



THE UNIVERSITY OF  
**WAIKATO**  
*Te Whare Wānanga o Waikato*

## Pacific Climate Mobility

# PACIFIC CLIMATE MOBILITY: TONGA AND SAMOA SYNTHESIS REPORT

**Climate Change Mobility Research**

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# OVERVIEW OF PROGRAMME AND PROJECT IN TONGA AND SAMOA

## THE PROGRAMME

This research programme has been enabled by New Zealand's climate finance through the International Development Cooperation (IDC) Programme. The research focuses on the scale, pattern and impacts of climate mobility – both current and future – in the Pacific region.

It aims to better understand and reveal relevant demographic trends, and why people decide to or end up staying and/or moving, as well as the social, cultural, and economic impacts of climate mobility on Pacific countries, their populations and Aotearoa New Zealand. The aim of the work is to deliver actionable research that can inform policy in Aotearoa New Zealand as well as be informative for Pacific governments in their climate planning and prioritisation. The research programme was carried out by teams at the University of Waikato, the University of Auckland and Mana Pacific Consultants. Nine Pacific countries were involved in the fieldwork including Tonga and Samoa (the focus of this report), the Cook Islands, Kiribati, Niue, Papua New Guinea, Solomon Islands, Tokelau and Tuvalu. Some Māori leaders, as well as some of the Pacific diaspora were also engaged.

## THE PROJECT – TONGA AND SAMOA

This report is based on the research led by the University of Waikato. In Tonga and Samoa, participants from all major island groups were engaged through a range of research activities – survey, workshops and small group talanoa (including with women and youth), and one-on-one talanoa. Future scenario planning and imagination-led future visualisations were held in group and one-on-one settings respectively. Approximately 900 participants in total were engaged for this project in Tonga and Samoa, including overseas diaspora in Aotearoa New Zealand, Australia, the United States of America and Hawai'i. As climate change mobility is relatively small in scale at this stage, the research team opted to also explore the experiences of population groups who had undergone environmental mobility recognising that there would be a lot of relevant and transferrable knowledge and insights for future climate mobility (in terms of decision making, patterns and impacts in particular). In Tonga, some of these population groups include the relocated village of Mango, the relocated village of 'Atataa and in Samoa, relocated villages in Lalomanu, Satitua (following the 2009 tsunami) and Leauva'a (following the eruption of Mt Matavanu in the early 1900s). The research team is indebted to our in-country research partners including Velata Tonga Inc, Dr Tepora Wright, and the Samoa Education Network (SEN) for their active support and for generously leveraging their personal and professional networks to allow us access to research participants both inside and outside of Tonga and Samoa. The research team are also greatly humbled by the participation of all those who took part in this project in Tonga, Samoa as well as those in the international diaspora. Many of the stories shared with the team – the stories that hold up this report – are deeply personal ones. We are endlessly grateful for the trust and generosity shown by all participants in sharing these stories, perspectives and knowledge.

Any opinions, findings, and conclusions or recommendations expressed in this material are those of the participants and authors, and do not necessarily reflect the views of the New Zealand Ministry of Foreign Affairs and Trade.

## CONTEXTUALISING THIS WORK FOR AOTEAROA NEW ZEALAND

Future climate mobility from Pacific nations to New Zealand will not happen in a vacuum. While this is a Pacific-led research project, discourses on climate change in New Zealand must acknowledge and consider the political, social, and cultural context, especially as it relates to Māori. This was affirmed in the 2018 Cabinet background paper to this research which stated:

Aotearoa New Zealand's unique Treaty of Waitangi obligations and arrangements between Māori and the Crown require that policy development and policy responses must also involve iwi, hapū and Māori in recognition of their Treaty partnership as well as their own status and acknowledge the whakapapa links Māori have with Pacific people and Te Moana-nui-ā-Kiwa.

