



# Migration or Non-migration to Adapt?

---

## Assessing the Impact on the Well-Being of the Population

---

Virginia De Biasio is a PhD candidate in Philosophy, Politics and Economics at University of York (UK). Her research interests include natural resources justice, territorial rights, environmental justice and climate-induced migration. [virginia.debiasio@york.ac.uk](mailto:virginia.debiasio@york.ac.uk)

Supervised by Lauren Grant, Director of Field Research at Earth Refuge

February 2023





The islands of the Republic of Kiribati in the Pacific Ocean are one of the world's most vulnerable nations to climate change. Sea-level rise, changes in temperature and in the frequency of precipitations, extreme weather events are affecting the territory of Kiribati and its natural resources. Lack of resources or changes in their availability have an impact on the living conditions of the population of Kiribati. Given the close link between the lifestyle of the I-Kiribati and their peculiar ecosystem, the well-being of the local population has been severely affected by climate-related changes in their surrounding environment.

The aim of this report is to assess how the population of Kiribati is affected by climate-related changes on their territory and its natural resources. The report examines the impacts of climate change on different indicators of individual well-being: survival and subsistence economy; health; work opportunities; traditional knowledge and culture.

There is evidence that climate change and its effects on the fragile ecosystem of Kiribati lead to a deterioration in the living conditions and in the well-being of the local population. Different strategies have been considered and implemented by the Kiribati Government to address this situation: adaptation within the territory of Kiribati, which may include internal displacement; and cross-border migration and relocation. This report concludes by examining the different challenges of climate-induced migration, both internal and cross-border, on the well-being of the I-Kiribati.

# Table of Contents

## Migration or Non-migration to Adapt?

### Assessing the Impact on the Well-Being

of the Population 2

1. Introduction 4

2. Kiribati: Background 6

2.1 Economy and Employment 6

2.2 Poverty and Low Standards of Living 7

2.3 High Climate Vulnerability 8

3. Impacts of Climate Change on the Well-Being of the I-Kiribati 9

3.1 Direct Impacts on Well-Being 11

3.2 Impacts on Natural Resources 14

3.2.1 Marine and coastal resources 16

3.2.2 Land, vegetation and agricultural resources 18

3.2.3 Freshwater resources 21

3.3 Impacts on Settlements 22

4. 'In Situ' Adaptation 25

5. Migration and Well-Being 31

5.1 Internal Migration 32

5.2 Cross-Border Migration 35

6. Conclusion 41



Source: <https://www.teriin.org/article/kiribati-land-no-tomorrow>

# 1. Introduction

“ In Kiribati, the word for land, ‘aba’, can also be translated to mean ‘people’ and ‘country’. Ancestral land holds more meaning beyond simply ownership, as it is linked to identity, culture and history.<sup>1</sup>

According to the latest report of the Intergovernmental Panel on Climate Change (IPCC, 2022), the observed effects of climate change are already evident today.<sup>2</sup> Global warming is set to reach 1.5°C in the near-term (2022-2040), already resulting in an increase of climate hazards which bring multiple risks to different ecosystems and human systems. Examples of climate-related hazards include extreme weather events, increase in droughts and fires, deterioration of ecosystems and species extinction. It is estimated that today between 3.3 and 3.6 billion people live in contexts that are highly vulnerable to climate change.<sup>3</sup> Vulnerability to climate change differs from region to region, and the negative impacts of climate change intersect with existing disadvantaged socioeconomic conditions, unsustainable resource use, patterns of inequity and marginalization, that bring about different risks for diverse human systems.<sup>4</sup>

Small islands developing states (SIDS), such as Kiribati, Tuvalu, the Maldives, are hit by some of the most devastating effects of climate change. As the IPCC (2022) reports, continued and accelerating sea-level rise is currently threatening coastal areas, settlements and infrastructures, placing low-lying ecosystems at risk of submergence and permanent loss.<sup>5</sup> SIDS are considered *highly* vulnerable, due to their socio-economic features, their high dependency on climate-sensitive livelihoods, current patterns of increasing displacement, the accelerating loss of their ecosystem services and natural resources, and their very limited adaptive capacities.<sup>6</sup>

This report focuses on the country of Kiribati, which is one of most vulnerable nations in the world

1 Goodwin, Zoya. "Words from the Last Generation of Kiribati." Ocean Conservancy, March 16, 2020. <https://oceanconservancy.org/blog/2020/03/16/words-last-generation-kiribati/>.

2 IPCC, 2022: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. Cambridge University Press, Cambridge, UK and New York, NY, USA, 3056 pp., doi:10.1017/9781009325844, 9.

3 Ibid.

4 Ibid., 12.

5 Ibid., 13.

6 Ibid., 13.



to the impacts of anthropogenic climate change. Sea-level rise, changes in precipitation patterns, saline-intrusion, increased frequency of extreme weather events, such as intensified cyclones, floods ('king tides'), and the prospect of permanent inundation, pose a serious threat to the territory of Kiribati and to the local population.<sup>7</sup>

In Gilbertese, the Kiribati language (also known as Kiribatese or Ikiribati), 'aba' means country (in the sense of land) as well as the people who live on the land. There is a strong correlation between Kiribati's territory, including its natural resources, and the way of living of the I-Kiribati. This report aims to assess how the population of Kiribati is affected by climate-related changes on their territory and its natural resources. The report examines the impacts of climate change on different indicators of individual well-being, including survival and subsistence economy, health, work opportunities, traditional knowledge and culture.

The report is structured as follows. Section 2 gives a general overview on the situation in the country of Kiribati: its geographical features, its main economic sectors, and major socio-economic issues. Section 3 outlines the main impacts of climate change on Kiribati's environment and on the well-being of the local population. It examines three different ways in which climate change negatively affects the well-being of the I-Kiribati: through direct impacts of climate-related hazards on the I-Kiribati; through impacts of climate change on Kiribati's natural resources; and through impacts of climate change on Kiribati's settlements and infrastructure. Section 4 considers adaptation within Kiribati's territory as a potential strategy to tackle climate-related issues. Section 5 focuses on migration, both internal and cross-border, and on the main effects that relocation brings to the I-Kiribati and to their well-being.

<sup>7</sup> Climate Risk Country Profile: Kiribati (The World Bank Group and the Asian Development Bank, 2021).





## 2. Kiribati: Background

---

The Republic of Kiribati consists of 33 islands dispersed over 3.6 million km<sup>2</sup> in the Central Pacific Ocean, located approximately halfway between Australia and Hawaii. Except for a raised volcanic island (Banaba), the remaining 32 islands are low-lying atoll islands (Gilbert, Phoenix and the Line Islands) that rise on average no more than 2–3 meters above the sea level.<sup>8</sup> 21 of these islands are inhabited.

Kiribati is a developing state. It is a rather young nation: a former colony of the British Empire, that gained independence from the UK on 12th July 1979. Due to several different factors, including its colonial history of domination and oppression, and the geographical features of the islands which have a limited availability of natural resources, Kiribati's economy is very fragile and under-developed. In 2020 Kiribati's GDP had a negative growth of -0.5%.<sup>9</sup> The country is highly dependent on sources of foreign aid, including official grants and loans, to sustain itself and its population. This situation is worsening due to the effects of climate change, and in the near-term the nation of Kiribati's reliance on foreign assistance will inevitably increase in order to tackle climate change issues and to plan adaptation or migration strategies for the local population.<sup>10</sup>

### 2.1 Economy and Employment

---

The economy of Kiribati has traditionally been dominated by subsistence farming and fishing, which are still important sectors in the economy. Around 90% of households in Kiribati still practices some form of fishing.<sup>11</sup> Both fishing and farming to meet subsistence needs, however, have been declining due to a rapid urbanization process in South Tarawa and Kiritimati.<sup>12</sup> A consistent portion of the

<sup>8</sup> Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 21.

<sup>9</sup> Available at: <https://data.worldbank.org/country/KI> (accessed 24 October 2022).

<sup>10</sup> See, for example: Pala, Christopher. "Kiribati and China to Develop Former Climate-Refuge Land in Fiji." *The Guardian*. Guardian News and Media, February 23, 2021. <https://www.theguardian.com/world/2021/feb/24/kiribati-and-china-to-develop-former-climate-refuge-land-in-fiji> (accessed 25 October 2022).

<sup>11</sup> Kiribati Country Environmental Analysis. Mainstreaming Environmental Considerations in Economic and Development Planning Processes (Hay and Onorio, 2006), 4.

<sup>12</sup> Kiribati: Climate change and migration – Relationships between household vulnerability, human mobility and climate change. Report No. 20. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS) (Oakes, R., Milan, A., and Campbell J., 2016), 25.

population, especially on the outer islands, still lives at a subsistence level. Heavily dependent on the available, increasingly scarce local natural resources, subsistence livelihoods are based on fishing and on local tree crops, whose productivity depends upon on the conditions of the surrounding environment.<sup>13</sup> In the urban cities, there is a monetized socioeconomic system, but there is still a strong interdependency between this system and the conditions of the surrounding environment.<sup>14</sup>

Kiribati's economy relies heavily on copra, the dried meat of a coconut which is used to produce coconut oil. This constitutes most of the agricultural exports of the country.<sup>15</sup> Other main exports are related to ocean resources, in particular fish (especially tuna) and seaweed.<sup>16</sup> Commercially viable phosphate deposits, which could have been a source of revenue for the country, were exhausted at the time of independence from UK.<sup>17</sup> Tourism is also a source of revenue for Kiribati, but it remains underdeveloped, although the Government of Kiribati plans to develop the sector of sustainable tourism in the near-term as a primary driver of Kiribati's economy.<sup>18</sup>

Kiribati offers limited work opportunities for the local population. The current unemployment rate in Kiribati stands at 30.6%, with youth unemployment rate (15-24 years old) at 54%.<sup>19</sup> Women have less access to employment than men, and they constitute only the 42.3% of paid workers.<sup>20</sup> Maritime and fisheries are the main sectors of employment and present the predominant opportunities for income-generation.<sup>21</sup> Private sector opportunities have also increased in recent years, especially in South Tarawa, leading to a problem of overpopulation as many I-Kiribati migrate to the city in search of employment. However, the overall limited availability of employment opportunities within the country, which are insufficient to meet the population's demands, has forced many I-Kiribati to migrate abroad to look for jobs (for instance, on foreign vessels or as seasonal labourers).<sup>22</sup>

## 2.2 Poverty and Low Standards of Living

As a result of lacking employment opportunities, poverty levels are high, and the satisfaction of basic human needs remain low. The population of Kiribati has one of the lowest standard of living in Oceania.<sup>23</sup> The country of Kiribati has the second-highest mortality rate for children under five years old, among the Pacific Island Countries and Territories.<sup>24</sup> According to the Kiribati Food Security Profile (2021), around 8% of people in Kiribati are undernourished; around 22% people live below the basic needs poverty line; and 41% of people experience moderate or severe levels of food insecurity.<sup>25</sup> Different diseases, such as diarrheal disease, dengue fever, ciguatera poisoning, tuberculosis, are widely spread among the population. The healthcare infrastructure is underdeveloped,<sup>26</sup> and this lack of an adequate infrastructure creates difficulties in accessing healthcare for the local population.<sup>27</sup>

13 Republic of Kiribati – National Adaptation Program of Action (Tereroko et al., 2007), 4.

14 Ibid.

15 Climate Change and Health Country Profile – 2017\_Kiribati (WHO & UN, 2018), 5.

16 Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 26.

17 Republic of Kiribati. "About Kiribati." Climate change. Available at: <https://www.climate.gov.ki/about-kiribati/> (accessed 26 October 2022).

18 Kiribati 20-year vision 2016-2036, 18.

19 Ibid., 26.

20 Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 27.

21 Ibid., 26.

22 Kiribati: Climate change and migration – Relationships between household vulnerability, human mobility and climate change. Report No. 20. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS) (Oakes, R., Milan, A., and Campbell J., 2016), 27-28.

23 Koppikar, Pratik Samir. "5 Facts About Healthcare in Kiribati". In The Borgen Project. "Kiribati." September 14, 2020. Available at: <https://borgenproject.org/tag/kiribati/>. (accessed 7 November 2022).

24 United Nations Children's Fund, *Situation Analysis of Children in Kiribati* (UNICEF, Suva, 2017), 26.

25 Kiribati Food Security Profile (KNSO, FAO and SPC, 2021).

26 Werner, Laura J. "Climate Change, King Tides and Kiribati," (MPH diss., University of Pittsburgh, 2017), 53. Available at: [http://d-scholarship.pitt.edu/31589/1/WernerLaura\\_MPH\\_April\\_2017.pdf](http://d-scholarship.pitt.edu/31589/1/WernerLaura_MPH_April_2017.pdf).

27 Koppikar, Pratik Samir. "5 Facts About Healthcare in Kiribati". In The Borgen Project. "Kiribati." September 14, 2020. Available at: <https://borgenproject.org/tag/kiribati/>. (accessed 7 November 2022).



Given the limited availability of habitable land on the atolls, one of Kiribati's main current challenges is overpopulation, especially in the main city of South Tarawa. The country's population has rapidly increased in the past years: according to the last census carried out by the Kiribati National Statistics Office (KNSO), the total population of Kiribati was 119,438 in 2020;<sup>28</sup> and more than 51% of the population - 63,072 individuals - lived in South Tarawa. This makes South Tarawa one of the most densely populated areas in the Pacific, with approximately 3,184 people living per km<sup>2</sup>.<sup>29</sup> South Tarawa lacks sufficient resources and an adequate system of infrastructures able to sustain the growing population, including a sewage system and a system of freshwater provision.

## 2.3 High Climate Vulnerability

Compounding economic, employment, poverty and standards of living challenges is that Kiribati is highly vulnerable to the impacts of climate change. The climate in Kiribati is tropical: hot and humid with an average temperature of 28.3°C,<sup>30</sup> traditionally characterised by cycles of alternating wet and dry seasons (also known as El Niño and La Niña). Kiribati's climate is closely related to the temperature of the oceans surrounding the atolls. This means that climate change, and in particular global warming, is disrupting the normal pattern of these two seasons, leading to a change in the frequency of El Niño-La Niña weather cycles, with an intensification of rain periods and droughts. It is worth highlighting that, although Kiribati is one of the nations which has contributed least to climate change,<sup>31</sup> as it produces less than 0.1% of the global greenhouse gas (GHG) emissions,<sup>32</sup> it is among the countries most affected by climate change.<sup>33</sup> The country is especially vulnerable given the environmental features of the atolls - which rise on average only 2-3 meters above sea level - coupled with the nation's socio-economic conditions and underdevelopment, and the lack of adequate infrastructure to mitigate and adapt to climate-related challenges.

The following section considers how climate change negatively affects the well-being of the I-Kiribati. It outlines the main effects of climate change on Kiribati's territory, and it examines the consequent impacts of these challenges on the well-being of the local population.

28 Kiribati National Statistics Office. Available at: <https://nso.gov.ki/> (accessed 24 October 2022).

29 Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 22.

30 "World Bank Climate Change Knowledge Portal." Climatology | Climate Change Knowledge Portal. Available at: <https://climateknowledgeportal.worldbank.org/country/kiribati/climate-data-historical#:~:text=Kiribati%20has%20a%20hot%2C%20humid,the%20small%20islands%20and%20atolls.> (accessed 24 October 2022).

31 Climate Change and Health Country Profile - 2017\_Kiribati (WHO & UN, 2018), 7.

32 "UNEP Climate Action Note: Data You Need to Know." UNEP. Available at : [https://www.unep.org/explore-topics/climate-action/what-we-do/climate-action-note/state-of-climate.html?gclid=CjwKCAjwh4ObBhAzEiwAHzZYU5kZibNfp14n7x0TG17tLpW6ETIOagDXcmSHNJ6J3q6JD3\\_1rkmGRoCrIAQAvD\\_BwE](https://www.unep.org/explore-topics/climate-action/what-we-do/climate-action-note/state-of-climate.html?gclid=CjwKCAjwh4ObBhAzEiwAHzZYU5kZibNfp14n7x0TG17tLpW6ETIOagDXcmSHNJ6J3q6JD3_1rkmGRoCrIAQAvD_BwE) (accessed 1 November 2022).

