties of getting food for survival'* (#12 Male, Abaiang, pers. comm., 2013).

Another participant said,

> '*Yes. Climate change has now become a big issue in our communities. Whenever people see the changes especially sea level rise, people would start panicking trying to figure out what can be done. We are been affected physiologically and*

*emotionally and becoming hopeless thinking just to go with the flow, to submerge with our lands. Water is also getting saltier than ever, which leads to fear in living in our environment'* (#12 Male, South Tarawa, pers. comm., 2013).

Climatic changes have caused people to lose their sense of identity, of whom they are and where they belong. Another respondent also mentioned

*'Land areas been cleared and the feeling of fear is now prevalent*' (#20 Male, South Tarawa, pers. comm., 2013).

People seem to lose hope; affecting the way they see their relationships with the environment. Many of the responses reflect that people are living against the odds; their environment. They are living fearful and doubtful lives against the environment, while others live in fear of other people. The loss and depletion of resources and lands has caused people to lose hope. For example, the threats of climate change and sea level rise have caused fear in people about staying close to the sea. Women are now finding it hard to collect firewood. Water has become saltier, affecting lives, especially those who live in proximity to the coastline. Loss of land due to erosion has given people more pressure and labor every day. One man responded,

'*We can't stand a chance, there is nowhere to run, people are now living with fear and we feel restricted to do anymore of our leisure activities. We are living like prisoners under supervision and surveillance cameras, we have to be cautious and alert of the surrounding environments instead of living for ourselves*' (#10 Female, South Tarawa, pers. comm., 2013).

Another participant mentioned,

*'Before, people enjoyed using resources from the environment, but now the environment is becoming a question to us whether we will still continue to live in doubt and fear or not'* (#12 Male, South Tarawa, pers. comm., 2013).

It was illustrated from the responses that the environment is no longer of high value because of the changes people have experienced. One man shared his feelings,

*'Before we used to enjoy living in their environment we had been raised and brought up in, but due to sea level rise, we have been affected, the relationship with the environment is no longer of high value'* (#12 Male, South Tarawa, pers. comm., 2013).

Another respondent also mentioned,

*'Instead of living for the future for ourselves we are living against the environmental and climate changes'* (#19 Female, Abaiang, pers. comm., 2013).

Findings provide enough evidence to argue that climate change can potentially affect the way people feel about themselves, and most of all about their environments. There's a prevalent sense of insecurity in Kiribati, and the welfare of people are at stake because of the dramatic changes, removing peace and happiness from people. Psychologists have addressed that it is a pressing concern that climate change is no longer merely a matter of biodiversity and geophysics, but globally also a psychological and social threat (Doherty and Clayton 2011). Kiribati people and communities are no exception to these effects.

#### 4.4.3.3 Community cohesion practices impacts.

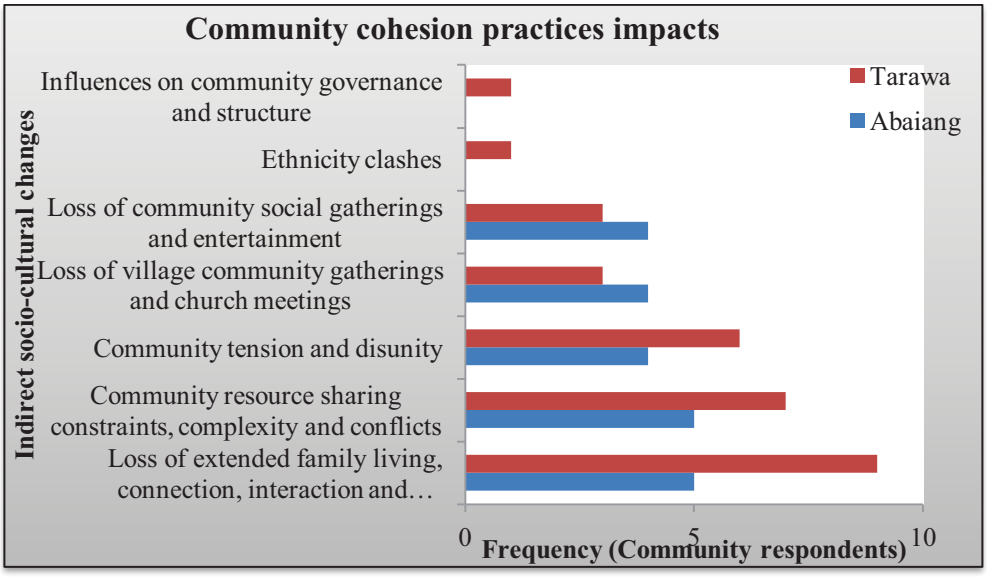



*Figure 4. 19 Perceived community cohesion practices and activities impacts (n=51, South Tarawa, 28; Abaiang, 23).*

This thematic group comprises of seven emerged indirect socio-cultural impacts that have affected the relationships of people and families with others, as well as the impacts on activities that connect or keep communities together and united. Five of the problems emerged from both islands and two were mentioned by South Tarawa respondents only. Statistical results shown in Table 4.11 indicate that these themes were equally shared by the respondents of both islands as the p values for each theme were all greater than 0.05 the point of significance.

**4.4.3.3.1 Impacts on social gatherings and community occasions/loss of village church meetings/ erosion of community structure/community tension and disunity/ethnicity clashes.**

Climate change has caused separation of village communities and the loss of social gatherings and entertainment that used to bring Kiribati people together. It has further led into the disunity and tension between community families, the erosion of community structure and governance, and even worse, it has caused discrimination and clashes between religious groups. According to many respondents, community living and sharing is one of the unique values of the Kiribati culture. It is seen as one of the bridges that people use to relive, cherish and embrace their socio-cultural values and connections; hence it sustains community cohesion and living. However according to many of the interviews, community gatherings and meetings are no longer of high value in Kiribati due to the implications of climate change on their entire lives as communities. One lady mentioned,

> '*Peoples relationships have been lost; climate change has affected our lives and gatherings every season, for example our Easter and Christmas celebrations. Sometimes when people are preparing for big occasions, unpredicted weather changes will spoil and ruin the plans such as heavy rainfall and storm surges'* (#2 Female, South Tarawa, pers. comm., 2013).

In reviewing the responses, many participants have highlighted the perception that climate change has either directly or indirectly affected their communities and community living. First, some of the important gatherings are directly affected by unpredictable climate changes or variability. In the course of social functions and

gatherings, some have stressed that the fun and enlightening spirits of communities to enjoy themselves could sometimes be spoiled due to disruptive weather changes, for example, a sudden change in rainfall or storm surges that arrive unpredictably. Others mentioned unpredictable rainfall in seasons that it shouldn't be raining. A concerned participant mentioned,

> *'Unstable and unsettled weather conditions can ruin our parties, spoiling the fun'* (#36 Male, Abaiang, pers. comm., 2013).

As a result, many of these social gatherings are affected or called to postpone when climate conditions are not favorable. One participant stressed,

> '*Some festive seasons are being postponed or cancelled due to unexpected rainy seasons or dry spells'* (#23 Male, South Tarawa, pers. comm., 2013).

Secondly, community social gatherings are also directly affected through the depletion of resources. For instance, the erosion of several islets, settlements and customary areas where people used to carry out their leisure activities, their cultural activities, plantations and even gatherings due to sea level rise. As a result, people have mentioned that parties and social functions are no longer practiced due to the interference of these changes. For example, one man mentioned,

> '*Before we used to have gatherings and play our traditional games on the beach during full moon, thus a loss in social relationships and gatherings and cultural practices. These were the ways that kept us connected but since our beaches have been eroded, our practices and leisure activities no longer exist*' (#7 Male, South Tarawa, pers. comm., 2013).

According to Doherty and Clayton (2011), the impacts of climate change on social and community relationships are linked to direct and indirect psychological effects, as discussed previously in section 4.3.3.2.

Sea level rise and storm surges have directly displaced and separated some village communities. They have inundated some village sites and mwaneaba, scattering families, while some wander in search of new and secure places or lands to resettle in.

This was a dramatic observation in the village of Tebunginako in Abaiang Island. Tebunginako used to be one village; unfortunately the village has split into two with many families having been displaced because of the rising seas over the years (see Figure 4.20 of the inundated old village site).

According to the villagers, the entire old village site has been claimed by sea level rise, as well as their plantation areas where plenty of bananas, coconuts and other crops had been thriving. Most of the foods and livelihoods have been lost; families had to relocate four times, with only a few families willing to stay in the remnants of the old site. All that is left in the old village site is the church mwaneaba and temple. As a consequence, those who have moved further inside the island find it very inconvenient and complicated to move back to the church compound where most are residing. Results show that climate change has affected community gatherings in Kiribati, with particular reference to what has happened in Tebunginako village.

The dispersal of people and communities due to sea level rise has stopped people coming together to meet and socialize, unless it's a special occasion where every family has to be involved in. One of the key informants said,

> '*Before, when the village was united at our old village site, when visitors came, we all gather together and people were very committed. The Mwaneaba used to be full because it's a big village. For now, it has been very complicated to get everybody together again since many families have moved and it's a big village it's very hard to get the message across*' (#18 Male, Abaiang, pers. comm., 2013).

Personal observations and experience support what the villagers have mentioned in their interviews. It took two to almost three hours to wait inside the mwaneaba for every family representative to be present before proceeding to the interview sessions. The community has been separated, and one of the village men had to use his motor bike to spread the message and to gather people together since families have moved further apart from each other and away from the main meeting place.

*Figure 4. 20 The inundated old village site of Tebunginako village, Abaiang, 2013.*

The communities of South Tarawa are no exception. Many respondents have stressed the same concern that community is no longer of high value to people, hence immediate families and children are only valued these days. Findings show that the separation of communities has caused community disunity and tension amongst families. Families have lost connections with each other. There are no more church gatherings or meetings due to the loss of community structure. The discrimination between religious groups has also been a concern to some. One respondent mentioned,

> '*Having no community to sustain connections has separated families in villages. Village meetings and church meetings are no longer of high value. Relationship within communities has been changed. There is no more commitment to gatherings these days*' (#12 Male, South Tarawa, pers. comm., 2013).

Others have mentioned that their lives have been affected after relocation to new areas. Not only it has affected them individually but community structure and function have also been eroded. One man shared his perception,

> '*Villages can be affected when they are relocated, which could possibly affect community structures of the village*' (#14 Male, Abaiang, pers. comm. 2013).

Another concerned respondent mentioned,

*'Relocation will lead to the scattering of people who tend to look after themselves rather than working as a community'* (#34 Male, South Tarawa, pers. comm., 2013).

**4.4.3.3.2 Loss of extended family living, connections, interaction and relationships**

The loss of extended family living, connections, interactions and relationships was one of the indirect socio-cultural changes experienced and perceived in both islands as a result of the loss of communities and community living. In reviewing the perceptions and experiences of respondents, there were five results of direct impacts of climate change which have triggered the losses to peoples' connections, relationships and interaction with others. These are (i) through migration, (ii) community living disruption or separation, (iii) psychological effects, (iv) complexities in new areas where relocated families move to, and (v) through disputes and conflicts as a result of insufficient supply of resources to sustain livelihoods.

First climate change has forced some families and individuals to relocate and migrate both internally and externally due to the erosion of lands and settlement areas by sea level rise and storm surges. One respondent mentioned,

*'Communities have been affected. We used to enjoy living together but due to sea level rise intruding our lands, we have lost families'* (#41 Male, South Tarawa, pers. comm., 2013).

The connections and interactions of these families with those who choose to remain have long gone. As shared by one respondent,

*'Relationships with other families have been disrupted; especially those who have moved and we have lost connections and fellowship with them'* (#25 Male, Abaiang, pers. comm., 2013).

Another respondent also mentioned,

*'Before, there used to be extended families living together, but now they have migrated overseas out of their fear of climate change thus contributing to the loss of our social connections'* (#10 Female, South Tarawa, pers. comm., 2013).

One man who had to relocate three times shared how he lost connections with three of his neighbors, whom were all his families,

> *'I've lost connections with three families who were my neighbors, they were forced to relocate when sea level rise has taken away all of their lands and properties* (#33 Male, South Tarawa, pers. comm., 2013).

The internal movement of people in Kiribati is nothing new, especially families who relocate or move to South Tarawa, but climate change has exacerbated it. This is also highlighted by Locke (2008), asserting the potential evidence of people from the rural outer islands of Kiribati flooding to the urban central islands, especially Tarawa, which was in fact induced by climate change coupled by socio-economic factors. Many families in Abaiang mentioned,

> *'Families have been moving out to Tarawa thus affecting our close relationship'* (#9 Male, Abaiang, pers. comm., 2013).

Direct impacts of climate change on livelihoods such as crops foods, fruit trees, and marine foods and freshwater that all families depend on have also forced people to abandon extended family living, hence a loss in family connections. One lady shared her sad experience,

> '*Us I-Kiribati used to live in an extended family, but climate change sometimes give us no choice but to live in a nuclear family since it destroys all our food crops and leave us with nothing. Our budget for our family is too tight. Climate change forces us to live in a nuclear family. It is much easier to live that way or otherwise we'll all starve and die, sad'* (#16 Male, South Tarawa, pers. comm., 2013).

Results show that living in nuclear families or worrying about one's own family affairs has been one of the choices that families have opted for to offset their losses. Climate change has forced many to live in nuclear families due to insufficient resources.

This study managed to get interviews with some relocated families who have left their original places. It was noticed that these families also suffer the same fate as those who chose to remain and adapt in their original lands. Even worse, these families have

encountered complexities and hardships in finding people to reconnect with. This reaffirms the argument made by Ferris *et* al (2011), which highlights the possible complications of community relocation. Climate change in this case has also affected Kiribati people's resettlement plans to other places where they are unable to meet others. One respondent from one of these families mentioned,

> '*Climate change takes away our homes right in front of us. We resettle in new areas and the problem is we become strangers to our new villages, it takes time to know the people around and we miss what we are used to. We miss our whole community, friends, mwaneaba and everything'* (#47 Male, Abaiang, pers. comm., 2013).

Such families have shared how hard it had been to adjust to their new environments, and especially to their new communities. Other families have shared that climate change related problems have caused disputes and quarrels amongst others, indirectly affecting their social connections. The continuous depletion of resources, mostly food crops and fruit trees, by sea water intrusion affecting soils, has consequently discouraged some people and families from planting and farming. Instead they steal coconut fruits for their cooking or steal food from their neighbors, provoking conflicts between families and neighbors. One family member mentioned,

> '*We always end up accusing and point fingers to someone who's within the community who is stealing fruits or vegetables. We are not in a good relationship with our neighborhood, thus affecting relationships with others. Our ways of living have changed. Everything has been broken; community confusion and conflicts have been breaking out'* (#52 Male, South Tarawa, pers. comm., 2013).

Findings of this study reiterate what some other studies have previously found. For example Costello *et* al. (2009) and Reuveny (2008) have stressed that global climate change certainly affects intergroup relations driven by the insufficient supply of natural resources, setting the grounds for human conflicts where both groups compete for the same natural resource, or through migration when one group is forced to leave and become a new member of the place they move to, thus competing for space or land especially in terms of ownership. However interestingly, findings from this study

indicate that conflicts are happening as well between family members or households themselves. This could explain the contribution of climate change in destroying family relationships in Kiribati, which was mentioned by many participants.

Lastly but not the least, people who are affected psychologically as a result of direct changes in climate and resource depletion are the same people who have seen losses in their connections and interactions with others. Many of the responses have highlighted how the changes in climate and the environment have led to internal stresses, which previously most are unaware of because they were normally dealt with. People have now concentrated more on these devastating and rapid changes instead of spending time to interact and socialize with others. One respondent stressed,

> '*We are impacted in a way where we have started to look and focus on the problem arising from sea level rise and climate change rather than getting to spend time in knowing and interacting with neighbors*' (#44 Male, Abaiang, pers. comm., 2013).

It could be argued that results from this study show that many of the psychological impacts and stresses that people are going through haven't received much attention and awareness in Kiribati. People are experiencing a lot of tension and internal problems, and climate change is amplifying such struggles and hardships in people's lives. Families and communities used to spend time to know each other and share. Unfortunately the changes in climate and the environment have changed people as well, and as a result, the connections and interactions of people with each other are no longer a vital part of their socio-cultural lives.

**4.4.3.3.3 Community resource sharing constraints, complexities and conflicts.**

Sharing and using resources freely is one of the unique attributes of the Kiribati culture, which keeps communities together. The Kiribati Poverty Analysis Report (2006) mentions that traditional Kiribati societies embrace caring for and sharing with the extended family, which reduces issues of poverty (Kiribati National Statistics Office and UNDP 2006). Unfortunately the loss of sharing and loving in both islands is becoming a big concern, and has attributed to the loss of connections, as discussed previously. This problem was persistently mentioned by respondents from both islands, based on their

experiences. Findings show that climate change has exacerbated impacts on livelihoods. In particular, the impacts on land, water, food crops and trees have affected the production, supply and availability of these resources to families. The insufficiency of such resources has restricted families from sharing and loving, as mentioned by respondents and focus instead to exclusively care for their own families' welfare. One respondent said,

> *'Water cannot be shared anymore, hence the loss of sharing love and hospitality because of the complexities in resource scarcity. Families are now lovers of themselves, again the loss of connections and intimate relationships with others*' (#54 Female, South Tarawa, pers. comm., 2013).

Another respondent also mentioned his experience,

> *'Due to the issue of water nowadays it has been very hard to get water from other families. There have been no more neighborhoods to look up to. Before we use to share food and water but now we have to be preservative of our own resource, no more sharing. People are staying ignorant of other's needs*' (#16 Male, Abaiang, pers. comm., 2013).

Moreover another participant mentioned,

> '*The loss of land which was used for plantations and food abundance through coastal erosion has also caused disputes about land which had allowed people to share and care for each other. But for these days there is less food thus no more sharing, but families have to reserve food for themselves for hard times during bad whether situations*' (#35 Male, South Tarawa, pers. comm., 2013).

Results show that the shortage of resources and livelihoods as a result of climate change has restricted people from sharing and loving. People have become selfish and greedy. These acts have initiated further problems such as family disputes and controversies over resources as one man mentioned one of his experiences,

> *'People have argued over stones being used to make shelter against the rising sea currents'* (#23 Male, South Tarawa, pers. comm., 2013).

The lack of resources has also fuelled arguments and differences within families or household members, as mentioned by one respondent,

> '*It is difficult to get fish these days to eat and sell and people are quarreling with household members. Families find it hard to look for food to feed children. It causes conflicts and controversies between neighbors, because if they also get affected and do not have enough food to share then more problems will arise'* (#39 Female, South Tarawa, pers. comm., 2013).

Others have mentioned the loss of visiting other families and sharing of resources with them.

> '*Before we used to visit our relatives often when things were okay and climate was still calm and normal and we use our own resources made available. Unfortunately, due to these changes in weather, we no longer do visiting but have to care for our own affairs. No more sharing and visiting*' (#33 Male, South Tarawa, pers. comm., 2013).

#### 4.4.3.4 Mobility impacts

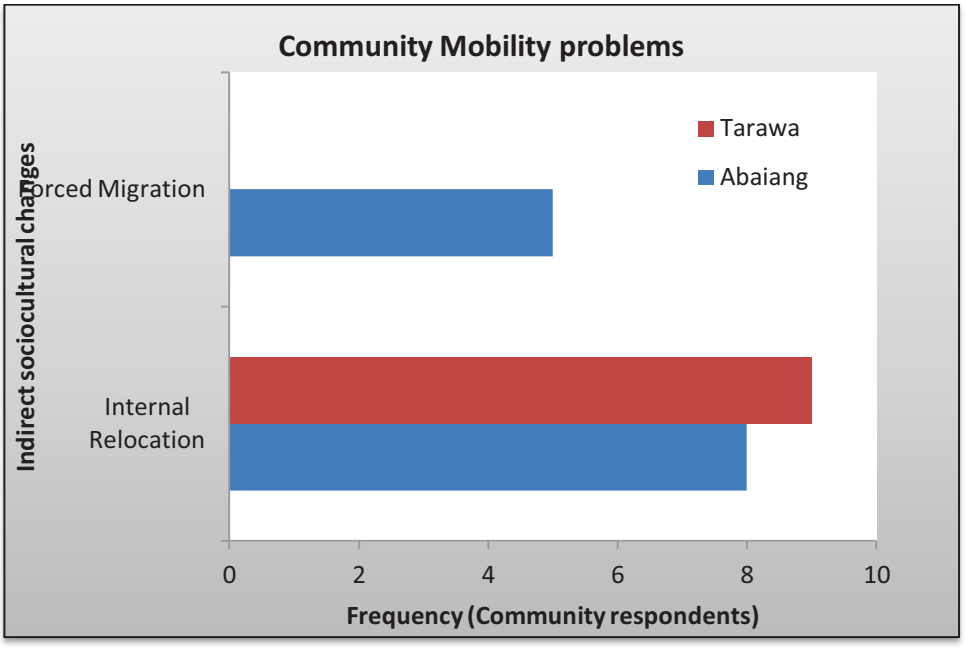



*Figure 4. 21The perceived community mobility impacts of climate change (n=South Tarawa, 28; Abaiang, 23)*

This thematic group represents two mobility problems; forced migration and internal relocation, both of which were perceived by some participants to be indirect. Internal relocation emerged from both islands, which refers to the movement of people internally, especially from outer islands to South Tarawa, the main atoll. Internal relocation was more highly perceived by participants of South Tarawa than Abaiang. Forced Migration on the other hand was only mentioned by some participants of Abaiang.