*1. Dungan et al (2021). Appendix One - Terms of Reference: Research investigating climate-related (im)mobility in the Pacific*

Additionally, the Terms of Reference for this research required the scope to be grounded in, and informed by, Tikanga Māori, the values of whanaungatanga (family), kaitiakitanga (guardianship) and manaakitanga (protection, wellbeing). These values are expressed in different ways in Pacific cultures, and they served as a starting point for decision-making in the scope of work.

The intention of the NZ Government was to demonstrate their commitment as a meaningful Treaty of Waitangi partner to Māori while ensuring that they show leadership to build a resilient Pacific region through the commissioning of this research. Partnership under the Treaty of Waitangi was also illustrated by the Ministry of Pacific Peoples who introduced their Te Tiriti o Waitangi statement by being clear about their position as a Treaty partner in relation to Māori:

Māori/ Tangata Whenua and Pacific peoples/ Tangata Moana, share ancient whakapapa linkages that have existed for millennia before the signing of Te Tiriti o Waitangi. Māori graciously acknowledge Pacific peoples as 'tuakana' or the elder siblings in this ancient relationship and themselves as 'teina/ taina' the younger siblings. However, in the context of the Treaty, Pacific peoples are part of 'Tangata Tiriti' as the presence of Pacific peoples in Aotearoa in recent history, is due to the signing of Te Tiriti o Waitangi/ the Treaty. In the context of Aotearoa New Zealand, Māori are 'Tangata Whenua' or 'tuakana' and Pacific peoples are 'teina' or 'Tangata Tiriti'.<sup>2</sup>

The Ministry of Pacific Peoples also commit to upholding the principles of the Treaty in terms of partnership, protection, and participation.<sup>3</sup> This means that they work together with tangata whenua, hapū, Māori organisations and mana whenua in ensuring that Māori contribute to decisions that could impact them during the Ministry's work. It also means acknowledging the growing population of Pacific peoples who have whakapapa Māori and utilising Te Reo, kawa, tikanga, taonga and Te Ao Māori knowledge and resources.<sup>4</sup>

Examining the impact of Pacific climate mobility on Te Tiriti o Waitangi and Tikanga Māori is significant, especially given the legal and moral rights that Māori/iwi/hapū assert and continue to assert as tangata whenua of Aotearoa.

### Recap: Te Tiriti o Waitangi

The Treaty of Waitangi, signed in 1840 between chiefs of hapū and the representative from the Crown and subsequent legislation, gave the Crown the mandate to govern while allowing chiefs to maintain their rangatiratanga over their taonga. The Treaty of Waitangi represented a partnership between the chiefs and the Crown and presumed a power sharing arrangement. Prior to 1840, the chiefs as leaders of their hapū exercised political, cultural and social dominance over their territories. Māori philosophies, practises and values were well embedded and underpinned behaviours and informed social interactions. Of central importance to chiefs and hapū members was land, whenua which was gained by inheritance (whakapapa); gift (tuku), conquest (raupatu), or other means. The following whakataukī are a demonstration of this importance;

*Ko te whenua, he taonga tuku iho*

Land is a treasure passed down through the generations

*Whakangarongaro atu te tangata, toitū te whenua*

People may perish, but land will remain

While there are various interpretations of what the Treaty of Waitangi intended, in summary both parties to the Treaty of Waitangi were looking for mutually beneficial arrangements which were trusting and had good faith between Māori and those who would come (now referred to as tangata whenua and tangata tiriti).

The initial commitments under the Treaty of Waitangi were not upheld by the Crown partner. Colonisation occurred with devastating consequences resulting in the erosion of the foundations on which Māori society was built and the erosion of the power and authority that hapū and chiefs held. The Crown assumed authority and in later years following the Treaty

2. Ministry of Pacific Peoples, *Te Manatū mō ngā iwi o Te Moana-nui-ā-Kiwa (2022b)*. *Yavu the foundations of Pacific engagement. The policy project*. Wellington: Ministry of Pacific Peoples., (2022b).