33 Mycoo, M., M. Wairiu, D. Campbell, V. Duvat, Y. Golbuu, S. Maharaj, J. Nalau, P. Nunn, J. Pinnegar, and O. Warrick, 2022: Small Islands. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 2043-2121, doi:10.1017/9781009325844.017.







### 3. Impacts of Climate Change on the Well-Being of the I-Kiribati

SIDS, such as Kiribati, are impacted by different issues resulting from the impacts of climate change and global warming. In particular, SIDS are vulnerable to sea-level rise, ocean warming and natural hazards that have been intensifying due to climate change (i.e. extreme weather events, such as storms; droughts).<sup>34</sup>

Sea-level rise is one of the major challenges affecting the low-lying atolls of Kiribati. The islands of Kiribati are often depicted as ‘sinking islands’ by the media, as the land of the atolls is at risk of permanent inundation due to the ongoing and accelerating sea-level rise.<sup>35</sup> Land security is currently threatened, and the problem is bound to become worse in the near-term.<sup>36</sup> Projections are unclear as to when the islands of Kiribati will be permanently underwater – some say before 2100, others assert this will occur in less than 50 years<sup>37</sup> – though it is likely that the living conditions in Kiribati will be unsustainable before the totality of Kiribati’s territory actually disappears.<sup>38</sup>

Sea-level rise is already contributing to flooding, permanent inundation and coastal erosion. At the same time, ocean warming has led to a variation in ocean acidity and to a degradation of the coral reefs (and coral bleaching).<sup>39</sup> Additional climate-related issues include soil salination, and changes in rain patterns.<sup>40</sup> These environmental challenges are all interlinked and reinforce one another, contributing to a fast deterioration of Kiribati’s ecosystem and resources (see Table 1).

34 Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 35.

35 Alexis-Martin, Becky, James Dyke, Jonathan Turnbull, and Stephanie Malin. “How to Save a Sinking Island Nation.” BBC Future, August 15, 2019. Available at: <https://www.bbc.com/future/article/20190813-how-to-save-a-sinking-island-nation>. (accessed 1 November 2022).

36 Campbell, John R. “Climate-Change Migration in the Pacific.” *The Contemporary Pacific* 26, no. 1 (2014): 1-28.

37 Climate Risk Country Profile: Kiribati (The World Bank Group and the Asian Development Bank, 2021).

38 Security Implications of Climate Change in Kiribati (Government of Kiribati, 2009), 3 – [draft]. Available at: [https://sustainabledevelopment.un.org/content/dsd/resources/res\\_pdfs/ga-64/cc-inputs/Kiribati\\_CCIS.pdf](https://sustainabledevelopment.un.org/content/dsd/resources/res_pdfs/ga-64/cc-inputs/Kiribati_CCIS.pdf) (accessed 2 November 2022).

39 Mycoo, M., M. Wairiu, D. Campbell, V. Duvat, Y. Golbuu, S. Maharaj, J. Nalau, P. Nunn, J. Pinnegar, and O. Warrick, 2022:

Small Islands. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to*

*the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [H.-O. Pörtner, D.C. Roberts, M. Tignor,

E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Lösche, V. Möller, A. Okem, B. Rama (eds.)].

Cambridge University Press, Cambridge, UK and New York, NY, USA, doi:10.1017/9781009325844.017, 2056-2057.

40 Campbell, John R. “Climate-Change Migration in the Pacific.” *The Contemporary Pacific* 26, no. 1 (2014): 1-28.

| Effects of climate change         | Agricultural land and soil | Ocean resources (fish) | Coastal resources (coral reefs, fish, shells) | Lagoon resources (seaweed) | Trees crops and vegetation | Freshwater resources |
|-----------------------------------|----------------------------|------------------------|---|----------------------------|----------------------------|----------------------|
| Sea-level rise                    | ✓                          |                        | ✓   | ✓                          | ✓                          | ✓                    |
| Flooding, inundation              | ✓                          |                        | ✓   | ✓                          | ✓                          | ✓                    |
| Coastal erosion                   | ✓                          |                        | ✓   | ✓                          | ✓                          | ✓                    |
| Ocean warming                     |                            | ✓                      | ✓   | ✓                          |                            |                      |
| Variation in ocean acidity        |                            | ✓                      | ✓   |                            |                            |                      |
| Coral reef degradation            | ✓                          |                        | ✓   | ✓                          |                            |                      |
| Extreme weather events            | ✓                          |                        |   |                            | ✓                          | ✓                    |
| Change in rain patterns, droughts | ✓                          |                        |   |                            | ✓                          | ✓                    |
| Soil salination                   | ✓                          |                        |   |                            | ✓                          | ✓                    |

**Table 1.** Main Effects of Climate Change on Natural Resources in Kiribati.

According to the last IPCC (2022), there are different effects of climate change on human systems in small islands (see Figure 1 below), including:

- 1. impacts on health and well-being:** diseases, heat, malnutrition, mental health and displacement;
- 2. impacts on natural resources:** water availability, agriculture and crop production, fisheries production and animal health and productivity;
- 3. impacts on settlements:** flooding and extreme weather events that damage the land and the islands' infrastructure.

**Figure 1.** Observed global and regional impacts on ecosystems and human systems attributed to climate change. Adapted from: IPCC (2022).<sup>41</sup>

All these impacts contribute to worsening the living conditions of the I-Kiribati. The most densely populated islands (South Tarawa and Kiritimati) are particularly vulnerable to climate change risks, as these intersect with the existing issue of overpopulation, which already causes an unsustainable pressure on essential services, such as waste collection, sewage disposal, availability of freshwater and food sources.<sup>42</sup>

<sup>41</sup> Ibid., FIGURE SPM.2, p.10.

<sup>42</sup> Republic of Kiribati. National Capacity Self-Assessment Project (Ministry of Environment, Lands and Agricultural Development. Government of Kiribati, 2009).



Leaving aside considerations of the potential future loss of the territory of the nation of Kiribati, mainly due to sea-level rise, as well as the subsequent loss of self-determination of its political community,<sup>43</sup> the individual well-being of the I-Kiribati is profoundly affected by climate-related issues.

The remainder of this section will examine how the three categories of climate-related impacts outlined above negatively affect the individual well-being of the I-Kiribati. Individual well-being encompasses different drivers and dimensions.<sup>44</sup> This report focuses on the following four: **survival; health** (physical and mental); **work opportunities; traditional knowledge and culture**. A deterioration of well-being concerns the majority of the I-Kiribati, but traditionally vulnerable groups, such as women, children, elderly populations, lower social classes, persons with disabilities – those considered *differentially* vulnerable – are those most affected by climate-related changes in the territory of Kiribati. Where relevant, the rest of the report will draw attention to specific differences between social groups with regard to the negative impacts of climate change.

### 3.1 Direct Impacts on Well-Being

There are two main climate-related issues that have a direct impact on the I-Kiribati's well-being: 1) *global warming*, which contributes to a host of health-related issues, such as outbreaks of infectious diseases as well as heat-related illnesses; 2) an increase in the occurrence of *extreme weather events*, which leads to higher number of traumatic injuries and deaths,<sup>45</sup> as well as an increase in mental health issues.

**Global warming** affects the land temperature in Kiribati.<sup>46</sup> This has repercussions on individual **health** and **survival**; more specifically, it increases the incidence of vector-borne, cardiovascular and respiratory diseases, which can be lethal.<sup>47</sup> Vector-borne diseases, such as dengue fever, chikungunya and Zika, are infections transmitted by the bite of infected species. Vectors that transmit these diseases are sensitive to climatic features, such as temperature, precipitation and humidity.<sup>48</sup> Climate change is creating the ideal conditions for these species to thrive. For example, the mosquito responsible for outbreaks of dengue fever (in 2003 and 2004) thrives at high temperatures (around 31°C), which are linked to global warming.<sup>49</sup> Overall, since 2012 there have been over 40 large infectious disease outbreaks in Kiribati, caused by climate-sensitive diseases.<sup>50</sup> Higher temperatures and changed rain patterns also have an effect on the rate of respiratory diseases,<sup>51</sup> and increasing temperatures are likely to lead to increased rates of hospitalization and death of individuals with cardiovascular illnesses.<sup>52</sup> Some vulnerable groups of individuals, including those with pre-existing medical conditions and the elderly, are the most affected.

43 This topic has been explored extensively elsewhere. See, for instance: Ker-Lindsay, James. "Climate Change and State Death." *Survival* 58, no. 4 (2016): 73–94. <https://doi.org/10.1080/00396338.2016.1207952>.

44 Those vary according to the study. See, among others: Ruggeri, K., Garcia-Garzon, E., Maguire, Á. et al. Well-being is more than happiness and life satisfaction: a multidimensional analysis of 21 countries. *Health Qual Life Outcomes* 18, 192 (2020). <https://doi.org/10.1186/s12955-020-01423-y>. Or see: "Well-Being Concepts." Centers for Disease Control and Prevention. Centers for Disease Control and Prevention, October 31, 2018. <https://www.cdc.gov/hrqol/wellbeing.htm>. (accessed 7 November 2022).

45 McIver, Lachlan et al. "Assessment of the Health Impacts of Climate Change in Kiribati." *International Journal of Environmental Research and Public Health* 11, no. 5 (2014): 5224–40. <https://doi.org/10.3390/ijerph110505224>.

46 "National Climate Change and Health Action Plan for the Republic of Kiribati." Ministry of Health and Medical Services, Government of Kiribati – World Health Organization, December 25, 2011. Available at: [http://macbio-pacific.info/wp-content/uploads/2018/04/Kiribati-CC-Health-Action-Plan\\_2011.pdf](http://macbio-pacific.info/wp-content/uploads/2018/04/Kiribati-CC-Health-Action-Plan_2011.pdf), 9 (accessed 7 November 2022).

47 McIver, Lachlan et al. "Assessment of the Health Impacts of Climate Change in Kiribati." *International Journal of Environmental Research and Public Health* 11, no. 5 (2014): 5224–40. <https://doi.org/10.3390/ijerph110505224>, 5233.

48 Climate Change and Health Country Profile – 2017\_Kiribati (WHO & UN, 2018), 4.

49 Republic of Kiribati – National Adaptation Program of Action (Tereroko et al., 2007), 19.

50 Climate Change and Health Country Profile – 2017\_Kiribati (WHO & UN, 2018), 4.

51 "National Climate Change and Health Action Plan for the Republic of Kiribati." Ministry of Health and Medical Services, Government of Kiribati – World Health Organization, December 25, 2011, Appendix I. Available at: [http://macbio-pacific.info/wp-content/uploads/2018/04/Kiribati-CC-Health-Action-Plan\\_2011.pdf](http://macbio-pacific.info/wp-content/uploads/2018/04/Kiribati-CC-Health-Action-Plan_2011.pdf) (accessed 7 November 2022).

52 McIver, Lachlan et al. "Assessment of the Health Impacts of Climate Change in Kiribati." *International Journal of Environmental Research and Public Health* 11, no. 5 (2014): 5224–40. <https://doi.org/10.3390/ijerph110505224>, 5233.



## Observed impacts of climate change on human systems

| Human systems             | Impacts on water scarcity and food production |                              |  |   | Impacts on health and wellbeing |                              |               |              | Impacts on cities, settlements and infrastructure |  |                           |                                 |
|---------------------------|---|------------------------------|--|---|---------------------------------|------------------------------|---------------|--------------|---|--|---------------------------|---------------------------------|
|                           | Water scarcity                                | Agricultural/crop production | Animal and livestock health and productivity | Fisheries yields and aquaculture production | Infectious diseases             | Heat, malnutrition and other | Mental health | Displacement | Inland flooding and associated damages            | Flood/storm induced damages in coastal areas | Damages to infrastructure | Damages to key economic sectors |
| Global                    | +   | -                            | ○  | -   | -                               | -                            | -             | -            | -   | -  | -                         | -                               |
| Africa                    | -   | -                            | -  | -   | -                               | -                            | ○             | -            | -   | -  | -                         | -                               |
| Asia                      | +   | -                            | -  | -   | -                               | -                            | -             | -            | -   | -  | -                         | -                               |
| Australasia               | +   | -                            | +  | -   | -                               | -                            | -             | not assessed | -   | -  | -                         | -                               |
| Central and South America | +   | -                            | +  | -   | -                               | -                            | not assessed  | -            | -   | -  | -                         | -                               |
| Europe                    | +   | -                            | -  | +   | -                               | -                            | -             | -            | -   | -  | -                         | -                               |
| North America             | +   | -                            | -  | +   | -                               | -                            | -             | -            | -   | -  | -                         | -                               |
| Small Islands             | -   | -                            | -  | -   | -                               | -                            | ○             | -            | -   | -  | -                         | -                               |
| Arctic                    | +   | -                            | -  | -   | -                               | -                            | -             | -            | -   | -  | -                         | -                               |
| Cities by the sea         | ○   | ○                            | ○  | -   | ○                               | -                            | not assessed  | -            | ○   | -  | -                         | -                               |
| Mediterranean region      | -   | -                            | -  | -   | -                               | -                            | not assessed  | -            | +   | -  | ○                         | -                               |
| Mountain regions          | -   | +                            | -  | ○   | -                               | -                            | ○             | -            | -   | na   | -                         | -                               |

### Confidence in attribution to climate change

- High or very high
- Medium
- Low
- Evidence limited, insufficient
- na Not applicable

### Impacts to human systems in panel (b)

- ⊕ Increasing adverse impacts
- ⊖ Increasing adverse and positive impacts

Global warming also has an impact on **working conditions**, contributing to a decrease in productivity. For example, high temperatures decrease the ability to perform outdoor work.<sup>53</sup> According to the World Bank, labour productivity has already decreased by 10% as a result of global warming, and it is expected to decrease up to 20% by 2050 in Kiribati.<sup>54</sup> Different studies correlate an increase of high temperature with an increase in risks of occupational heat stress, potentially leading to an increase in heat-related mortality.<sup>55</sup> Individuals who are part of the poorest groups in society will be the most affected by climate change, since the majority are employed in heavy manual labour jobs, more prone to the risks of heat stress. They are also less able to afford air conditioning, supplies of water in times of drought, infrastructure for irrigation and ways to adapt to the changed circumstances.<sup>56</sup>

**Extreme weather events**, such as tsunamis or 'king tides', affect the **survival** and **health** of the I-Kiribati as well. A large proportion of the I-Kiribati (80%) live in proximity to the coastal areas, which

53 Ibid.

54 Climate Risk Country Profile: Kiribati (The World Bank Group and the Asian Development Bank, 2021), 15.

55 Mycoo, M., M. Wairiu, D. Campbell, V. Duvat, Y. Golbuu, S. Maharaj, J. Nalau, P. Nunn, J. Pinnegar, and O. Warrick, 2022: Small Islands. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, B. Rama (eds.)].

Cambridge University Press, Cambridge, UK and New York, NY, USA, doi:10.1017/9781009325844.017.2064.

56 Climate Risk Country Profile: Kiribati (The World Bank Group and the Asian Development Bank, 2021), 16.



are prone to flooding and cyclones.<sup>57</sup> The atolls are also frequently inundated and the infrastructure is washed away.<sup>58</sup> In cases where such natural hazards are not a direct cause of death, they often forced the local population to relocate inwards on the atolls wherever possible, given the small extension of the atolls.<sup>59</sup> According to a recent study on tsunamis in Kiribati, “a number of adolescents and young adults consider tsunamis and the creeping rise in sea levels to be among the series of dangerous effects of climate change that threaten the survival and future of younger generations of I-Kiribati”.<sup>60</sup>



**Figure 2.** Eita settlement in Tarawa, Kiribati. Source: *The Guardian*. Photograph: Jonas Gratzner/LightRocket via Getty Images.<sup>61</sup>

During extreme weather events, such as flooding, vulnerable groups are often the most affected. For example, during floodings individuals with disabilities are often perceived as a burden and are displaced from their traditional houses, leaving them little room to display their concerns.<sup>62</sup> Children are also often treated as a burden.<sup>63</sup> Women are another vulnerable group that is mostly affected during extreme weather events, since they are forced to live in overcrowded areas, which leads to stress, and health issues.<sup>64</sup>

Moreover, the occurrence of natural disasters increases the likelihood of violence against women and children, when normal forms of social protections are missing.<sup>65</sup> The problem of gender-based violence is already a crucial one in Kiribati, as more than one-third of the I-Kiribati women (68% of women aged 15–24) have reported to have been in a partnership where they experienced physical or sexual violence.<sup>66</sup> Climate change disasters are likely correlated to an increase in these episodes, since women are forced to live in overcrowded places with little security.<sup>67</sup>

Extreme weather events, coupled with the current poor living conditions in Kiribati, increase the occurrence of mental health stress, too. As the pending threat of sea-level rise is bound to affect the country’s sovereignty and national identity, an overall deterioration in the mental health of I-Kiribati communities is also considered inevitable.<sup>68</sup> Different studies associate climate change to a decrease in mental health, as the traditional relationship of the population with the sea is replaced by fears of ‘encirclement or siege by the sea’.<sup>69</sup> The country has already the highest age-standardised

57 UNDRR (2020). Disaster Risk Reduction in the Republic of Kiribati: Status Report 2019. Bangkok, Thailand, United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, 6.