Statistically, the Pearson goodness of fit test results depicts that there is a significant difference in the prevalence distribution of forced migration between the two islands which shows a p value of .009 (see Table 4.11). There is however no significant difference determined in the prevalence of internal relocation between the two islands, since the p value of .786 was greater than 0.05 the point of significance (see Table 4.11).

Climate change has significantly increased numerous mobility problems in Kiribati, as perceived by both South Tarawa and Abaiang participants. In fact however, the movement of people is nothing new to people, but it was also mentioned that the indirect mobility impacts as shown in Figure 4.21 will create furthermore indirect problems such as socio-cultural problems in their new places or settlements such as modernization, culture shock problems, the loss or erosion of socio-cultural values such as traditional knowledge and skills, the mwaneaba system and houses, language, land ownership problems, and living in isolation because of the new environments and communities.

Direct impacts that people refer to, include sea level rise that has eroded many shorelines, forcing families away from their original lands and homes. It has caused displacement and dispersal of communities and families, and has eventually forced many to either relocate or migrate internally or externally. According to many responses, others have been forced to migrate to South Tarawa, and even to other countries in search of secure places. One respondent who was originally from one of the outer islands residing in South Tarawa mentioned,

> *'Some places have shrunk which caused outer islands people to migrate and reside in South Tarawa'* (#24 Male, South Tarawa, pers. com., 2013).

Other families have relocated to new areas, for example the communities of Tebunginako village in Abaiang because of sea level rise that has inundated their old village site. The loss of lands has caused the displacement of communities, and people have been dispersed from their original lands. Families have become restricted from functioning and working as a community. One respondent mentioned,

> '*Forced migration contributes to further socio-cultural changes. We have experienced and noticed within our small island land erosion that has enforced us to leave and resettle in other places'* (#28 Female, Abaiang, pers. comm., 2013).

It was clear that some people also view migration and relocation as a secondary response to the direct impacts of family displacement and dispersal. To others, the indirect impacts of migration and relocation refer to the aftermath of such mobility problems. Numerous problems were identified by respondents to demonstrate these indirect effects on individuals, as families and as communities. Others have mentioned the complications of finding lands to resettle; therefore they have to reclaim lands for resettlement. One respondent mentioned,

> '*Due to coastal erosion, some families have been displaced and have moved inland. They have found difficulties in finding lands to rebuild their lives and homes so they have buried one pond and reclaimed it with rubbish to resettle into'* (#33 Male, South Tarawa, pers. comm., 2013).

Many families have been residing and resettled on reclaimed lands in Kiribati especially on South Tarawa. A young man who is now residing in South Tarawa shared his experiences of why he had moved and how that movement has affected him socio-culturally (Refer to discussion 4.4.3.1.8 for personal comment). Another respondent also said,

> *'Relocation initiative will play more impacts to socio-cultural values of Kiribati people in the future; we believe that there will be a huge loss of our traditional knowledge and the disappearance of the Mwaneaba system*' (#40 Male, Abaiang, pers. comm., 2013).

Others have mentioned the possibility of losing culture through modernization as a result of forced relocation or migration,

> '*Modernization has contributed to socio cultural changes as well. People have changed their attitudes not just due to climate change' (#18 Male, South Tarawa, pers. comm., 2013).*

It is observed that people are already dreading their socio-cultural losses as a result of migration and relocation induced by climate change. Others have stressed the problem of getting to know and interact with people in their new communities. One lady responded,

> *'Relocation will create a lot of social problems such as resettlement in new areas that we have no knowledge about'* (#11 Female, South Tarawa, pers. comm., 2013*).*

It is seen that mobility problems are already happening in Kiribati. Families have been relocating internally to places they are not familiar with, which then affects communities in the long term.

> '*Without the environment our skills and knowledge won't be that sustainable, but seeing climate change leading our people to migrate and relocate, this would be a huge problem for us in the future'* (#25 Male, South Tarawa, pers. comm., 2013).

#### 4.4.3.5 Loss of tangible and intangible cultural assets

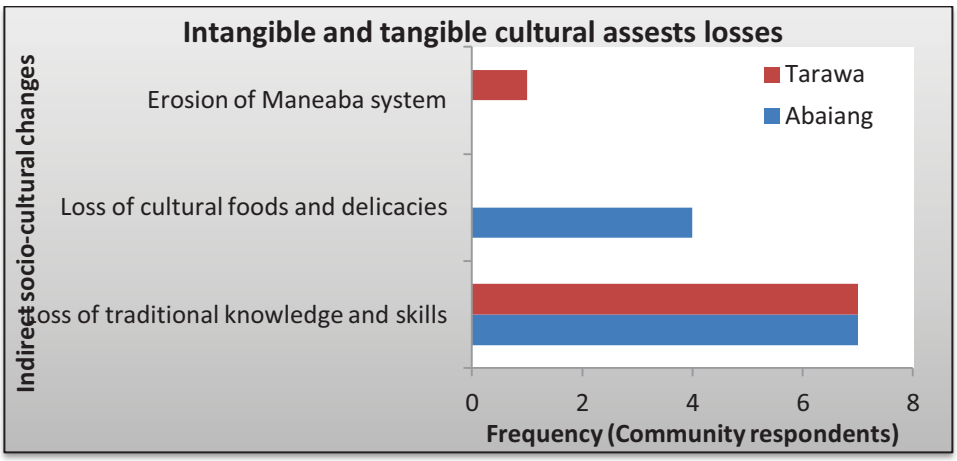



*Figure 4. 22The perceived tangible and intangible cultural assets losses and impacts (n= South Tarawa, 28; Abaiang, 23)*

This thematic group presents the losses to some of Kiribati's important cultural assets, both tangible and intangible, which participants have perceived to be indirectly affected by climate change. This includes as shown in Figure 4.22, the mwaneaba, cultural foods and delicacies, and the loss of traditional knowledge and skills.

The direct problems, as mentioned and shown in Figure 4.13, are the loss of coastal medicinal plants and the loss of cultural sites and archives, such as the mwaneaba. The loss of tangible and intangible assets of the Kiribati culture was one of the common socio-cultural losses that had emerged. The direct physical impacts of climate change on tangible assets such as traditional medicinal plants, mwaneaba houses, cultural or local foods, environmental resources and livelihoods have all contributed to the loss of the intangible culture or traditional environmental knowledge and skills.

#### 4.4.3.5.1 Loss of medicinal coastal plants

According to women who use medicinal plants, many of these important plants and herbs are now nowhere to be seen, or have become extinct. Other plants have been directly affected by heat stress and droughts. Coastal erosion has also caused extinction of these useful medicinal plants. One of the key informants from Abaiang mentioned,

> '*Traditional medicinal plants found mainly on coastlines have been eroded, thus it's no longer available. I find it hard to look for the herbs I used to collect for healing so I have to go looking for the herbs on the other side of the island. The very useful and most valuable traditional herbs and plants have long disappeared' (#17 Female, Abaiang, pers. comm., 2013).*

In an interview with another lady, she mentioned some of the medicinal plants that have started to become extinct. For example, the nonu; which they use for protection from being harmed by spirits. Also, the mao, which is also not as plentiful as it was before. It heals up everything in a wounded person (Female, South Tarawa, pers. comm., 2013).

The loss of coastal medicinal plants was the only direct problem that showed a significant difference in its prevalence distribution amongst the two islands. The Pearson chi square test results show a p value of .014 (Table 4.10) which is less than 0.05 the point of significance. It indicates that the distribution for the loss of coastal medicinal

plants between the two islands is significantly different. This is because it was more perceived among Abaiang than South Tarawa participants. It could also exemplify intense coastal erosion in Abaiang, which has wiped coastal areas where these medicinal plants were thriving.

**4.4.3.5.2 Loss of cultural archives and cultural sites/ Erosion of maneaba**

Cultural archives can be directly or indirectly affected by climate change. Direct effects refer to the direct erosion of cultural sites and artifacts, especially by sea level rise. The traditional mwaneaba system has also been eroded and is no longer of high value to some villages and families, especially in South Tarawa. According to the responses, climate and environmental change has been a major contributing factor to the losses, both directly and indirectly. First, the erosion of land has directly led to the disappearance of the mwaneaba, as indicated by one respondent,

> '*Land erosion causes disappearance of sites for mwaneaba. Having no mwaneaba, a traditional meeting place for people to learn from elder's traditional knowledge*' (#21 Male, South Tarawa, pers. comm., 2013).

To others, the variations in climate have forced them to build European houses to respond to the severe changes in climate. This indirectly leads to the loss of mwaneaba houses. As stated by one respondent,

> *'Climate change has led people to resort to building strong threshold houses to suit them. As a result, the construction of a mwaneaba is no longer of high value and people have started to build using foreign and modernized material. The traditional mwaneaba where the materials for buildings are brought from the environment is no longer a priority*' (#46 Male, South Tarawa, pers. comm., 2013).

Indirectly, the mwaneaba system has been impacted upon or lost, through the loss of environmental based building resources used for the construction of mwaneaba houses (Refer to discussion 4.4.2.1.4). According to many responses, people have no choice but to switch to buying and using imported or manmade materials for the construction of the mwaneaba, such as aluminium roofing instead of the pandanus leaves thatches; and iron and steel instead of the pandanus trunk posts; and nails instead of the husk strings and so forth. One respondent said,

'*People aren't bothered to use strings these days or to use thatches when nails and aluminium roofing are available*' (#33 Male, South Tarawa, pers. comm., 2013.

An in depth interview with one of the elders stressed the implications of these transformations to the overall Kiribati culture,

'*Whenever a mwaneaba is built integrated with these manmade materials, there would also be a change in the system of things conducted inside the mwaneaba. For example, inside a modern mwaneaba, people would not bother anymore about the environmental products they were supposed to present such as the pandanus juice, pigs, and so forth but would replace it with imported foods such as corned beef, rice, and European foods* (#56 Male, South Tarawa, pers. comm., 2013).

The loss of the mwaneaba has inevitably led to the loss of traditional knowledge and skills that people have in the construction of the mwaneaba, and the loss of culture overall. Moreover, the substitution of environmental foods with processed foods in the course of a mwaneaba celebration has implications as well for the sustainability of the environment. Without these practices, people would lose their stewardship skills in protecting the environment for sustainable living.

**4.4.3.5.3 Loss of traditional knowledge and skills in fishing and farming**

Traditional methods and knowledge in fishing are no longer practiced because of the increase in sea level rise, and also changes in climate. This was perceived by many fishermen. One of the men interviewed realized it has been a concern that their skills and knowledge of fishing has been significantly affected. (Please see discussion 4.4.3.1.5 for example of traditional methods of fishing). Another man also mentioned another method which is no longer practiced.

'*We used to cut a stick and use a hook and string from the coconut trees, at night we use the dry coconut leaves to give us light to direct us. But these days we are no longer using these methods but use spears to get fish, which suits the rising sea levels'* (#33 Male, South Tarawa, pers. comm., 2013).

Another fisherman also shared his perception,

> *'Fishing skills have been readjusted to the tough currents these days. Fish movement is affected by changes in climate so they will shift around and this causes reduction in fish catch affecting our traditional fishing skills* (#33 Male, South Tarawa, pers. comm., 2013).

Farmers have also perceived that their traditional knowledge and skills on planting or farming have also been affected because of the changes in environment that has discouraged them from continuing to plant and garden. The impacts of sea level rise have killed most of these foods.

> *'Bwabwai is mostly affected because of sea level rise killing them. When tides flood the bwabwai pits, they will be killed, I cannot plant it anymore, hence skills and knowledge on planting is abandoned'* (#30 Male, Abaiang, pers. comm., 2013).

It is seen that once people abandon these cultural activities, traditional knowledge and skills are also lost with it. The loss of cultural foods and delicacies has been significant. This was in fact one of the problems that showed a significant difference in its prevalence distribution between the two islands. It was mentioned by Abaiang respondents only (see Figure 4.22)

It could be discussed that the existence of these tangible cultural assets, traditional medicinal plants, cultural archives especially the mwaneaba, and traditional fishing and farming sustains the Kiribati socio-cultural values. Unfortunately these are lost because of the direct effects of significant changes to climate which has threatened the environmental resources on which most of these practices depend for their sustainability. It affects the traditional knowledge of women in medicinal healing, and men with gardening and fishing. Climate change has amplified these losses and challenges in Kiribati. This is supported by Macchi *et* al. (2008) who claimed that the most impacted human groups by climate change are those extremely vulnerable to climate change, who are possessed and gifted with rich and practical traditional knowledge about agriculture, hunting, fishing, foraging and medicinal plants.

#### 4.4.3.6 Land Mass/Size reduction related problems (Loss and reduction of farming areas; loss of customary land)

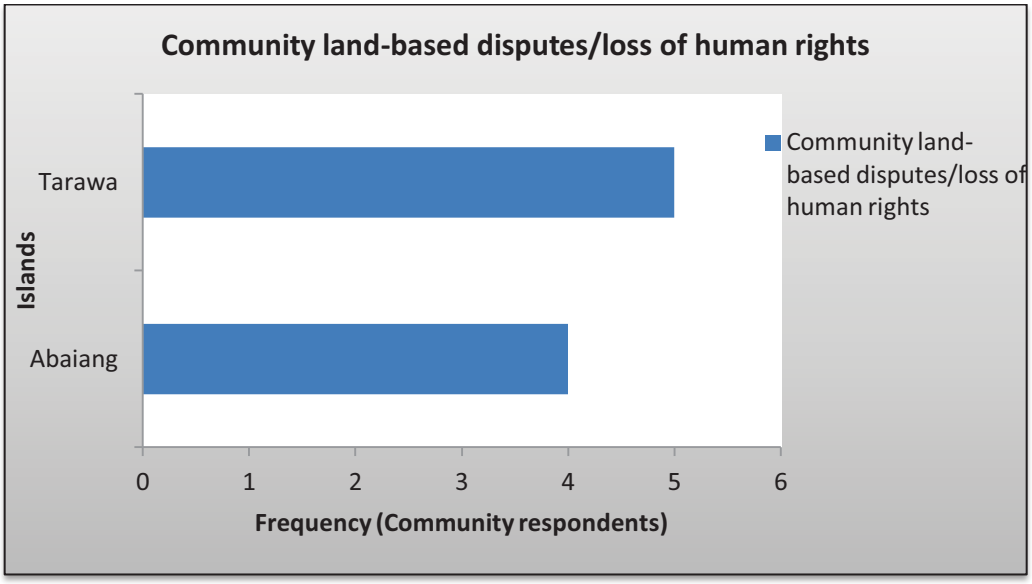



*Figure 4. 23The perceived community land ownership conflicts and impacts (n= South Tarawa, 28; Abaiang, 23).*

This group includes issues and problems related to the loss of lands. The direct land problems as demonstrated in Figure 4.13 will be discussed under this theme, such as the loss and reduction of farming areas and the loss of customary land which has indirectly affected people's behaviors. Figure 4.23 shows that most of these indirect land disputes problems were more highly perceived in South Tarawa than in Abaiang. However there is no significant difference in the prevalence distribution of these problems between the two islands (see Table 4.11).

Climate change with respect to sea level rise is perhaps the most prevalent issue influencing many land problems and concerns in Kiribati, according to the experiences of the participants. The loss of lands through coastal erosion induced by sea level rise is one of the critical signs to explain the realities of climate change affecting Kiribati communities. Direct land impacts in this study refer to the direct losses and reduction of farming areas, as well as the loss of customary land-space which people use for their habitual activities and settlements. Indirect impacts refer to the disputes and challenges that families and communities get involved in because of the reduction and losses of

these portions of land. Statistical data in Table 4.10 show there is a significant difference in the preference of the loss and reduction of farming areas, and also the loss or reduction of family customary land space between the two islands, with p values of 0.034 and 0.003 respectively. According to Figure 4.13 these problems were persistently perceived by Abaiang respondents than those in South Tarawa. It exemplifies the greater extent which Abaiang is affected by coastal erosion, which has wiped customary lands and farming areas. The Kiribati Office of the President and T'Makei Services (2012) supports this that Abaiang witnesses difficulties with agriculture production, where the existing physical features of the island has limited the land areas where farming practices can be extended to.

Coastal erosion caused by sea level rise and storm surges has removed large farming areas for families and have negatively affected their livelihoods. It has also led to the loss of cultural foods, because of the loss of original lands which people used for settlements and plantations. The uprooting of coconut trees which played an important role huge role as a buffer to avoid high tides has caused more severe erosion of customary lands. One respondent mentioned,

> *'Land is shrinking, leaving less land for us to resettle and to use for home gardens, so we have to look for other areas which are more complicated these days in Kiribati'* (#22 Female, South Tarawa, pers. comm., 2013).

The loss of lands means a loss of farming areas and customary space that people used to carry out their daily activities and even community activities and gatherings. One respondent stressed,

> *'People are struggling where they have to move from place to place within a very small land-space'* (#40 Male, Abaiang, pers. comm., 2013).

Many people have also experienced and perceived indirect impacts of these losses and reduction of lands. It has affected and transformed people's lives, initiating a lot of land border disputes between families and land owners. It has caused controversies and competition between families on who would get the most land and so forth especially in South Tarawa. The Kiribati Office of the President and T'Makei Services (2012) also

recognizes the rise in the occurrence of land occupation and boundaries in South Tarawa, however the report mentions that the rise of such land disputes are because of the lack of agreements made between families and landowners (Kiribati Office of the President and T'Makei Services 2012). This study discovers that, based on people's experiences, the root of these land disputes in South Tarawa is due to sea level rise that has affected and removed many portions of lands, leaving many families landless and homeless. One respondent mentioned,

> '*Yes, the rise in sea level took away our lands and our rights. We relocate to other places which are not ours and we have no rightful permission in it. We live in fear thinking that one day the owners will chase us away. Respect is no longer highly recommended to the landlords and owners of lands we relocate to. Relationship between neighbors is also affected'* (#50 Female, South Tarawa, pers. comm., 2013).

It is seen that these direct problems have affected people's rights, their welfare and long term security. Another respondent also said,

> *'Less land has caused land disputes between owners and families without lands. Fighting who would get the most land or so. The future use of land will all be affected. As land is affected, so is culture'* (#46 Male, South Tarawa, pers. comm., 2013).

Others have also explained how the loss of lands contributes to the changes in the way people behave.

> *'Loss of land means a loss of culture and the cause of human conflict and complexity. Thus climate change is changing cultural ways of living and leads to the complications of rebuilding people's lives and connections with other relatives'* (#55 Female, Abaiang, pers. comm., 2013).

Another respondent mentioned,

> *'Climate change has also led to starvation and poverty issues as a result of loss of lands. Once land is cleared, food security is influenced leading people to steal others food'* (#34 Male, South Tarawa, pers. comm., 2013).

Moreover, it contributes to the loss of self-respect as mentioned by some,

> *'Climate Change has caused disputes among people. People have fought for land with elders and could see that they have lost respect for elders, the respect for elders have been lost due to land problems'* (#42 Male, South Tarawa, pers. comm., 2013).

One of the elders from South Tarawa concluded his interview with sharing some of his experience,

> *'As the sea level rise, we begin to fight for our lands with our neighbors. Fighting for land here in Kiribati is one big issue, Land erosion is affecting people. In the olden days there was love and people were lending help. But nowadays if someone loses his or her land people tend to turn away and never wanted to help. We do care and we love people, but when it comes to land issue people will never intend to help. People have fought over their customary lands'* (#50 Female, South Tarawa, pers. comm., 2013).

It is clear from the findings that people consider climate change to be the root of all the land related socio-cultural problems and disputes in Kiribati. The high rate of land problems as discussed is a clear demonstration of the high vulnerability of Kiribati to sea level rise and coastal erosion. The loss of land resources has further led to humanitarian issues and problems which then acquires for careful management of land and incorporation the role of land into national policies.