3. *These are the most wellknown set of principles of many but there is no final list. Rather they are determined on a case by case basis.*

4. *Idem*. 3-4

of Waitangi Act 1975 and its subsequent amendments in 1988, a Waitangi Tribunal was established. The Waitangi Tribunal also introduced a principle-based approach for how we in New Zealand will now work the Treaty of Waitangi. This means that for one part of the arrangements based on the principles, Māori must be involved in policy development and policy decisions in accordance with the principles of partnership and good faith.

Given future scale projections of mobility to New Zealand and given whakapapa and whānau relationships between Māori and Pacific, inclusion of Māori in Government decision making processes especially at a hapū and iwi level may help to mitigate emerging challenges. This is explored further in the later section on the impacts of future climate mobility on Aotearoa New Zealand.

Casting a Treaty of Waitangi lens over the relationship that Māori have with peoples of the Pacific, does not do justice to the fact that Māori are Polynesian; They have whakapapa links with peoples of Samoa and Tonga and other peoples of the Pacific which extend beyond the 1840 Treaty of Waitangi relationships. Pacific peoples, if categorised under the tangata whenua/tangata tiriti would fit under tangata tiriti, but that would diminish a shared past, a shared value system, a shared inheritance and obligation to Te Moana-nui-a-Kiwa. We in New Zealand must and are yet to find ways to honour the special relationship and override such a bifurcated approach. Celebrating our identity, our values and who we are as Māori and Pacific peoples is also an important facet of upholding the Treaty of Waitangi.

### **Māori and Pacific connections - Māori are people of the Pacific**

Māori made sense of their world through implementing a set of practices that were rooted in a Polynesian blueprint. They sourced knowledge from that blueprint to adapt to new environments as navigational feats resulted in epic journeys across the Pacific to new lands, like Aotearoa New Zealand. Consequently, Māori and peoples of Polynesia share common ancestors, common Gods - such as Māui and Tangaroa - and common storying. Relationships to lands, seas, taniwha, tīpua and Gods are similar, as is respectful relationships between all living creatures and people.

Given that Māori survival was wholly dependent on the resources of their environment, a strong ethic of responsibility to care and respect resources - or kaitiakitanga - ensued. Māori belief systems are founded on tikanga (guidelines) which valued whakapapa (genealogy) and whanaungatanga (relationships) to all humankind extending to territories. They also include an acknowledgement to the spiritual dimensions (wairua). Order within Māori society was maintained through tapu (regulation or sacredness) of which the antithesis is the concept of noa (profane or the ordinary). Rāhui (a marker of temporary protection) were placed over resources when replenishment or mauri (vitality) needed to be restored and karakia (incantation) was an important ritual which acknowledged these gifts from the Gods. Important Māori values: mana (prestige), manaakitanga (to care for the person's prestige), aroha (unconditional love) allowed for a relationship with the resources that was both practical and spiritual, with Māori seeing themselves as part of their environment, at one and working with it, not dominating it.

Tongans and Samoans, like Māori, have deeply embedded value systems based on anga faka tonga/Tongan philosophy (Vaiolēti, 2011) and fa'a Samoa. These values are the holistic nature of life and the centrality of good relationships; the connectivity of the past, present, and future, of people, land, sea, and sky and the spirituality that binds them together (Taufe'ulungaki, 2003).

