

Can climate change exacerbate the survival of minor languages?

A case study of Kiribati

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Abstract

This study examines the social effects brought on by sea level rise in Kiribati, a small island nation located in the Pacific region. It is already well documented that rising sea levels, enhanced by the growing temperatures due to climate change, can adversely affect coastal populations. Furthermore, the low-lying atoll islands are estimated to be the first ones, even among the SIDS, to lose a significant portion of territories and even get submerged if the sea level rise speed intensifies. However, even though there is evidence that relocation negatively impacts endangered languages, it is still not known if this could negatively affect languages spoken by small populations which may be permanently displaced.

This paper focuses on the cases when natural disasters directly affected local languages by reviewing articles that have either discussed a possible connection between language vitality or estimated the vulnerabilities of Kiribati and other island communities. A significant part of the paper is dedicated to the case study of the perception of threats by the inhabitants of South Tarawa in Kiribati, as it allows us to assess how urgent the situation is based on the observations of the local population. Based on the existing studies and the new data, the study could not find any cases of permanent displacement of the main island, and the scope of migration is not high enough to affect the survival of the local Gilbertese language and thus threaten biocultural diversity in Kiribati. However, the existing future models show that the worsening sea levels may significantly shape this low-lying island nation and its population, and this sense of threat is shared with the local population in Kiribati.

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I. Introduction

Kiribati is a Small Island Developing State (SIDS) located in Micronesia, the smallest sub-region of Oceania in the Pacific Ocean. It is one of the three sovereign countries comprised primarily or entirely of atoll islands in the Pacific region, the others being the Marshall Islands in Micronesia and Tuvalu in the sub-region of Polynesia. Kiribati is comprised of 32 atolls and one raised coral island, Banaba. Despite having a territory of only 811 km², the islands that comprise this island nation are dispersed and extend approximately 4,000 km from east to west and over 2,000 km from north to south. As almost all its territory lies below 4 m above sea level, Kiribati is often called one of the most threatened countries due to rising sea levels (Baldacchino, 2016; Storlazzi et al., 2015). Despite this, Kiribati is one of the biggest countries by population in the Micronesia sub-region, accounting for more than one-fifth of the total population of Micronesia. The population of Kiribati is estimated at over 122,000, most of whom are of I-Kiribati ethnicity. The most spoken language in Kiribati is Gilbertese, or Kiribati, belonging to the Austronesian language family and is generally not considered endangered (Ethnologue, 2022). Gilbertese and English are co-official languages in the republic. Even though quite ethnically and linguistically homogenous now, the country used to be more linguistically diverse. Banaban language, once spoken on the island of Banaba, went extinct as its tiny population shifted to Gilbertese as the Banaba Island population was encouraged to adopt Gilbertese by the missionaries in addition to an enormous influx of Pacific Island labourers into the phosphate mining industry, which used to be concentrated on this island (Karutake et al., 2004).

The Kiribati Government is trying to counter the effects of rising sea levels by building seawalls and planting mangroves. In addition to mitigating the floods, they can serve as carbon sinks and a carbon mitigation measure. A negligible contributor to global greenhouse gas emissions, the country has also set goals to decrease its carbon footprint, with the most considerable mitigation potential in transport and energy efficiency, as pledged in its nationally determined contributions (NDC), updated in November 2022 (Republic of Kiribati, 2022).

Despite the efforts in adaptation and mitigation, the submersion rates in the Pacific region are higher than the reef accretion of coral reefs (Montaggioni, 2005). At least two islets belonging to Kiribati, Abanuea and Tebua Tarawa, were reported to have been sunk in 1999 (Republic of Kiribati, 2015), and two villages in the outer islands (Tebunginako and Abaiang) had to manage the relocation (Republic of Kiribati, 2022).

The principal climate change-induced threats towards Kiribati are the deterioration of drinking water security and safety due to saline contamination, coastal zone erosion, and food security due to coral bleaching and reduced livestock productivity (Republic of Kiribati, 2022). In addition, climate change negatively impacts local people's health due to the surge in heat-related illnesses, vector-borne diseases, non-communicable diseases and other disorders (McIver et al., 2016).