### 4.4.3.7 Health and other related socio-cultural problems

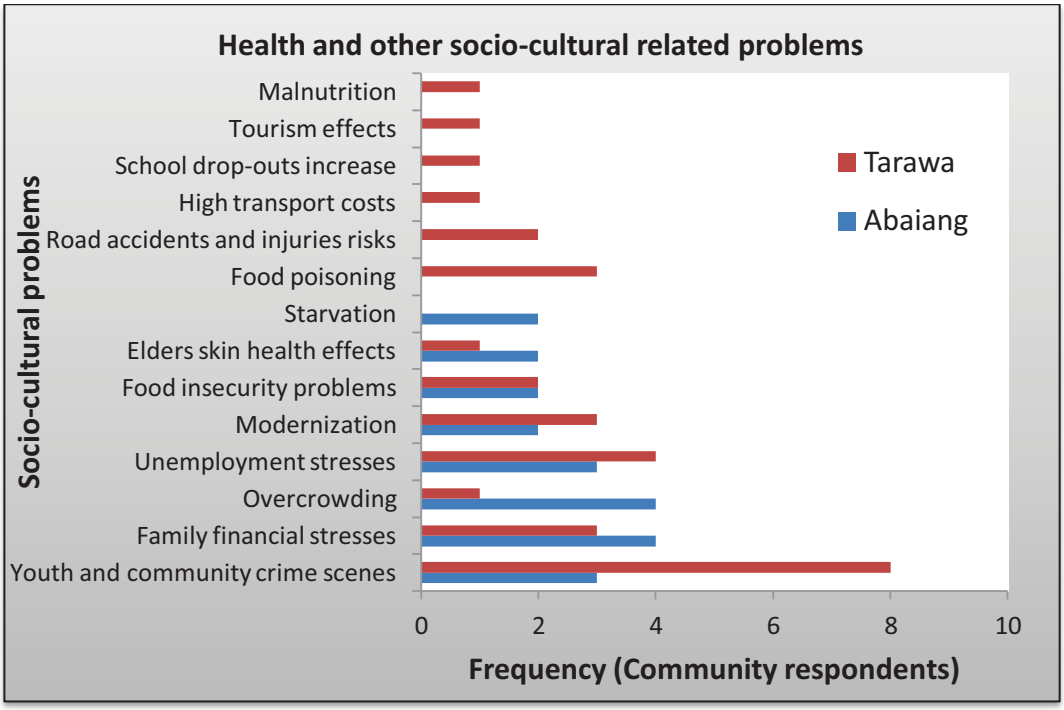



*Figure 4. 24The perceived health and other socio-cultural related impacts (n=51; South Tarawa, 28; Abaiang, 23)*

This group includes socio-cultural related problems affecting the health, welfare and security of people. A total of 14 problems emerged, and seven of these problems were commonly perceived by respondents of both islands. Starvation was the only health problem that only emerged from Abaiang, while six only emerged from South Tarawa. The highest mentioned problem in South Tarawa was the increase of community and youth crimes, followed by unemployment stresses. In Abaiang, the highest mentioned problems include overcrowding, family financial stresses and unemployment stresses as well as youth crime problems. Statistically the p values as shown in Table 4.9 were all greater than 0.05 which indicates that there were however no significant differences in the prevalence of each theme between the two islands, despite the differences observed, except for overcrowding which had a p value of 0.00 which will be discussed further in section 4.3.2.7.2

#### 4.4.3.7.1 Malnutrition/Food poisoning/Starvation/Elders skin health effects/Food Insecurity problems.

The health of local communities in both South Tarawa and Abaiang has been impoverished by their poor diets and food choices, because of the increasing impacts of climate change on their basic and subsistent local foods and livelihoods. These health problems include malnutrition, food poisoning, starvation, food insecurity and skin health problems. There were two particular reasons that emerged from this study in relation to how climate change contributes to health problems. First, the degradation of local and natural food sources by climate change and the direct effects that have led to the transformation of people's choices of food, where they have switched from local foods to imported foods, and have caused dietary sicknesses and NCDs. One respondent mentioned,

> *'We have now depended on imported foods and commodities which are costly and expensive for us and make us prone to health problems and diet sickness'* (#12 Male, South Tarawa, pers. comm., 2013).

The Kiribati National Statistics and UNDP Report (2010) states that food poverty in Kiribati does not necessarily mean being practically hungry, but that many households have poor diets with inadequate nutrition, which results in the rise of health problems, including many cases of NCDs related to poor dietary or poor level of nutrition (Kiribati National Statistics and UNDP 2010). One respondent mentioned,

> '*Less food sources have caused malnutrition thus giving rise to health problems and there would be not enough money to cater for our people. Sometimes the hospital will be overcrowded with people. People can't eat properly anymore because of food spoilage and poisoning. For example, when climate changes, water quality changes also*' (#5 Female, South Tarawa, pers. comm., 2013).

Siamomua *et* al. (2002) addressed in the Kiribati Common Country Assessment Report that NCDs are on the rise, and that infectious diseases are also common in Kiribati because the lifestyles and dietary habits have been changing rapidly, especially in South Tarawa. The second health effect commonly mentioned was skin health damage due to

extreme temperatures, especially among elders. One respondent has mentioned that many elders are at risk and feeling extreme hot temperatures, which are affecting their daily jobs. People have noticed that working under extreme hot temperatures has been very difficult these days compared to the past. This is also highlighted by Haines *et* al. (2006), that the impact of heat waves intensity on people's health is exacerbated by increases in humidity. It could be discussed that the effects of climate change on health in Kiribati is because of their low capacity to adapt and high vulnerability.

#### 4.4.3.7.2 Overcrowding

Overcrowding was the only problem of this thematic group that indicated a significant difference in its prevalence distribution between the two islands, as depicted by the p value of 0.00 which is less than 0.05 the point of reference (Table 4.11). This statistical output supports the observation that the overcrowding of people and families was a greater indirect socio-cultural problem in South Tarawa than in Abaiang. However the problem was perceived by Abaiang respondents and none from South Tarawa participants (Figure 4.24), which exemplify that Abaiang participants were well aware of the overcrowding situation in South Tarawa.

It was clear from the responses that land erosion, alongside the depletion of livelihoods, has contributed to overcrowding. Abaiang respondents were optimistic in arguing that the cause of the movement of outer island people to South Tarawa should be understood well, and requires more attention to be paid to the root of the problem. This they refer to the uninhabitable situation of their islands due to threats of climate change. The movement of people from outer islands to the mainland in search for opportunities has always been the most attended to concern, coupled with the loss and reduction of customary or habitual lands. However to Abaiang participants, the root of the overcrowding problem in South Tarawa is environmental change, rendering their homelands uninhabitable and hence causing people to move. One respondent said,

> *'Some places have shrunk which has caused those from the outer islands to migrate to reside in Tarawa. Climate change has a role to play in the overcrowding situation in Tarawa'* (#21 Male, Abaiang, pers. comm., 2013).

Migration coupled by the loss or reduction of customary lands have contributed to the overcrowding situation in South Tarawa. Many youths have moved to South Tarawa due to dreading their future and purpose in remaining in their homelands. One of them said,

> *'During droughts, our coconut trees have died which affects us financially. We earn our money from the copra but as the coconut trees died, we no longer get profit so we all migrate to Tarawa, the capital island, which is slowly being overcrowded to find opportunities there. We have left the work of our fathers' and our ancestors' (copra production) because of the impacts of climate change. Climate change sometimes is too harsh on us; it destroys us with our community and our environment'* (#25 Male, Abaiang, pers. comm., 2013).

#### 4.4.3.7.3 Family financial stresses/Unemployment stresses/ School drop outs increase/Youth and community crime sceneries/Modernization.

The Kiribati Poverty Analysis Report (2006) by the Kiribati National Statistics Office and UNDP (2010) mention that the people of Kiribati have been hard hit by the high cost of living that the country has transitioned into, with those without regular cash income earnings, and the most vulnerable, mostly affected by it (Kiribati National Statistics Office 2006 and UNDP 2010). It supports what people have perceived. The perspectives of many are that the direct impacts of climate change on natural resources and livelihoods have placed the lives of many self-employed or unemployed people and families into high stress. Such stresses highlighted include financial; and unemployment stresses, which have been identified by respondents of both islands (Figure 4.24), with the increase of school drop-outs only highlighted by South Tarawa participants. One respondent said,

> '*Due to the depletion of resources coupled with unemployment and population growth, social problems will continue to increase in the next 10 to 20 years in Kiribati*' (#42 Male, South Tarawa pers. comm., 2013).

Another respondent in justifying his response, he said,

> '*For example, if trees don't bear much fruits, coupled with unemployment, this would give birth to numerous social problems'* (#21 Male, South Tarawa. pers. comm., 2013).

Participants, especially those who are self-employed, have mentioned that the money they have earned is no longer sufficient to support all their family needs. The availability of land or space, abundance of foods such as crops and fish have dramatically reduced, which have also impoverished income earnings. One lady stressed,

> '*The money we were supposed to get out of our food marketing could no longer be earned'* (#3 Female, Abaiang, pers. comm., 2013).

The loss of lands due to direct coastal erosion has led to starvation and poverty issues in Kiribati, which in turn have increased the number of crimes. One man mentioned,

> *'Once land is cleared, food security is influenced leading people to steal others food*' (#7 Male, South Tarawa, pers. comm., 2013).

Another respondent also mentioned,

> *'Poverty, overcrowding, and the demand in resources due to shortage of production and supply, have occurred. And climate change has worsened the problem increasing socio-cultural problems'* (#10 Female, Abaiang, pers. comm., 2013).

Some have mentioned the stresses of church or community obligations that have become too demanding, and so they are no longer able to be fulfilled. One respondent said,

> *'There are times when obligations from the church or community are too demanding and we aren't able to face it'* (#47 Male, Abaiang. pers. comm., 2013).

This agrees with what Codjoe *et* al. (2013) found, that it is certain that climate change is and will continue to be burdensome, especially on to poor communities and societies with poor financial backgrounds, amplifying poverty issues and giving additional hardships and stresses to such vulnerable people. As people live and struggle to survive,

crimes have increased, such as stealing due to unemployment and lack of income earned by families. Some have experienced broken families because of the behavior of youth. The high unemployment rate has caused bad behavior among some. Other problems are the increase in school drop outs due to lowered or loss of income earned, as a result of resource depletion though, this was mentioned only from respondents of South Tarawa. This has led to the increase in crimes. One elder mentioned,

> *'They have been stealing food from others. They now can steal; there has been a lot of crime. For example, people have fought over their customary lands. Robberies are increasing and so forth'* (#13 Male, South Tarawa, pers. comm., 2013).

Unemployed and self-employed families and people, who rely mainly on the environment for commercial services, suffer the most social problems and are the troublemakers, stealing and asking for money to support themselves. Prostitution is also increasing because it's the only choice for some unemployed girls to earn money. They have resorted to drinking alcohol to have themselves sold for money, according to some elders. Others have resorted to doing mini-businesses to replace social activities to get money for their subsistence living.

#### 4.4.3.7.4 High transport costs, high risks of road accidents and injuries, social implications of poor transport infrastructure.

Several studies have produced findings on the possible effects that climate change could pose on transportation. For instance very hot days; intense rainfall; intense hurricanes; droughts; and rising sea levels, coupled with storm surges and land subsidence (US National Research Council of the National Academies 2008). The impacts are costly and far reaching in both human and economic terms, irrespective of the different locations and regions (US National Research Council of the National Academies 2008). Such information reflects the situation in Kiribati. The impacts of climate change on road infrastructure are prevalent in both islands; however it was only mentioned by respondents of South Tarawa.

Participants have perceived that due to the direct impacts of climate change on roads and infrastructure, there are many more road accidents, and the behavior of bus drivers is

changing, negatively affecting the public. According to the respondents in South Tarawa, there have been frequently observed poor road conditions due to heavy rainfall downpour at some periods, and poor soil conditions which have wrecked vehicles and caused many road accidents and injuries. They refer also to additional depression and other psychological effects pressuring them because of it. Siamomua *et* al. (2002) highlights the common occurrences of traffic accidents, especially on South Tarawa. The problems posed on roads are caused by changing rainfall patterns in South Tarawa, while in Abaiang; roads are prone to dust during periods without rain, and to flooding during rainy periods, as well as the high cost of both land and sea vessels (Kiribati Office of the President and T'Makei Services 2012). These effects on transport infrastructure have also triggered the high costs in transport. Moreover other rural respondents have stressed the hardships in finding transport to take them to their respective homes because of the loss and destruction of road infrastructure, due to coastal erosion, inundation and heavy rainfall. One of the interviews mentioned,

> *'Weather changes are affecting road infrastructure so buses would not be able to come to our village'* (#33 Male, South Tarawa, pers. comm., 2013).

These effects should be taken into account to improve transportation infrastructure and planning for Kiribati.

#### 4.4.3.7.5 Tourism effects.

The impact of climate change on Tourism was one of the indirect socio-cultural problems mentioned by only a few respondents and only from South Tarawa. They refer to how the loss of their entire islands would discourage tourists to travel to Kiribati, and hence be a great loss in the Tourism industry. One participant mentioned in her interview,

> *'We used to have places to tour visitors around but now we lost the beauty of our island, and so no more visitors who are interested to bother and come to visit Kiribati'* (#51 Female, South Tarawa, pers. comm., 2013).

Another respondent also mentioned,

> *'It is really obvious that our place has been affected as a result of rising sea level and climate change. Everywhere we go, we see it by our own two eyes, our view of Kiribati as a paradise has been lost'* (#11 Female, South Tarawa, pers. comm., 2013).

People perceive that tourists are attracted to visit Kiribati because of the sandy beaches and spectacular island landscapes. Unfortunately land erosion in Kiribati has been a great concern, thus affecting the landscapes. Such problems were mentioned in a presentation by Cavan *et* al. (nd), that climate change impacts on landscape will further affect visitors in terms of the inability of the landscape's to appeal to visitors, which ended with a request that land cover should be very important in policy discussions. Findings from this study reaffirm that climate and environmental problems will have a great impact on the Tourism industry in Kiribati. The success of any tourism industry depends highly on environmental features; unfortunately if islands of Kiribati are disappearing, then the future of the industry would be at stake. It is important however that the perceptions and concerns of people as well as tourists are taken into consideration for future development plans.

### 4.4.4 Chapter Summary Discussion

According to the findings, it is clear that climate change is a threat to Kiribati people's lives socio-culturally. The socio-cultural problems identified reflect the adverse physical impacts on their limited natural resources and livelihoods. Considering the numerous socio-cultural problems that had emerged, it is highlighted that the awareness of Kiribati people to climate change is high and reflects their high degree of vulnerability to climate change and its consequences. This thesis has assessed in detail the nature of the problems, the processes and all the emerging socio-cultural challenges faced by Kiribati, one of the most vulnerable small island nations of the world. As presented and discussed, the socio-cultural challenges on people such as the transformations, losses, and disruptions of their behaviors and lifestyles, has been exacerbated by climate change impacts on their natural resources, livelihoods, infrastructure and directly on their lives

not only as individuals, but as families and as communities. These socio-cultural challenges are important to consider when understanding and planning for Kiribati's long-term sustainability and adaptive capacity. From the interviews and discussions with most of the key informants, there was a strong emphasis on the socio-cultural shifts in Kiribati which has raised the importance of these values to be incorporated in government policy making. For instance in one of the interviews it was mentioned,

> *'Climate change is a political agenda altogether and it is very sad that the government here do not integrate socio-cultural values and specifically culture in their policy makings. Political issues are suppressing the rights of the people to speak for themselves. It should be of high priority to the government to include culture and social factors to their policy makings and planning' [....]* (#56 Male, South Tarawa, pers. comm., 2013).

These socio-cultural changes are likely to be exacerbated increasingly if they are not taken into consideration and excluded from national policy making. These socio-cultural changes and challenges should be deeply looked into in terms of community adaptive capacity as the sustainability of values and practices is what matters most to Kiribati people.

# 5.0 EXPLORATION OF RELOCATION AND ITS SOCIO-CULTURAL IMPACTS WITH REFERENCE TO FIJI.

*'Loss of land means a loss of culture and the cause of human conflict and complexity. Thus climate change is changing cultural ways of living which leads to the complications of rebuilding people's lives and connections with other relatives'*

(Female, Abaiang, pers. comm., 2013)

## 5.1 Overview

This chapter presents locals (residing in Kiribati) perceptions of relocation with reference to Fiji, and its implications on socio-cultural values. In addition, the perceptions and experiences of Kiribati communities residing in Fiji are also explored, discussed and compared with the views of Kiribati locals. The participants in Fiji were Kiribati people in general living and few students studying in the University of the South Pacific. Exploring relocation strategies are imperative for countries such as Kiribati who are on the frontline of climate change impacts. This section aims to discover and collect preliminary information on grassroots perceptions from Kiribati grassroots with regards to relocation and its implications on their socio-cultural ways of living in the long term. Kiribati will be more impacted in the future as scientists have projected with high degree of confidence the future changes in climate that will subsequently threaten and compromise their essential livelihoods, which are their only foundation for survival. It is of high confidence that these projected changes will render the atolls of Kiribati uninhabitable and inhospitable; making it likely there will be the need for alternatives to adapt, such as relocation. This study voices out some of the unheard but important needs and concerns and perceptions of vulnerable local communities of South Tarawa and Abaiang. As mentioned in the introduction chapter, if worst case scenarios occur, when the situation in Kiribati is no longer favorable and relocation seems to be the only solution to opt for, it would be of great advantage that policies and consensus on mobility concerns and environmental refugees agendas are already in place to avoid unforeseen and perceived consequences between relocated and host countries, and to protect rights and security of future relocated communities. Data gives insights for policy makers to guide their decisions on climate-induced mobility issues and also to prepare for future environmental or climate refugees, relocated communities, as well as to prepare host countries such as Fiji. A comparison between the views of Abaiang and South Tarawa communities on relocation is presented and discussed.

## 5.2 Relocation approval and dimensions through the lens of the Abaiang and South Tarawa communities, Kiribati.

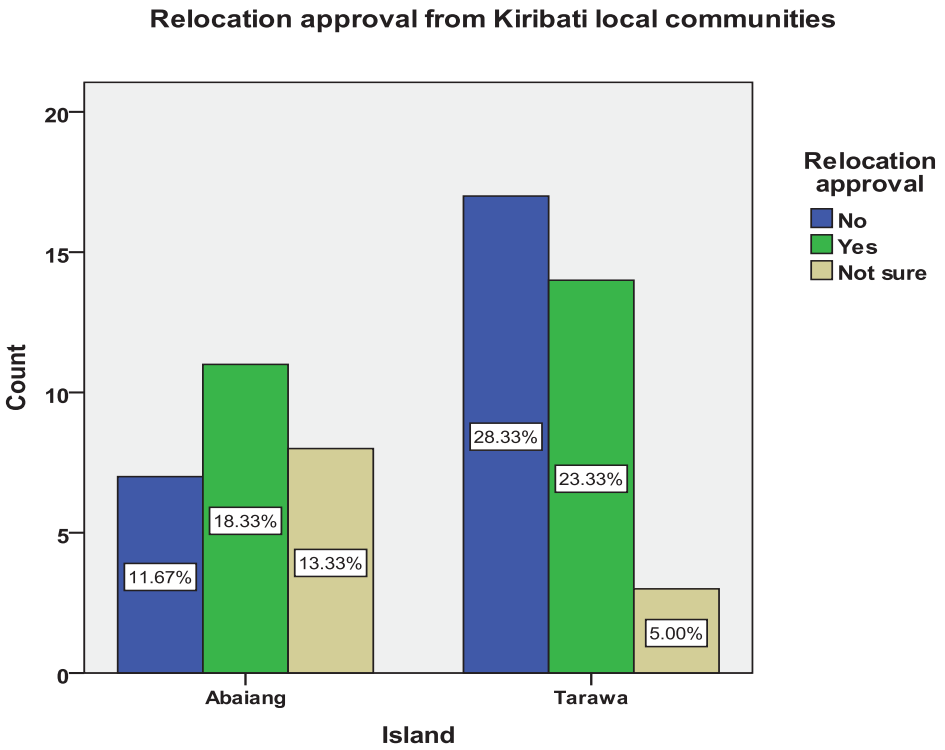



*Figure 5.1 Relocation approval statuses/ranking of South Tarawa and Abaiang communities (n=60)*

Figure 5.1 shows the outcomes of the respondents' relocation approval status. In South Tarawa, there is a high percentage of those who disagreed to relocation (28.33%) compared to those who approved (23.33%). Only 5% of the participants were not sure with their decisions. In contrast, in Abaiang, the percentage of those who have agreed to relocation is greater; 18.33% than those who disagreed to it; 11.67%, 13.33% of the respondents were unsure. Table 5.1 shows the output of the Mann Whitney U test.