### **A very brief (recent) history of Māori and Pacific peoples in Aotearoa New Zealand**

Māori and Pacific peoples share an ancient genealogical relationship which is anchored in shared gods, shared storying, shared ancestry, and developed into many shared values. They both have roamed and voyaged Te Moana-nui-ā-Kiwa for centuries (Pacific peoples for far longer) and continue to do so. These shared values in which both Māori and Pacific peoples can find common purpose include valuing family, collectivism, consensus in decision-making, reciprocity, respect, and love. These values form the holistic nature of life and the centrality of good relationships: the connectivity of the past, present, and future; of people, land, sea, and sky and the spirituality that binds them together.<sup>5</sup>

5. Taufe'ulungaki, A. M. (2003, 5 December). *What is Pacific research?: A methodological question. Paper presented at the Health Research Council (HRC) Pacific Health Fono, Auckland, New Zealand.*



From a political perspective, the relationship between Māori and Pacific peoples in New Zealand has largely been under the direction and policies of the New Zealand Government. There has both been a long history of cooperation and equally a long history of competition. From the late 1950s and 1960s, there was a high influx of Pacific migrants to New Zealand. This was brought about by the need for more unskilled labour to meet New Zealand's economic growth in the manufacturing sector, as well as the ongoing primary production for Britain which found Māori and Pacific peoples working cooperatively in similar positions.<sup>6</sup>

The 1970's gave rise to political activism with the Polynesian Panthers challenging the hegemony of the State to improve the working and living conditions for Pacific peoples (Anae, 2006). These cooperative endeavours did not dispel some resentment from Māori to the arrival of Pacific migrants to New Zealand as they were seen as causing "incursions on finite local and national resources" (Teaiwa and Mallon 2005, p. 211). Sefita Hao'uli wrote that "Pacific Island people did not come here to hongī with Māori" an indication that they were coming to New Zealand for jobs and opportunities on a palangi agenda.<sup>7</sup>

Dr Timote Vaoileti, a member of our research team, referenced a talanoa with pre-eminent Tongan philosopher 'Epeli Hau'ofa in 2004, where Hau'ofa said "*ko e kakai pe e fonua tenau lave e fakangofua e kakai kehe ken au nofo fonua*" meaning, only tangata whenua can make others part of their whenua. His view that a shared spirituality demanded that those entering new lands must secure the goodwill of tangata whenua and the right to continue to live on another people's whenua must be respectful and include consultations with tangata whenua. Involving Māori to give their blessing is the right thing to do spiritually and even more so when discussing Pacific mobility.<sup>8</sup>

## BRIEF OVERVIEW OF PROJECT METHODOLOGIES

This project in Tonga and Samoa (with engagement in Aotearoa New Zealand as well as Australia, the United States of America and Hawai'i), took a mixed methods approach to maximise the potential for broad but equally authentic, rich, culturally-aligned and contextual data collection. The following provides a quick overview of these methods.

### Talanoa

Talanoa Research Methodology is the most engaged Pacific research methodology (Farrelly & Nabobo-Baba, 2012). Talanoa as a term has entered near-mainstream use, though in pure terms, it should never be mistaken for merely talking or having a discussion. Talanoa can be complex, multi-layered and can range from free to critical discussion, with discussion not bound by having to remain within the two-way process of question and answer. Cultural interplays, silence, deep and reflective thought, eye and body movements are all part of the talanoa dynamism.

Talanoa can involve highly interactive engagement in which those involved probe, question and challenge each other as they search for new meanings, taking each other to higher and deeper levels of intellectual and emotional stimulation. Talanoa can be used to analyse issues at multiple levels as well as to synthesise information to e.g., make a recommendation. Talanoa is also interpretive, and an interpretation is always personal, partial, and dynamic. Talanoa, like narrative research, is suitable for those scholars and researchers who, to a certain degree, are comfortable with ambiguity. It is therefore not inappropriate to amend the findings from talanoa to reflect interpretations and, when necessary/agreed, to hold more talanoa to clarify situations (Vaoileti 2006; Vaoileti, 2011, Vaoileti, 2013).

Talanoa as a notion covers several types (talanoa vave, po talanoa, talanoa faka'eke'eke, talanoa usu etc.). Depending on the purpose of research, one level of talanoa may be dominant although it is likely that most levels of talanoa will be employed in a given engagement (Vaoileti, 2011, Vaoileti, 2013).