Studies on climate change and related migration in Kiribati remain scarce. Furthermore, although various studies on climate change migration exist, no surveys have investigated its impact on local cultures and languages in Kiribati and other countries (Republic of Kiribati, 2022). Furthermore, language loss predictions are hardly ever based on statistically rigorous analysis. Among the exceptions is the study by Bromham et al. (2022), where the language loss pace is estimated based on the rates of change in land use, even though sea level rise (SLR) effects are not analysed in detail. A negative effect on local language due to SLR-induced migration is also briefly discussed in the study by Sabūnas et al. (2021). Meanwhile, the loss of global diversity of languages threatens cultural identity, mental health, and the preservation of traditional knowledge and institutions, as different languages offer a distinctive window into human history, cognition, and culture (Skirgārd et al., 2023).

Even though the research on possible links between climate change and language loss is limited, more studies exist on the population's perception of climate change and forced migration. One of the most fundamental sources for Kiribati is a 2016 report by the United Nations University based on a big-scale survey of 377 households in South Tarawa, Butaritari, Kiritimati, Marakei, North

Tarawa and Outer Islands and published a report in 2016. The main finding was that 19 out of 20 I-Kiribati people reported being impacted by climate change. Despite that, migration between atolls is rare and even more so overseas. It was also noted that 14% of all migrations are attributed to environmental changes. At the same time, women tend to have significantly fewer opportunities to move overseas due to societal reasons compared to their male counterparts, who migrate almost two times more frequently. Meanwhile, a lack of money was quoted as the main reason for a constraint common for both sexes (Oakes et al., 2016).

People's behaviour in the face of rising sea levels is hard to predict, even for SIDS, such as Kiribati, making reliable and realistic models challenging (Donner & Webber, 2014). Even though the most populous area of Kiribati, Tarawa Atoll, is estimated to be severely affected by the rising sea levels, which will worsen due to increasing sea surface temperatures, the past study by Sabūnas et al. did not find evidence that climate conditions can drive Gilbertese language into extinction (Sabūnas et al., 2021). Kiritimati, the largest island in the Line Islands Group belonging to Kiribati, is less susceptible than the main island and may accommodate the mainlanders, at least in theory (Sabūnas et al., 2021). On the other hand, the existing surveys indicate that local people would likely flee abroad instead to other islands if they had to evacuate from the main island (Tatoa & Hogan, 2008).

While studies regarding climate change on society have been conducted, such as the study by Bradacs et al. about a threat to unique ethnobotanical heritage (Bradacs et al., 2011), there is a lack of studies linking climate change and the possible threat to indigenous languages. Meanwhile, language extinction negatively affects society, comparable to species extinction on biodiversity. This analogy has already been mentioned in several studies, and Loh and Harmon refer to the similar situation of the two as “a tandem extinction crisis that is devastating the world’s biocultural diversity” (Loh & Harmon, 2014). Meanwhile, there are studies about the possible changes in phonetics and vocabulary due to changes in climatic conditions (Everett et al., 2016). Since the exposure, predominantly rising sea levels may result in a permanent displacement, and climate change

can threaten already vulnerable local languages in the region, a phenomenon that remains largely undocumented. Language extinction similarly threatens traditional knowledge. It might even result in decreased crop biodiversity, as documented in the case of the Amuesha tribe and linked to the loss of knowledge about the stable regulation system of the different species in village communities or rare plants (UNESCO, 2020). Integration of traditional knowledge also helps secure resilient traditional social-ecological systems (Folke et al., 1998) and increases the capacity for mitigation and adaptation.

While numerous studies were conducted regarding the impact of climate change on biodiversity, there has been a void in research on the impact of climate change on language diversity up until very recently (Brown & Middleton, 2024). However, it has been documented that the displaced people are at risk of physical, economic, and social exclusion (Cerne, 2005) and are forced to abandon their customs (Berchin et al., 2017), which might facilitate the loss of languages, which are already endangered, with their vulnerability and exposure also dependent on the economic situation and education. There is also a documented case of the Dusner language spoken in a village under the same name in Papua, which became on the verge of extinction primarily due to the devastating flood in 2011 (Malvem, 2011). Owing to the interdisciplinarity of climate change, the cultural aspect should not be neglected when discussing the obligation to limit global warming below 1.5°C compared to the pre-industrial era by joint legislation. As such, this study elaborates on the underdeveloped discourse of climate change as a potential catalyst for the loss of minor languages and cultures, or biocultural diversity, in addition to biological diversity.