*Table 5.1 Mann Whitney U Test results for the rankings on the relocation approval between Abaiang and South Tarawa.*

| | **Relocation approval** |
|---|---|
| Mann-Whitney U | 300.500 |
| Wilcoxon W | 895.500 |
| Z | -2.279 |
| Asymp. Sig. (2-tailed) | **.023** |

a. Grouping Variable: Island

The p value of .023 is less than 0.05 the point of significance, which indicates the two islands are systematically different in the views about relocation. As observed in Figure 5.1, South Tarawa has the highest percentage for both those who have approved and disapproved relocation. Abaiang on the other hand has a higher percentage of who were unsure. Another conclusion is that Abaiang has the greatest difference in percentages between those who disapproved of relocation compared to those who approved. Table 5.2 outlines the differences and similarities between the participants of the two islands justifications of their perceptions and views on the relocation strategy.

*Table 5.2 Summary of the differences and similarities in the justifications behind relocation approval status between Abaiang and South Tarawa communities.*

| Relocation Approval | Differences | Similarities |
|---|---|---|
| YES | ➢ Exploration and luxurious purposes<br>➢ "Go with the flow"/Move when everybody else moves<br>***Emerged from Abaiang** | ➢ For the sake of younger generations<br>➢ Fear of the pre-existing climatic and environmental changes and effects<br>➢ Provision of better careers, education opportunities and benefits in foreign countries |

| | | |
|---|---|---|
| NO | ➢ Fear and awareness of extreme events affecting host countries e.g.) cyclones in Fiji<br>➢ General understanding that climate change is a global crisis not confined to Kiribati<br>➢ Skepticism: Kiribati will not submerge given the reasons that it is an offense to God's good will and because of Kiribati's geographical and geological situation.<br>➢ Ignorance: Wait for the right conditional time to move<br>***Emerged from South Tarawa.** | ➢ Strong and firm connections and faith in God supported with biblical beliefs and evidences of the 'apocalyptic signs of the end of the world'<br>➢ Doubting local political decisions on which people to move first/lack of public awareness on relocation strategies and matters<br>➢ Firm connection to homeland for the protection of culture and identity<br>➢ Doubting the unforeseen nature of political and social agendas in host countries |

Table 5.2 demonstrates the different dimensions that the respondents of both islands viewed the relocation strategy with reference to Fiji. Altogether, for those who were not supportive of the relocation strategy, 8 themes of justifications emerged to support their disagreement; but 4 of these themes emerged from South Tarawa respondents only and were not shared by Abaiang.

Prior to the differences and similarities highlighted from Table 5.2, two conclusions can be made. First, the general interpretation is that the local communities in South Tarawa and Abaiang are well aware of the seriousness of climate change, and how it will lead to relocation, shown by their diverse responses and perceptions. However, there are a few people who were unsure of their decisions, hindered by their lack of awareness with relocation matters, which was obvious in Abaiang where the percentage of those who were unsure was much higher than in South Tarawa.

Second, a more specific difference observed was that the respondents from South Tarawa seemed to not agree to relocation from a much broader and global scale, while those interviewed in Abaiang Island viewed it from a narrow and personal scale, hindered by their low level of awareness of relocation matters and climate change overall. For instance, South Tarawa communities and individuals were more aware, not

only of the benefits but also of the implications of relocation in the long term, while Abaiang respondents were more sensitive to the benefits of relocation in the short term only, and were unable to look beyond the benefits of relocation.

In a nutshell, the communities of South Tarawa and Abaiang similarly view the benefits or the need for relocation based on social, financial, emotional, and environmental factors. Distinctively, Abaiang respondents further viewed relocation as an opportunity to take advantage of in terms of exploration, opportunities for luxury, and the perception to 'go with the flow' when everybody else moves. A significant trend is observed in the different dimensions of why relocation is not supported between the two islands. South Tarawa respondents drew their justifications from a much more inclusive and global point of view. Similarly though, both islands do not agree to relocation, based on spiritual, political, cultural and social reasons as summarized in Table 5.2.

### 5.3 Kiribati local communities' justifications and perceptions on Fiji as the most preferable relocation destination.

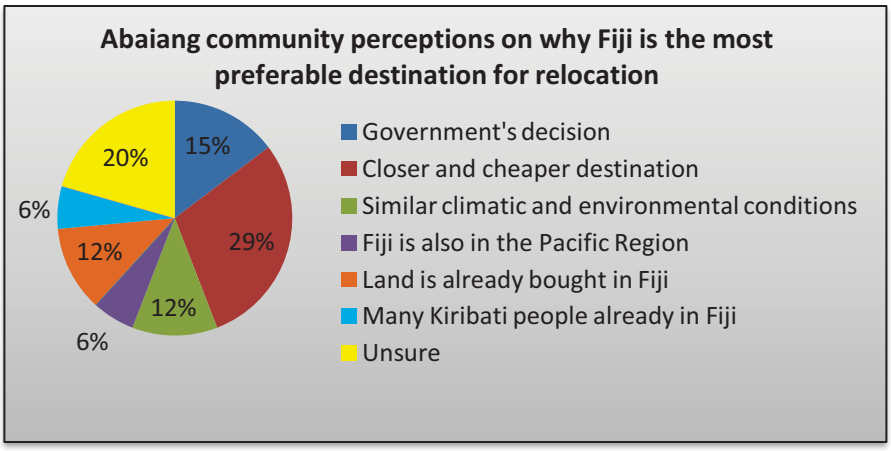



*Figure 5.2 Abaiang community perceptions of Fiji as the suitable host country for relocation*

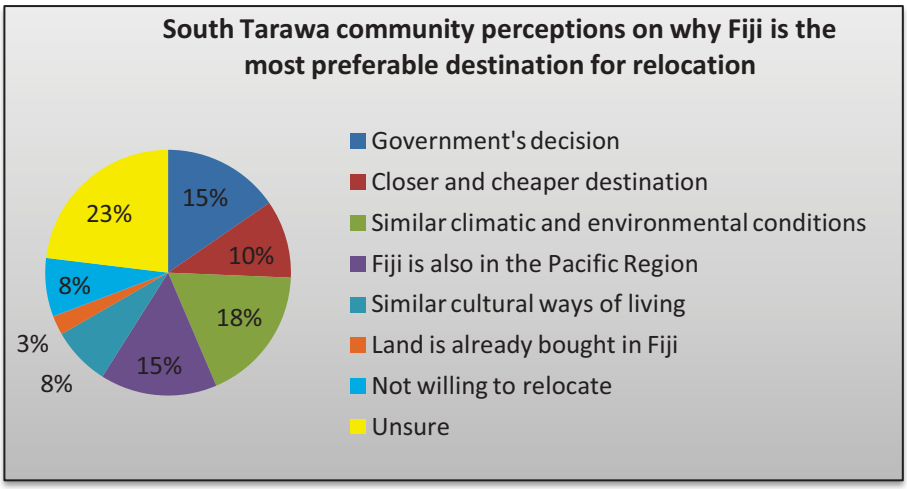



*Figure 5.3 South Tarawa community perceptions of Fiji as the suitable host country for relocation.*

Figures 5.2 and 5.3 shows the breakdown of the different perceptions of Abaiang and South Tarawa communities on why Fiji is the most preferable host country for relocation, as opposed to others such as Australia and New Zealand. In Abaiang, the most perceived reason was that Fiji is closer to Kiribati and a cheaper destination. In South Tarawa, the highest perceived was that Fiji is within the South Pacific region. People of both islands have perceived similarly that Fiji is preferable because of the government's decision, and is not their preferences; Fiji is a closer and a cheaper destination; Fiji has similar climatic and environmental conditions to Kiribati; and because of the perception and awareness that land was already bought in Fiji for food security purposes. Abaiang respondents also indicated that Fiji is where most of the Kiribati people are already residing, for instance in Rabi and Banaba. In South Tarawa, there were people who opposed relocation and thus did not respond; there were also a number of people who were not sure, so they were reluctant to give any reasons as observed in Figures 5.2 and 5.3.

In reviewing the perceptions, it could be discussed that people's preferences for Fiji to be the first choice for relocation is driven by a combination of climatic, environmental, socio-cultural and geographical factors that contributes to their socio-cultural welfare and security in the long term. It highlights one general conclusion; that Kiribati people value their cultures; traditions and connections to their homelands highly, and prefer Fiji

to be the first choice as the best way to stay connected to their homeland and their cultures. One respondent said,

> *'Fiji is a Pacific country; we will still feel connected and would be able to survive in Fiji'* (#10 Female, South Tarawa, pers. comm., 2013).

For climate and environment wise reasons, people prefer Fiji because of the similar climatic and environmental conditions into some extent. One respondent mentioned,

> *'Fiji is one Pacific island with coconuts, breadfruit and it's a closer destination. It has a slight humid temperature but not as cold as New Zealand and Australia'* (#20 Male, Abaiang, pers. comm., 2013).

Another respondent similarly said,

> '*Fiji is larger in size, it is also a Pacific island country and the weather is not as cold as in New Zealand and Australia* (#47 Male, Abaiang, pers. comm., 2013).

There were also some complications, noticed due to the lack of public awareness of the main purpose of the relocation plan to Fiji by the government. This explains the reason why some people referred to the government's decision to choose Fiji. There was confusion about why the land was bought in Fiji, which was apparently for food security purposes. Unfortunately it was beyond the objective of this study to look at this relocation plan. One respondent replied,

> *'This is the government's sole decision and I'm not aware of it'* (#3 Female, Abaiang, pers. comm., 2013).

Others were concerned that this was the government's decision and the people's choice or preference. As one respondent stressed,

> *'This is the government's choice and not the people's* (#2 Female, South Tarawa, pers. comm., 2013).

> *'The bilateral ties to Fiji decided this, not me'* was another one of the responses (#21 Male, Abaiang, pers. comm., 2013).

It was learned that the respondents were only aware of the land that was already purchased in Fiji and that what the purpose of the land purchased brought confusion to these respondents. The majority of the respondents had the impression that the land was for the relocation of Kiribati communities. There was very little awareness of the reason and how the land will be utilized. This was indicated from people's responses, which were restricted to the fact that the land is already bought in Fiji without any conclusion made on why the land was bought. Exploring relocation in this study served as an awareness raising initiative, and was advanced for the communities, especially those who were not aware and even those who had little understanding of the government's relocation plan at the time. Another conclusion drawn is that some South Tarawa respondents are more conservative and conscious of their decisions to relocate. They were very articulate and firm with their perceptions. One respondent mentioned,

> *'This is not my choice and I will never have plans to leave my country. I wouldn't trade wealth, New Zealand and Australia in exchange for my country'* (#50 Female, South Tarawa, pers. comm., 2013).

## 5.4 Perceptions on the socio-cultural implications of relocation with reference to Fiji.

*Table 5.3 A comparative summary of the perceived and observed socio-cultural challenges between Kiribati residents in Fiji and Kiribati locals.*

| **Perceptions of Kiribati local communities on socio-cultural challenges of relocation with reference to Fiji.** | **Perceived and experienced socio-cultural challenges by Kiribati residents in Fiji.** |
|---|---|
| Loss of traditional entertainment and customs/traditional dances | ✓ Change of food choices/Heavy reliance on processed or imported foods |
| ✓ Social influences on younger generations | ✓ Unemployment complexities/ Financial problems |
| Overcrowding pressures | Normal domestic chores no longer practiced; gardening, fishing, cooking, weaving |

| | |
|---|---|
| ✓ Fear of crimes and violence | ✓ Loss of traditional knowledge and skills. |
| ✓ Distant connections with the environments (land and ocean)/less and complications in accessibility to environment and resources | ✓ Loss of social relationships and extended family living/Loss of community living. |
| Loss of traditional medicinal herbs and knowledge | Increase of ecological footprints without any more investments in sustainable development and living for example, high consumptions, high use of energy. |
| Loss of identity/sense of belonging | ✓ Living in isolation and fear to use resources freely or loss of human rights to resources. |
| ✓ Monetary and unemployment problems/poverty concerns | ✓ Language barrier and losses |
| Changes linked to island type | ✓ Modernized influences and lifestyles |
| Loss of traditional land-based rituals | ✓ Loss of loving and sharing of resources |
| ✓ Difficulties in adjustments to new environments and climate | ✓ Insecurity because of crimes and violence |
| ✓ Racism and discrimination | ✓ Less accessibility to environmental resources such as the ocean/distant relationships with environment. |
| Loss of unique hospitable welcoming practices | ✓ Loss of Mwaneaba system and living |
| ✓ Loss of community love, sharing, respect and unity | ✓ Discrimination |
| ✓ Loss of freedom and living inferior of others | ✓ Youth social peer pressure influences |
| ✓ Loss of traditional knowledge and skills (fishing and farming) | High risks of health problems, NCDs |
| ✓ Adoption of foreign lifestyles and cultures | ✓ Climatic differences |
| ✓ Loss of Mwaneaba system and living | |
| ✓ Loss of language | |
| ✓ Dependence on foreign foods/loss of cultural natural foods | |

Table 5.3 highlights and compares the socio-cultural challenges perceived by local communities of Kiribati with the challenges observed by Kiribati people residing in Fiji. It demonstrates that most of the socio-cultural challenges already observed by Kiribati communities residing in Fiji coincide with what local people have perceived which are indicated by the (ticks). One of the participants mentioned,

> *'The way of life in Fiji is totally different, we have to adapt and adjust ourselves to these socio-cultural changes otherwise we would not be able to survive'* (#3 Female, Suva, pers. comm., 2013).

### 5.4.1 Cultural lifestyle changes (Foreign culture adoption and modernization influences)

This covers change of food choices and heavy reliance on foreign foods, loss of language and language barrier, adoption of foreign or modernized lifestyles and cultures, social influences on younger generations.

Modernization and the adoption of foreign culture was one of the socio-cultural problems highlighted by residents in Fiji, but which in fact was also highly perceived by many local people. Most of the respondents, both the locals and in Fiji, agreed to the notion that the influences in Fiji will be greater and rapid because of the stronger influences of Western ways, which will transform the lifestyles and behaviors of Kiribati communities. Others have raised that Fiji, being a multi-cultural country with diverse ethnic groups; will also contribute to the influences that Kiribati people will encounter. One of these respondents mentioned,

> *'There will be culture shock, influences and changes in lifestyles, due to multi-cultural and racial influences'* (#2 Male, South Tarawa, pers. comm., 2013).

Some have perceived that relocation will lead to 'identity dilution'. Through intermarriage, the Kiribati culture is perceived to be slowly diluting. Residents in Fiji have identified the erosion of their Kiribati socio-cultural integrity and values that they were brought up in: from the food they eat, to the clothes they wear and the houses they live, the language they speak, the social entertainments they are enthusiastic about and

the changes in their behaviors. One respondent commented about the influences she has observed,

> *'The modern influences are very huge, causing huge problems from simple to complex. There is no more loving and sharing'* (#4 Female, Suva, pers. comm., 2013).

The switch to modernized foods was one of the most highly perceived socio-cultural problems. All the respondents in Fiji have mentioned the substitution of their unique cultural or local foods such as fish, bwabwai or swamp taro, pandanus, toddy and copra with processed and modernized foods bought from the shops, such as tin foods, rice, flour, potatoes, meat and so forth. One participant shared her experience,

> *'In Kiribati, we eat fish and bwabwai or swamp taro and sweet pandanus fruits every day, and in Fiji, fish is hard to get so we have to buy. It's hardly eaten and we have switched to buying tinned fish from the shops'* (#7 Female, Suva, pers. comm., 2013).

Fish are amongst the main foods in a typical Kiribati diet which are consumed on a daily basis but are barely consumed in Fiji because of various reasons. Some have mentioned the difficulties in accessing resources, such as the ocean to get fish, because of distance constraints from the ocean and also because of its high cost in Fiji. One man stressed,

> '*Back at home, fishing is easier; you can just walk from home to the ocean or reef to get fish. Here in Fiji, it seems hard because the reef is too distant from where we are staying. The only choice is to buy it but it is very expensive'* (#2 Male, Kiribati resident, pers. comm., 2013).

Another respondent also said,

> *'Fish our main source of food or diets is hard to get, in Kiribati, people sell fish on the roads, it's easy to access it and it's being sold at a cheaper price, whereas in Fiji, it's very expensive. This is why people have to bring fish with them from home to Fiji'* (#8 Female USP student, pers. comm., 2013).

Moreover, the toddy, a cultural drink that is very nutritious to Kiribati people, cannot be cut or produced and consumed as well in Fiji, due to climatic differences, where the

climate in Fiji is thought to be cooler than Kiribati. People have also compared the taste of their Kiribati foods with the ones in Fiji. For example fish in Fiji was perceived to be tasteless compared to the ones found at home. Pandanus fruits on the other hand are sour compared to the ones at home, according to the respondents. As a result most people are starting to dread the loss of their cultural foods in the long run.

Another socio-cultural change identified was the loss of the Kiribati language due to language barriers and differences. One of the youths mentioned how she misses communicating in her own language. She was forced to because of her relations with her other foreign friends. To others, it was complicated to connect with foreign people due to poor English communication skills. One participant mentioned,

> *'I feel embarrassed, people would not respect us the way we talk; they laugh at us and discriminate us, I feel left out'* (#8 Female, Suva resident, pers. comm., 2013).

Many of the local people have also highlighted the loss of the Kiribati language in the long term. One respondent mentioned based on her experience,

> *'Our culture will be affected in terms of language due to exposure to other cultures and adopting it, for example, Rabi people were originated from Kiribati, but now they are speaking a different Kiribati language'* (#4 Female, South Tarawa, pers. comm., 2013).

Another respondent also mentioned,

> *'Language barrier will be a socio-cultural problem that will cause people to feel shy and mute'* (#8 Female, South Tarawa, pers. comm., 2013).

Lastly, youth social problems have been alarming to some in Fiji,

> *'There have been so many influences. Kiribati youths have been clubbing and partying like never before'* (#8 Female, Suva resident, pers. comm., 2013).

This was also captured in the perceptions of locals where many of the responses claimed that younger generations will be the most affected by western influences and will lose respect and loyalty to elders and their parents.

### 5.4.2 Psychological-related problems and effects

These include: Living inferior to others, living in isolation and fear to use resources freely or loss of human rights to environmental resources (land and ocean), racism and discrimination, difficulties in adjustments to new environments and climate, less and complications in accessibility to environment and resources, less accessibility to environmental resources such as the ocean, distant relationships with environment, climate differences.

Many participants in Fiji have raised the psychological challenges affecting their welfare and security, due to reasons such as, the difficulties in accessing environmental resources particularly the ocean, land, coconuts, fish and so forth; the increase in violence and crimes; discrimination and racism; and the changes or differences in the environment and climate, which most have stressed the difficulties in trying to adjust to it. People have shared concerns and perceptions about the difficulties in utilizing the environment for their subsistent needs. The ocean for instance in Kiribati is an open, common and free resource for people to do fishing according to many participants. However in Fiji, many participants have stressed complications in finding ways to get access to the ocean. Locals were also aware of these problems. An interview with some men-focus groups mentioned,

> '*The Ocean wouldn't be open for us as we will feel restricted to use resources. Over here in the village, the ocean is open, our culture is that we know the best fishing methods, we know which fish to fish, we know what plant to grow and what's the right time to grow and the good thing, we have the freedom to use these resources'* (Men focus group, Abaiang, pers. comm., 2013).

These perceptions are highlighted as well by Campbell (2010), who stressed the need to consider relocated communities to have free access to resources such as land, rivers and mainly the ocean.

Some were concerned about the loss of sense of belonging as a consequence, as captured in one of the interviews,

> *'We will feel that we don't belong anywhere, we will lose our sense of belonging because of the restrictive use of resources which are in fact free and simple in Kiribati'* (#21 Male, South Tarawa, pers. comm., 2013).

Others have indicated the need for land to grow their own coconuts to avoid spending money to buy them from the market. One woman responded,

> *'We need land for coconuts so we need to buy. The only choice is to buy yet it is very expensive'* (#4 Female, Suva, pers. comm., 2013).

To others, it is a matter of human rights where resources should be used freely, but in fact many are hampered by their fear of other ethnic groups. One respondent mentioned,

> *'We live in isolation and fear to ask things from other ethnic groups. We miss living and enjoying the coastal breeze in Kiribati'* (#2 Male, Suva resident, pers. comm., 2013).

A local also mentioned,

> '*If we ever get to move to Fiji, memories will still live on about Kiribati, we will always feel connected to it, the spirits of sharing and loving. Our freedom in getting things from the environment without anyone's interference will be no more'* (#38 Female, South Tarawa, pers. comm., 2013).