58 For stories of houses and hospitals washed away, see: Gormley, Shannon. “Migration with Dignity: Their Island Nation May Someday Sink into the ...” December 16, 2016. <https://ottawacitizen.com/news/world/migration-with-dignity-their-island-nation-may-someday-sink-into-the-ocean-so-what-are-kiribatis-people-to-do/>, (accessed 7 November 2022).

59 Kimberly, Ketchoyan. “Kiribati and Sea Level Rise.” Inventory of conflict and environment (ICE), Kiribati. ICE Case Studies, Number 244, July 2011. Available at: <http://mandalaprojects.com/ice/ice-cases/kiribati.htm>, (accessed 2 November 2022).

60 Kempf, Wolfgang. “Tsunami Warnings: Cultural Conceptualizations of Climate Change Impacts in Kiribati.” *Journal de la société des océanistes*, no. 149 (2019): 245–56. <https://doi.org/10.4000/jso.10877>, 252. For stories reported by the I-Kiribati, see: Aurora Brachman and Bradley King, dir. *Words from the Last Generation*, 2017. Available at: <https://www.youtube.com/watch?v=NeBycXljsjw> (accessed 7 November 2022).

61 Retrieved from: Pala, Christopher. 2020. “Kiribati’s President’s Plans to Raise Islands in Fight against Sea-Level Rise.” *The Guardian*. Guardian News and Media. August 10. Available at: <https://www.theguardian.com/world/2020/aug/10/kiribatis-presidents-plans-to-raise-islands-in-fight-against-sea-level-rise> (accessed 23 November 2022).

62 UNDRR (2020). Disaster Risk Reduction in the Republic of Kiribati: Status Report 2019. Bangkok, Thailand, United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, 4.

63 Ibid.

64 Ibid.

65 Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019–2028 (Government of Kiribati, 2014 & 2019), 46.

66 UNDRR (2020). Disaster Risk Reduction in the Republic of Kiribati: Status Report 2019. Bangkok, Thailand, United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, 6.

67 UN WomenWatch (2009). “Women, Gender Equality and Climate Change”, Fact Sheets. Available at: [http://www.un.org/womenwatch/feature/climate\\_change/](http://www.un.org/womenwatch/feature/climate_change/) (accessed 3 December 2022).

68 McIver, Lachlan et al. “Assessment of the Health Impacts of Climate Change in Kiribati.” *International Journal of Environmental Research and Public Health* 11, no. 5 (2014): 5224–40. <https://doi.org/10.3390/ijerph110505224>, 5234.

69 Cianconi, Paolo, Sophia Betrò, and Luigi Janiri. “The Impact of Climate Change on Mental Health: A Systematic Descriptive Review.” *Frontiers in Psychiatry* 11 (2020). <https://doi.org/10.3389/fpsyt.2020.00074>, 6.

rate of suicide mortality of the Pacific Islands.<sup>70</sup> Studies on suicide rates have started to consider the impacts of climate change on individual mental health, especially among younger generations, and on the occurrence of suicidal behaviours, finding evidence that these two variables are often directly correlated.<sup>71</sup> In recent years there seems to be an increase in cases of anxiety, depression, PTSD and substance abuse.<sup>72</sup> Self-harm has also increased by 5.3% from 2009 to 2019,<sup>73</sup> although the correlation with climate change effects is not well-documented yet. Disruption to mental health has also been recently driven by the COVID-19 pandemic, which has disrupted the availability of community-based activities and services for vulnerable groups.<sup>74</sup>

Having examined the main direct effects of climate change-related issues on well-being, the next section explores how climate change affects the natural resources available in the territory of Kiribati, resulting in further negative impacts on the I-Kiribati's livelihood and well-being conditions.

### 3.2 Impacts on Natural Resources

The country of Kiribati is highly dependent on the surrounding environment and on the availability of local natural resources (Figure 3 below). First, natural resources have an *economic* value for the I-Kiribati. They are essential to sustain resource-dependent subsistence livelihoods, and they are directly relevant for the main economic sectors of Kiribati: agriculture, fisheries, energy and tourism. Indirectly, ecosystem services are essential for the provision of natural resources which sustain the life and the economy in Kiribati.<sup>75</sup> Second, natural resources have a *cultural* value for the I-Kiribati.<sup>76</sup> They are essential to preserve types of traditional knowledge and culture, traditional production of handicrafts, traditional styles of building, and traditional forms of medicine. Examples reported by the Kiribati's National Capacity Self-Assessment Project (NCSA, 2009) include: marine and terrestrial practices, chants used while preparing and applying traditional medicine, fishing techniques and knowledge on how to get a good catch, navigational skills.<sup>77</sup>



**Climate change contributes to the loss of natural resources in the territory of Kiribati. Hence, not only does climate change threaten the survival, the health and the economic opportunities of the I-Kiribati, but it also erodes traditional practices and knowledge, contributing to a sense of loss of identity**



Climate change contributes to the loss of natural resources in the territory of Kiribati. Hence, not only does climate change threaten the survival, the health and the economic opportunities of

70 Mathieu, Sharna et al. "Suicide and Suicide Attempts in the Pacific Islands: A Systematic Literature Review." *The Lancet Regional Health - Western Pacific* 17 (2021): 100283. <https://doi.org/10.1016/j.lanwpc.2021.100283>.

71 Mathieu, Sharna et al. "Suicide and Suicide Attempts in the Pacific Islands: A Systematic Literature Review." *The Lancet Regional Health - Western Pacific* 17 (2021): 100283. <https://doi.org/10.1016/j.lanwpc.2021.100283>, 18.

72 "National Climate Change and Health Action Plan for the Republic of Kiribati." Ministry of Health and Medical Services, Government of Kiribati - World Health Organization, December 25, 2011, Appendix I. Available at: [http://macbio-pacific.info/wp-content/uploads/2018/04/Kiribati-CC-Health-Action-Plan\\_2011.pdf](http://macbio-pacific.info/wp-content/uploads/2018/04/Kiribati-CC-Health-Action-Plan_2011.pdf) (accessed 7 November 2022).

73 "Kiribati." Institute for Health Metrics and Evaluation, September 15, 2017. Available at: <https://www.healthdata.org/kiribati>. (accessed 7 November 2022).

74 "Strengthening Mental Health Services in the Pacific during COVID-19 and Beyond." World Health Organization. World Health Organization, February 23, 2022. <https://www.who.int/news-room/feature-stories/detail/strengthening-mental-health-services-in-the-pacific-during-covid-19-and-beyond> (accessed 7 November 2022).

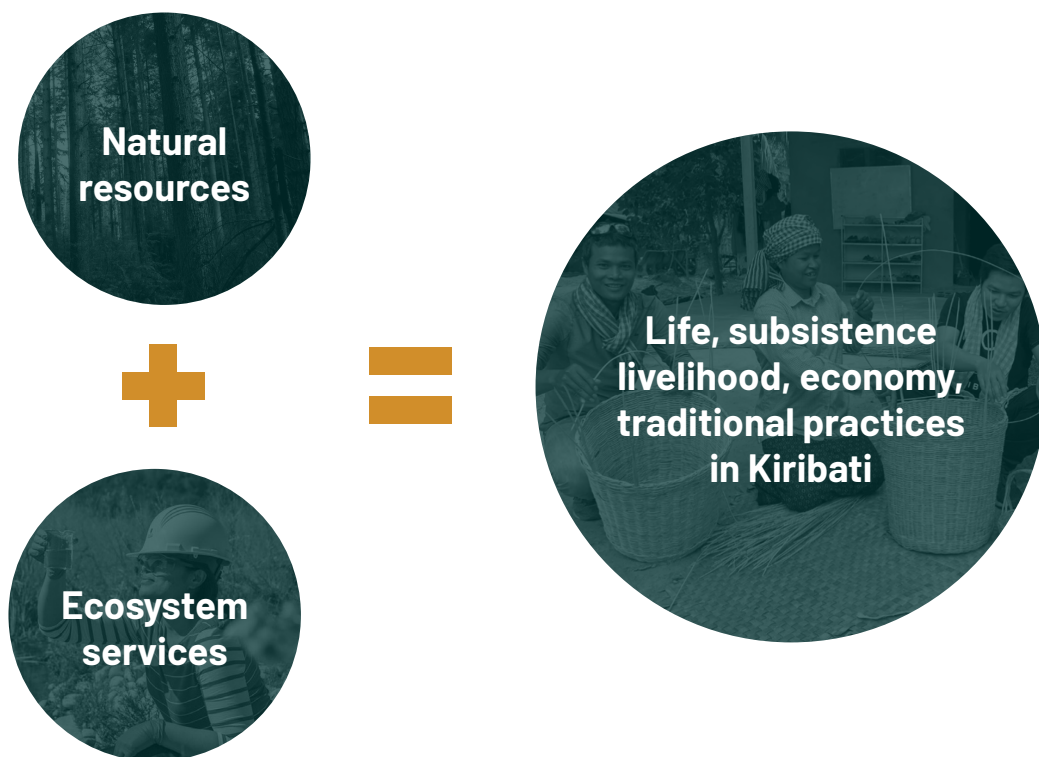
75 Kiribati Country Environmental Analysis. Mainstreaming Environmental Considerations in Economic and Development Planning Processes (Hay and Onorio, 2006), 3.

76 Republic of Kiribati. National Capacity Self-Assessment Project (Ministry of Environment, Lands and Agricultural Development. Government of Kiribati, 2009), para. 3.3.7.

77 Ibid, para. 4.6.



the I-Kiribati, but it also erodes traditional practices and knowledge, contributing to a sense of loss of identity.<sup>78</sup>



**Figure 3.** Importance of environmental factors for the I-Kiribati.

Given the close interdependence between natural resources and the living conditions in Kiribati, the effects of climate change on Kiribati’s environment and on its resources have a negative impact on the well-being of the I-Kiribati. As reported by Hay and Onorio, “the immediate and longer-term well-being of the country, and its inhabitants, are inexorably linked to the quality of the environment in which the people live and to continued ready access to the natural resources on which they depend for their livelihoods”.<sup>79</sup>



**the immediate and longer-term well-being of the country, and its inhabitants, are inexorably linked to the quality of the environment in which the people live and to continued ready access to the natural resources on which they depend for their livelihoods**



<sup>78</sup> Kupferberg, Jakob Schou. 2021. “Migration and Dignity – Relocation and Adaptation in the Face of Climate Change Displacement in the Pacific – a Human Rights Perspective.” *The International Journal of Human Rights* 25 (10): 1793–1818. doi:10.1080/13642987.2021.1889515, 1802.

<sup>79</sup> Kiribati Country Environmental Analysis. *Mainstreaming Environmental Considerations in Economic and Development Planning Processes* (Hay and Onorio, 2006), iii.

There are three main groups of natural resources that are essential for the I-Kiribati: **marine and coastal resources; land, vegetation and agricultural resources; and freshwater resources** (see Figure 4 below). Whereas marine and coastal resources have been traditionally abundant in Kiribati, land, vegetation, agricultural resources and freshwater resources are scarce, due to the geographical features of the atolls' ecosystem. Overpopulation in recent years has further increased the pressure on the scarce resources available, especially in South Tarawa

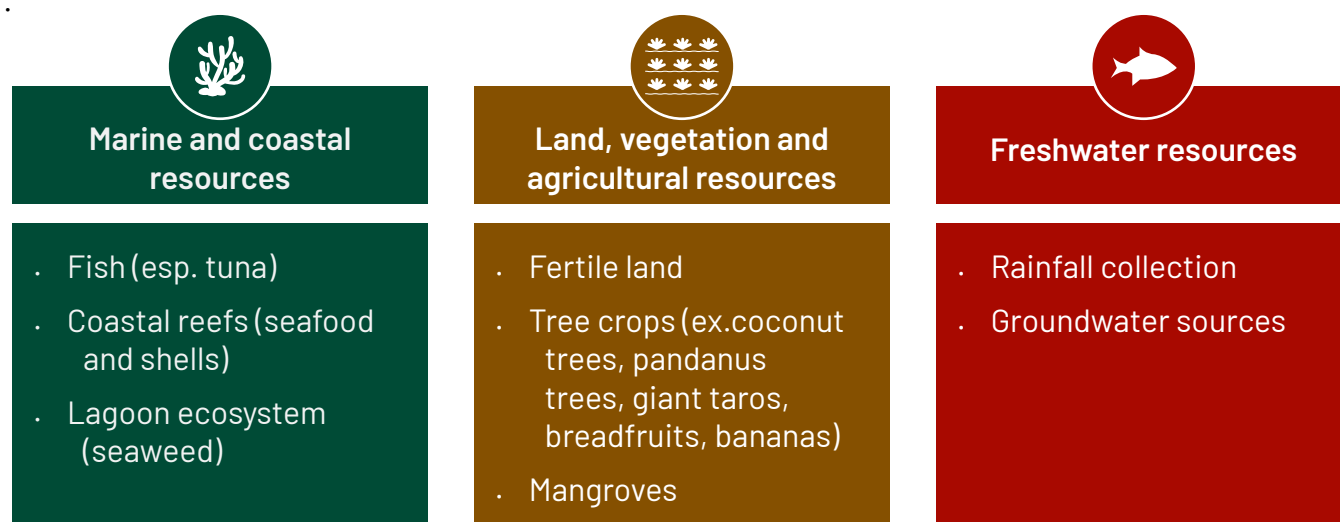


Figure 4. Main natural resources in Kiribati.

The next sections examine each of these groups of resources, outlining how climate change respectively contributes to their rapid deterioration, and analyzes the main negative consequences of each on the well-being of the I-Kiribati, with respect to the four dimensions of well-being outlined above (e.g. survival, health, work opportunities, traditional knowledge and culture). When applicable, the sections to follow will also highlight the differential vulnerabilities that lead to disproportionate burdens and costs on the well-being of various groups within the I-Kiribati population.

### 3.2.1 Marine and coastal resources

Marine resources are essential for the economy of Kiribati and for subsistence livelihoods. Marine resources (e.g. fish, seaweed) are one of the main exports of Kiribati.<sup>80</sup> The local population is highly dependent on fish, which is the main source of protein and income. The I-Kiribati practice subsistence fishing especially in the coastal areas, whereas the ocean territory of Kiribati provides some of the most important fishing grounds for tuna.<sup>81</sup> Fishing is used to provide food sources, but also materials for handicraft production (e.g. shells) used as a source of income. Coastal areas are also a source of materials used for construction as well as a place of recreation for the locals.<sup>82</sup>

Climate change-related issues, in particular ocean warming and changes in the acidity of seawater, are threatening the conditions of the Kiribati's marine and coastal ecosystems. Fishing resources can

80 Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 26.

81 Kiribati: Climate change and migration – Relationships between household vulnerability, human mobility and climate change. Report No. 20. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS)(Oakes, R., Milan, A., and Campbell J., 2016), 26.