II. The relation between climate change and language vitality

The social aspect of climate change effects has been studied under various discourses – from gender to climate justice and biodiversity. However, it is also likely that the intensified climate change and the accelerating migration may exacerbate previously unforeseen issues. One potential issue that has been understudied so far is the exacerbation of the extinction of local endangered

languages due to climate change caused primarily by human activities (IPCC, 2021). As the living conditions and liveability seriously deteriorate in some areas due to the effects of climate change, entire communities may become “climate migrants”. The study by Brohmam et al. (2022) mentions land use change and climate as “significant predictors” of language endangerment. However, the study also highlights documentation, formal education, and road density as the focal points in defining language endangerment (Brohmam et al., 2022). On the other hand, migration is known for its complexity, and it is still debated to what extent future migration patterns will be shaped by climate change (Mortreux & Barnett, 2009).

It is generally agreed in the future projections that SLR is one of the effects of climate change that will make a disproportionately sizeable socioeconomic and environmental impact on small island nations in Oceania, severely worsening living conditions and habitability to the point of displacing significant numbers of island populations, particularly in the Pacific region (Storlazzi et al., 2015; Mycoo et al., 2022). As a result, the loss of traditional knowledge may follow, aggravating the survival of indigenous languages due to pressure on “climate migrant” populations abroad (Brown et al., 2025). However, a more complete picture of the negative impact on society caused by climate change might facilitate a better understanding of the impact.

Even though the statistics comparing the vitality of minor (heritage) languages are limited to only a few languages, there is a tendency for the diaspora to abandon their heritage language once settling abroad. One kind of evidence is a census conducted in 2001 in New Zealand, which includes the statistics about the Tokelauan community, which is more sizeable in New Zealand than in Tokelau. According to the census, even though 71% of the people born in the three atolls could speak at least basic Tokelauan, the number was 44% for the people with a Tokelauan background living in New Zealand and only 29% among the Tokelauans born in New Zealand (Glenn, 2012). This number was even lower in Hawaii (USA), with only 8% of a significant Tokelauan community having retained proficiency in Tokelauan (Glenn, 2012)

Although the Oceanian region is known for its linguistic diversity, it is also known for a speedy extinction of local languages or *hotspots* of future language loss, particularly in Australia and Papua New Guinea (Bromham et al., 2022), among other regions. Recently extinct languages spoken on the islands or coastal areas in Oceania include Yan-nhangu, Volow, and Oirat.

1. Past surveys

Multiple studies exist regarding the perception of the Pacific Small Island Developing States towards climate change. One of them interviewed 71 Indigenous Fijians in rural areas of Fiji, one of the largest countries in the Pacific region frequently hit by storm surges caused by typhoons and cyclones (Lykins et al., 2024; Sabūnas et al., 2022). The study found that representatives of each interviewed village observed environmental changes which negatively affected food security. The study also found that many coastal villages attempted to build sea walls and plant mangroves to mitigate flooding. Despite some villages reportedly having to relocate due to rising sea levels, the interviewers showed reluctance to move due to financial and cultural reasons (Lykins et al., 2024).

Another existing study enquired about the perception of climate change among the inhabitants of two atolls in French Polynesia. The study found that the interviewees have witnessed changes in weather patterns, coral reefs, and beaches over the past decades, with the risk perception differing depending on the education and urbanisation levels. It also distinguished the knowledge about climate change among the local population into sensitive and intellectual, concluding that policies must mix sensitive and intellectual approaches to climate change and coastal risks (Goeldner-Gianella et al., 2019).

The selected studies show that the populations of small developing states are witnessing the local effects of climate change in their communities. However, only a few studies analyse the sociological or linguistic impact of climate change.