Another local also said,

> *'I better stay and die in my homeland rather than dying somewhere else, it will be a different weather, different lifestyles and foods. We will feel sad because the familiar ways of living and the environment that we are connected to will be no more'* (#3 Female, Abaiang, pers. comm., 2013).

Others have indicated the feeling of fear and insecurity because of crimes and violence which has discouraged them from connecting and interacting with other ethnic groups. In this case, some Kiribati people are living in isolation for the sake of their safety and security.

One respondent mentioned,

> *'I feel secure at home to walk around at night but in Fiji, I feel scared. We live in open houses (mwaneaba), not in closed houses as seen here. I feel insecure because of the many crimes here in Fiji'* (#2 Male, Suva resident, pers. comm., 2013).

Some have also mentioned the difficulties to get along with foreign people in Fiji,

> *'It's hard to connect and get along with foreign people in Fiji. We live in fear and isolation, not knowing what to expect'* (#4 Female, Suva, pers. comm., 2013).

Some Kiribati locals have also raised the issue of crimes that will psychologically affect their freedom and rights. One respondent mentioned,

> *'We will have no rights in Fiji to do our own normal routines because there are too many crimes there. Here we are free to walk at night, free to plant, fish; the ocean is open up for everyone and anyone. In Fiji, there are many people using the ocean, there is a possibility for greater problems to arise than the ones experienced here'* (#28 Female, Abaiang, pers. comm., 2013).

The act of discrimination and racism were also perceived by many to be one of the concerns that had to be addressed. The perceptions of local people reflected most of what participants in Fiji have stressed about the act of discrimination and oppression by other ethnic groups. For example, one concerned local mentioned,

> *'Our legal rights will not be freely recognized. The way people will live in Fiji, will not be as free as we do in Kiribati. People will see us as imposters'* (#3 Female, Abaiang, pers. comm., 2013).

Another local also mentioned,

> '*People will discriminate and gossip about us being lazy. We want to feel wanted and recognized as people who are in need, we will feel sad and worry moving to a place that we do not know'* (#21 Male, South Tarawa, pers. comm., 2013).

Others have also dreaded the difference in environments and climate, especially the locals. One mentioned,

*'I am afraid that we are moving from a cyclone-free to a cyclone- headache country. Kiribati has higher humidity whereas Fiji there is cold water and less tasty fish. I feel connected standing on the coast overlooking the sea and enjoying the breeze and growing our own crops to rely on'* (#25 Male, South Tarawa, pers. comm., 2013).

Another response was,

*'The climate of Kiribati better suits the people and their ways of living. Not sure whether Fiji is safe because they are also affected by cyclones and flooding, which are worse than in Kiribati'* (#34 Male, Abaiang, pers. comm., 2013).

### 5.4.3 Loss of cultural assets (tangible and intangible cultural assets)

Kiribati people have strong connections with their culture and socio-cultural ways and practices. Many have perceived that relocation to other places will potentially affect their socio-cultural integrity in the long term**.** One of the elders in his interview mentioned,

'*Relocation is literally deleting Kiribati from the globe or earth. If this is the case, culture, identity, the flag and the traditions will all be vanished with it'* (#15 Male, Abaiang, pers. comm., 2013).

The loss of both tangible and intangible cultural assets was one of the main socio-cultural problems perceived from respondents in Fiji, and were also emphasized by many locals. Many of the cultural activities such as fishing, farming, cooking and weaving have been neglected; the absence of the maneaba and loss of cultural foods were all problems identified to be influenced by factors such as the changes or differences in climate and environment. In fact, all of these cultural activities are closely knitted to the environment. Unfortunately the restriction or the decreased accessibility to natural resources, mainly the ocean and land, has forced people to abandon these cultural activities in Fiji.

Many in Fiji, such as those at home, have perceived that the ignorance of these cultural activities will lead to the eventual loss of their traditional knowledge and skills, and

hence their intangible culture in the long term. In fact these important cultural activities identify who they are and their roles as Kiribati people and communities. In response, people have raised the need to have free access to bigger lands and the ocean to be able to continue activities such as gardening and fishing. Participants in Fiji have mentioned how they have missed engaging in these cultural activities, such as the Kiribati style of cooking, preparing, and preservation methods to store foods; their traditional ways of farming and fishing, weaving, handicraft making and building maneaba. One elderly lady mentioned,

> *'I miss working and weaving at home with other women, I can't do it here in Fiji*' (#4 Female, Suva, pers. comm., 2013).

To some fishermen, distance constraints, especially to and from the ocean, have been a barrier. Not only has it restricted them from consuming fish, but was also perceived to be a leading cause to the loss of important traditional fishing skills. One respondent shared,

> *'The reef is too distant from where we stay, so the only choice to get fish is to buy but it's expensive. In this case, we hardly practice fishing, and our fishing skills will be lost*' (#2 Male, Suva, pers. comm., 2013).

Locals have also showed concerns about the same problem. One local fisherman in his interview said,

> '*There will a big difference especially with fishing, we understand that Fiji is bigger and some people live far from the coastline, this will make us miss fishing skills* […]' (#40 Male, Abaiang, pers. comm., 2013).

One participant also shared,

> '*We miss doing home chores, the Kiribati style of cooking, preparing foods and farming. Here in Fiji, we feel relaxed and this has led to the loss of skills in cooking'* (#3 Female, Suva, pers. comm., 2013).

Others have stressed the possible loss of their traditional knowledge and skills in cutting toddy, the Kiribati cultural drink, because of climate differences in Fiji which was also perceived by many locals. To elders, climatic differences especially changes in temperature has left them with no choice but to refrain from doing such activities. They have realized the complications to do work such as planting and farming because of the changes in climate directly affecting their health. One lady responded,

> *'We are getting fatter and there is a high risk of getting diseases because we are not working the way we used to. We do planting, but now I get tired and lazy easily because of how my health has been affected by the changing environment here'* (#4 Female, Suva, pers. comm., 2013).

The loss or absence of the mwaneaba, unique to Kiribati, was one of the challenges perceived that will contribute to the loss of traditional knowledge and skills, such as fishermen navigation skills in voyaging applied in building the mwaneaba. The mwaneaba as known is the meeting place that serves to bring Kiribati communities together to socialize and strengthen their relationships. It keeps communities united; it allows people to share and associate with others. No one is left out or ignored because everybody will be on the same ground regardless of age, status, gender and so forth. In Fiji, people perceive that the absence of a mwaneaba has impacted their socio-cultural integrity and practices to function as communities. One of the respondents mentioned,

> *'We miss the mwaneaba at home; it's our meeting place at home where everyone meets and enjoys each other's company'* (#3 Female, Suva, pers. comm., 2013).

Some interviewees, both locals and those in Fiji, have mentioned factors that will restrict them from building mwaneaba houses in foreign places. For example the insufficient supply of environmental resources for the construction of a mwaneaba,

> '*To build a mwaneaba here is hard, we need resources and plants for building our mwaneaba, yet there are none and not many'* (#2 Male, Suva, pers. comm., 2013).

Some locals however had different views, arguing that if by chance a mwaneaba is still built in Fiji, it will be most likely that the building materials will be transitioned to man-made resources.

One respondent mentioned,

> '*The mwaneaba system will be lost and disappear because moving into another place will encourage the use of modernized building resources which will set grounds for the loss of another important aspect of our culture'* (#7 Male, South Tarawa, pers. comm., 2013).

Another respondent on the other hand, because of his awareness of the extreme climate changes that Fiji is prone to, justifies the mwaneaba being built in Fiji using foreign or man-made resources as it will help people adapt to extreme events by building stable foundation mwaneaba,

> *'Relocation to Fiji will see our buildings or the mwaneaba built on y-posts instead of coral stones due to extreme climate changes in Fiji which is prone to cyclones'* (#56 Male, South Tarawa, pers. comm., 2013).

In all the responses, it implies the essence of the environment in terms of the ocean and land to the Kiribati culture and socio-cultural values; therefore it is very important that the concerns the communities have addressed, gets more attention to guide relocation strategies in the future. One of the participants in Fiji mentioned,

> '*Kiribati culture is about love and sharing, living in peace and harmony, there is a warm and close connection with the environment. Here in Fiji, we don't have any more connections with our environments, but are married to western influences. We miss living with the environment, we don't look at the environment anymore and in this way we are increasing our ecological footprints here, no more sustainable living, since we are abusing and misusing resources such as water'* (#4 Female, Kiribati housewife, pers. comm., 2013).

There were other challenges perceived by locals which were not reflected in the interviews of the participants in Fiji. These are the loss of traditional entertainment and performing arts; the loss of traditional medicinal knowledge due to the unavailability, or the absence of medicinal plants in Fiji; changes linked to island type, and the loss of traditional land-based rituals. The perception of many is that some of the cultural

practices are restricted to certain areas or lands in Kiribati, and so are forbidden to be applied to any foreign land. One of the respondents mentioned,

> '*Traditional knowledge and skills will be lost because there are certain locations in Kiribati related to particular traditional rituals, and moving to a new place will deprive indigenous Kiribati people from such practices'* (#11 Female, South Tarawa, pers. comm., 2013).

This was supported by another respondent,

> '*We have certain areas that Kiribati cultures can be solely practiced in and would not be able to be practiced in Fiji'* (#18 Male, Abaiang, pers. comm., 2013).

The connections to the atoll life was one factor mentioned by another respondent,

> *'The Kiribati culture is related to low lying lands where Fiji culture relates to the high lands people live in'* (#24 Male, South Tarawa, pers. comm., 2013).

### 5.4.4 Community living or cohesion losses

This includes the loss of community love, sharing, respect and unity, loss of social relationships and extended family living, loss of community living and structure.

The absence of community and extended family living were also indicated from both Kiribati locals and those in Fiji. Community living is one of the integral socio-cultural practices of the Kiribati culture, which promotes the act of sharing and loving of resources and gifts between families. However, according to responses from Fiji participants, the role and function of a community is hard to maintain in Fiji. This is due to factors such as the absence of the mwaneaba, the meeting place that functions to gather people and the perception that their freedom and rights to perform such gatherings are hindered. As a result, families are living in isolation from other families, taking care of their own affairs and the spirit of sharing and loving has been impractically shown. It has further impacted people's relationships and connections. One respondent in Fiji mentioned,

> '*We have also missed our social relationships with friends and families. We share and live in extended families in Kiribati'* (#4 Female, Suva, pers. comm., 2013).

It was also captured from the interviews of the local people,

'*Culture is not what we want to lose, we love, socialize, fooling others all in the mwaneaba. We love to keep our culture, to laugh together. We think that we will be the poorest; we have to speak in English to communicate'* (Men focus-group, Abaiang, pers. comm., 2013).

### 5.4.5 Difficulties in finding employments and financial problems and pressures.

One of the struggles perceived by Kiribati residents in Fiji was the lack of opportunities for employment. One of the participants who was still in search for employment mentioned,

'*It's very hard to find an employment here and that is all'* (#2 Male, Suva, pers. comm., 2013).

Another also said,

'*In Kiribati, people do not need money to survive but without employment here in Fiji we won't get money'* (#1 Female, Suva pers. comm., 2013).

This fact was also highlighted by many Kiribati locals in their interviews. One of them was an unemployed man who yet finds himself living at peace in Kiribati. In his interview, he shared,

*'I am an unemployed resident. I prefer staying in Kiribati than going to other places doing nothing. From understanding, money is the greatest need to survive in countries overseas like Fiji. In Kiribati, people can live as long as it takes without money; in Fiji when people are unemployed they become poor and become beggars. I am afraid that if there is an increase in the number of school drop outs and form seven leavers relocating it will be hard. It will be even harder, giving people a hard time trying to find jobs since people there are qualified, talented and skillful'* (#13 Male, South Tarawa, pers. comm., 2013).

## 5.5 In-depth interview with the Cultural Officer, Culture and Museum, Ministry of Internal and Social Affairs in Kiribati, Natan Itonga.

The relocation strategy has received a lot attention from stakeholders and communities in Kiribati, especially the concern of how it will impact on the Kiribati culture and

socio-cultural values in the long term. Itonga was one of the key informants already dreading the implications of relocation on his unique Kiribati socio-cultural values, regardless of which host country is to receive relocated communities. He argues that all relocation strategies that require Kiribati communities to move elsewhere will be a start of socio-cultural revolution, if people are not moved according to their preferences. Itonga raised two major questions; how would the government deal with land owners in Kiribati and what would happen to their lands if they are bound to relocate? Will the ones with bigger lands in Kiribati be offered the same acres of land in Fiji or elsewhere?

### 5.5.1 'Copy and Paste' movement: Cloning the environment and the Kiribati culture in host countries.

Itonga argues that all relocation policies, strategies and preparations have to be holistic and inclusive of all values that are important to communities, such as socio-cultural and spiritual values. In this regard, Itonga invented and highlighted in his interview what he called the 'Copy and Paste' concept for any relocation plan for Kiribati in the future. His argument refers to the cloning of the Kiribati culture and environment to places they will be forced to relocate to, for the sustainability and preservation of the Kiribati culture and socio-cultural values in the long term. He stated,

> *'We need to ensure that we have the same resources and the climatic factors are the same in Fiji, for example temperature, rainfall patterns, and even the ocean will be freely given to people for fishing. The environment there has to be the same as in Kiribati, and ensure that all the plants found and used here are present there too'* (Natan Itonga, South Tarawa, pers. comm., 2013).

Some of the medicinal plants he referred to include the te bunna, which is mainly used for the protection of people from black magic spells; and the te mao which is a plant useful for healing all injuries and wounds of a patient. He added,

> *'We should have our own sovereignty, if they want us to move then move together. People also have to be aware of the features of land they will be moved to, whether it's located in the interior and not a coastal area'* (Itonga, South Tarawa, pers. comm., 2013).

Itonga also argues that their traditional fishing skills will be changed and will be lost on the way as also perceived by many participants of the study. He mentions that people will travel far out to the ocean to get fish. In response to this he stressed,

> *'Therefore, for Kiribati to maintain their culture, we have to be sure that the resources found here are also found there in order for us to continue using and practicing our traditional knowledge and skills of doing things'* (Itonga, South Tarawa, pers. comm., 2013).

Another solution he stressed was for Kiribati people to relocate together and stay together in one place and be given the freedom and right to build mwaneaba houses in Fiji,

> *'Also we have to be allowed to be united, we should be given the freedom and right to build our mwaneaba houses the Kiribati way because it's the only way to meet up and to keep our culture alive'* (Itonga, South Tarawa, pers. comm., 2013).

In the final remarks of his interview Itonga highlighted the lack of political will and attention paid to the protection of culture and socio-cultural values in the face of climatic changes at the national scale. He said,

> *'Climate change is a political agenda altogether and it is very sad that the government here do not integrate socio-cultural values and specifically culture in their policy makings. Political issues are suppressing the rights of the people to speak for themselves. It should be of high priority to the government to include culture and social factors to their policy makings and planning, especially for the relocation strategy* (Itonga, South Tarawa, pers. comm., 2013).

Considering the political situation, coupled by other issues such as environmental factors Itonga like many of the participants then argued from a spiritual point of view,

> '*People would have to adjust themselves to the climate and the environment to suit them in that new environment. The best adaptation is to keep us staying on our own lands and to preserve our culture. In order to do that, we have to save the spiritual person, it's easy'* (Natan Itonga, pers. comm., 2013).

## 5.6 Perceptions on measures to protect socio-cultural integrity in the course of relocation to Fiji

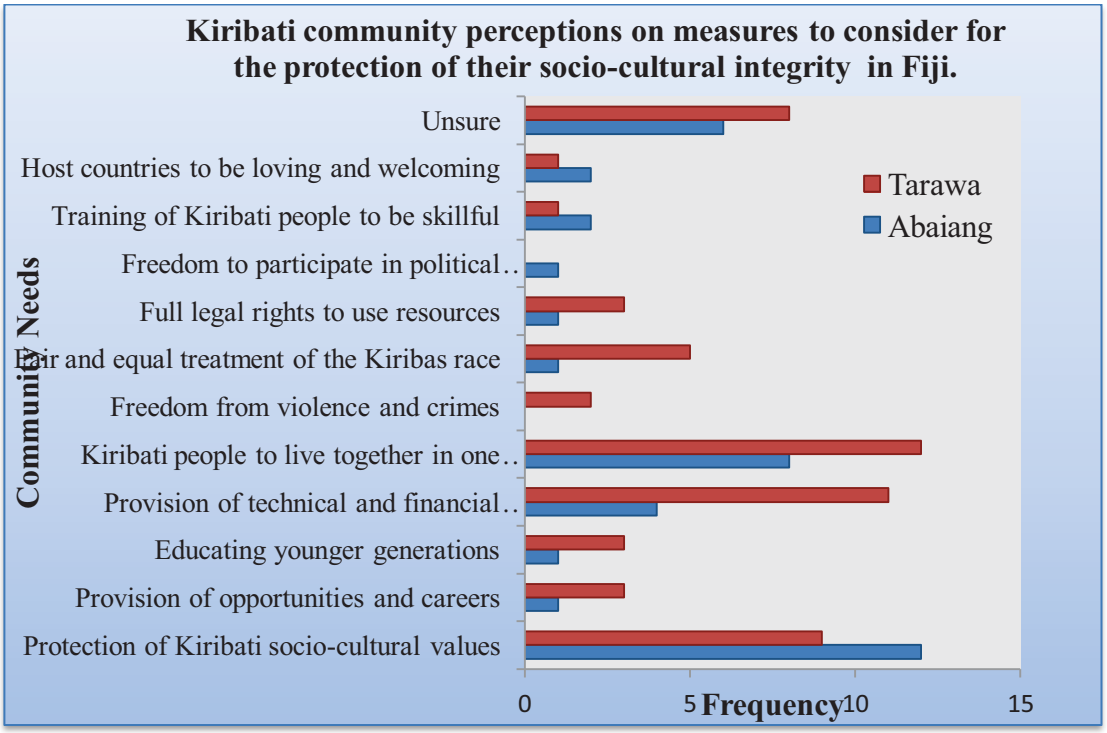



*Figure 5.4 Kiribati local people's perceptions on measures to consider for the protection of their socio-cultural integrity in foreign countries (n= South Tarawa 28; Abaiang, 23).*

Figure 5.4 outlines the common perceptions of South Tarawa and Abaiang respondents on measures to take for the continuous recognition and protection of their socio-cultural values and practices in Fiji. These concerns were raised after highlighting the perceived socio-cultural challenges people will perhaps face while in Fiji, as discussed previously. A total of 11 concerns emerged, with eight highly perceived by South Tarawa people compared to Abaiang. The highest concern identified from South Tarawa, was for Kiribati communities to move and stay together in one location, followed by the perception to provide technical and financial resources. Abaiang respondents on the contrary highly perceived three of the problems. The most perceived was the need to protect Kiribati socio-cultural aspects in general, and then the need for communities of Kiribati to remain and stay together in one location.

It could be discussed that, the views that Kiribati communities should resettle and remain together in a particular location was the most preferable option to keep the Kiribati culture and socio-cultural values alive. This was perceived by participants of both islands. The underlying ideology was that resettling and living together will help Kiribati communities continue practicing activities that will boost and promote their socio-cultural integrity, in particular, sharing and loving, the continuous use of the Kiribati language and the transfer of traditional knowledge to younger generations. One of the respondents mentioned,

> *'Gathering together in one place will help to strengthen community cohesion and unity practices and activities'* (#12 Male, South Tarawa, pers. comm., 2013).

Another interviewee also mentioned,

> *'Staying together to maintain and promote culture and traditional knowledge and skills is the best alternative'* (#19 Female, Abaiang, pers. comm., 2013).

Others viewed that living together will give people more freedom,

> *'Kiribati people should relocate to areas where people are given the freedom to practice their traditional ways of living without much outside interference'*
> (#42 Male, South Tarawa, pers. comm., 2013).

The communities of Kiribati are very zealous of their socio-cultural values, and that the measures perceived are all connected to the protection of their socio-cultural values in the long term. In light of these concerns, it could be discussed and concluded that mobility policies and frameworks, whether it is migration or relocation internally and externally, should be formulated as urgent as possible for the long term security and welfare of future relocated communities. This also benefits the host countries, for instance Fiji, as used in this study. Negative impacts of relocation were highly perceived by Kiribati communities, and significantly felt and experienced by Kiribati residents in Fiji, specifically on their socio-cultural values. This is supportive of the argument made by Loughry and McAdam (2008), that the international resettlement of whole communities will be extremely impacted in terms of cultural, social, political, psychological, and economically.