It is difficult to define a process for engaging in talanoa and doing so does run the risk of providing a prescriptive process that actually belies what talanoa aims to do. However, there are a few features to call out. In formal talanoa, one would start with the words "malo 'etau lava, pea tapu mo..." (thank god) that we are well, and I acknowledge the (title of participant/s etc.), but in less formal talanoa, the kau nga fa'u would be aware of one's intent to talanoa and give signals,

6.. Spoonley, P. & Bedford, R. (2012). *Welcome to our world? Immigration and the reshaping of New Zealand*. Auckland: Dunmore Ltd.; Liu, McCreanor, McIntosh & Teaiwa, 2005.

7. Hao'uli, S. (1996). *We did not come to hongī with Maori*, *Mana*, 11: 38-39. 38

8. *Talanoa*, Timote Vaoileti and Dr 'Epeli Hau'ofa, 2004.

verbal and non-verbal, to indicate appropriate engagement. The talanoa process then responds to what is said as well as what is not said, who is saying it, and how things are said and not said. There can be no one approach, nor one type of talanoa. Rather its contextual nature means that it is responsive, dynamic, highly focused and often quite ritualistic (Vaiotei, 2011). Electronic recording devices are not always used, and it is not typically culturally appropriate to record exchanges with elders and leaders in a talanoa context. Tongan and Samoan people, like other Pacific peoples, have cultures that respect oracy and memory, and recognise that some highly valued knowledge is held by only a privileged few. In group talanoa, limited note-making is done during as all attention is given to the discussions at hand while ensuring protocols are strictly observed, especially if the talanoa involves a large group of people of different age groups, genders, and rank.

While talanoa can create an environment conducive to knowledge exchange and co-creation, one must always be mindful of cultural considerations and seek to ensure that no parties are exposed unnecessarily to undue stress or loss of mana. In the team's experience, we have found that the noa we create is always contextual and as such, there can be no universal approach to talanoa that will provide the environment for learning and talking freely in every situation. Talanoa, like many learning and research approaches, must be contextually aligned because it has its limitations as well as its strengths (Vaiotei, 2006, Vaiotei, 2011, Vaiotei, 2013).

Other methods and approaches used in this project, such as past and future visualisations and future scenarios were strictly mitigated by the respect and do-no-harm guidelines of the Talanoa Research Methodology.

### **Kaupapa Māori Research Methodology**

Kaupapa Māori research has been applied in this project, including in the definition and production of the *Six Kōrero* research product. It is a term given by Māori researchers to research that is centred on Māori culture and paradigms, is used for the benefit of Māori, with emancipation of their knowledge as its aim. Kaupapa Māori research challenges the dominance of traditional, individualistic research methodologies that primarily benefit the researcher. It provides strategies that empower Māori to have control over their knowledge creation, life and cultural wellbeing (tino rangatiratanga) and operationalises self-determination (Bishop, 1991a; Smith, 1992, 1997). Its philosophical base is collective, and it acknowledges Māori aspirations for research. It advocates for control over decision-making processes, governance over the ways in which the research is to be carried out, while developing and implementing a Māori theoretical and methodological base for research (Bishop, 1996; Bishop & Glynn, 1999). Bishop & Glynn (1999, p. 105) stated that, "integral to this movement has been the realisation of the importance of meaning and interpretation of peoples' lives within their cultural context".

It is important to note, however, that before the naming of Kaupapa Māori research as a methodology, the dominant western paradigm was being challenged many years earlier by others such as the late Dame Evelyn, Stokes (1985) and Ngahua Te Awakotuku (1991). Both Stokes (1985) and Te Awakotuku (1991) raised issues about appropriate ethical conduct when researching in Māori communities.

### **Visualisations**

Visualisations were used as part of this research to tap into the imagination of participants in Tonga and Samoa - capturing snippets of knowledge, memories, perceptions and worldviews, recognising that people's assumptions, beliefs and worldviews have, and likely will, influence decision-making on future mobility.