2. Situation in Kiribati

A quantitative interview approach was selected to understand the perception

of their own vulnerability and climate change of the local population of Kiribati, in addition to more general studies that have already been conducted. The respondents from various locations in South Tarawa, the most populous part of the country situated on the southern part of the main island, were selected for logistic reasons, as face-to-face interviews were favoured, and because of the lack of opportunities to meet people from outer atolls when gathering data for the research. Meanwhile, the assumption was made that Tarawa can still be considered representative of Kiribati, as approximately half of the country's population lives in Tarawa and because it is located on a low-lying atoll, just like most territories of Kiribati. The total number of respondents was 28 ($n = 28$). The survey aimed to reach people of diverse social backgrounds. The questionnaires included 12 questions, including the ones about the perception of the current situation (4), climate change (6), and cultural aspects (2). Most questions were polar questions with the Likert scale. Most interviews were tape-recorded.

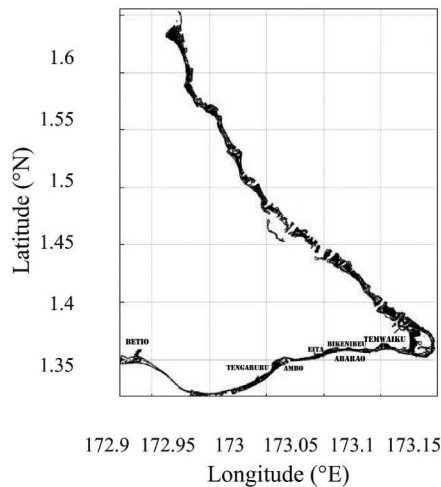


Figure 1. Map of Tarawa, Kiribati, with the indicated settlements where inhabitants were surveyed.

The respondents included residents of various settlements on the Tarawa atoll, with 29% living in Abarao, 14% in Temwaiku and Eita, and 11% in Betio and Bikenibeu. Other surveyed locations were Abaunamou, Ambo, Kaibanagi, Taborio, Teaoraereke, and Tengaruru, all located in South Tarawa (Fig.1).

The goal of the survey is to assess the perception of climate change to comprehend the socio-ecological stressors that the population of this island nation may face while also considering it a model country for other SIDS. This survey, albeit a small-scale one, helps us understand the local population's perception of their vulnerability and climate change in Kiribati and learn more about the potential for resilience of the local population.

More female respondents (64%) participated in the survey than male respondents (36%). The age of respondents varied between 16 and 66, with young people between 21 and 30 being the most represented group (43%), followed by people aged 31–40 (25%), 41–60-year-old I-Kiribatis (18%), young people below 20 (11%), and people over 60 (3%). M_{age} was 28.5 years old (range = 15 to 66 years old). For comparison, the median age for Kiribati is currently estimated to be 27.3 years (CIA Factbook, 2024). People with secondary education were the most surveyed group (39%) by educational background, followed by people with tertiary education (36%), primary education (18%), and unfinished tertiary education (7%, Fig.2).

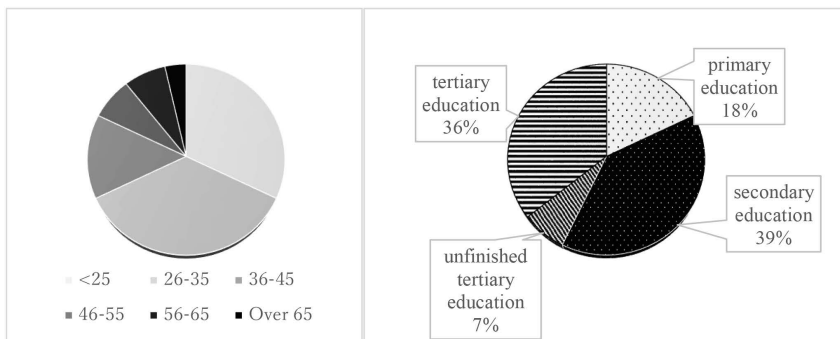


Figure 2. The surveyed interviewees' age groups (left) and educational backgrounds (right).

More surveyed people could allow us to include age, sex, location, and education as factors of climate change perception and a better picture behind their (lack of) willingness to migrate.