Results from this study suggest that these impacts will be most likely challenging if host countries are not prepared to receive relocated countries in the course of immediate relocation. The information gathered from this thesis will be helpful for the implementation of such strategies to offset the delay in development of national regional and international laws to manage environmentally induced relocation. According to Martin (2010), without basic information such as how many people are likely to move, from where to where and so forth, then the development of an appropriate policy framework would be complicated.

Technical assistance and support for the agents that are to be responsible for relocation is very crucial and should be strengthened to ensure that all plans and alternatives are looked into before people are required to relocate. This will ensure that all generations, and especially the communities that are affected, are involved in consultation and planning, and that all socio-cultural values that are important to people are considered for appropriate implementation.

There should also be environmental laws that take care of human rights to common resources such as the ocean and land. As discussed, much of the socio-cultural lives and practices of Kiribati people are tied to the environment. Therefore these should be considered in all policy making. It is saddening to note though that the social and cultural backgrounds and locale of relocated people and those who are most likely to move as a result of climate change, are one of the reasons that explains the lack of enthusiasm of developed nations to receive these people (Okeowo 2013). Furthermore, Fatima *et* al. (2014) also argue that a legally binding human rights mechanism has yet to establish to guarantee and support the rights and protection of vulnerable populations. Findings from this study guarantees the need and argument that communities such as Kiribati deserve all to be treated with justice and their rights to common properties should be acknowledged and protected if they ever relocate to Fiji, in order to keep their socio-cultural values and practices and their culture in its totality alive. They are victims of climate change and hence their concerns and needs needed to be heard and attended to urgently.

# 6.0 THE SPIRITUAL DIMENSION OF CLIMATE CHANGE IN KIRIBATI

*"I was born as a Kiribati, so I will die as a Kiribati. I don't care if I would die poor here on my own land. Just wait, if it's God's will to wash Kiribati away, so be it. We do not know the hour and the day for the end of time to arrive. We can relate this to Noah's time. We have to blame ourselves because of the rumors of climate change that have been ongoing; it is a sign that we have changed a lot. Climate is changing because humans are changing; we are modifying the natural resources from God and living rebelliously"*

(Male, Abaiang, pers. comm., 2013)

## 6.1 Chapter Overview

The ultimate purpose of this chapter is to discuss in breadth and depth the spiritual dimension of relocation as it persistently emerged from the Kiribati communities, which unexpectedly fuelled other numerous interesting questions, in particular the role of spirituality to enable people to cope with climate change and how it could potentially help successful adaptation if relocation is required? Most of the climate change induced mobility studies seem to pay more attention to or draw conclusions from the patterns of movement of those who migrate; the political, environmental, socio-economic and scientific aspects of it, with very little emphasis and discussion placed on the concerns and justifications of those who refuse to do so, and specifically those who do so from a spiritual point of view. This study argues that the people's perceptions and beliefs are comprehensible and so their views shouldn't be misunderstood or seen negatively as a drawback to any form of climate change adaptation, such as relocation. Furthermore this study highlights the importance of reading between the lines of what people are saying at a grassroots level to unveil the messages behind it. It discovers that the refusal of many Kiribati communities and individuals to relocate from a spiritual point of view does not necessarily mean that people were in denial or skeptical of climate change, but was rooted in their awareness of a dangerous level of climate change, and that despite efforts to escape it, they will still be doomed. Apparently, the refusal of the majority of those who were interviewed to relocation with reference to Fiji, delving from a spiritual dimension was rooted on their strong awareness of the dangerous level that climate change is currently at not only affecting Kiribati but the world globally. This great awareness of Kiribati people of climate change and its consequences was the critical reason which they stressed to justify their refusal hence perceiving, that relocating elsewhere cannot reverse the consequences that climate change will have on their lives as it is a global crisis affecting every nation to differing extents. In response, the participants are now adapting to climate change spiritually hence building up their spiritual persons and realigning their ways to God's decrees which they believe to be the best and promising adaptation option to resort to when all else fails and even if they relocate. Peoples' justifications were based on Christian biblical interpretations to

explain their real life experiences, which interestingly unveiled the biblical future they were aware of, and preparing for, in this climate crisis.

This study therefore highlights interesting information beyond the scientific, political and financial agendas, which the international and scientific community, and even the policy makers of this generation, should not ignore because it is the view of the actual most affected communities. It is inconsiderate to undermine communities' perceptions on climate change that are based on ethical, biblical or spiritual points of view because for them these are important pillars which function together with socio-cultural values to hold their communities together and maintains adaptive capacity in times of crisis. It is seen that while financial and political support has often delayed the success of adaptation initiatives regarding communities like those in Kiribati, religion and spirituality are potentially a useful support mechanism which people have unswervingly held on to. This thesis therefore highlights the importance of spirituality in helping vulnerable Kiribati communities to adapt to climate change and to see climate change beyond science and its physical impacts over their lives.

The participants who refused to relocate from both islands were on common ground regarding the spiritual dimension as the key to successful and more certain sustainable adaptation. In reviewing and examining participants' responses, it was clear that there was a contradiction of two perceptions. People believe that climate change is a problem happening on the ground but they also refuse to take action or consider relocating, even if their islands submerge. People are ready to accept whatever happens to their islands as opposed to forced relocation which they perceive will compromise their solid foundation and faith in God. As mentioned, this was not because of their ignorance of the problem but because of their common understanding of the dangerous level of climate change concerning them. There were three reasons raised to explain how people are coping with climate change spiritually. First, people have strong 'faith in God' to defend them in this climate crisis; second is their strong belief that as long as their 'inner being is secure and in tune with God then the direct threats of climate change on their physical being is not a worry; and third, was the biblical belief that climate change was one of the apocalyptic signs of the world's end times. Since the majority of the responses were from people

with Christian backgrounds, they formulated conclusions based on the Bible to justify their views. Kiribati Christian communities are using the Bible to address crises and dilemmas, including climate change. Based on their faith, the Bible provides the normative and definitive basis for interpretation of all events. For those that adhere to such interpretations, it reveals the secrets to the unseen fixed and predetermined future that awaits the world, including climate change. This was the case in Kiribati.

### 6.2 Strong connection to and faith in God as the source of refuge.

The participants who refused to relocate were very optimistic about their decisions despite the awareness of a dangerous level of climate change they were vulnerable to. According to them, it is a demonstration of their strong and intimate connection with the divine, whom is unshakeable and able to defend them eternally beyond this life, hence their faith in God, and not necessarily their denial or ignorance of the problem. The vulnerable local communities of Kiribati is already witnessing a dangerous level of climate change, with threats that are uncontrollable and already putting people into a new era of deprivation; reflecting why many have delved into climate change and relocation from a spiritual point of view. In this case, people have reached out for divine supernatural power and intervention. One of the responses was,

> *'Wait, because at the moment there is still not yet a clear sign that Kiribati would submerge. Relocation can be the answer right now, but we still have to wait on what the Lord has for Kiribati'* (#12 Male, South Tarawa, pers. comm., 2013).

> *'For us, we believe that Jesus is coming soon. If we're faithful to Him, then the problem won't matter, because we also have another "home in heaven". We have a lot of plans like building a ship but if we have faith then I'm sure God will see us through, we have to be prepared'* (#21 Male, South Tarawa, pers. comm., 2013).

People appear to believe in God more than their problems including climate change. It raised the question; why God? The justifications provided by participants are based on references from the Bible. They are coherent given their belief system, and are summarized below.

### 6.2.1 Why God?

Many have referred to God as their only source of refuge and hope, because of His supernatural and unfathomable nature. One of the participants mentioned, *'There is an uproar in the world but God says to return to Him. He is powerful, He knows what's best, His target and will is/was to create people to know Him and love Him*' (#38 Female, South Tarawa, pers. comm., 2013). This is mentioned in reference to the Bible, *'The islands will look to me and wait in hope for my arm. Lift up your eyes to the heavens, look at the earth beneath; the heavens will vanish like smoke, the earth will wear out like a garment and its inhabitants die like flies. But my salvation will last forever, my righteousness will never fail'* (Isaiah 51:5-6 NIV Bible 2011). …. "*Was my arm to short to deliver you? Do I lack the strength to rescue you? By a mere rebuke I dry up the sea, I turn rivers into a desert; their fish rot for lack of water and die of thirst. I clothe the heavens with darkness and make sackcloth its covering"* (Isaiah 50:2-3 NIV 2011).

With reference to biblical evidence of who God is and what He's able to do is why God is more trusted by many Kiribati people in times of crisis, such as climate change, than physical solutions. With biblical references to God as the creator of nature, who has sovereignty and ultimate authority, power and wisdom to create and destroy, to cause, to move and control the celestial bodies, is how they justify their interpretation. The argument generally accepted by the communities is that everything else fails except God's salvation, which explains why Kiribati people have entrusted their lives to have connection with "Him" rather than their physical situation. Given their interpretation of God as the creator of nature and that all the different celestial bodies listen to Him, it is understandable why the grassroots are claiming God to be more trustworthy than climate change impacts as well as human scientific knowledge and physical solutions. One respondent mentioned; *'We run here and there to our neighbors but they are also affected. So that was the chance for us to look up to God for a heavenly solution. Maybe God has allowed climate to change to draw people closer to Him*' (#10 Female, South Tarawa, pers. comm., 2013).

### 6.3 'As long as my inner nature is saved and in tune with God's will'

The second justification that emerged was the belief that 'as long as the inner nature or spiritual person is saved and in tune with God's will, then the means of relocating for the security and safety of the physical nature isn't obligatory'. One of the detailed responses was, *'No (I won't move), it is better I stay and die here in Kiribati rather than dying in a foreign country that we have no knowledge about. Fiji cannot save me from dying; we will all die no matter where we run so it's better I die here. I will not move* ***as long as my inside person is safe and secure*** *no matter what would happen with my physical being'* (#5 Female, South Tarawa, pers. comm., 2013). Another respondent replied, '*I don't think relocation is a good idea, but maybe it's the last step to hope for. But I won't move because* ***I give my life to God'*** (#7 Male, South Tarawa, pers. comm., 2013). Along the same note another respondent mentioned, *'Wait, I will not go* ***as long as I am saved in the inside****. Kiribati will not be submerged because God says in His bible that there would be no more flooding'* (#35 Male, South Tarawa, pers. comm., 2013).

These responses fuelled a few questions, namely*; 'What does it mean, 'as long as the spiritual person is saved', and what people actually refer to as the 'spiritual person' and what are they being saved from?* Their understanding was that no physical life would be spared in the wrath of climate change, and that running away from it cannot reverse its consequences. Their views were justified by the biblical references in 1John 1:17 which declares, *'The world and its desires pass away but whoever does the will of God lives forever'* (1John 1:17 NIV Bible 2011). The spiritual person or the inner nature which people refer to is amongst the three things that they consider that are eternal when all else fails; alongside God and His word, the Bible. The participants were certain that the physical nature will in fact fail in this climate crisis, while the spiritual nature can nevertheless advance through to the next life, hence the life after death if the lesson manifested through climate change is learnt. The belief is that this next life only permits spiritual beings that were living accordingly to God's will, and climate change is occurring due to people no longer living in accordance with God's will. This study discovers that the security of the spiritual nature in the midst of climate change, which most people refer to, has given insights into a legitimate aspect of human security in the

face of climate change. People have claimed that their real home is in heaven, prepared by God, which is in fact the home for all the spiritual persons or beings that were living acceptably to God's decrees, as mentioned in one of the interviews, *'We believe that Jesus is preparing the best home for us in heaven, so I think it's best to prepare the person inside or the spiritual person so that when the end times arrive or you die, your inside person goes straight to heaven where there is joy, peace and love, no more crying, sorrow or even death'* (#5 Female, South Tarawa, pers. comm., 2013). Another respondent also mentioned, […] *'If we're faithful to Him (God), then the problem won't be that much because we have another home in heaven'* (#33 Male, South Tarawa, pers. comm., 2013).

### 6.3.1 What is the inner person being saved from: The biblical future revealed?

Further interesting questions were inspired with regards to biblical references to a destructive future which was illuminated from the participant's spiritual views. It is a future which no human being can escape, except for the inner person that is in tune with God's will. Discovering this dreadful biblical future, due to the crisis of climate change again provides enough explanation to comprehend why most people were clinging more strongly to their spiritual or inner nature. People were aware of the future beyond climate change, which is the end of the world that is near in which their spiritual nature has to be saved from, and the establishment of God's kingdom for the prepared spiritual persons to dwell in. One participant mentioned, *'Physical is physical, saving our lives physically such as relocating to other places would not save us from the end of the world that is at hand. Now is the time to be prepared because the kingdom of heaven is near'* (#5 Female, South Tarawa, pers. comm., 2013). Such compelling views reveal that local communities of Kiribati are already looking at climate change beyond science and politics, and furthermore, view human security from an eternal point of view which speaks of the establishment of a "new heaven and a new earth" and the destruction of the current earth. There were many biblical sources referred to, to provide evidence for what Kiribati people believe in. They all seek to reassure that what God has foretold will all come to pass, and that no person can ever nullify what God pleases to do. One reference was from Zephaniah 1: 14-16 that warns, *"The great day of the Lord is near - near and*

*coming quickly. The cry on the day of the Lord is bitter; the Mighty Warrior shouts his battle cry. That day will be a day of wrath, a day of distress and anguish, a day of trouble and ruin, a day of clouds and blackness, a day of trumpet and battle cry against the fortified cities and against the corner towers"* (Zephaniah 1: 14-16; NIV Bible 2011). Another reference was from Amos warning, *"Woe to you who long for the day of the Lord. Why do you long for the day of the Lord? That day will be darkness, not light. It will be as though a man fled from a lion only to meet a bear as though he entered his house and rested his hand on the wall only to have a snake bite him"* (Amos 5: 19 NIV Bible 2011). Another was from Zephaniah, "*I will sweep away everything from the face of the earth; I will sweep away the birds in the sky and the fish in the sea and the idols that cause the wicked to stumble"* (Zephaniah 1:2-3; NIV Bible 2011).

It is clear that to Kiribati communities, the future the world is about to face is dreadful where everything will be cleared from the surface of the earth. The most detailed reference of this future was, *'First, there was a great earthquake, the sun turned black like sackcloth made of goat hair, the whole moon turned blood red and the stars in the sky fell to earth as figs drop from a fig tree when shaken by a strong wind. The heavens receded like a scroll being rolled up and every mountain and island was removed from its place. Then the kings of the earth, the princes, the generals, the rich, the mighty, and everyone else both slave and free, hid in caves and among the rocks of the mountains. They called to the mountains and the rocks, fall on us and hide us from the face of the wrath of the Lamb, for the great day of their wrath has come and who can withstand it*' (Revelation 6:12-17; NIV Bible 2011).

### 6.4 Anthropogenic climate change: An apocalyptic sign of the end times and an appointed time for all to 'return to God'.

There seemed to be a linkage between climate change and the end times according to the responses. Although climate change is anthropogenic, through the lens of Kiribati people, it is allowed by God as a warning for all humanity to repent and return to Him and that the end times and the establishment of His Kingdom is at hand. Hence in Kiribati, climate change is not just an indication of a physical crisis but primarily a

spiritual crisis. This was the third reason mentioned to justify people's views with regards to their disagreement to relocate. Some of the responses are quoted below. One respondent mentioned, *'I don't want to move, God placed me here, I will not lose thinking about my own land but whenever I move I would always think as a Kiribati until the very last day; these are the signs of the end times that Jesus is coming soon, and we have to get ready and repent'* (#10 Female, South Tarawa, pers. comm., 2013). Another respondent also mentioned, quoting from the bible, *'Yes, in the book of Matthew 24, it mentions all the signs of the end times and of Jesus' coming, for example pestilences and so forth. Climate change is also a sign of the end times'* (#21 Male, South Tarawa, pers. comm., 2013). Another also responded, *'Climate change is very much related also to the signs of the end times we are in. At times we talk about this problem, it is one of the signs that the end of times is coming'* (#12 Male, South Tarawa, pers. comm., 2013). One participant from Abaiang said, *'I was born as a Kiribati, so I will die as a Kiribati, I don't care if I would die poor here on my land. Just wait, if it's God's will to wash Kiribati away, so be it. We do not know the hour and the day for the end of times to arrive. We can relate this time of climate change to Noah's time. We have to blame ourselves because of the rumors of climate change been ongoing; it is a sign that we have changed a lot. Climate is changing because humans are changing, modifying the natural resources from God and living rebelliously. I believe if we had been responsible and reliable, stick to our traditional ways of living then there won't be many changes in our environment and climate'* (#15 Male, Abaiang, pers. comm., 2013).

People's phenomenal reasoning based on biblical interpretation stresses that the world is in a new era of changes. A time of dangerous changes in climate and environment are interpreted as due to the changes within humans, which some respondents compared to Noah's time, when God destroyed the earth and all mankind by a massive flood and saved only eight people, because of evilness that spread like wildfire in all face of the earth (Genesis 7: 23-24, NIV Bible 2011). Similarly, it was clear that Kiribati people have a great awareness of human-induced climate change, and interpret it as God having allowed it to happen as a warning to humanity that His coming is at hand, hence at the

same time an invitation to realign their ways of living to prepare and secure their lives for the dreadful future discussed previously, as reiterated from other respondent's interview in preparation for Jesus' return. God makes it clear that mankind should examine their ways and return to him, as captured in one of the interviews, […] '*We have to blame ourselves because of the rumors of climate change been ongoing; it is a sign that we have changed a lot. Climate is changing because humans are changing; we are modifying the natural resources from God and living rebelliously'* (#15 Male, Abaiang, pers. comm., 2013).

As mentioned, many participants have perceived that the changes in climate are one of the signs biblically forewarned of the approaching doomed days of all creations. One of the sign mentioned was sea level rise. One of the interviews was based biblically on the book of Matthew 24, […] '*the people during Jesus time asked, What is the sign of the end of the world, then Jesus replied, the stones that you see, there will be no stone on top of another, in other words, the stones will be washed off similarly to what we see now with our sea walls because of sea level rise. So this is one of the signs that the world should be aware of, that the end of time is drawing near'* (#21 Male, South Tarawa, pers. comm., 2013). This sea level rise trauma is interpreted according to the biblical reference of (Luke 21:5-36) where it mentions the conversation between Jesus and His disciples about the signs of the future that is near which he refers to the eternal destruction of all creation and then the reign of His kingdom. In particular the signs referred to are: *"There will be signs in the sun, moon and stars. On the earth, nations will be in anguish and perplexity at the roaring and the tossing of the sea:* And, "*People will faint from terror, apprehensive of what is coming on the world for the heavenly bodies will be shaken"* (Luke 21: 25- 26, NIV Bible 2011). It was mentioned by respondents that the bible also speaks of other signs such as famines and pestilences in various places, alongside the occurrence of great earthquakes and more fearful events which again were captured in some of the interviews. One respondent mentioned, *'Pestilences as a result of climate change is also one sign of the end times'* (Male, South Tarawa, pers. comm., 2013). They refer to the biblical message, "*There will be great*

*earthquakes, famines and pestilences in various places, and fearful events and great signs from heaven"* (Luke 21:11, NIV Bible 2011).

This study supports the argument that climate change indeed has a spiritual dimension. The argument being made by respondents appears to be the following: Ever since before the rise of modern human scientific intelligence, the advancement of technology and the huge influx of scientific evidence proving that the world's climate is changing, God the creator whose wisdom surpasses all human understanding knew beforehand the catastrophic calamities that will take place if/when humans do not do His will. No one can escape. God will fulfill His purpose on earth, including the future foretold, which is what the communities were well aware of. Before the world had its eyes on these calamities, the creator had seen it beforehand, and so His warning for the future was already written. So the communities ask, why then isn't any of His work being recognized in these times of uncertainties and climate change resilience and adaptation initiatives? What more do we need to research when the future is foretold already? There is ignorance and lack of attention to the spiritual view of climate change, yet it potentially teaches a lot about the world's future and is providing a useful framework for grassroots communities to prepare for the future.

### 6.5 The good news: Moving forward spiritually.

Based on their disastrous experiences already of climate change, through interpreting them biblically, the participants then proposed some key messages for the world and all humanity at large to help them understand and to escape the disastrous days illuminated and biblically referenced. This is what people were referring to that their inner persons had to be saved from. All believed that this time of climate crisis is an appointed time for all to 'return to God'. One of the key informants mentioned, *'The best advice to the world to escape these fearful days is just to get ready, repent and stop playing around with God […] Now is the time to stop playing with the Lord, you have to make up your mind whether to keep playing with the Lord or accept the Lord now to make yourself ready before that time arrives, the unknown time'* (#12 Male, South Tarawa, pers. comm., 2013). This was biblically justified by three references. The first was: *"Since*

*everything will be destroyed in this way, what kind of people ought you to be? You ought to live holy and godly lives as you look forward to the day of God and speed its coming. That day will bring about the destruction of the heavens by fire and the elements will melt in the heat. But in keeping with His promise we are looking forward to a new heaven and a new earth where righteousness dwells*" (2 Peter 3: 11-13; NIV Bible 2011). The second was: *"Gather together, gather yourselves together, you shameful nation before the decree takes effect and that day passes like windblown chaff, before the Lord's fierce anger comes upon you, before the day of the Lord's wrath comes upon you. Seek the Lord all you humble of the land, you who do what he commands. Seek righteousness, seek humility perhaps you will be sheltered on the day of the Lord's anger"* (Zephaniah 2: 1-3 NIV Bible 2011). The third was: "*The day of the Lord is great; it is dreadful. Who can endure it? Even now, declares the Lord, return to me with all your heart, with fasting and weeping and mourning"* (Joel 2: 10-12, NIV Bible 2011).