82 Government of Kiribati National Report to the United Nations Convention to Combat Desertification (Ministry of Environment and Social Development, 2002) – [draft], 6. Available at: <https://www.sprep.org/att/IRC/eCOPIES/Countries/Kiribati/27.pdf> (accessed 26 October 2022).



survive only at stable temperature regimes.<sup>83</sup> Temperature changes are driving species extinction or relocation. For instance, availability of tuna fish, which is the main catch used for food and as a source of income by the I-Kiribati, has been decreasing.<sup>84</sup> Changes in ocean currents due to global warming are bound to further disrupt the existing conditions of the marine ecosystem in the region.<sup>85</sup> Secondly, climate change contributes to *coral reef degradation*, which disrupts the supply of reef fish and seaweed.<sup>86</sup>

Further, most of the fishing income in Kiribati is linked to fishing licenses that the country grants to foreign vessels for access and use of its ocean territory and fishing resources.<sup>87</sup> In recent years, this has resulted in overfishing by commercial fishing operators from Asia, Europe and America,<sup>88</sup> which has led to increasing pressure on living marine resources, and a consequential decline in the availability of fish and in the size and weight of available fish.<sup>89</sup>

The increasing scarcity of marine and coastal resources, which were traditionally abundant, has different repercussions on the well-being of the I-Kiribati, as such scarcity has led to disruptions in their food supply and economy of subsistence. Impacts of the increasing scarcity of marine and coastal resources on the well-being of the I-Kiribati have become apparent with regard to their health (including food security), work opportunities and traditional knowledge (see Box 1-3 below).

|  |   |
|--|---|
| <b>Impacts on Health &amp; Food Security</b> | Increase in food-borne and food safety diseases (due to higher land and ocean temperatures):                      |
|  | 1. diarrhoeal diseases<br>2. outbreaks of algal blooms and shellfish contamination<br>3. ciguatera fish poisoning |
|  | Decline in food security and food affordability: malnutrition   |
|  | Forced changes in livelihood and diet: decline in mental health   |

**Box 1.** Scarcity of marine and coastal resources: impacts on health and food security.<sup>90</sup>

83 Climate Risk Country Profile: Kiribati (The World Bank Group and the Asian Development Bank, 2021), 10.

84 Palmentieri, Stefania. "Sustainable Tourism: A Valid Remedy against Climate Change Impact in Every Context. the Svalbard and Kiribati Archipelagos." *AIMS Geosciences* 6, no. 2 (2020): 151-70.

85 Julie Babinard et al., "Sustainably Managing Natural Resources and the Need for Construction Materials in Pacific Island Countries: The Example of South Tarawa, Kiribati," *Natural Resources Forum* 38, no. 1 (September 2014): pp. 58-66, <https://doi.org/10.1111/1477-8947.12035>, 61.

86 Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 53.

87 Kiribati: Climate change and migration – Relationships between household vulnerability, human mobility and climate change. Report No. 20. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS) (Oakes, R., Milan, A., and Campbell J., 2016), 26.

88 "Overfishing in Kiribati." Greenpeace Australia Pacific, February 14, 2018. Available at: <https://www.greenpeace.org.au/blog/overfishing-in-kiribati/> (accessed 26 October 2022).

89 Ibid.

90 See: World Bank 2000, "Impact of Climate Change on Low Islands: The Tarawa Atoll, Kiribati", in *Cities, Seas, and Storms: Managing Change in Pacific Island Economies*, vol.4, Papua New Guinea and Pacific Islands Country Unit, chap. 4, 19-26, 26. Available at: <https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library/pacific-islands/micronesia/Papua-New-Guinea--Pacific-Country-Unit.--2000.--Impact-of-CC-on-Low-Islands.pdf> (accessed 7 November 2022); Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 54; Human health and climate change in Pacific islands countries (World Health Organization Western Pacific Region, 2015), 66; "National Climate Change and Health Action Plan for the Republic of Kiribati." Ministry of Health and Medical Services, Government of Kiribati - World Health Organization, December 25, 2011, 24. Available at: [http://macbio-pacific.info/wp-content/uploads/2018/04/Kiribati-CC-Health-Action-Plan\\_2011.pdf](http://macbio-pacific.info/wp-content/uploads/2018/04/Kiribati-CC-Health-Action-Plan_2011.pdf) (accessed 7 November 2022); Climate Change and Health Country Profile - 2017\_Kiribati (WHO & UN, 2018), 4.



## Impacts on Work Opportunities

Decrease in employment opportunities in the fishing sector (especially for men) → loss of autonomy, control and individual identity: decline in mental health

Decrease in income sources

Challenges to vulnerable population groups:

1. inhabitants of outer islands, reliant on types of subsistence livelihoods
2. women, who harvest fish and shells for food and for manufacturing in coastal reef areas
3. children: potential increase in child labour

**Box 2.** Scarcity of marine and coastal resources: impacts on work opportunities.<sup>91</sup>

## Impacts on Traditional Knowledge

Loss of traditional fishing skills

Loss of traditional knowledge of food production and processing

**Box 3.** Scarcity of marine and coastal resources: impacts on traditional knowledge.<sup>92</sup>

## 3.2.2 Land, vegetation and agricultural resources

Vegetation in Kiribati is very limited both in quantity and in diversity. Vegetation resources are scarce due to the extremely infertile nature of the soil, which is correlated with high levels of alkalinity.<sup>93</sup> In terms of diversity, since the end of WWII, the Pacific region has experienced an accelerated removal of trees as a result of colonial rule that established monocultures on the islands, reducing crop diversity in order to make room for more lucrative crops, such as coconut plantations.<sup>94</sup> Regardless of this original situation of scarcity, the I-Kiribati have developed a distinct type of subsistence livelihood using the limited resources available.<sup>95</sup>

Vegetation resources are used as food sources, as well as construction materials, medicine sources and compost materials for gardening.<sup>96</sup> Tree crops and vegetables, however, are insufficient to meet the population's demands, especially in South Tarawa and Kiritimati,<sup>97</sup> where there is now a mixture

91 See: Security Implications of Climate Change in Kiribati (Government of Kiribati, 2009) – [draft], 11. Available at: [https://sustainabledevelopment.un.org/content/dsd/resources/res\\_pdfs/ga-64/cc-inputs/Kiribati\\_CCIS.pdf](https://sustainabledevelopment.un.org/content/dsd/resources/res_pdfs/ga-64/cc-inputs/Kiribati_CCIS.pdf) (accessed 25 October 2022); Women producers of Kiribati and their participation in inter-island and international trade (United Nations Conference on Trade and Development, 2020), 3; Devadason, Caroline Anitha, Luke Jackson, and Jennifer Cole. 2019. Rep. *Pacific Island Countries: An Early Warning of Climate Change Impacts*. Secretariat of the Rockefeller Foundation Economic Council on Planetary Health at the Oxford Martin School, 11. Available at: <https://www.planetaryhealth.ox.ac.uk/wp-content/uploads/sites/7/2019/04/Pacific-Island-Countries-and-Climate-Change-2019.pdf>, (accessed 9 November 2022); Lisa Myers and Laura Theytaz-Bergman, The Neglected Link: Effects of Climate Change and Environmental Degradation on Child Labour, (Osnabrueck: Terre des Hommes, June 2017), 36-39; Cianconi, Paolo, Sophia Betrò, and Luigi Janiri. "The Impact of Climate Change on Mental Health: A Systematic Descriptive Review." *Frontiers in Psychiatry* 11 (2020) <https://doi.org/10.3389/fpsy.2020.00074>, 9.

92 See: Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 54; Kiribati Country Environmental Analysis. Mainstreaming Environmental Considerations in Economic and Development Planning Processes (Hay and Onorio, 2006), 40.

93 Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 23.

94 Frank R. Thomas, "Self-Reliance in Kiribati: Contrasting Views of Agricultural and Fisheries Production," *The Geographical Journal* 168, no. 2 (2002): pp. 163-177, <https://doi.org/10.1111/1475-4959.00045>, 168.

95 Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 23.

96 Government of Kiribati National Report to the United Nations Convention to Combat Desertification (Ministry of Environment and Social Development, 2002) – [draft], 6. Available at: <https://www.sprep.org/att/IRC/eCOPIES/Countries/Kiribati/27.pdf> (accessed 26 October 2022).

97 Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 26.



of subsistence livelihood and dependency on foreign food imports. Vegetation resources are also a relevant economic resource. For instance, copra, is the main agricultural export of Kiribati and it is the main source of income for many I-Kiribati who live on the outer islands, who are paid by the government in exchange for copra through a social protection program known as 'cash for coconut'.<sup>98</sup>

Given the scarce availability of trees and plants, the impacts of climate change on local flora are particularly damaging. Direct impacts stem from *changes in precipitation patterns, droughts, and an increase in land temperatures*. As a result, there is not enough water for the local trees and plants to survive, such as coconut trees, sugar cane, sweet potatoes, taro and cassava crops.<sup>99</sup> For example, production of copra is highly sensitive to rainfall (coconut trees require precipitation of around 1,000-1,500 milliliters per year).<sup>100</sup> Thus, the dependency on this specific crop is threatened as weather patterns become increasingly unpredictable.

Sea level rise is contributing to coastal erosion and to an increase in the frequency and in the height of *inundations*, which destroy the vegetation that grows in proximity of the coast.<sup>101</sup> Additionally, floodings bring about a lack of freshwater sources, a decline in fertile land and an increased level of salinity in the soil.<sup>102</sup> The problem of *soil salinity* is especially relevant, as the elevated level of salt in the soil results in crop damage and crop failure.<sup>103</sup> Salination of groundwater sources is also a threat for the local vegetation. Water salination leads to dying plant life, such as palm trees,<sup>104</sup> coconut trees,<sup>105</sup> and taro, the latter of which is especially sensitive to reductions in groundwater sources and to saltwater intrusions.<sup>106</sup>



**Figure 5.** Sea water that floods the land that threatens food security-pandanus trees. Source: Republic of Kiribati - National Adaptation Program of Action.<sup>107</sup>

Climate change impacts on the land, vegetation and agricultural resources of the I-Kiribati lead to impacts on the well-being of the peoples in the areas of health and food security, work productivity and opportunities, and traditional forms of knowledge and culture (see Box 4-6 below).

98 Kiribati 2019-2020 Household Income and Expenditure Survey Report: Copra brief (Sharp, 2021). See also Henssler, Markus, dir. *Kiribati: a drowning paradise in the South Pacific*, Berlin: DW Documentary, 2017. Available at: [https://www.youtube.com/watch?v=TZ0j6kr4ZJ0&ab\\_channel=DWDocumentary](https://www.youtube.com/watch?v=TZ0j6kr4ZJ0&ab_channel=DWDocumentary) (accessed 26 October 2022).

99 Palmentieri, Stefania. "Sustainable Tourism: A Valid Remedy against Climate Change Impact in Every Context. the Svalbard and Kiribati Archipelagos." *AIMS Geosciences* 6, no. 2 (2020): 151-70, 164.

100 World Bank 2000, "Impact of Climate Change on Low Islands: The Tarawa Atoll, Kiribati", in *Cities, Seas, and Storms: Managing Change in Pacific Island Economies, vol.4, Papua New Guinea and Pacific Islands Country Unit*, chap. 4, 19-26, 25. Available at: <https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library/pacific-islands/micronesia/Papua-New-Guinea--Pacific-Country-Unit.--2000.--Impact-of-CC-on-Low-Islands.pdf> (accessed 7 November 2022).

101 Republic of Kiribati. National Capacity Self-Assessment Project (Ministry of Environment, Lands and Agricultural Development. Government of Kiribati, 2009), para. 4.2.3.

102 Climate Risk Country Profile: Kiribati (The World Bank Group and the Asian Development Bank, 2021), 15.

103 Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 56.

104 Kimberly, Ketchoyian. "Kiribati and Sea Level Rise." *Inventory of conflict and environment (ICE)*, Kiribati. ICE Case Studies, Number 244, July 2011. Available at: <http://mandalaprojects.com/ice/cases/kiribati.htm>. (accessed 2 November 2022).

105 Walker, Ben. "An Island Nation Turns Away from Climate Migration, despite Rising Seas." *An Island Nation Turns Away from Climate Migration, Despite Rising Seas*. Inside Climate News, November 20, 2017. Available at: <https://insideclimatenews.org/news/20112017/kiribati-climate-change-refugees-migration-pacific-islands-sea-level-rise-coconuts-tourism/>. (accessed 2 November 2022).

106 World Bank 2000, "Impact of Climate Change on Low Islands: The Tarawa Atoll, Kiribati", in *Cities, Seas, and Storms: Managing Change in Pacific Island Economies, vol.4, Papua New Guinea and Pacific Islands Country Unit*, chap. 4, 19-26, 25. Available at: <https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library/pacific-islands/micronesia/Papua-New-Guinea--Pacific-Country-Unit.--2000.--Impact-of-CC-on-Low-Islands.pdf> (accessed 7 November 2022).

107 Republic of Kiribati - National Adaptation Program of Action (Tereroko et al., 2007), 15.

## Impacts on Health & Food Security

Decline in food security:

1. threat to subsistence livelihoods
2. malnutrition and vitamins' deficiency (especially in children)
3. loss of biodiversity and genetic erosion

Increase in non-communicable diseases (e.g. diabetes, circulatory disease, obesity, heart disease, strokes, cancer)

Change in traditional nutrition and increased consumption of unhealthy foreign food

**Box 4.** Scarcity of land, vegetation and agricultural resources: impacts on health and food security.<sup>108</sup>

## Impacts on Work Opportunities

Decline in fertile land:

1. issues of crop and animal productivity
2. longer working hours for farmers

Challenges to women in different domains:

- 1) subsistence agriculture
- 2) traditional manufacturing
- 3) less capability to provide for family
- 4) increase in workload

**Box 5.** Scarcity of land, vegetation and agricultural resources: impacts on work opportunities.<sup>109</sup>

108 See: John P. Cauchi, Ignacio Correa-Velez, and Hilary Bambrick, "Climate Change, Food Security and Health in Kiribati: A Narrative Review of the Literature," *Global Health Action* 12, no. 1 (January 2019): 1603683, <https://doi.org/10.1080/16549716.2019.1603683>, 1-4; World Bank 2000, "Impact of Climate Change on Low Islands: The Tarawa Atoll, Kiribati", in *Cities, Seas, and Storms: Managing Change in Pacific Island Economies*, vol. 4, Papua New Guinea and Pacific Islands Country Unit, chap. 4, 19-26, 26. Available at: <https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library/pacific-islands/micronesia/Papua-New-Guinea--Pacific-Country-Unit.--2000.--Impact-of-CC-on-Low-Islands.pdf> (accessed 7 November 2022); Republic of Kiribati - National Adaptation Program of Action (Tereroko et al., 2007), 15-18; Devadason, Caroline Anitha, Luke Jackson, and Jennifer Cole. 2019. Rep. *Pacific Island Countries: An Early Warning of Climate Change Impacts*. Secretariat of the Rockefeller Foundation Economic Council on Planetary Health at the Oxford Martin School, 10. Available at: <https://www.planetaryhealth.ox.ac.uk/wp-content/uploads/sites/7/2019/04/Pacific-Island-Countries-and-Climate-Change-2019.pdf> (accessed 9 November 2022); Fedor, Ilka. "Cultural and National Identity in the Face of Climate Change: A Case Study of I-Kiribati Migrants in New Zealand" (MA diss., University of Otago, Dunedin, New Zealand, 2012), 34. Available at: <http://hdl.handle.net/10523/2445>.

109 See: Werner, Laura J. "Climate Change, King Tides and Kiribati," (MPH diss., University of Pittsburgh, 2017), 12-13. Available at: [http://d-scholarship.pitt.edu/31589/1/WernerLaura\\_MPH\\_April\\_2017.pdf](http://d-scholarship.pitt.edu/31589/1/WernerLaura_MPH_April_2017.pdf); Devadason, Caroline Anitha, Luke Jackson, and Jennifer Cole. 2019. Rep. *Pacific Island Countries: An Early Warning of Climate Change Impacts*. Secretariat of the Rockefeller Foundation Economic Council on Planetary Health at the Oxford Martin School, 11. Available at: <https://www.planetaryhealth.ox.ac.uk/wp-content/uploads/sites/7/2019/04/Pacific-Island-Countries-and-Climate-Change-2019.pdf>. (accessed 9 November 2022).