III. The threat perception of Kiribati in the face of climate change

The negative impact of climate change, its scope and the corresponding perception and understanding of the local population differs depending on the location. This paragraph focuses on the survey results, which help understand the regional situation on Tarawa Island in Kiribati based on the perception of its inhabitants or the sensitive knowledge.

71% of the respondents indicated their home is at least to some extent threatened by weather-related events. Meanwhile, those who tend to fear SLR and other weather-related events will threaten their home in the future accounted for 90%, with over half responding *yes* to the question. In addition, 82% think that climate change will become more intense. The surveyed people also indicated that outbound migration was a social problem, and 59% described climate change as one of the reasons for that. The residents of South Tarawa showed their certitude that they will be displaced by the effects of climate change in the future – 72% of respondents indicated that they agree or partly agree with the statement that they will have to relocate from their house for good, with 28% thinking the opposite way (none indicated they did not know, Table 1).

Question	Responding Yes	Responding More likely yes	Responding I do not know	Responding More likely No	Responding No
Q1. Do weather-related events threaten your home?	46%	25%	4%	11%	14%
Q2. Does your home face high tide, surges or waves?	39%	22%	11%	14%	14%
Q3. Have you experienced evacuation from natural disasters	34%				66%
Q4. Are you aware of climate change?	68%	11%	0%	7%	14%
Q5. Do you think that climate change will become more severe?	57%	25%	11%	3%	4%
Q6. Do you think the rising sea levels and weather-related events will threaten your home?	52%	38%	0%	3%	7%
Q7. Do many people migrate from this location due to climate change?	38%	21%	17%	10%	14%
Q8. Do you think you will have to leave your home for good due to climate change?	38%	34%	0%	14%	14%
Q9. Is human migration to other places negatively affecting your culture and language?	46%	36%	0%	11%	17%
Q10. Do you consider your mother tongue endangered?	32%	28%	0%	11%	29%

Table 1. A list of questions used in the survey, including the answers by the respondents.

When asked about the tipping point of the negative climate change impact on their island, the opinions were divided – over a quarter of the respondents indicated it as late as 2100, while 33% indicated the 10-20-year period. One interviewee commented that the tipping point may come in less than ten years. More than half of the surveyed respondents indicated 30-40 years in the future or

earlier as a possible period when the effects of climate change in Kiribati become drastic, indicating a sense of urgency among the population (Fig.3). On the other hand, regarding the experience of extreme events, only one-third of the surveyed people mentioned they had an evacuation experience (Table 1). Among those who have had such an experience, moving further to the same settlement was chosen as a solution for most (Fig.3). However, a similar number of surveyed people chose to move elsewhere on the same island or overseas as a solution. Meanwhile, almost a half could not reply to this question (Fig.3).

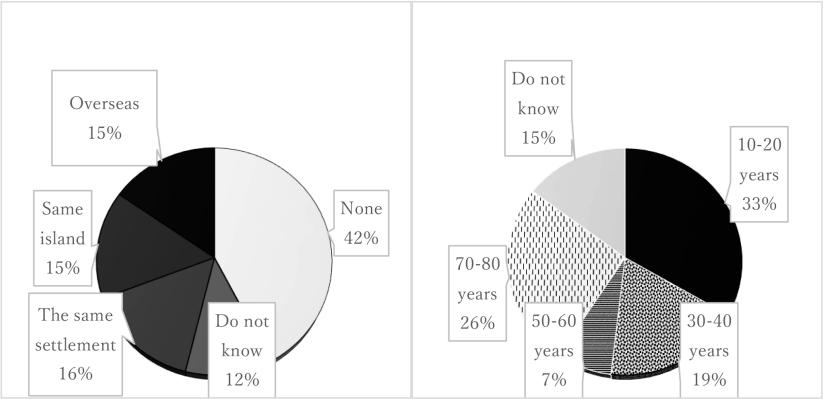


Figure 3. The surveyed people's opinions on their evacuation routes in case of a disaster, including those who have not experienced the evacuation yet (left). The surveyed people gave their opinions on the future of climate change (right).