The biblical information the Kiribati communities refer to clarifies why they held certain beliefs about their spiritual nature to be more important than their physical nature, in the face of climate change. It goes some way towards explaining what they were referring to as in the spiritual person, which can be saved from a future that the physical person can never escape. There was a strong emphasis and awareness on the dreadful future which only the spiritual person that is in tune with God could escape. It is learned from this study that even though communities are not knowledgeable about the science and other dimensions of climate change, their spiritual views is potentially helping them to transform and shape their ideas and beliefs towards climate change and that it is successfully preparing them for the future that they experience as fast approaching. In one of the interviews, one lady stressed, *'Climate change is helping us realize that it is real and that the world will come to an end, so we have to prepare both our physical beings and spiritual beings'* (#5 Female, South Tarawa, pers. comm., 2013).

This study discovered that the dangers of climate change in Kiribati has challenged the way people think and see the world, evaluating their behaviors and looking beyond the

physical impacts of climate change. People are not only preparing or adapting physically but also spiritually because of the belief of the doomed days that are approaching beyond climate change. One of the respondents mentioned, *'Let people practice fasting and praying to God for a solution once a month, instead of looking to the government and other people for help'* (#37 Male, South Tarawa, pers. comm., 2013).

### 6.6 Overview of findings and discussion: Spirituality as a measure for successful adaptation in response to climate change.

In exploring relocation, it was brought to light that climate change through the lens of Kiribati communities is not just a matter of physical, environmental, political or economic crisis but a spiritual crisis that they stressed the world needs to be aware and take heed of. The intensifying impacts of climate change in Kiribati have sparked changes and transformation in peoples' view of climate change. Kiribati people are looking beyond the physical challenges and seeing and interpreting climate change from a spiritual dimension in order to understand and take action accordingly to a fixed biblical future they are aware of and in some cases anticipating. They drew conclusions from a Christian biblical point of view, considering that climate change is inescapable, that they could never run away from. Therefore, people through their strong spiritual connections and beliefs, have confidence and faith to remain on their islands and rather submerge with it, as opposed to relocation elsewhere. Interestingly, the benefits of spirituality claim that even if they relocate, there would still be a chance for successful adaptation spiritually.

Relocation is seen as the last alternative for Kiribati; it is a bridge for communities fleeing from sea level rise but only to meet cyclones, in the case of Fiji and other disasters elsewhere. Although it's the last hope for communities like Kiribati, it has no power to change what really matters to communities, hence their spiritual beliefs. As a result, people choose to adapt through remaining on their homelands and concentrate on ensuring their spiritual nature is safe and secure rather than their physical nature, knowing that it never matters where they would escape to, the same spiritual challenge remains. Paradoxically, this is also why the same religious understanding equally

provides a spiritual foundation for adaptation by relocation if it becomes necessary. If they have maintained their faith to God then they will still be safe spiritually, if they relocate. Also, because they would then be safe spiritually, as their eternal life is secure in the new heaven and new earth after death, they would relocate peacefully, or at least they would be peaceful that their children do so. Thus there is a strong foundation provided by this spiritual perspective for successful adaptation, even if it requires relocation.

It is, therefore, essential to include considerations of religion and spirituality and the role of churches in the settlement of new Pacific migrants, as also argued by Mc Leod (2010). The spiritual views of climate change have shaped and transformed communities' perceptions and the way they live their lives. From this perspective, climate change has ironically advanced the way Kiribati people have viewed the world and themselves. This is supported by Roncoli *et* al. (2008) who highlighted the importance of cultural and spiritual values in shaping people's attitudes towards remembrance of the past and predictions for the future. This study argues that despite the great investments in preparing and building resilience and momentum of local communities, the ugly truth is, none of these investments can go against the wrath of nature and save lives as all will die, hence, the reason why Kiribati people have delved into a spiritual sphere in response to the effects of climate change, is because 'as long as the inside person is saved' then all else doesn't matter.

Furthermore, this study has sparked another critical sphere of human security that perhaps the world leaders and policymakers should start considering. It is perhaps important for the world leaders, the scientific and research community to take time to listen to what grassroots are saying, rather than the other way around. According to Veldman *et* al. (2012), science in its solid promises, advanced knowledge and ability to maneuver political agendas is insufficient; however projecting climate change through religion offers new insights and inspirations about what it means to be human in this climate change era. In an interview with one of the Kiribati AOG pastors, there was an important message, *'This is and should be our main theme now to the world, that this*

*(climate change) could be the sign of the end times that is coming, drawing near and we pledge the world, to please stop playing around with the Lord. We understand that anthropogenic climate change is real, yet God is allowing it to happen for us to return to Him. Make yourself ready and return to the Lord, the climate and the environmental changes do have a lot of explanation to offer to us'* (#12 Male, South Tarawa, pers. comm., 2013).

Posas (2007) highlights the importance of considering ethical dimensions of climate change to help leaders continue to see a common ground and have a way forward. The use of Christian scriptures by Kiribati communities has shown itself to be one such approach. According to Tamasese *et* al. (1997), religion and spirituality are the foundation of Pacific peoples' communities and the spiritual side of the Pacific 'self' is a significant aspect of Pacific being. Therefore these values should never be taken for granted but have to be considered in all policies at different levels. The shared knowledge of Kiribati people is an example of a common ground, namely mortality, which could help pave the way to a new discourse in addressing climate change.

As uncertainties in the science of climate change remains, with international negotiations and debates branching into many diverse issues, Kiribati people have delved into human security from an eternal point of view, explaining the reason why the perception of 'saving the inner person or spiritual nature' was mentioned. Neither does this view of eternal security of the spirit of a person stop a practical concern for successful adaptation if relocation becomes necessary. Rather it defines the essential values that will make an adaptation strategy successful. They believe that preparing spiritually is the best adaptation to respond to the impacts of climate change. People were clinging onto their spiritual nature to be saved from the biblical future that was illuminated from their responses, and which no person can nullify or escape from it. This accords with what scientists have already warned humanity of; the dreadful and appalling future that is approaching if the international community does not take full responsibility and commitment in reducing their greenhouse gas emissions, but adds to it, the need to consider the eternal security of a person's spirit.

The real challenge is, climate change has already claimed a lot of precious lives and apparently leaves the whole world especially vulnerable communities guessing. *How effective then are the decisions made? How realistic are they to make a change? How loyal are the world leaders to their promises and signed agreements? How sure are they with their current decisions to secure a better future for younger generations to dwell in when they are not effective enough to secure the lives of generations dying today?* It is beyond all political power and efforts, decisions and agreements on paper to control the increasing number of deaths or even reclaim the lives of those who have lost it. The fact that Kiribati people tend to trust in God more than climate change policies, is therefore understandable. This study argues that it is therefore inappropriate to dismiss God out of the big climate change picture, when vulnerable grassroots communities are referring to God as the basis of their trust and entire lives in the face of climate change.

## 6.7 Chapter Conclusion

The ethical and spiritual dimension of climate change should not be ignored. Spirituality is probably the last adaptation measure to resort to when all else fails, including relocation. But the sphere of knowledge addressed when this acute challenge is experienced, potentially has wide ranging value. Also, it is inhumane to ignore the views of communities on how they deal with their spiritual nature, as it is important in how it shapes and transforms their views. In particular it inspires them to plan for more sustainable futures; for when humanity generally has learnt the lessons that climate change is bringing. What people have raised are not just fantastic perceptions but carefully reasoned messages that potentially could help shift the world's views of climate change. In summary, climate change through the lens of Kiribati is not just a matter of physical crisis but primarily a spiritual crisis. The crisis of this small nation and the answer it has found for itself is perhaps an act of will that generally all have will come to learn as climate change unfolds. Climate change is seen as a global crisis where no nation, big or small, is spared, hence it affects all countries. However, relocation is seen as the last alternative for Kiribati; it is a bridge for communities fleeing from sea level rise but only to meet cyclones, in the case of Fiji and other disasters elsewhere. As a result, people choose to adapt through remaining on their homelands and concentrate

on ensuring their spiritual nature is safe and secure rather than their physical nature, knowing that it never matters where they would escape to, the same spiritual challenge remains.

# 7.0 CONCLUSION AND RECOMMENDATIONS CHAPTER

*"The International community should be in the frontline of supporting Kiribati, because it's their fault that Kiribati is facing changes and impacts of climate change"*

(Male, South Tarawa, pers. comm., 2013)

## 7.1 Introduction

This chapter will give a synopsis of the findings or results of the research accordingly to the objectives stated in the introduction chapter. It will also highlight some of the important conclusions drawn for recommendations for policy implications.

## 7.2 Result findings and conclusions

The first objective for this thesis was to assess and compare the level of awareness of climate change information and impacts between the two target islands, to assess the climatic and environmental changes, and to evaluate the status of the most important livelihoods in Kiribati in the past 30 years, based on participant's historical knowledge and perceptions. Furthermore, the perceptions of historical climatic conditions between elders, adults and youths were also assessed and ways to address climate change was recorded. It is important for any climate change based research to assess the level of understanding of communities on climate change, to identify their perceptions and to see whether they are standing on common grounds with the scientific community.

First, observed results indicate that the level of awareness to climate change information and climate change impacts was greater and more frequent in South Tarawa than Abaiang; on a daily basis for South Tarawa and on a weekly basis for Abaiang (Figure 4.1). The level of awareness and exposure to climate change information and impacts between the two islands were however statistically the same. Secondly, in identifying the different mediums through which climate change is communicated to both islands, radio was observed to be the most effective source of media for both islands for the coverage of climate change issues, especially for Abaiang communities. South Tarawa people had more advantage in accessing to climate change information through other sources such as internet, newspapers and village awareness programs than Abaiang communities, which reveals the important role of media, specifically radio, to the transferring of such information to outer islands of Kiribati. Results reflect the need for more climate change information awareness initiatives in the outer islands of Kiribati if future adaptation programs are to be sustained, holistic and community based.

Climate has been significantly changing in both islands. Rainfall intensity and frequency have increased, sea level rise has increased, storm surges have become frequent and temperature has been increasing significantly, as perceived and evaluated by participants of both islands. There was a significant difference noticed in temperature increase and sea level rise, hence temperature increase was highly perceived by Abaiang participants.

To address climate change, the perceptions of participants of both islands were more concentrated on the preference to remain on their islands and adapt to the impacts of climate change, as opposed to migration, which demonstrates the close connections of Kiribati communities to their original homelands.

The very important livelihoods, which all depend on, for subsistent and commercial living have been threatened over the period of 10 to 30 years, according to participants 'perceptions and experiences. Participants of both islands have evaluated the status of their livelihoods over the 30 years in terms of supply and abundance and have concluded that the supply of freshwater, fisheries and agriculture have worsened. The quality and supply of freshwater resources was most highly emphasized by participants from South Tarawa, whereas for Abaiang, most perceived that agriculture was the highest impacted livelihood. It can be concluded that both island livelihoods were threatened significantly by climate change to a similar degree.

To provide more information on community perceptions of climate change, the majority of participants from both islands persistently showed agreement that climate change, with a specific emphasis on sea level rise was in fact, the main drivers of significant livelihood depletion and environmental changes. Distinctively, South Tarawa communities have however also raised other non-climatic factors, such as unsustainable human activities like burning, the over-exploitation of natural resources, as well as overcrowding, which might have all added more pressure on the sustainability of their livelihoods and their environment. There is nevertheless a high exposure of Kiribati communities to climate change effects and changes in livelihoods, as well as climate change information. Before scientific information became available to communities of Kiribati to prove to them that climate change is happening, people were well aware of such changes. Therefore, community perceptions and historical experiences of such

changes could also be used to support and back up scientific information and evidence of climate change.

The perceptions of historical climatic conditions between the three age groups namely the elders from age 60 and above, adults from age 59 to 34 and youths from the age of 34 to 18 were also assessed. Results reveal similar perceptions held by all the three age groups that the intensity and frequency of rainfall, the frequency of storm surges, temperature and sea level height have all increased dramatically. This concludes that the all generations have a great awareness of climatic changes and are exposed to such changes to a similar degree.

The second objective was to assess the characteristics of the Kiribati cultural and social values and the value of the environment for their foundation. The Kiribati culture has unique qualities that define and supports people's lives and their roles. Furthermore there is a mutual relationship between the environment and the Kiribati socio-cultural values, hence they are inseparable. Most of the socio-cultural values and practices are closely knitted to the environment and resources specifically; their social, cultural, spiritual, and financial needs. It was also discovered from this study that socio-cultural activities and values are the strongest pillars in Kiribati. They support communities, steering them towards sustainable living, environment sustainability and the management of resources. Socio-cultural values encourage people to control their carbon and ecological footprints on the environment and also towards shaping and molding peoples' perspectives and responses of climate change. Importantly these socio-cultural practices are very important in building capacity and resilience to climate change threats. It keeps people and communities together, and without the existence of communities, the journey woven towards a sustainable future for Kiribati will never be successful. But the close connection of people with their environment is the reason why they are more vulnerable to the effects of climate change. In particular, the mwaneaba needs preservation, as this is where most of the Kiribati socio-cultural values and practices are preserved.

Furthermore, the socio-cultural impacts of climate change should never be undermined. This study managed to assess in detail the socio-cultural problems and challenges and processes that has affected Kiribati people with reference to the perceptions and experiences of the target participants and communities of South Tarawa and Abaiang. In conclusion, it is reaffirmed that the socio-cultural impacts of climate change in Kiribati are huge and dramatic and require immediate attention because they are the foundation to the survival and functioning of communities in Kiribati, in the face of climatic changes.

Climate change has impacted individuals and communities socio-culturally, both directly and indirectly. Directly, sea level rise, droughts, seawater intrusion, extreme temperatures, and coastal erosion have impacted the production, yield and supply of local or cultural foods; the supply of marine foods and resources; the supply of quality freshwater resources; the supply of environment-produced building resources and the destruction of homes, settlements and infrastructure. Other problems also directly affected people and socio-cultural determinants such as community cohesion practices; impacts on tangible and intangible cultural assets; the loss of customary lands and the movement of people internally and externally. Statistical results (Pearson chi square test) indicate that there was no significant difference in the prevalence of most of the direct problems between the two islands except for the loss of farming areas, the loss of customary lands and the loss of coastal medicinal plants. These three problems are linked to the loss of lands through coastal erosion as a result of climate change and were all highly reported from Abaiang participants which indicate the significant loss of lands in Abaiang.

Indirect socio-cultural problems were the most reported from both islands. These problems refer to the transformations, losses, and changes perceived and observed in peoples' lives, behaviors and socio-cultural practices. Most of these problems were perceived to be results of the direct problems, namely, the physical losses of materials, resources and determinants of socio-cultural activities and practices. Altogether there were 43 indirect problems which were thematically grouped into seven groups. These impacts are; the cultural lifestyle and behavior transformations, psychological effects

and welfare changes; community cohesion practices impacts, land ownership community problems and conflicts, intangible and tangible cultural assets losses, community mobility impacts and lastly health problems with other socio-cultural related problems. Statistical results show no significant differences in the prevalence of almost all the themes between the two islands, except for foreign culture adoption, loss of cultural foods, forced migration, and overcrowding. The numerous indirect socio-cultural problems identified reveals the dangerous level of climate change Kiribati is now facing. This study concludes that climate change is not just a physical threat but a threat to the important socio-cultural integrity of communities and as individuals in Kiribati. People are indeed struggling and challenged, not only as individuals but as communities. There is an eminent collapse and shift of socio-cultural integrity within the communities of South Tarawa and Abaiang as a result of climate change, and the first signs of it are already underway.

The exploration of relocation in this study focused on the collection of preliminary information on how people perceive relocation. The conclusion is that South Tarawa respondents drew their justifications from a much more inclusive and global point of view. Similarly though, both islands do not agree to relocation, based on spiritual, political, cultural and social reasons, and similarly view the benefits or the need for relocation based on social, financial, emotional, and environmental factors. Distinctively, Abaiang respondents further viewed relocation as an opportunity to explore and obtain luxury as well as the perception to 'go with the flow' when everybody else moves.

In the review of why Fiji would be the most preferred destination for relocation, the conclusion can be reached that people's preferences for Fiji as their first choice for relocation is driven by a mix of climatic, environmental, socio-cultural and geographical factors, all of which contribute to the socio-cultural welfare and security of Kiribati people in the long term. It highlights that Kiribati people value their cultures, traditions and connections to their homeland most highly, and prefer Fiji as their first choice because it is the best alternative to remain connected to their homeland and their cultures. Exploring relocation in this study also served as an awareness raising initiative

for communities, especially the communities who were not aware, and even those who had little understanding of the local government's relocation plan for food security in Fiji.

A comparative study was done to compare the perceptions of Kiribati people in Fiji and the perceptions of local people on the implications of relocation on socio-cultural integrity in the long term. The socio-cultural challenges perceived and observed by Kiribati people residing in Fiji were all consistent with what the locals perceived. Relocation is seen by Kiribati people as a movement that will compromise their socio-cultural integrity, including their sovereignty and identity in the long term. These socio-cultural problems range from cultural lifestyle changes, to psychological effects, loss of cultural tangible and intangible assets, community living and cohesion losses, difficulties in finding opportunities and employments, and financial problems and pressures.

Considering such huge socio-cultural changes and the preference for relocation, participants have suggested measures and policies for the protection of their socio-cultural integrity. A 'copy and paste' method was highlighted referring to the cloning of the environment and the Kiribati culture in host countries, to ensure that the environmental resources found in Kiribati should also exist in Fiji. There was a persistent worry however prevalent in both islands that socio-cultural problems will intensify in Fiji if in its worst case scenario, and Kiribati communities are forced to relocate.

Most of the communities perceived the need to protect themselves from socio-cultural problems while in Fiji. Kiribati people prefer staying in one particular location, as an option they would choose to keep their socio-cultural values and practices alive. The underlying perception was that resettling and living together will help Kiribati communities continue practicing activities that will boost and promote their socio-cultural integrity, such as sharing and loving; the continuous use of the Kiribati language, the transfer of traditional knowledge to younger generations and the

construction of the mwaneaba, to name a few. It is concluded that the communities of Kiribati are very zealous in protection of their socio-cultural values, and that the measures conceived are all connected to the protection of their socio-cultural values in the long term. It is clear that relocation is the last option for Kiribati communities; as it is a bridge that will expose them to more socio-cultural challenges and influences. But even though they see many challenges, they remain hopeful that a successful adaptation mechanism after relocation is possible.

In addition to relocation, it is concluded that climate change through the lens of Kiribati communities, is not just a matter of physical, environmental, political or economic crisis but also and primarily spiritual crisis that the world needs to be aware and to take heed of. As mentioned in one of the interviews, '[....] *climate has changed because humans have changed, modifying the natural resources from God, and living rebelliously'*. The refusal of many participants to relocation based on a spiritual point of view was not necessarily out of denial or skepticism but was rooted in their awareness of a dangerous level of climate change they were currently in. This is the reason of why most have delved into human security from an eternal point of view, and why the perception of *'saving the inner person or spiritual nature'* was mentioned by many. Neither does this view of eternal security of the spirit of a person stop a practical concern for successful adaptation if relocation becomes necessary. Rather it defines the essential values that will make an adaptation strategy successful, including the maintenance of socio-cultural integrity.

The intensifying impacts of climate change in Kiribati have sparked changes and transformation in peoples' view of climate change. They drew conclusions from a Christian biblical point of view, considering that climate change is too late to avoid, that they could never run away from it, wherever they ran to; climate change will run after them as mentioned in some of the interviews. Therefore, people through their strong spiritual connections have confidence and faith to remain on their islands and rather submerge with it, as opposed to relocation to Fiji. As uncertainties in the science of climate change continues, with negotiations and debates branching into many diverse

issues and apparently getting nowhere, Kiribati people are already looking at human security from an eternal point, which they refer to as the security of their spiritual nature. They believe that preparing spiritually is the best adaptation to respond to the impacts of climate change. People were clinging onto their spiritual nature to be saved from the biblical future that was illuminated from their responses, and which no person can nullify or escape from it. This accords with what scientists have already warned humanity of; the dreadful and appalling future that is approaching if the international community does not take full responsibility and commitment in reducing their greenhouse gas emissions, but adds to it, the need to consider the eternal security of a person's spirit. Climate change has been a very diverse and dynamic concern globally, therefore it is also important to understand climate change from a spiritual perspective as well. Understanding climate change from a supernatural or eternal point of view from Kiribati is perhaps a response the world is hungry and waiting for, in these times of agony and insecurity.