## Impacts on Traditional Knowledge

Loss of traditional agricultural skills and knowledge

Loss of traditional practices of manufacturing, such as the production of handicrafts, garments, products made of coconut, and cigarettes made from pandanus leaves

**Box 6.** Scarcity of land, vegetation and agricultural resources: impacts on traditional knowledge.<sup>110</sup>

### 3.2.3 Freshwater resources

Another group of resources essential for the I-Kiribati are those of freshwater resources. Water supply depends primarily on rainwater collection and groundwater, which in turn, depend on rainfall replenishment.<sup>111</sup> Overall, available freshwater is scarce and already insufficient to meet the demands of the local population.<sup>112</sup> Some villages do not have any groundwater lenses, due to scarcity of sufficient land. On the most densely populated islands, like South Tarawa, freshwater sources are heavily polluted due to poor waste management and lack of an adequate sewage system.<sup>113</sup>

The main climate-related challenges affecting freshwater provision are: 1) *changes in rainfall*, which lead to longer periods of droughts; 2) *sea-level rise*, which causes inundations, floodings and saline contamination of groundwater sources.<sup>114</sup>

The **unpredictability of rain** periods is considered one of the greatest short-term and medium-term threats for the population of Kiribati.<sup>115</sup> Rainfall is, in fact, directly connected to the availability of freshwater resources for the I-Kiribati, who use it for drinking or cooking purposes. Due to diminished rainfall and unpredictable patterns, drought periods have been more severe.<sup>116</sup> In June 2022, the Kiribati Government declared a state of emergency due to drought, which increases issues with water accessibility and availability.<sup>117</sup> Drought also contributes to salination of freshwater by leaching salt into freshwater and making it unsuitable for drinking.

**Sea-level rise** brings about inundations and flooding: this leads to soil salination and to the frequent intrusion of saltwater into groundwater sources, which are the main sources of freshwater for the I-Kiribati.<sup>118</sup>

The combination of these climate-related issues leads to a drastic reduction of the already scarce supply of freshwater. The impacts of lack of freshwater on the well-being of the I-Kiribati are mainly evident in the area of health (see Box 7 below).

110 See: Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 56; Women producers of Kiribati and their participation in inter-island and international trade (United Nation Conference on Trade and Development, 2020), vii; Werner, Laura J. "Climate Change, King Tides and Kiribati," (MPH diss., University of Pittsburgh, 2017), 51. Available at: [http://d-scholarship.pitt.edu/31589/1/WernerLaura\\_MPH\\_April\\_2017.pdf](http://d-scholarship.pitt.edu/31589/1/WernerLaura_MPH_April_2017.pdf).

111 Climate Risk Country Profile: Kiribati (The World Bank Group and the Asian Development Bank, 2021), 11.

112 Republic of Kiribati – National Adaptation Program of Action (Tereroko et al., 2007), 16.

113 Donovan Storey and Shawn Hunter, "Kiribati: An Environmental Perfect Storm," *Australian Geographer* 41, no. 2 (2010): pp. 167-181, <https://doi.org/10.1080/00049181003742294>, 171.

114 Climate Risk Country Profile: Kiribati (The World Bank Group and the Asian Development Bank, 2021), 22.

115 Donovan Storey and Shawn Hunter, "Kiribati: An Environmental Perfect Storm," *Australian Geographer* 41, no. 2 (2010): pp. 167-181, <https://doi.org/10.1080/00049181003742294>, 170.

116 Di Liberto, Tom. "Drought in the Pacific." NOAA Climate.gov, April 20, 2016. <https://www.climate.gov/news-features/event-tracker/drought-pacific>. Available at: <https://www.climate.gov/news-features/event-tracker/drought-pacific> (accessed 22 November 2022).

117 "Pacific: Drought - May 2022." ReliefWeb. Accessed November 2, 2022. <https://reliefweb.int/disaster/dr-2002-000244-kir>. (accessed 22 November 2022).

118 Kiribati Country Environmental Analysis. Mainstreaming Environmental Considerations in Economic and Development Planning Processes (Hay and Onorio, 2006), 52.



## Impacts on Health

Increase in water-borne diseases (e.g diarrhoeal disease, cholera and typhoid fever)

Increase in child mortality

Lack of water and poor sanitation: problems of food hygiene

Challenges to women (responsible for household's water):

1. increase in stressful situations
2. increase in violent situations
3. conflicts over water

**Box 7.** Scarcity of freshwater resources: impacts on health.<sup>119</sup>



**Figure 6.** Women collecting water in Tarawa. Source: Pacific Community.<sup>120</sup>

The next section will highlight the impacts of climate change on the atolls' infrastructure. In addition to the more direct impacts of climate change on the I-Kiribati, and to the deterioration of the environment and the natural resources on which they depend, impacts on settlement further disrupt their livelihood conditions, their traditions, and pose threats to their survival.

## 3.3 Impacts on Settlements

In addition to depleting natural resources on which the I-Kiribati depend, climate change-related impacts also disrupt well-being across the atolls through the destruction of settlements. *Sea-level rise* is the major issue affecting the territory of Kiribati and its infrastructure. Land is constantly threatened or lost due to sea-level rise. 'King tides' strike the coastlines of the atolls, leading to damages to the shores and to the infrastructure. Houses, hospitals and roads are inundated with flooding or washed away by the sea.<sup>121</sup>

<sup>119</sup> See: "National Climate Change and Health Action Plan for the Republic of Kiribati." Ministry of Health and Medical Services, Government of Kiribati - World Health Organization, December 25, 2011, 15-18. Available at: [http://macbio-pacific.info/wp-content/uploads/2018/04/Kiribati-CC-Health-Action-Plan\\_2011.pdf](http://macbio-pacific.info/wp-content/uploads/2018/04/Kiribati-CC-Health-Action-Plan_2011.pdf) (accessed 7 November 2022); UNDRR (2020). Disaster Risk Reduction in the Republic of Kiribati: Status Report 2019. Bangkok, Thailand, United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, 5; Werner, Laura J. "Climate Change, King Tides and Kiribati," (MPH diss., University of Pittsburgh, 2017), 48. Available at: [http://d-scholarship.pitt.edu/31589/1/WernerLaura\\_MPH\\_April\\_2017.pdf](http://d-scholarship.pitt.edu/31589/1/WernerLaura_MPH_April_2017.pdf); News, Radio New Zealand. "Kiribati Drought at Critical Stage Says UN Body." RNZ. RNZ, September 4, 2022. Available at: <https://www.rnz.co.nz/international/pacific-news/474150/kiribati-drought-at-critical-stage-says-un-body#:~:text=The%20Kiribati%20government%20in%20June,the%20lack%20of%20clean%20water.> (accessed 24 November 2022); Climate Change, Water Security, and Women (Asian Development Bank, 2021), 4-6.

<sup>120</sup> Retrieved from: "KIRIWATSAN: A Resilient Approach to Combat Water, Sanitation and Hygiene Issues in Kiribati." The Pacific Community. July 12, 2018. Available at: <https://www.spc.int/updates/blog/2018/07/kiriwatsan-a-resilient-approach-to-combat-water-sanitation-and-hygiene-issues> (accessed 24 November 2022). Kiribati 20-year vision 2016-2036, 31-34.

<sup>121</sup> Kimberly, Ketchoyian. "Kiribati and Sea Level Rise." Inventory of conflict and environment (ICE), Kiribati. ICE Case Studies, Number 244, July 2011. Available at: <http://mandalaprojects.com/ice/ice-cases/kiribati.htm>. (accessed 2 November 2022).

Rising sea level contributes to *coastal erosion*, which further affects the infrastructure on the islands. Coastal erosion is also linked to changes in the ocean temperature and acidity, which lead to coral reef degradation and bleaching.<sup>122</sup> Coral reefs used to serve as a natural protection from flooding and ‘king tides’. However, their deterioration results in reduced protection from inundation and stronger waves that hit the atolls of Kiribati.



**Figure 7.** Residents on a village in South Tarawa. Source: Josh Haner/The New York Times.<sup>123</sup>

These climate-related issues affecting the land and the infrastructure in Kiribati have different effects on the population’s well-being, in particular on the areas of health (including mental health) and traditional practices and cultural heritage (see Box 8–9 below).

|                          |  |
|--------------------------|--|
| <b>Impacts on Health</b> | <p>Forced relocation of I-Kiribati inwards on the atolls, abandoning their homes</p> <p>Decline in mental health</p> <p>Barriers to access adequate healthcare</p> |
|--------------------------|--|

**Box 8.** Damage to settlements and infrastructure: impacts on health.<sup>124</sup>

|   |   |
|---|---|
| <b>Impacts on Traditional Practices and Cultural Heritage</b> | <p>Threat to traditional infrastructure and social contexts (e.g. traditional halls abandoned on outer islands)</p> <p>Loss of culture and traditional cultural institutions</p> <p>Loss of existing village rules and social networks</p> <p>Loss of relevant cultural and historical places (e.g. stone monuments in Nnabakana, Tabiteuea)</p> <p>Threat to national identity and historical heritage</p> |
|---|---|

122 Mycoo, M., M. Wairiu, D. Campbell, V. Duvat, Y. Golbuu, S. Maharaj, J. Nalau, P. Nunn, J. Pinnegar, and O. Warrick, 2022: Small Islands. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, doi:10.1017/9781009325844.017, 2056-2057.

123 Retrieved from: Ives, Mike. “A Remote Pacific Nation, Threatened by Rising Seas.” The New York Times, July 3, 2016. Available at: <https://www.nytimes.com/2016/07/03/world/asia/climate-change-kiribati.html>. (accessed 24 November 2022). Kiribati 20-year vision 2016–2036, 31–34.

124 See: United Nations Children’s Fund, *Situation Analysis of Children in Kiribati* (UNICEF, Suva, 2017), 40.

**Box 9.** *Damage to settlements and infrastructure: impacts on traditional practices and cultural heritage.*<sup>125</sup>

As this section's overview on the impacts of climate change on Kiribati and on people's well-being has highlighted, the current living conditions in Kiribati are critical. This raises the question of whether life in Kiribati will continue to be sustainable as the I-Kiribati strive to adapt to intensifying climatic impacts and related threats to their natural resources in the medium- and longer-term, or whether the islands are destined to become uninhabitable soon, leaving the local population with no other choice but to relocate elsewhere. The next two sections examine the adaptation strategies taken by the Government of Kiribati to enhance the resilience and abilities of the I-Kiribati to remain in place on the atolls or to relocate in order to cope. The sections to follow examine some of the accomplishments and challenges of both 'in situ' adaptation and 'ex situ' adaptation, where the I-Kiribati migrate to seek refuge from the intensifying impacts of climate change.



**the current living conditions in Kiribati are critical. This raises the question of whether life in Kiribati will continue to be sustainable as the I-Kiribati strive to adapt to intensifying climatic impacts and related threats to their natural resources in the medium- and longer-term, or whether the islands are destined to become uninhabitable soon, leaving the local population with no other choice but to relocate elsewhere.**



<sup>125</sup> See: Security Implications of Climate Change in Kiribati (Government of Kiribati, 2009), 9 – [draft]. Available at: [https://sustainabledevelopment.un.org/content/dsd/resources/res\\_pdfs/ga-64/cc-inputs/Kiribati\\_CCIS.pdf](https://sustainabledevelopment.un.org/content/dsd/resources/res_pdfs/ga-64/cc-inputs/Kiribati_CCIS.pdf) (accessed 2 November 2022); Werner, Laura J. "Climate Change, King Tides and Kiribati," (MPH diss., University of Pittsburgh, 2017), 20. Available at: [http://d-scholarship.pitt.edu/31589/1/WernerLaura\\_MPH\\_April\\_2017.pdf](http://d-scholarship.pitt.edu/31589/1/WernerLaura_MPH_April_2017.pdf); Kiribati 20-year vision 2016-2036, 35-36; "UNESCO Highlights Climate Change Threats to Cultural Property in Kiribati.". SDG Knowledge Hub: IISD. January 3, 2012. Available at : <https://sdg.iisd.org/news/unesco-highlights-climate-change-threats-to-cultural-property-in-kiribati/> (accessed 10 November 2022).







Source: <https://www.kiribatitourism.gov.ki/wp-content/uploads/2017/04/Kiribati-Cultural-Experience-by-David-Kirkland.jpg>

## 4. 'In Situ' Adaptation

As has been established in preceding pages, climate change is rapidly contributing to worsening the living conditions and well-being of the I-Kiribati. Given the effects of climate-related issues on the atolls' territory and the increasing diminishment of natural resources that are key to the survival, health, employment, and culture of the I-Kiribati, measures need to be taken to ensure that minimal conditions of well-being can be guaranteed for the local population. Such measures are often referred to as 'adaptation.'



**the Kiribati public are largely in favour of staying and fighting for their survival [...] They say, 'We've been here for over 2,000 years, how can you convince us that our islands are going to disappear?'**



Adaptation to the impacts of climate change is the effort to adapt to changed environmental and climatic circumstances, strengthening people's resilience and ability to cope with the issues brought about by climate change. While adaptation may take various forms, depending on the context, time, geographical setting and circumstances, **'in situ' adaptation** (adaptation 'on site', in the original place where the Kiribati are located – on the atolls of Kiribati) has been promoted by the Government of Kiribati, in an attempt to ensure that the I-Kiribati can maintain a suitable living standard in face of the current climatic challenges, while continuing to live on the atolls. For example, the 2003–2016 Kiribati Adaptation Program (KAP)<sup>126</sup> aimed "to reduce Kiribati's vulnerability to climate change, climate variability and sea level rise by raising awareness of climate change, assessing and protecting

<sup>126</sup> Available at: <https://www.climate.gov.ki/category/action/adaptation/kiribati-adaptation-program/>

available water resources and managing inundation”.<sup>127</sup>

Overall, the efforts made to sustain adequate livelihood conditions in Kiribati aim to ensure that the population is not going to be *forced* to relocate. It appears that ‘in situ’ adaptation is often preferred by affected communities over the prospect of permanent relocation, because individuals do not generally want to abandon their homeland.<sup>128</sup> For example, during the most recent UN-led Conference of the Parties (COP27, Egypt, 6–18 November 2022), the current Kiribati President Maamau stressed that “the Kiribati public are largely in favour of staying and fighting for their survival [...] They say, ‘We’ve been here for over 2,000 years, how can you convince us that our islands are going to disappear?’”.<sup>129</sup>

President Maamau’s words reflect a religious belief widespread among the local population, which is constituted by a Christian majority, that God gave the land to the I-Kiribati and will not take it from them.<sup>130</sup> This perception is correlated with an attitude of **voluntary immobility** prevalent among the local population. For instance, in an interview with a 52-year old man from Kiribati conducted by Leckie et al. (2013), the respondent stated that “despite knowing the projections of future sea-level rise and the risk of further storm surges... [he] does not wish to leave Kiribati, the country he loves so dearly. His hope is that his government and the international community will not be too quick to encourage the migration of the i-Kiribati people”.<sup>131</sup> Given the religious and cultural beliefs held by the Christian-majority I-Kiribati, ‘in situ’ adaptation strategies are of significance importance for ensuring that populations across the atolls are not forced to move in order to cope with the intensifying impacts of climate change. The paragraphs to follow highlight some of the major ‘in situ’ adaptation strategies that have been implemented in Kiribati in recent years.

A comprehensive adaptation project – the Kiribati Adaptation Program (KAP) – was adopted by the Government of Kiribati in 2003 and implemented between 2006–2016 (under the former President Tong).<sup>132</sup> The main initiatives aimed to improve supply of freshwater sources; enhance coastal protection through plantations of mangroves and strengthen laws against coastal erosion; and improve settlements.<sup>133</sup>

Regarding freshwater, numerous projects were undertaken from 2012 to 2016, including the installation of four rainwater harvesting works and two infiltration gallery works in North and South Tarawa, that included both training an I-Kiribati team to operate the equipment for drilling operations and raising awareness around water use and collection. A related project connected to promoting sufficient water supply was the 2011 KIRIWATSAN I (Water and Sanitation in the Outer Islands of the Republic of Kiribati), aimed at reducing diseases linked to water and poor hygiene in the outer islands of Kiribati, and at increasing supply of freshwater.

To respond to rising sea levels, inundation and coastal erosion, the local population has often taken on the tasks of building seawalls made of sand, debris and materials taken from coral reefs. However, such attempts appear to be counterproductive in the sense that they may cause more harm to marine

127 Republic of Kiribati. “Kiribati Adaptation Program (KAP).” Climate Change. Available at: [https://www.climate.gov.ki/kiribati-adaptation-program/#:~:text=The%20Kiribati%20Adaptation%20Program%20\(KAP,water%20resources%20and%20managing%20inundation.](https://www.climate.gov.ki/kiribati-adaptation-program/#:~:text=The%20Kiribati%20Adaptation%20Program%20(KAP,water%20resources%20and%20managing%20inundation.) (accessed 24 November 2022).