Another worry that the I-Kiribati face is that their language may be negatively affected by the climate change-driven migration. Only 18% of the surveyed people did not think that the migration of I-Kiribati abroad may negatively impact their language and culture. Meanwhile, 46% were convinced, and another 36% were more likely to agree. However, as speakers of a minor language, I-Kiribati may be more worried about the future of their language than scholars' estimate. When asked whether they consider their language endangered, more respondents expressed their fears that their language is endangered (32%) or more likely

endangered (28%) than those who thought otherwise (29% and 11% respectively).

However, it is clear from the survey that even though many I-Kiribati are not willing to leave their country, they perceive climate change as an encroaching threat to their lives, language, and culture.

The unfortunate paradox for the low-lying island nations in Oceania is that they are at the forefront of being affected by the consequences of climate change despite having made negligible contributions to greenhouse gas emissions. In other words, its fate is mainly at the hands of the global community and its success in curbing greenhouse gas emissions. From this point of view, Kiribati can be seen as a litmus paper of our lack of adequate action to curb climate change and, thus, its adverse effects. However, some scholars and local activists challenge the passivity in which the media frequently put low-lying island nations. In response to a popular discourse according to which island nations such as Kiribati will no longer be habitable in the future, Simon Kefe, the then-minister of Justice, Communication and Foreign Affairs of Tokelau, another small island nation, launched a new initiative, *Te Ataeao Nei*, in 2022 to prepare his country for the worst-case scenario and to counter the passive discourse with the radical hope. The project, occasionally called *Digital Tokelau*, attempts to create a digital twin of this island nation in the metaverse if *in situ* adaptation measures are not applicable (Rothe et al., 2024). As of 2024, Tuvalu is in the process of drafting a revised Constitution whose first Part states that Tuvalu shall remain “notwithstanding the impacts of climate change or other causes”, giving a legal basis for its proactive stance (Tuvalu, 2023). However, it is unclear where the exiled Tuvaluan government would be seated, and it is doubtful that such measures will slow down the erosion of its unique culture and language in real life.

Meanwhile, the Government of Kiribati is considering purchasing land in Fiji to relocate or move to New Zealand in the worst-case scenario (Hermann & Kempf, 2017). However, there has been no precedent for migrants from Kiribati or Tuvalu to be granted asylum due to climate change (one such applicant from Kiribati was rejected in 2013), and the quotas for the population migrating to

New Zealand from the Pacific Islands remain low despite former discussions to introduce targeted climate change visa by the recipient country (McAdam, 2020). Under such circumstances, Kiribati's adaptation capacity and resettlement opportunities in the worst-case scenario are unclear since a solution would require negotiations with recipient countries over the resettlement and its conditions (Kelman, 2015).

IV. Potential climate change impact on linguistic and cultural legacy in Oceania

The region of Oceania is known for its cultural diversity. Even though no similar surveys have been recorded in such nations, their vulnerability is more pronounced due to smaller population numbers and the fact that the local languages are mostly considered vulnerable or endangered, unlike Gilbertese, a co-official language and lingua franca in the Republic of Kiribati. The Pacific region is home to many smaller language communities, which may be more susceptible to various effects of climate change.

For this part of the analysis, the map of Oceania was thoroughly studied, and the languages deemed as endangered were selected. Finally, only the languages spoken on small islands or coastal areas were singled out. According to this methodology, 44 languages belonging to over ten different language families, spoken in coastal areas, are considered endangered in the Pacific region (Table 2). Most (30) such languages belong to the Austronesian language family. These languages are spoken by nations and tribes primarily in the Federated States of Micronesia (11), followed by Australia (9), Vanuatu (8), Cook Islands (3), Solomon Islands (3), French Polynesia (2), Papua New Guinea (2), Fiji, Nauru, Norfolk Island, Palau, Tokelau, and Tuvalu (one language each; Table 2). As for the vulnerability of the potentially affected languages, six of them are considered vulnerable, 11 definitely endangered, 17 severely endangered, and ten as definitely endangered, the most threatened category (Moseley & Nicolas (2010). Even though the scope of vulnerability of each language differs, they all may exhibit an apparent decline if the effects of climate change disperse the small communities

of its speakers. However, a lack of data about each endangered language spoken by coastal populations makes it difficult to predict the scope and speed of adverse effects.