Finally, climate change is an indescribable global issue that has been fueling debates, skepticisms, uproars, chaos and dilemmas in the world today. It has stirred numerous other concerns which warrant decisive political and realistic financial agreements from the developed countries' leaders. As known, the existence of the annual UN international conferences for global leaders was to meet at one point, chasing for one purpose and one goal to meet; to tackle climate change and its impacts, by agreeing to the most realistic decisions, policies and effective measures possible to control climate change and its wrath over humanity. If this has been every nation's target over the years, if the world's leaders have been serious and realistic enough with their agreements and targets by signing the Kyoto Protocol, why then is mankind still suffering? Why is Kiribati still in agony? Why isn't climate change resolved yet? Apparently, an ideal solution and consensus to overcome the biggest fears of the century on a global scale is still yet to be enforced. It is a disheartening truth that while the world leaders continue to gather in conferences to meet and talk, argue, to debate, pointing fingers on who has to do most of the work, at the same time, climate change will continue to take its toll over many vulnerable victims of climate change such as in Kiribati.

The truth is; numerous lives have already been lost. This should leave the whole world guessing, how effective then are the decisions made? How realistic are they to make a change? How loyal are the leaders to their promises and signed agreements? How sure then are our leaders with their current decisions to secure a better future for younger generations to dwell in when they are not effective enough to secure the lives of people dying today? It is beyond all power and efforts, political will, decisions and agreements on paper to control the increasing number of deaths or even reclaim the lives of those who have lost it. The fact that Kiribati people tend to trust in God more than climate change policies, is therefore understandable. It is therefore inappropriate to dismiss God out of the big climate change picture, when vulnerable grassroots communities are referring to God as the basis of their trust and entire lives in the face of climate change. For vulnerable communities like Kiribati, time is precious, every second, every minute, every hour, and every day counts, therefore the time to act is now and for everyone to act individually taking responsibility for what they can do as it is their own future that is at stake, materially, culturally and spiritually.

This study concludes with a few recommendations.

1) There is very little emphasis placed on how climate change could affect people's lives socio-culturally, however some of these practices, as identified by Kiribati communities, are the foundation of their unique identities which distinguishes them from other cultures. The essence of socio-cultural values builds momentum of communities, keeping communities unwavering at times of climate crisis; hence they shape and transform people's views and perceptions towards a sustainable future. They are powerful keys and tools to unlock solutions that steer communities towards sustainable living and development. Therefore socio-cultural impacts of climate change should never be ignored in policy making at any level. As victims of climate change, Kiribati people's voices need to be heard, their needs and challenges should be at the heart of all policies to guide policy makers in their decision making.

2) There is a need for more climate change community awareness programs for remote or outer islands, not only in Kiribati but for the entire Pacific, to build capacity and momentum of communities to live sustainable lives with the support of their socio-cultural values and practices.

3) Science information in its technical form cannot be taken to the communities but it helps communities to understand, and it also supports the historical and current observations and experiences of communities. Therefore scientific information had to be in its finest and simplest form for communities to easily grasp and understand it.

4) Moreover, as highlighted by one of the stakeholders, any relocation plans for Kiribati should include all values and concerns that are important in keeping the Kiribati culture alive. Thus policies have to be in line with the concerns that matters to communities. Concerns of both those who choose to relocate and those who disagree need to be prioritised; hence mobility policies should ensure that they are realistic and effective for the protection of socio-cultural values of people. Policies formulated should be built around political, climatic, and environmental, and most of all socio-cultural and spiritual values of people. For example, the lives of Kiribati people are closely tied to the environment, the land and the ocean, therefore these resources should also be granted without a cost in places they will relocate to for the sustainability of their socio-cultural lives in the long term.

5) Relocation matters and consensus within national communities and governments should involve and engage all stakeholders, from all sectors of the civil society, such as pastors and community leaders in consultation to avoid confusion and misunderstandings, and most importantly to consider their needs and concerns before the implementation of such strategies. As discussed, there was a lack of awareness within the communities on the relocation plan by the Kiribati government to Fiji for food security purposes at the time of the study. It was clear from the public that they were not informed, or have been aware of, the purpose of the land bought in Fiji; as a result, it brought confusions to some. The concerns collected with reference to the socio-cultural

challenges faced and perceived by Kiribati residents in Fiji warrants holistic national and regional policies and frameworks, and a consensus that integrates socio-cultural values and migration, concerns which will invest in the welfare and security of future relocated communities. There has to be a platform set on a regional scale to shed light onto community mobility issues and concerns in the Pacific, which still have failed to receive attention by the international community.

6) The views and justifications of those who refuse to migrate or relocate and specifically from a spiritual angle in the face of climate change shouldn't be ignored in climate change induced mobility or anthropology studies. Research priorities seem to pay more attention or draw conclusions on the movement patterns of those who migrate, in particular the political, environmental, socio-economic and scientific aspects of it, with very little emphasis and recognition given in detail to the concerns and justifications of those who refuse to do so, and specifically those who do so from a spiritual point of view. In the case of Kiribati, not all people will move. Some will choose to stay, and this gap needs to be bridged by supporting and digging deep to investigate what it is that holds communities back, which was the very reason of featuring the spiritual dimension of relocation in this thesis. Preparing communities physically is very crucial, yet it is insufficient to build resilience and capacity of communities because it cannot stop people's lives from being claimed. This leaves space for spirituality to intervene, to prepare people spiritually if human security in the long term has to be accounted for. Therefore the needs and concerns of those who do not want to relocate should also be fully accounted for, and should be included in the development of policies at all levels.

7) For climate change leaders or advocates, there should be an emphasis on the spiritual beliefs of people. A lot of talks and studies have been requesting and acknowledging the importance of taking science to the communities. In the same way, community views and concerns from a spiritual perspective should also be valued and taken into consideration. It is observed that while the delay in financial and political support has always been a disadvantage to communities like Kiribati, religion and spirituality has

also been a reserve which people have unswervingly held on to alongside their socio-cultural values. Spiritual wisdom helps people shape and transform their lives, including for adaptation to climate change.

8) The use of biblical sources should not be undermined and limited to theological studies. Climate change apparently has a spiritual dimension which should not be undervalued because it reveals important information that guides communities to a more sustainable future. Man's scientific studies are recent, for grassroots communities, God spoke ages ago of things that would happen, and they now see them happening. If scientists are saying that the future is appalling, for grassroots communities, so does God the creator who spoke about it years ago.

9) Finally, as mentioned in the introduction chapter, the numerous socio-cultural impacts of climate change collected from this study will help provide more accurate and specific areas of concerns, which will help advance Kiribati's position within the UN climate change negotiations and policy making. It is important to discuss and know about the science and the physical impacts of climate change in Kiribati, but the international community should also be aware of the unheard socio-cultural hardships and battles that Kiribati grassroots are wrestling with.

There has been a wide coverage in the media of the socio-cultural impacts of climate change on Kiribati; however there is still insufficient knowledge or a thorough study to assess in depth and breadth the root of such problems and the kinds of socio-cultural problems there are on the ground. This study begins to reveal just how far-reaching the effects of climate change have been and that these effects are not confined to material or physical losses but include also the socio-cultural integrity of Kiribati communities, which includes the spiritual dimension of eternal security.

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**Appendix A: Research Questionnaire**

**Research Topic: The social-cultural impacts of climate change in Kiribati: The exploration of the relocation strategy to Fiji and its implications on social and cultural values.**

**1.0 Climate Change Perception & Environmental Awareness in Kiribati**

Bibitakin bong e riai ni kakatanoataki man tataekinaki aron ana urubwai iaon Kiribati

1.1 Have you experienced any changes in the weather in your area in the past?

*Man am atatai, iai bibitakin kanoan te bong ae koataia n te tabo ae ko maeka iai ma are ngkoa?*

Yes No

30-50 years 10-30 years 5-10 years <5 years

1.2 Do you think these changes are related to climate change?

*Koatia ni kaitara ma ana urubwai te cyclone, batakataka, te kakarau, te kabuebue n te ngaina*

*ao te bong n tai aika nako?*

Yes No

1.3 Have you experienced an increase in occurrence of extreme events like cyclone, droughts, rainfall, warming days/nights in the past?

*Kanga maitira ongongoram iaon rongorongon bibitakin kanoan bong nna abam?*

30-50 years 10-30 years 5-10 years <5 years Others

1.4 How often do you hear of climate change in your country?

*Maitira ongom taekan kanoan bibitakin bong nna abam?*

daily monthly weekly once per year others

katoa bong katoa namakaina katoa wiiki ni katoa ririki tabeua riki

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1.5 How did you hear about climate change?

*Ko kanga n ongo taekan bibitakin kanoan bong?*

village awareness radio newspaper telephone, television, internet, others.

man ana kakaongora te kaawa, te rerio, Uekera, tarebon, television, internet, tabeua riki

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1.6 Is your community exposed or vulnerable to the changing climate? Explain.

*Nnam iango e riai ba tina kaitarai aron ana urubai bibitakin kanoan bong ke tinaki? Kabarabara ao e aera tinaki?*

_____

_____

1.7 Do you think climate change can be avoided? Yes or No. If yes, how can it be addressed?

*Nnam iango man bibitakin kanoan bong e kona n totokoaki? eng ke tiaki? ngkan eng ao tera am anga iai.*

kona kaitara, kona maing nako, akea am iango, tabeua riki

Adapt migrate do nothing others

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1.8 Do you think it is necessary to adapt to climate change or not? Explain why or why not.

*Ko bon namakinna raoi ma am iango ba am otabanin aei e bongana ibukim? Ngkan Eng, ao bukin tera ao kabarabara.*

_____

_____

1.9 Do you consider your physical environment important to you? If yes...in what ways?

*Ko kakoaua ba am otabanin irarikim e bongana ibukim? ngkana eng, n te anga ra? karinani.*

*List*_____

_____

1.10 In what ways is the ocean, land and water useful to you? List

*N te arora am marawa, abam ao te ran e bongana ibukin*. Karinani

_____

_____

1.11 Have you noticed any changes in terms of the health of the environmental resources and resource use? Yes or No. If yes, what resources did you notice undergoing major change. List those resources.

*Iai am atatai man bitakin maurira man kaubain abara ma bonganaia nakoira? eng ke tiaki, ngkana eng ao tera bwai akana arang rotaki aron bitakia man kaubaira?*

_____

_____

1.12 What do you think might have been the external causes to these changes?

*Tera am iango man rotakin bibitaki aikai, ena iai riki bwai aika ana manga kona riki ni biti aron bibitaki aika*

e riaon kabongana, Man bibitakin kanoan bong, ao tabeua riki

Overuse changing climate others.

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1.13 When did you start seeing changes in your environment resources? *Nningai te tai ae ko kakoaua man nora aron te bitaki iaon kaubain ara otabanin?*

30 -50yrs 10 - 30yrs 10 - 5yrs 5yrs

1.13 How have the changes in resources been affecting your relationship with your environment? *Ena kanga ni bitaki aron kaubaira ni irekereke ma ara otabanin. Karabaraba*

Explain._____

_____

**2. 0 Community experiences of past and current physical impact on sea level rise and climate change on livelihood and natural resources**.

| In which way do you think that the following weather events and environmental changes have changed in your place between the past and now (Tera ae kam norii ae a ibitaki nakon, Ami weather n to bong aei ao taai aika nako) | Less | No change | More |
|---|---|---|---|
| • Frequency of Rain (it rains more often) (Euara maitin babakan te karau? | | | |
| • Intensity of Rain (rains are stronger) (Euara korakoran babakan te karau?) | | | |
| • Frequency of storm surges (storm surges happen more often) (Euara korakoran Karen te nao ni buaka?) | | | |
| • Temperature (Euara kabuebuen taai?) | | | |
| • Height of sea level (Iabutin tari?) | | | |
| • Other changes? Please name (Lai riki bibitaki…taiaoka korei ikai) | | | |

| How do you think that environmental change affects the following sectors of your society (worse/better)?<br>Bibitaki nakon ami otabinin ae a roti bai<br>Ni mauin aikai? | Worse | No change | Better |
|---|---|---|---|
| • Freshwater<br>Te ran ni moi? | | | |
| • Fisheries<br>Ika ni marawa? | | | |
| • Agriculture<br>Te ununiki? | | | |

2.1 Give three essential resources/livelihoods that your family depends on a daily basis (e.g freshwater, land, agriculture, marine etc

*Korei tenua kaubwain abam ae am utu a maiuakinki nte tai aei…e.g. te ran, aba, ununiki)*

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2.2 How important and valuable these resources are to your daily needs?

*Tera kakawakin kaubwain abam aikai nakoim?*

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2.3 Was there a period in which these resources were in short supply or disrupted?

*Lai taai ae e karako reken kaubai aikai nakoim?*

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2.4 What did you normally do in order to manage these resources for continuous supply?

Tera ae ko kakaraoi ni kawakin kaubai aikai?

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2.5 Name the most affected natural resources that your family depends on for your livelihoods?

Ao tera kaubai aiki ae te kabanea n rotaki?

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2.6 To what extent that your natural resources and environment has been changed or destructed?

Buburara aron teuruaki nakon kaubain ao am otababanin ae eatia reke n tai aikai?

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2.7 Did you experience difficulties with the environment in your effort/your family's effort to support your livelihood (such as too little/too much rain, poor soils, natural hazards (storms, floods, erosion, sea level rise etc)

Ko atia n nimakina te rotaki ni karekean te maiu ibukin bibitakin am otabanin? Eurarereke te karau, e mate te tano…

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2.8 What would you and your family do to cope with these difficulties?

Tera ae ko kona ni karaoia ma am utu n totokoi kanganga aikai?

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**3. 0 Perceptions on the cultural impacts of climate change.**

Ara kantaninga ke ara iango iaon rotakin ara katei ni Kiribati ae reke man bibitakin kanoan bong?

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3.1 How would you explain culture in the context of a Kiribati community?

Kabarabara nanon te taeka ae te katei irouia kain Kiribati?

_____

_____

3.2 How do you see Kiribati culture different from other countries?

Iai kaokoran ana katei tei I-Kiribati ma kain abatera?

_____

_____

3.3 What is the relationship between the environment and natural resources and your culture and cultural values?

Tera rekereken te otabanin, kaubwain Kiribati, te katei ni Kiribati ao bongan ara katei ni Kiribati?

_____

_____

3.4 Have you experienced and noticed cultural change in your community as a result of rising sea level and climate change? Explain

Koa tia n nimakina ke nori bitakin ana katei tei I-Kiribati ae reke man waeraken te iabuti ke bibitakin bong? Kabarabara aei…

_____

_____

3.5 Would you think that climate change can affect your cultural ways of living? Yes or No.

If yes, in what ways....list them.

Iai am kantaninga ba bibitakin bong ena kona ibita te katei ke anuan maiun te I-Kiribati? Eng ke eaki? Ngkana eng am kaenga ao korei ikai ae ko ataia?

_____

_____

3.6 What aspect of your culture do you think would be affected the most?

Language, traditional knowledge, land, people's behavior, others?

Tera katein te I-Kiribati ae ko kantaningaia bae ena nang rotaki bibitakin bong? (am taetae ni Kiribati, wanawana, te aba, aia katei aomata…tabeua riki?

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3.7 Do you think it's important to maintain and keep your culture? Why?

Iai raoiroin kawakin am katei ni Kiribati? Ibukin tera?

_____

_____

3.8 Are other cultural activities been affected because of changing climate?

Iai katei ke kakamakuri ni Kiribati aika rotaki naba I bukin bibitakin kanoan bong?

_____

_____

3.9 If your culture is affected by the changing climate what would you think is the best measure to take to save your culture? Explain.

Ngkana am katei ni Kiribati ea bon rotaki man bibitakin kanoan bong, tera n am kantaninga bwa ena karaoaki bae ena teimatoa am katei ni Kiribati? Kabarabara…

_____

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**4. 0 Social impacts and challenges of climate change**.

Katei ni bobotaki ao ni raorao ao kanganga man bibitakin bong?

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4.1 Do you or your family experience social changes in your community due to changing climate? Yes or No. If yes, list the social changes...

*Ngke ke am utu iai te tai ae kam atia n nora bibitakin te katei ni Kiribati ae reke man bibitakin kanoan bong? Ngkana eng am kaeka…ao korei ikai bitaki aikai.*

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4.2 Explain how you see climate change leading into many social problems.

*Kabarabara kanganga aika koa n reke man bibitakin kanoan bong?*

_____

_____

4.3 How has sea level rise and climate change been affecting your social life generally?

*Tera ae ko noria n am katei ao te maiu ni Kiribati ae rotaki man te iabuti ao bibitakin kanoan bong?*

_____

_____

4.4 Do you believe that climate change contributes to social problems in your community?

*Ko kakoaua bwa bibitakin kanoan bong bon ngaia teuana reken kanganga n ara katei ao ara reitaki ma raora?*

_____

_____

4.5 How would you address these social problems?

*Tera ae ko kona ni karaoia n totokoa kanganga aikai? Kabarabara.*

_____

_____

**5.0 People's perception on the relocation strategy with reference to Fiji.**

Kaini baire ibukia aomata ake ana manga kamaingaki nako Biti.

5.1 Are you willing to relocate if your government asks you to do so?

Why and why not

*Ko tauraoi ngkana ea roko te kamaing man te tautaeka? Au ao aera tinaki*

_____

_____

5.2 How ready is your community to relocation plans given by the government?

Tera aroia botaki nako man ana babaire te tautaeka iaon te kamainga aei?

Ready Not ready Reluctant to relocate Others

Tauraoi, aki tauraoi, iangoia imain te kamaing, ao tabeu riki

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5.3 Do you think that Kiribati should relocate now or wait until climate change becomes serious? Why and why not

*Nnan iango e riai te maing ke tina bon tataninga are ea bon rotaki te tabo ao tia tiba maing? Aou, ao eaera tinaki?*

_____

_____

5.6 Why would you choose Fiji to relocate to? Why not Australia or New Zealand?

*E aera e rineaki Biti ba te tabo ae ena maing te aba nakoi iai, ao tiaki New Zealand ao Australia?*

_____

_____

5.7 How do you see relocation to Fiji impacting your identity and culture?

*Tera aron am namakin n te kamaing aei, e na rota aron kateim iabam ma arom ni maeka?*

_____

_____

5.8 How would relocation to another country impact you socially?

*Tera am namakin iaon te kamaing ena iai rotakin anuara ni bobotaki ma kateira iai?*

_____

_____

5.9 What do you think would be some issues other than social and cultural problems that would arise in Fiji?

*Tera am iango, ena kona n reke kanganga irarikin arora ni bobotaki ma ara katei nte maekaibiti?*_____

_____

5.10 What would be some of the cultural practices you think would no longer be practiced in Fiji?

*Tera ae ena manga kona ni manga bua ni kateira ni maekara ibiti?*

_____

5.11 What would you want the international and national community to consider in terms of migration and relocation?

*Tera ae ti tangiria ba tina maiuakinna ni kateia aba ianena ma bon oin kateira ma ara baronga ibukin maingira ao manga kamangaira?*

_____

_____

5.12 Do you think Kiribati culture would still be recognized in Fiji? Yes or No? Explain

*Nnam iango katein abara ena kona ni kinaki irouia kain biti? eng ke eaki? Kabarabara*

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5.13 What would you think is the best way to maintain culture and social values while living in Fiji?

*Tera ami iango, e bon riai ba tina bon kateimatoa ara katei ma anuara ni bobotaki iaon te aba ae biti?*

_____

_____

5.14 Would you consider living in other countries much better than living in your original country?

*Am iango ko bon kan maeka riki iabam tinaniku nakon ae ko bon maeka iaon oin abam?*

_____

_____

5.15 Would there be any differences in living in Kiribati and in Fiji? Explain

*Iai kaokoron ae ko bon maeka iabam nakon ae ko maeka ibiti?*

_____

_____

5.16 What would make you feel connected to Kiribati if you are still forced to relocate as result of climate change?

*Tera am namakin ngkana bon te Ikiribati ngke ao koa tuangaki naba ba kona manga manging man am tabo ibukin bibitakin kanoan bong?*

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