128 Mycoo, M., M. Wairiu, D. Campbell, V. Duvat, Y. Golbuu, S. Maharaj, J. Nalau, P. Nunn, J. Pinnegar, and O. Warrick. 2022. Small Islands. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Lösche, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, doi:10.1017/9781009325844.017, 2076.

129 Milman, Oliver. “No Safe Place’: Kiribati Seeks Donors to Raise Islands from Encroaching Seas.” The Guardian. Guardian News and Media, November 18, 2022. Available at: <https://www.theguardian.com/environment/2022/nov/18/cop27-kiribati-donors-raise-islands-sea-level-rise> (accessed 24 November 2022).

130 Kempf, Wolfgang. “Tsunami Warnings: Cultural Conceptualizations of Climate Change Impacts in Kiribati.” *Journal de la société des océanistes*, no. 149 (2019): 245–56. <https://doi.org/10.4000/jso.10877>, 253.

131 Leckie, Scott. 2013. “Finding Land Solutions for Climate Displacement: A Challenge Like Few Others.” *Displacement Solutions*, October 2013. doi:10.4324/9780203762516, 38.

132 “KAP is financed through grants via the World Bank from Government of Australia; the Global Environment Facility (GEF) Least Developed Country Fund (LDCF); Japan Policy and Human Resources Development (PHRD); Global Facility for Disaster Reduction and Recovery (GFDRR); and in-kind contribution from the Government of Kiribati.” See: Republic of Kiribati. “Kiribati Adaptation Program (KAP).” Climate Change. Available at: <https://www.climate.gov.ki/category/action/adaptation/kiribati-adaptation-program/kiribati-adaptation-program-phase-i/> (accessed 24 November 2022).

133 For data on KAP implementation, see: <https://projects.worldbank.org/en/projects-operations/project-detail/P112615>



ecosystems, as building seawalls with resources taken from the reef and aggregate mining destroy the coastal reef ecosystem, which provide a natural barrier to inundations.<sup>134</sup> In an effort to partially address this situation, in 2011 the Government of Kiribati has launched a campaign to plant mangroves to help reduce coastal erosion.<sup>135</sup> This had positive impacts “both on the protection of the coast and also for food security by providing more fish and crabs for the community”.<sup>136</sup>

Another major project has aimed at improving the islands’ infrastructure. In 2016, the *Kiribati Road Rehabilitation Project (KRRP)* was inaugurated.<sup>137</sup> This is a \$48.2 million project to reconstruct the main road in South Tarawa, making transportations across the island easier.<sup>138</sup> The outcomes of the project were overall positive, leading to an improvement in travel times, safer road conditions and less vehicles’ damages, more reliable public transport and protection for vulnerable users (pedestrians, cyclists).<sup>139</sup>



**The plan would entail that the islands of Kiribati are physically raised up to three meters, to adapt to the future projections of sea-level rise.**



Another project worth highlighting was the planning of a model of floating islands (2008-2010),<sup>140</sup> designed by the Japanese engineering company Shimizu.<sup>141</sup> This ‘futuristic’ project was conceived during Tong’s presidency, but it was soon abandoned due to infeasibility. President Tong’s main policy efforts were instead aimed at improving the current living conditions in Kiribati (via the KAP outlined above) and at ensuring that migration – in case it became the only feasible option – would be planned as to empower the I-Kiribati as much as possible. Further examination of this approached will be offered below (Section 5. Migration and Well-Being).

Currently, ‘in situ’ adaptation is promoted by President Maamau, who grounds adaptation efforts on a combination of economic development, technological advances and faith.<sup>142</sup> During the COP27 (November 2022), President Maamau put forward his plan for ensuring life in Kiribati in the future, regardless of the rising sea level.<sup>143</sup> The plan would entail that the islands of Kiribati are physically raised up to three meters, to adapt to the future projections of sea-level rise. This would require a billion-dollar operation of dredging the seabed, which Kiribati does not currently have the resources to undertake.<sup>144</sup> Although the Government of Kiribati asserts that the responsibility of climate change and global warming falls onto wealthy countries, which theoretically should compensate for their emissions and for the consequent climate-related problems through financing schemes now popularized and codified in International Environmental Law agreements as Loss and Damage, guaranteeing such an investment from rich countries is not an easy task.

134 Security Implications of Climate Change in Kiribati (Government of Kiribati, 2009), 5 – [draft]. Available at: [https://sustainabledevelopment.un.org/content/dsd/resources/res\\_pdfs/ga-64/cc-inputs/Kiribati\\_CCIS.pdf](https://sustainabledevelopment.un.org/content/dsd/resources/res_pdfs/ga-64/cc-inputs/Kiribati_CCIS.pdf) (accessed 2 November 2022).

135 World Bank. “37,000 Mangroves for Kiribati.” World Bank Group, July 20, 2012. Available at: <https://www.worldbank.org/en/news/feature/2011/03/29/37000-mangroves-for-kiribati>. (accessed 24 November 2022)

136 Ibid.

137 Available at: <https://www.mfed.gov.ki/projects/kiribati-road-rehabilitation-project>

138 The KRRP is funded by AusAID, the World Bank, Asian Development Bank in partnership with the Government of Kiribati. See: Republic of Kiribati. “Kiribati Adaptation Program (KAP).” Climate Change. Available at: <https://www.climate.gov.ki/category/action/adaptation/kiribati-adaptation-program/kiribati-adaptation-program-phase-iii/> (accessed 24 November 2022).

139 For an overview of the project’s outcomes, see: [https://devpolicy.org/2019-Pacific-Update/Day\\_2\\_Panel\\_5C\\_Pierre\\_Graftieaux.pdf](https://devpolicy.org/2019-Pacific-Update/Day_2_Panel_5C_Pierre_Graftieaux.pdf) (accessed 3 December 2022).

140 See: <https://www.designbuild-network.com/projects/green-float/> (accessed 3 December 2022).

141 Walters, Laura. “New Plan Gives Pacific People Chance to Stay Home.” Newsroom, April 30, 2019. Available at: <https://www.newsroom.co.nz/groundbreaking-project-gives-pacific-people-chance-to-stay-in-their-homeland>. (accessed 24 November 2022).

142 Pala, Christopher. 2020. “Kiribati’s President’s Plans to Raise Islands in Fight against Sea-Level Rise.” The Guardian. Guardian News and Media. August 10. Available at: <https://www.theguardian.com/world/2020/aug/10/kiribatis-presidents-plans-to-raise-islands-in-fight-against-sea-level-rise>. (accessed 12 November 2022). For a plan to build an artificial islands, see Lister, Natasha, and Ema Muk-Pavic. 2015. “Sustainable Artificial Island Concept for the Republic of Kiribati.” *Ocean Engineering* 98: 78–87. doi:10.1016/j.oceaneng.2015.01.013.

143 Milman, Oliver. “No Safe Place: Kiribati Seeks Donors to Raise Islands from Encroaching Seas.” The Guardian. Guardian News and Media, November 18, 2022. Available at: <https://www.theguardian.com/environment/2022/nov/18/cop27-kiribati-donors-raise-islands-sea-level-rise> (accesses 24 November 2022).

144 Ibid.



The main policy framework of President Maamau's Government is outlined in the [Kiribati 20-year vision 2016-2036](#).<sup>145</sup> Current priorities noted in the Vision include the improvement of the infrastructure on the islands and the development of natural, human and cultural capital in Kiribati. Moreover, President Maamau has been trying to alleviate the pressure on the capital city of Tarawa, attracting people to move back to the outer islands, namely by promoting the economic policy of copra subsidies.<sup>146</sup> So far, this policy has been substantially ineffective, as the conditions on some of these outer islands are increasingly less suitable for agricultural production. However, a recent funding scheme in support of climate-resilience-building measures in Kiribati was approved by the World Bank in May 2022, with the aim to finance works to ensure "improved access to fresh water, drainage improvements, coastal protection, upgrades to public buildings and critical facilities, as well as maintenance equipment and climate-resilient solutions for flooding" on Kiribati's outer islands, in an effort to maintain suitable livelihood conditions on the atolls.<sup>147</sup> Only time will tell if the financing provided will be sufficient to enhance the resilience of the I-Kiribati to adapt 'in situ.'



**traditional knowledge should be "incorporated into design and management of marine and terrestrial protected areas as well as in projects aimed at enhancing the coping capacity of Kiribati people in light of the looming threats of climate change"**



Aside from government's policies and foreign finance and aid, efforts to adapt are highly dependent on local communities, whose awareness to the impacts of climate change has been promoted through training schemes and informative sessions aimed at building their resilience in recent years.

**Traditional knowledge and practices** remain key elements to the consideration, development and implementation of adaptation and resilience-building measures in face of climate change in Kiribati. According to the National Capacity Self-Assessment project (NCSA, 2009), traditional knowledge should be "incorporated into design and management of marine and terrestrial protected areas as well as in projects aimed at enhancing the coping capacity of Kiribati people in light of the looming threats of climate change".<sup>148</sup> Overall, it appears that if traditional practices of management of natural resources are not maintained or revived, the ability to sustain and support the life of the I-Kiribati on the atolls will be permanently hindered.<sup>149</sup>

145 Government of Kiribati. "Kiribati 20-year vision 2016-2036". Available at: <http://president.gov.ki/images/kiribati-20-year-vision-2016-2036%E2%80%A2sept.final.pdf>

146 Kupferberg, Jakob Schou. 2021. "Migration and Dignity - Relocation and Adaptation in the Face of Climate Change Displacement in the Pacific - a Human Rights Perspective." *The International Journal of Human Rights* 25 (10): 1793-1818. doi:10.1080/13642987.2021.1889515, 1800.

147 World Bank. "\$20m Climate Adaption support for Kiribati's Outer Islands." World Bank Group, May 15, 2022. Available at: <https://www.worldbank.org/en/news/press-release/2022/05/15/-20m-climate-adaption-support-for-kiribati-s-outer-islands> (accessed 24 November 2022).

148 Republic of Kiribati. National Capacity Self-Assessment Project (Ministry of Environment, Lands and Agricultural Development. Government of Kiribati, 2009), para. 4.6.

149 Kiribati Integrated Environmental Policy (Government of Kiribati, 2013), 35.





**Figure 8.** I-Kiribati planting mangroves.

Source: World Bank Group.<sup>150</sup>

For example, several studies have explored the connection between traditional knowledge and adaptation as co-existent strategies in furtherance of sustainable development, as a way to enhance human development goals without depleting further the available natural resources. For instance, research has been conducted on the link between

conservation of cultural heritage and sustainable development,<sup>151</sup> and between adaptation to climate-related challenges, such as lack of freshwater, and the cultural capital of the local population.<sup>152</sup>

In response to such research, there is an increasing interest in promoting traditional knowledge and preservation techniques among the local I-Kiribati populations, particularly among the younger generations, since these practices have been declining due to urbanisation and the westernisation of lifestyle.<sup>153</sup> For instance, younger women are now trained by older ones to use traditional methods of food preparation and preservation using the available local resources.<sup>154</sup> Implementing these efforts to preserve traditional forms of knowledge and use of natural resources not only has a positive effect on the conservation of the I-Kiribati culture, but helps as well in sustaining the **health** of the I-Kiribati, by maintaining nutritional diversity and offsetting the negative health impacts caused by an increased dependence on imported food.<sup>155</sup>



**Figure 9.** Positive outcomes of 'in situ' adaptation.

<sup>150</sup> Retrieved from: World Bank. "Kiribati: Kiribati Adaptation Program - Phase III" World Bank Group, September 15, 2011. Available at: <https://www.worldbank.org/en/results/2011/09/15/kiribati-adaptation-program-phase-3> (accessed 24 November 2022). Kiribati 20-year vision 2016-2036, 31-34.

<sup>151</sup> Woodham, Anna, et al. 2018. "Enduring Connections Heritage, Sustainable Development and Climate Change in Kiribati". *Journal of Museum Ethnography*, March 2018, No. 31, Cloth and Costume in Ethnographic Museums: New Directions in Research, Care and Interpretation Papers from Annual Conference of the Museum Ethnographers Group Held at the University of Glasgow 6-7 April 2017: 199-211.

<sup>152</sup> Kuruppu, Natasha. 2009. "Adapting Water Resources to Climate Change in Kiribati: The Importance of Cultural Values and Meanings." *Environmental Science & Policy* 12 (7): 799-809. doi:10.1016/j.envsci.2009.07.005; Kuruppu, Natasha, and Diana Liverman. 2011. "Mental Preparation for Climate Adaptation: The Role of Cognition and Culture in Enhancing Adaptive Capacity of Water Management in Kiribati." *Global Environmental Change* 21 (2): 657-69. doi:10.1016/j.gloenvcha.2010.12.002.

<sup>153</sup> Republic of Kiribati. National Capacity Self-Assessment Project (Ministry of Environment, Lands and Agricultural Development. Government of Kiribati, 2009), para. 3.3.7.

<sup>154</sup> Women producers of Kiribati and their participation in inter-island and international trade (United Nation Conference on Trade and Development, 2020), 30. To see a direct representation of this, see Hensler, Markus, dir. *Kiribati: a drowning paradise in the South Pacific*, Berlin: DW Documentary, 2017. Available at: [https://www.youtube.com/watch?v=TZ0j6kr4ZJ0&ab\\_channel=DWDocumentary](https://www.youtube.com/watch?v=TZ0j6kr4ZJ0&ab_channel=DWDocumentary) (accessed 10 November 2022).

<sup>155</sup> John P. Cauchi, Ignacio Correa-Velez, and Hilary Bambrick, "Climate Change, Food Security and Health in Kiribati: A Narrative Review of the Literature," *Global Health Action* 12, no. 1 (January 2019): 1603683, <https://doi.org/10.1080/16549716.2019.1603683>, 5-6.



## Is 'in situ' adaptation enough for the I-Kiribati?

According to the available scientific evidence, Kiribati has a low expectation of 'in situ' adaptation in the future.<sup>1</sup> This has led the Government of Kiribati to account for the failure of these attempts and to explore strategies for the relocation of the local population.<sup>2</sup> Regardless of the policies promoted by the Government to ensure current habitability of the atolls, internal migration (partially climate-induced) is already a fact on the atolls. Cross-border relocation is not common for the time being, but scientific evidence suggests that it will become necessary. The last section of this report aims to briefly examine the effects that both internal and cross-border relocation have – or will likely have – on the well-being of the I-Kiribati.

<sup>1</sup> Climate Risk Country Profile: Kiribati (The World Bank Group and the Asian Development Bank, 2021).

<sup>2</sup> Barnett, Jonathon. 2017. "The Dilemmas of Normalising Losses from Climate Change: Towards Hope for Pacific Atoll Countries." *Asia Pacific Viewpoint* 58 (1): 3–13. doi:10.1111/apv.12153, 7.



**Kiribati has a low expectation of 'in situ' adaptation in the future**





## 5. Migration and Well-Being

As discussed throughout this report, the impacts of climate change on Kiribati's territory have a negative effect on the well-being of the local population, and they threaten to permanently disrupt the ability of the territory of Kiribati to support human life and livelihood.<sup>156</sup> Shortcomings of 'in situ' adaptation strategies thus far undertaken and their likelihood of succeeding in the future unveil that it is likely that the local population will necessarily have to relocate.

Such migration would be at first **internal migration** within Kiribati—a trend in mobility that is already being observed across the atolls. Climate change is increasingly forcing many individuals and communities in Kiribati to relocate internally to safer areas, including inwards on the atolls or to higher islands, such as Kiritimati. Such movement, in some sense, may be regarded as part of the adaptation process within Kiribati's territory outlined in the previous section.