Language	ISO 639 code	Family	Vulnerability level	Country	Population (Ethnologue)
Araki	<i>akr</i>	Austronesian	critically endangered	Vanuatu	<100
Asumboa	<i>aua</i>	Austronesian	severely endangered	Solomon Islands	<100
Bieria	<i>brj</i>	Austronesian	critically endangered	Vanuatu	<100
Emae	<i>mmw</i>	Austronesian	vulnerable	Vanuatu	<1000
Kaki Ae	<i>tbd</i>	Isolate	vulnerable	Papua New Guinea	<1000
Kayardild	<i>gyd</i>	Macro-Pama-Nyungan	critically endangered	Australia	<100
Kija	<i>gia</i>	Jarrakan	severely endangered	Australia	<1000
Kurrama	<i>vku</i>	Pama-Nyungan	critically endangered	Australia	<100
Löyöp	<i>urr</i>	Austronesian	vulnerable	Vanuatu	<1000
Mafea	<i>mkv</i>	Austronesian	definitely endangered	Vanuatu	<100
Manihiki	<i>rkh</i>	Austronesian	definitely endangered	Cook Islands	<10,000
Maringarr	<i>zmt</i>	Western Daly	critically endangered	Australia	<100
Meriam Mir	<i>ulk</i>	Eastern Trans-Fly	definitely endangered	Australia	<10,000
Mokilese	<i>mkj</i>	Austronesian	critically endangered	Micronesia	<10,000
Mortlockese	<i>mrl</i>	Austronesian	definitely endangered	Micronesia	<10,000
Murik	<i>mtf</i>	Ramu-Lower Sepik	vulnerable	Papua New Guinea	<10,000
Mwesen	<i>msn</i>	Austronesian	critically endangered	Vanuatu	<100
Nakkara	<i>nck</i>	Arnhem	severely endangered	Australia	<100
Namonuito	<i>nmt</i>	Austronesian	severely endangered	Micronesia	<1000
Nauruan	<i>nau</i>	Austronesian	severely endangered	Nauru	>10,000
Ngarluma	<i>nrl</i>	Pama-Nyungan	critically endangered	Australia	<100
Ngatikese Creole	<i>ngm</i>	Creole	definitely endangered	Micronesia	<100

Language	ISO 639 code	Family	Vulnerability level	Country	Population (Ethnologue)
Norfolk	<i>pih</i>	Creole	definitely endangered	Norfolk Island	<1000
Nukuoro	<i>nkr</i>	Austronesian	definitely endangered	Micronesia	<1000
Nyamal	<i>nly</i>	Pama-Nyungan	severely endangered	Australia	<100
Paafang	<i>pfa</i>	Austronesian	severely endangered	Micronesia	<10,000
Penrhyn	<i>pnh</i>	Austronesian	severely endangered	Cook Islands	<10,000
Pingelapese	<i>pif</i>	Austronesian	severely endangered	Micronesia	<10,000
Pukapukan	<i>pkp</i>	Austronesian	definitely endangered	Cook Islands	<10,000
Puluwat	<i>puw</i>	Austronesian	severely endangered	Micronesia	<10,000
Rapa	<i>ray</i>	Austronesian	severely endangered	French Polynesia	<10,000
Rotuman	<i>rtm</i>	Austronesian	vulnerable	Fiji	<10,000
Satawal	<i>stw</i>	Austronesian	severely endangered	Micronesia	<1000
Savo	<i>svs</i>	Central Solomons	definitely endangered	Solomon Islands	<10,000
Teanu	<i>tkw</i>	Austronesian	definitely endangered	Solomon Islands	<1000
Tiwi	<i>tiw</i>	Isolate	vulnerable	Australia	<10,000
Tobian	<i>tox</i>	Austronesian	critically endangered	Palau	<1000
Tokelauan	<i>tkl</i>	Austronesian	severely endangered	Tokelau	<10,000
Tuamotuan	<i>pmt</i>	Austronesian	severely endangered	French Polynesia	<10,000
Tutuba	<i>tmi</i>	Austronesian	severely endangered	Vanuatu	<10,000
Tuvaluan	<i>tvl</i>	Austronesian	definitely endangered	Tuvalu	>10,000
Ulithian	<i>uli</i>	Austronesian	severely endangered	Micronesia	<10,000
Ura	<i>uur</i>	Austronesian	critically endangered	Vanuatu	<100
Woleaian	<i>woe</i>	Austronesian	severely endangered	Micronesia	<10,000

Table 2. A list of endangered languages spoken in the islands and coastal languages of Oceania. The data is based on the Atlas of the World's Languages in Danger for the status and the Ethnologue data for the location (Moseley & Nicolas, (2010); Ethnologue, 2023).