**according to the main projections of climate science, the possibility of sustaining life on the atolls will be permanently hindered in the future, making forced relocation of the I-Kiribati to foreign countries an inevitable outcome.**



However, according to the main projections of climate science, the possibility of sustaining life on the atolls will be permanently hindered in the future, making forced relocation of the I-Kiribati to

156 Mycoo, M., M. Wairiu, D. Campbell, V. Duvat, Y. Golbuu, S. Maharaj, J. Nalau, P. Nunn, J. Pinnegar, and O. Warrick, 2022: Small Islands. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, doi:10.1017/9781009325844.017, 2046.

foreign countries an inevitable outcome.<sup>157</sup> If the current ambitious plans of President Maamau of raising the atolls' land fail, while the sea-level continues to rise, **cross-border migration** will likely become unavoidable. In response to the likely inevitable climate-related mobility of the I-Kiribati, the Government of Kiribati (under President Tong, 2003-2016) adopted several strategies to ensure its people can move in dignity, if cross-border relocation becomes the only viable option.

The following sections will examine both internal and cross-border migration of the I-Kiribati, highlighting the positive effects and challenges on their well-being that come with both types of movement of the I-Kiribati.

## 5.1 Internal Migration

---

Internal displacement within the atolls has been occurring in Kiribati in recent years. Between 2005-2015, 10% of the population migrated, and 79% of these movements were movements of internal migration.<sup>158</sup> An increasingly common internal migration route, the I-Kiribati living on the outer islands, especially the young generations, have been moving towards the areas of South Tarawa and Kiritimati, leading to a rapid increase in urbanisation and to overcrowding issues. In the considered timeframe (2005-2015), the main reasons for migration among the I-Kiribati were the following, in order of priority: work(34%), education(28%), medical reasons(19%), environment(19%)(see Figure 10).<sup>159</sup>



**Between 2005-2015, 10% of the population migrated, and 79% of these movements were movements of internal migration.**



<sup>157</sup> Barnett, Jonathon. 2017. "The Dilemmas of Normalising Losses from Climate Change: Towards Hope for Pacific Atoll Countries." *Asia Pacific Viewpoint* 58(1): 3-13. doi:10.1111/apv.12153, 4.

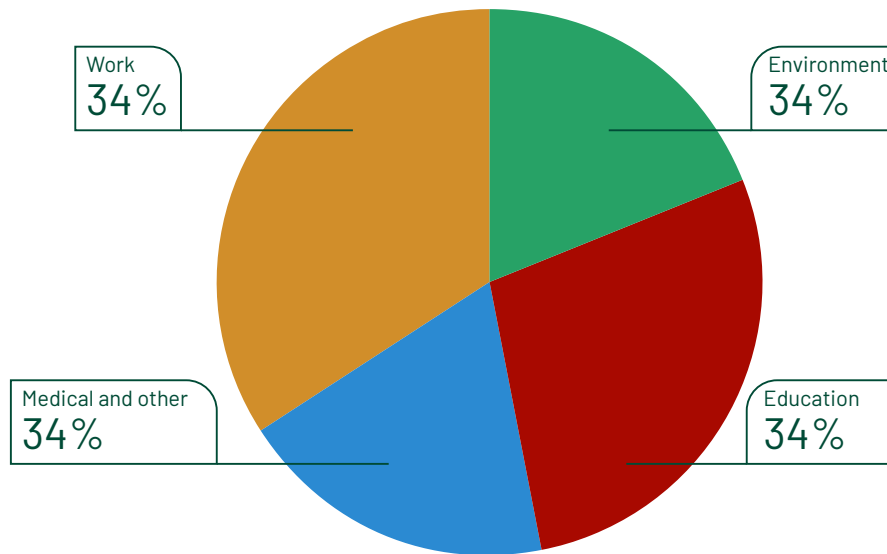
<sup>158</sup> Kiribati: Climate change and migration - Relationships between household vulnerability, human mobility and climate change. Report No. 20. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS)(Oakes, R., Milan, A., and Campbell J., 2016), 39.

<sup>159</sup> Ibid., 43.





## Percentage of internal migrants



**Figure 10.** Reasons for internal migration. Adapted from: PCCM Kiribati Fieldwork.<sup>160</sup>

Different push and pull factors have been identified as drivers of internal relocation, such as population growth and lack of sufficient employment opportunities on the outer islands. One of the main factors driving internal migration are the disparities between the different islands of Kiribati,<sup>161</sup> which lead many I-Kiribati to look for employment and educational opportunities and for a better provision of healthcare in the urban areas. Environmental reasons such as climate change figured as the least commonly cited reason for migration in the years 2005-2015, but climate-driven displacement has likely increased in recent years.<sup>162</sup> For instance, according to the Climate Risk Country Profile of Kiribati (2021), many communities living on the outer islands (such as the village of Tebunginako, Abaiang) had to undertake managed relocation due to the threat of permanent inundation.<sup>163</sup> Further, as it has been illuminated throughout this report, the lack of employment opportunities, and of sustainable living conditions – all drivers of internal migration amongst the I-Kiribati – are often a direct or indirect result of changing climatic and environmental conditions, and this correlation is envisioned to further increase in the near-term.



**internal relocation is not always possible, and it will likely become unsustainable in the longer term as the islands to which people move will be increasingly affected by climate change and sea-level rise, and by overpopulation issues, coupled with scarcity of essential natural resources.**



<sup>160</sup> Data retrieved from: Ibid., Figure 10: Internal migration by reason, p.43.

<sup>161</sup> Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028 (Government of Kiribati, 2014 & 2019), 44.

<sup>162</sup> Climate Risk Country Profile: Kiribati (The World Bank Group and the Asian Development Bank, 2021).

<sup>163</sup> Ibid., 12.

Internal migration can help to partially offset some of the negative impacts of climate change, but those who relocate often face continued, sometimes new threats to their security in the areas where they resettle. Campbell (2014) classifies these as threats to: land security; livelihood security; habitat security.<sup>164</sup> In many instances, internal displacement towards higher land (i.e. the island of Kiritimati) is necessary to guarantee survival and an adequate kind of livelihood for the I-Kiribati, offsetting some of the negative effects of climate change to the aforementioned types of security. In theory, people will move where land security, livelihood security and habitat security are still guaranteed, at least partially. The challenge, however, arises in instances where internal relocation is not always possible, and it will likely become unsustainable in the longer term as the islands to which people move will be increasingly affected by climate change and sea-level rise, and by overpopulation issues, coupled with scarcity of essential natural resources.<sup>165</sup>

Today, internal migration patterns are considered among the most worrying demographic challenges that Kiribati is currently facing.<sup>166</sup> Migration towards the urban area of South Tarawa has led to overpopulation that leads to a host of different challenges, such as overcrowding, poor housing, lack of adequate sanitary conditions, lack of sufficient essential resources, poverty, and increased levels of pollution. The issue of scarcity of resources, including freshwater, contributes to create conflicts and social tensions among the population.<sup>167</sup> Unrest is already considered a security issue in Kiribati, which means that safety in a new home cannot be guaranteed, as tied to conflicts of interest over the scarce resources and territory.<sup>168</sup> As highlighted in Section 3 of this report, scarcity of essential natural resources is rapidly increasing due to climate change and related environmental issues. Hence, if the I-Kiribati move from the outer islands to South Tarawa to escape inundation and unsustainable living conditions, and to find employment, but then they cannot secure employment and live in just as precarious conditions (with lack of essential resources and poor health conditions), they may have to consider moving again, or in other words, they may risk further forced displacement. The issue is that in Kiribati, where all of the atolls are vulnerable, the I-Kiribati risk running out of places to which they can migrate in order to better their situation.

Adaptation strategies, such as the ones outlined in Section 4, have been supported by the Government of Kiribati in an attempt to solve these challenges in the short-term, for instance by trying to increase the provision of essential freshwater supply in South Tarawa. However, these efforts reflect ongoing works-in-progress. Increasing internal migration, coupled with already challenging living conditions, and with an increase in climate-related issues in the medium- and longer-term, are bound to make the living situation in Kiribati's most densely populated islands even more unsustainable.<sup>169</sup> Some I-Kiribati already believe that it is too late for adaptation, as per former President Tong and Rytz (2018)'s words: "It is already too late. But what the international community could do is assure the islanders that they will be able to migrate with dignity. It is the least they could do".<sup>170</sup> Cross-border relocation may soon become the only option for the I-Kiribati.

<sup>164</sup> Land security is the presence of land able to sustain human life; livelihood security (especially food security) concerns the possibility of having the adequate resources to carry out the activities necessary for sustenance and for economic profit; habitat security concerns additional factors, such as health and community well-being, aside from the existence of land and livelihood. See on this: Campbell, John R. "Climate-Change Migration in the Pacific." *The Contemporary Pacific* 26, no. 1 (2014), 4-5.

<sup>165</sup> Devadason, Caroline Anitha, Luke Jackson, and Jennifer Cole. 2019. Rep. Pacific Island Countries: An Early Warning of Climate Change Impacts. Secretariat of the Rockefeller Foundation Economic Council on Planetary Health at the Oxford Martin School, 19. Available at: <https://www.planetaryhealth.ox.ac.uk/wp-content/uploads/sites/7/2019/04/Pacific-Island-Countries-and-Climate-Change-2019.pdf> (accessed 9 November 2022).

<sup>166</sup> Kiribati country case study. AusAID Pacific social protection series: poverty, vulnerability and social protection in the Pacific (Australian Government – AusAID, 2012), 14.

<sup>167</sup> National Research Council. (2013). Climate and Social Stress: Implications for Security Analysis. Committee on Assessing the Impacts of Climate Change on Social and Political Stresses, J.D. Steinbruner, P.C. Stern, and J.L. Husbands, Eds. Board on Environmental Change and Society, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press, 20.

<sup>168</sup> Security Implications of Climate Change in Kiribati (Government of Kiribati, 2009), 11 – [draft]. Available at: [https://sustainabledevelopment.un.org/content/dsd/resources/res\\_pdfs/ga-64/cc-inputs/Kiribati\\_CCIS.pdf](https://sustainabledevelopment.un.org/content/dsd/resources/res_pdfs/ga-64/cc-inputs/Kiribati_CCIS.pdf) (accessed 2 November 2022).

<sup>169</sup> See, for instance: Donovan Storey and Shawn Hunter, "Kiribati: An Environmental 'Perfect Storm,'" *Australian Geographer* 41, no. 2 (2010): pp. 167-181, <https://doi.org/10.1080/00049181003742294>.

<sup>170</sup> Tong, Anote, and Matthieu Rytz. "Opinion | Our Island Is Disappearing but the President Refuses to Act." *The Washington Post*. WP Company, October 24, 2018. <https://www.washingtonpost.com/news/worldpost/wp/2018/10/24/kiribati/>. (Accessed 25 November 2022).





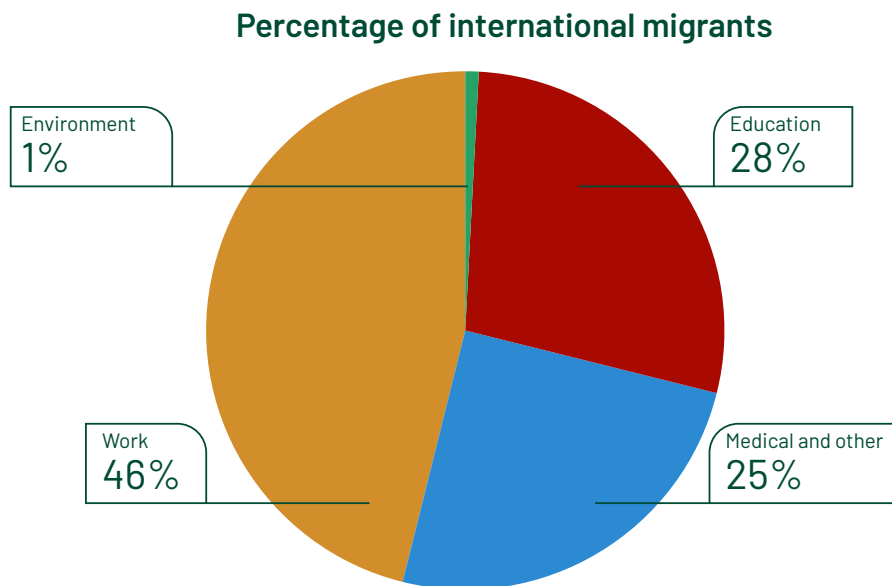
## Cross-border relocation may soon become the only option for the I-Kiribati.



### 5.2 Cross-Border Migration

As outlined in this report, climate change is rapidly contributing to making the living conditions in Kiribati unsustainable, both on the outer islands and in the more urban areas (towards which people have been relocating). The remaining choice, if the current ‘in situ’ adaptation efforts are not able to keep the pace with the changed environmental conditions, will be an increase in cross-border migration, which eventually might affect the totality of the I-Kiribati population.

Cross-border migration has so far concerned only a small portion of the population of Kiribati. Between 2005–2015, international migration amounted to 13% of total of migration movements in the country.<sup>171</sup> The main reason for relocation was related to finding work, given the scarcity of employment opportunities in Kiribati. Other reasons were tied to medical needs and educational purposes. Only 1% of the international migration that occurred between 2005–2015 had environmental issues as the driving reason.<sup>172</sup> But climate change is likely going to become one of the main drivers for cross-border mobility in the future (see Figure 11).



**Figure 11.** Reasons for international migration. Adapted from: PCCM Kiribati Fieldwork.<sup>173</sup>

<sup>171</sup> Kiribati: Climate change and migration – Relationships between household vulnerability, human mobility and climate change. Report No. 20. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS)(Oakes, R., Milan, A., and Campbell J., 2016), 41.

<sup>172</sup> Ibid., 43.

<sup>173</sup> Data retrieved from: Ibid., Figure 10: International migration by reason, p.43.



**even if migration may begin as voluntary, the negative effects of climate change on livelihood will likely lead to a change in the nature of migration, from voluntary to forced.**



According to the latest IPCC report (2022), types of climate-related migration can “occur across a continuum of agency from involuntary displacement at one end to voluntary movement to strategically reduce risks and planned resettlement at the other end”.<sup>174</sup> It should be however noted that this is not a clear-cut distinction: as highlighted by the Government of Kiribati in its analysis of the security implications of climate change, even if migration may begin as voluntary, the negative effects of climate change on livelihood will likely lead to a change in the nature of migration, from voluntary to forced.<sup>175</sup>

In response to the prospect of forced relocation tied to looming threats to land security of Kiribati’s territory, under President Tong (2003–2016), the Government of Kiribati, while working also on ‘in situ’ adaptation efforts, promoted different strategies and policies aimed at **easing ‘ex situ’ adaptation** (off site) and voluntary cross-border relocation for the I-Kiribati, by adopting the so-called idea of **‘Migration with Dignity’**. This narrative aimed to frame the displacement tied to climate issues in terms of a planned (and voluntary) relocation rather than a coercion, in an attempt to avoid the most disruptive effects of cross-border migration and permanent relocation.



**“there is medium evidence and high agreement that the degree of migrant agency and choice in decisions about whether to move, where, when and how is an important determinant of success and therefore ‘adaptiveness’.”**



As per the IPCC report (2022), “there is medium evidence and high agreement that the degree of migrant agency and choice in decisions about whether to move, where, when and how is an important determinant of success and therefore ‘adaptiveness’”.<sup>176</sup> Other studies have found evidence that planned relocation entails that communities experience less trauma and stress and are able to resettle more smoothly, as they retain a sense of agency and control.<sup>177</sup> On the other hand, it seems that unplanned relocation increases the vulnerability of the affected populations.<sup>178</sup>

174 Mycoo, M., M. Wairiu, D. Campbell, V. Duvat, Y. Golbuu, S. Maharaj, J. Nalau, P. Nunn, J. Pinnegar, and O. Warrick, 2022: Small Islands. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, doi:10.1017/9781009325844.017, 2067.  
175 See Security Implications of Climate Change in Kiribati (Government of Kiribati, 2009) - [draft], 7. Available at: [https://sustainabledevelopment.un.org/content/dsd/resources/res\\_pdfs/ga-64/cc-inputs/Kiribati\\_CCIS.pdf](https://sustainabledevelopment.un.org/content/dsd/resources/res_pdfs/ga-64/cc-inputs/Kiribati_CCIS.pdf) (accessed 25 October 2022).  
176 Mycoo, M., M. Wairiu, D. Campbell, V. Duvat, Y. Golbuu, S. Maharaj, J. Nalau, P. Nunn, J. Pinnegar, and O. Warrick, 2022: Small Islands. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, doi:10.1017/9781009325844.017, 2076.  
177 Barnett, Jonathon. 2017. “The Dilemmas of Normalising Losses from Climate Change: Towards Hope for Pacific Atoll Countries.” *Asia Pacific Viewpoint* 58 (1): 3–13. doi:10.1111/apv.12153, 8.  
178 Methmann, Chris, and Angela Oels. 2015. “From ‘Fearing’ to ‘Empowering’ Climate Refugees: Governing Climate-Induced Migration in the Name of Resilience.” *Security Dialogue* 46 (1): 51–68. doi:10.1177/096701061452548, 61.

The idea of ‘Migration with Dignity’ focuses on accepting the inevitable, by trying to give the I-Kiribati the tools to cope with the changed circumstances and with the prospect of permanent relocation.<sup>179</sup> In the discourse held at the UN Panel Discussion (2013) on “Strengthening the Resilience of Small Island Developing States within the context of Sustainable Development”, the Kiribati PR on Climate Change said that: “the Government has taken a policy position that it would be irresponsible [...] not do anything to prepare our community for eventual migration in circumstances that permit them to migrate with dignity. That said, relocation will always be viewed as an option of last resort”.<sup>180</sup>

Several proposals were explored under this policy framework and different policies were adopted. Firstly, the Government of Kiribati purchased some land in the Fiji islands,<sup>181</sup> which the intention of using it to ensure food security and to offer a potential destination for the I-Kiribati’s relocation.<sup>182</sup>

Other options implied coordinating relocation to neighbouring countries, such as Australia and New Zealand, with the primary aim of creating employment opportunities for those wishing to emigrate. The Government of Kiribati promoted schemes aimed at facilitating work opportunities abroad, training the I-Kiribati for jobs that are on demand in the destination countries, such as seafarers and health-care workers.<sup>183</sup> The main goal was to help establish some communities that could constitute the first bulk of Kiribati communities outside the country and that could facilitate future migration.

There are potential positive effects of these kinds of ‘Migration with Dignity’ policies. For example, planned migration for employment is expected to reduce vulnerability in the destination countries, by **expanding economic and employment opportunities** for the migrants.<sup>184</sup> More importantly, cross-border migration could help to partially tackle the main challenges to security for the I-Kiribati, especially land security. Relocating to a country which is not threatened by sea-level rise guarantees the **provision of land** able to sustain human life. Other climate-related challenges that deteriorate



**strong cultural connection to land and uncertainty about life in receiving communities in Australia and New Zealand means that many remain opposed to indefinite or permanent migration**



the living conditions in Kiribati could be avoided too, such as some extreme weather events, flooding, and water insecurity. Or, if not completely avoided, since climate-related issues will also affect neighbouring countries (Fiji, New Zealand and Australia), they could be better addressed. The receiving countries, especially New Zealand and Australia, have in fact more tools and resources to cope and adapt to changed climatic circumstances compared to the Republic of Kiribati.

However, as also suggested by the IPCC (2022), the government’s optimism on the effectiveness

179 Barnett, Jonathon. 2017. “The Dilemmas of Normalising Losses from Climate Change: Towards Hope for Pacific Atoll Countries.” *Asia Pacific Viewpoint* 58 (1): 3–13. doi:10.1111/apv.12153, 4.

180 Available at: <https://sdgs.un.org/events/special-event-strengthening-resilience-small-island-developing-states-within-context> (accessed 25 November 2022).

181 Campbell, John, and Richard Bedford. 2013. “Migration and Climate Change in Oceania.” *People on the Move in a Changing Climate*, 177–204. doi:10.1007/978-94-007-6985-4\_8, 180.

182 Kiribati: Climate change and migration – Relationships between household vulnerability, human mobility and climate change. Report No. 20. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS) (Oakes, R., Milan, A., and Campbell J., 2016), 28.

183 Gormley, Shannon. “Migration with Dignity: Their Island Nation May Someday Sink into the ...” December 16, 2016. <https://ottawacitizen.com/news/world/migration-with-dignity-their-island-nation-may-someday-sink-into-the-ocean-so-what-are-kiribatis-people-to-do/>. (accessed 7 November 2022).

184 Mycoo, M., M. Wairiu, D. Campbell, V. Duvat, Y. Golbuu, S. Maharaj, J. Nalau, P. Nunn, J. Pinnegar, and O. Warrick, 2022: Small Islands. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, doi:10.1017/9781009325844.017, 2076.



of these policies did not seem to be shared by many among the I-Kiribati, since “strong cultural connection to land and uncertainty about life in receiving communities in Australia and New Zealand means that many remain opposed to indefinite or permanent migration”.<sup>185</sup> There appear to be many valid concerns related to cross-border relocation among the I-Kiribati.

Though promising for some, such policies aimed at expanding employability could benefit only certain groups of the population, with specific employable skills, and not to the totality of the I-Kiribati, which has raised concerns around the exclusion of some of the most vulnerable groups (i.e. disabled people, children, elderly). This policy also fails to reach people who already live in poverty, with limited literacy skills and largely dependent on a type of subsistence livelihood.<sup>186</sup>

Perhaps the main challenge connected to permanent relocation in a foreign country is the **lack of legal recognition**. Although the Government of Kiribati said in 2013 that “[they were] looking at the various options available to a ‘disappearing’ state, the legalities, the precedents”,<sup>187</sup> no legal status currently exists for people displaced for environmental reasons.<sup>188</sup> This lack of legal recognition for the I-Kiribati has received the world’s attention, following the outcome of the 2013 case of an I-Kiribati man (Ioane Teitiota), who illegally migrated to New Zealand for environmental reasons. He and his family applied for refugee status in New Zealand, on the ground of climate-related issues posing a risk to their lives in Kiribati. But Teitiota was unable to establish that his right to life had been violated and was eventually deported back to Kiribati,<sup>189</sup> as the New Zealand’s government did not recognise environmental reasons as a legitimate ground for immigration.<sup>190</sup> Teitiota then took his case to the UN Human Rights Committee (HRC), which confirmed that there was not “a risk of imminent, or likely, risk of arbitrary deprivation of life upon return to Kiribati”.<sup>191</sup> The risk was recognised as not imminent, since it could take years for Kiribati to become uninhabitable, and there was still enough time for adaptation measures to be implemented in Kiribati to avoid this situation.<sup>192</sup> This case illuminates one of many examples of what is, effectively, a legal vacuum and a consequent lack of adequate protection for individuals who relocate cross-borders due to climate change.

Other relevant challenges of cross-border relocation concern **health**, in particular **mental health**. Findings from a study on the effects of climate change on Pacific Islands communities predict that cross-border migration will likely have negative impacts on the health and on the livelihood of the individuals who relocate, including “landlessness, unemployment, homelessness, social marginalization, food insecurity, reduced access to common-property resources and increased morbidity [...] loss of income, impoverishment, mental illness, inability to retain cultural ties, or to preserve a strong sense of self and identity, and increases exposure to social and environmental stresses”.<sup>193</sup> Migrants find themselves in unfamiliar environments, and often become a minority in the areas they relocate to, with limited access to options for employment and to services. Those who

185 Ibid.

186 McNamara, Karen E. 2015. “Cross-border migration with dignity in Kiribati”. *Disasters and displacement in a changing climate*: 62.

187 Available at: <https://sdgs.un.org/events/special-event-strengthening-resilience-small-island-developing-states-within-context> (accessed 25 November 2022).

188 Methmann, Chris, and Angela Oels. 2015. “From ‘Fearing’ to ‘Empowering’ Climate Refugees: Governing Climate-Induced Migration in the Name of Resilience.” *Security Dialogue* 46(1): 51–68. doi:10.1177/0967010614552548, 56.

189 Aust, Melanie. “Climate Change Refugees: The Landmark Case of Teitiota v New Zealand.” *AirQualityNews*, December 23, 2020. [https://airqualitynews.com/2020/12/23/climate-change-refugees-the-landmark-case-of-teitiota-v-new-zealand/#:~:text=In%202013%2C%20Ioane%20Teitiota%20\(the,a%20risk%20to%20their%20lives](https://airqualitynews.com/2020/12/23/climate-change-refugees-the-landmark-case-of-teitiota-v-new-zealand/#:~:text=In%202013%2C%20Ioane%20Teitiota%20(the,a%20risk%20to%20their%20lives). (accessed 25 November 2022).

190 “Kiribati Climate Change Refugee Told He Must Leave New Zealand.” 2015. *The Guardian*. Guardian News and Media. September 22. Available at : <https://www.theguardian.com/environment/2015/sep/22/kiribati-climate-change-refugee-told-he-must-leave-new-zealand>. (accessed 13 November 2022).

191 Aust, Melanie. “Climate Change Refugees: The Landmark Case of Teitiota v New Zealand.” *AirQualityNews*, December 23, 2020. [https://airqualitynews.com/2020/12/23/climate-change-refugees-the-landmark-case-of-teitiota-v-new-zealand/#:~:text=In%202013%2C%20Ioane%20Teitiota%20\(the,a%20risk%20to%20their%20lives](https://airqualitynews.com/2020/12/23/climate-change-refugees-the-landmark-case-of-teitiota-v-new-zealand/#:~:text=In%202013%2C%20Ioane%20Teitiota%20(the,a%20risk%20to%20their%20lives). (accessed 25 November 2022).

192 For the details of the legal case, see: Ioane Teitiota v. New Zealand (advance unedited version), CCPR/C/127/D/2728/2016, UN Human Rights Committee (HRC), 7 January 2020, available at: <https://www.refworld.org/cases,HRC,5e26f7134.html> (accessed 25 November 2022).

193 Devadason, Caroline Anitha, Luke Jackson, and Jennifer Cole. 2019. Rep. Pacific Island Countries: An Early Warning of Climate Change Impacts. Secretariat of the Rockefeller Foundation Economic Council on Planetary Health at the Oxford Martin School, 19. Available at: <https://www.planetaryhealth.ox.ac.uk/wp-content/uploads/sites/7/2019/04/Pacific-Island-Countries-and-Climate-Change-2019.pdf> (accessed 9 November 2022).



move commonly experience feelings of homesickness and nostalgia.<sup>194</sup> Loss of social support, loss of belongings and job insecurity in the host country are all contributing factors to the deterioration of the mental health of relocated individuals.<sup>195</sup> Moreover, a major life change, such as displacement, can cause exposure to trauma, loss and can lead to the development of post-traumatic stress disorder, anxiety, and depression.<sup>196</sup>

**Traditional culture and knowledge** is another dimension of well-being that is likely going to be negatively affected by cross-border relocation.<sup>197</sup> It is a current concern among the I-Kiribati that, as they lose their land, they will inevitably lose their culture and tradition, too.<sup>198</sup> From the Kiribati Government's analysis of security implications related to climate change, it is suggested that when the I-Kiribati relocate, they will constitute a minority and will have to eventually adopt the host countries' culture. Even if parts of their culture can be preserved, it will not be the same as before.<sup>199</sup> In addition, there will likely be disruptive effects on the traditional social settings and networks, since community solidarity and cohesion are linked to a place-based identity.<sup>200</sup>



**it seems that cross-border relocation will bring about additional challenges that could be instead (partially) avoided with 'in situ' adaptation and internal migration, if those were feasible and sustainable in the longer-term.**



Overall, then, it seems that cross-border relocation will bring about additional challenges that could be instead (partially) avoided with 'in situ' adaptation and internal migration, if those were feasible and sustainable in the longer-term. Generally speaking, when the displacement is internal rather than cross-border, social and environmental changes are fewer. Kiribati's culture and traditional practices could be more easily maintained, as well as social bonds among the population. Other problems brought about by cross-border relocation could also be avoided: for instance, loss of the nation; problems of uncertainty of legal status in the foreign countries; problems of adaptation to a different environment; problems of integration within a new country.

All these considerations speak to one of the main fears of the I-Kiribati concerning cross-border relocation, which relates to the deep connection that runs between their identity and the particular environment of Kiribati's atolls. Many among the I-Kiribati fear that they will lose their uniqueness,

194 Kupferberg, Jakob Schou. 2021. "Migration and Dignity - Relocation and Adaptation in the Face of Climate Change Displacement in the Pacific - a Human Rights Perspective." *The International Journal of Human Rights* 25 (10): 1793-1818. doi:10.1080/13642987.2021.1889515, 1804-1805.

195 Cianconi, Paolo, Sophia Betrò, and Luigi Janiri. "The Impact of Climate Change on Mental Health: A Systematic Descriptive Review." *Frontiers in Psychiatry* 11 (2020) <https://doi.org/10.3389/fpsy.2020.00074>, 6.

196 Shultz, James M., Andreas Rechkemmer, Abha Rai, and Katherine T. McManus. 2018. "Public Health and Mental Health Implications of Environmentally Induced Forced Migration." *Disaster Medicine and Public Health Preparedness* 13 (02): 116-22. doi:10.1017/dmp.2018.27, 118.

197 See on this: Fedor, Ilka. "Cultural and National Identity in the Face of Climate Change: A Case Study of I-Kiribati Migrants in New Zealand" (MA diss., University of Otago, Dunedin, New Zealand, 2012), 34. Available at: <http://hdl.handle.net/10523/2445>.

198 Kiribati: Climate change and migration - Relationships between household vulnerability, human mobility and climate change. Report No. 20. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS) (Oakes, R., Milan, A., and Campbell J., 2016), 61.

199 Security Implications of Climate Change in Kiribati (Government of Kiribati, 2009), 9 - [draft]. Available at: [https://sustainabledevelopment.un.org/content/dsd/resources/res\\_pdfs/ga-64/cc-inputs/Kiribati\\_CCIS.pdf](https://sustainabledevelopment.un.org/content/dsd/resources/res_pdfs/ga-64/cc-inputs/Kiribati_CCIS.pdf) (accessed 2 November 2022).

200 Mycoo, M., M. Wairiu, D. Campbell, V. Duvat, Y. Golbuu, S. Maharaj, J. Nalau, P. Nunn, J. Pinnegar, and O. Warrick. 2022: Small Islands. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, doi:10.1017/9781009325844.017, 2069.



once they lose the connection with their land.<sup>201</sup> Unfortunately, to this problem (and fear), there seems to be for the time being no easy solution.



**Many among the I-Kiribati fear that they will lose their uniqueness, once they lose the connection with their land**



<sup>201</sup> As evident in interviews conducted with some I-Kiribati on this topic: see Henssler, Markus, dir. *Kiribati: a drowning paradise in the South Pacific*, Berlin: DW Documentary, 2017. Available at: [https://www.youtube.com/watch?v=TZ0j6kr4ZJ0&ab\\_channel=DWDocumentary](https://www.youtube.com/watch?v=TZ0j6kr4ZJ0&ab_channel=DWDocumentary) (accessed 26 October 2022).





## 6. Conclusion

Kiribati is one of the countries hit the hardest by the effects of climate change. There is already ample evidence of the deterioration of Kiribati’s environment and of its natural resources due to climate-related challenges. This implies a drastic reduction in the well-being of the I-Kiribati, whose life is deeply intertwined with the conditions in their surrounding environment.

As the current situation is very likely going to worsen in the near future, there is a growing need to consider strategies of adaptation, as well as relocation for the I-Kiribati. Taking into account the impacts of such strategies on the well-being of the population could help in drawing future strategies that are sensitive to the traditional living conditions of the I-Kiribati and to the challenges that they will likely face as the effects of climate change continue to worsen.

### Policy Recommendations

|   |   |  |
|---|---|--|
| Improve the current living conditions of the I-Kiribati within the country, at least in the short- and medium- term   | In implementing ‘in situ’ adaptation, incorporate the traditional knowledge and practices of the population to improve resilience-building and practices of sustainable development | Explore cross-border relocation options, in case longer-term ‘in situ’ adaptation fails  |
| Consider the close link between the I-Kiribati and their environment when planning for cross-border relocation (i.e. consider finding similar environmental conditions) | Empower the I-Kiribati’s population, making them ‘agents’ in future cross-border relocation, rather than victims  | Consider the differences between different social groups of I-Kiribati, devoting particular attention to vulnerable social groups with limited adaptive capacities and resources |



**Web** <https://earthrefuge.org>

**E-mail** [info@earthrefuge.org](mailto:info@earthrefuge.org)