The findings of this study, combined with the existing study by Bromham et al., cannot prove that the Gilbertese language will become threatened by climate change, as despite potentially enormous displacement scopes, the language is considered institutional and stable (Ethnologue, 2022). On the other hand, it is already enlisted as a potentially vulnerable language by the newest edition of The World Atlas of Languages released by UNESCO (UNESCO, 2021). Added to the estimates by Bromham et al. and a recent study which links migration with a significantly reduced proficiency in the native language (Brown et al., 2025), this makes it possible that the Gilbertese language will become threatened, even though the role that climate change will play here remains unclear. On the other hand, 44 already endangered languages are spoken on small islands or coastal areas in the Pacific Region and may be threatened by displacement in the future. Similar surveys could help us understand their actual status and conduct a local language sensitivity analysis, but we can assume their vulnerability levels will further increase with the progress of climate change, as also indicated in the model by Bromham et al.

Even though it would not be substantiated to link climate change with the acceleration of language endangerment and extinction, climate change will likely play a negative role in the survival of some languages used by island and coastal communities.

V. Conclusion

Based on the studies conducted so far and the survey described in this study, climate change can negatively affect minor languages that are already vulnerable due to numerous socioeconomic reasons. However, apart from a few isolated cases, there is no proof that the consequences of climate change can play a crucial role in exacerbating the survival of minor languages. On the other hand, climate change-driven displacement can disperse local communities, negatively affecting languages with a very limited number of speakers. Even though anecdotal evidence of the local population decline due to the consequences of climate change exists, particularly in the coastal areas, and many islanders demonstrate

sensitive knowledge about the local effects of climate change, only a thorough sociolinguistic analysis of a selected language could better explain the situation of the coastal languages amidst the effects of climate change. Gilbertese language may be more adaptable due to a relatively higher number of its speakers and its official status in the country; however, at least 44 other languages in the Pacific region alone are already vulnerable and potentially directly threatened by the effects of climate change, such as SLR or more potent and frequent storm surges. In addition, the number of languages indirectly affected by climate change can be assumed to be much higher.

For future analysis, it is essential to include other nations in Oceania to understand the prospects for minority languages better. It is important to note that while the rising sea levels menace Kiribati to be gradually submerged, the most dominant language, I-Kiribati, is not threatened and is widely spoken by I-Kiribati people inside the country and abroad. However, the signals of the negative impact of Kiribati's cultural and spiritual legacy have begun to appear, as there are already cases when people have to move inwards to the island due to rising sea levels.

The approach used in this study has three principal drawbacks which make it harder to predict the effects of migration on the Gilbertese language (or any language which could be affected by climate change in the future):

- a) The perception of locals is subjective, and a more accurate analysis would require the involvement of linguists or sociologists constantly surveying the island population;
- b) Despite the existing models for likely land loss in the future, it is not possible to estimate the scope of involuntary migration and the role of climate change in it;
- c) There is no legal recognition of “climate migrants” as of 2024, and no scheme exists to accommodate the population and state if mass exodus becomes inescapable for Kiribati, so the conditions in the worst-case scenario remain unclear.

Many surveyed people in Kiribati voiced their concerns that their native language is endangered and that emigration is increasing. While climate change-enhanced relocation in the future may not be among the principal reasons threatening the survival of Gilbertese, it is clear that climate change does not work in favour of small island nations. As such, this study serves as a reminder of humanity's joint responsibility in mitigating anthropogenic climate change and, by doing so, safeguarding the biocultural diversity of our planet. At the same time, it hints at the necessity for the SIDS to reconsider climate adaptation measures by including the land for resettlement in the worst-case scenario and for the potential recipient countries to update their migration policies.

Notes

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