Guiding participants through a process where they spent time exploring in their minds the past (50 years in the past) and the future (50 years in the future) researchers were able to identify a number of things, including:

- Assumptions about changes (particularly social, environmental and cultural)
- Conclusions about some drivers of change
- Beliefs about what might be lost or gained in the future (including in comparison to the past) and priority losses or gains (based on what information is focused on and volunteered or shared)
- Fears and hopes for the future
- Hints on broader sentiments held by others in the community (noting that the sample size for this activity was small).

By running the visualisation process with some participants ahead of the future scenario workshops, researchers were also able to get a few workshop participants into the 'future frame of mind' ahead of the workshop. Quotes and insights from the visualisations were shared with the other workshop participants as valuable creative inspiration and something to 'stress test' thinking against as the group went through the scenario building process.

### Future scenario planning

The creation of future scenarios by participants in Tonga and Samoa was a key activity in this research project. Variations of future scenario planning processes have been used in many contexts globally, for many years. Not just a tool for corporate strategy, future scenario planning has been used in numerous social science and political settings where uncertainty, and risk, is high and issues are complex and heavily intertwined. The researchers themselves have used future scenario planning to support prioritisation, decision making and risk mitigation in a range of settings, including in global sustainable finance, local and state government strategic planning and public health operations. The researchers also tested and refined the methodology with a diverse group of Pacific peoples a decade ago, informing the approach taken in this effort.

The scenario development process overlaid two major change forces – change forces which were determined to have a high level of uncertainty and were likely to have high impact on future mobility. Placing these two forces on two different axes in tension delivers a framework for four future scenarios.

Critically, this process taps into the imagination of participants in a methodical way, and within that, reveals knowledge and assumptions that might otherwise remain unaccessed. The imagination of participants, paired with other information like personal experience or second-hand knowledge also supported thinking on second and third order impacts of possible future changes. By stimulating the imagination of participants, scenario planning has the potential to be an even more powerful tool. 'Seeing' futures – with all their positive and negative features – is establishing what some scenario planning experts and practitioners describe as 'memories of the future' (van der Heijden, 2005). These future memories can help us to recognise and make sense of signals in the events around us, and can cue action to pursue or avoid further steps along a path to the hypothesised futures. By sharing these visions with others in the group, different future iterations are stored in the collective memory of others, amplifying the potential to guide decision-making and actions in the future.

Culturally and socially, the scenarios process works in Tonga and Samoa for several reasons. Steeped in oral tradition, and skilled in storytelling, the researchers felt there was a natural ease to the development and exploration of different hypothetical futures. The participants caught on quickly to the process and were able to reach impressive levels of detail in a relatively short period of time. Beyond following the guidance of the researchers to define and explore the social, economic, cultural, religious, political and environmental aspects of their scenarios, they also developed role plays and other performances, shared dances and one even wrote and shared a journal entry from her future self. While the process and initial framework for identifying four futures was provided to the group, the remainder of the thinking and direction of the day was very much participant-led. Working in small groups people had adequate time to sit in their own space as they needed, contribute when they wanted, and listen and absorb when they didn't. The indirect nature of the approach in drawing out knowledge also likely sat well with the participants. The researchers sought another outcome from running this process in Tonga and Samoa. The leaders who took part – business and media leaders, community leaders and village chiefs, women's group leaders, youth leaders, teachers, church leaders, government ministry staff, emergency and humanitarian workers and members of parliament – learnt a process they can carry into their own lives and professional practices. Participants are also afforded the space to listen and learn from each other's experiences and perspectives.

### WHO TOOK PART

Nearly 900 participants in Tonga, Samoa and New Zealand (as well as diaspora in Australia, the USA and Hawai'i) took part in this project. For the two surveys run for this project, 305 people in Tonga and 290 people in Samoa took part in *Survey One* – see *Survey One, The Mobility Willing and the Steadfast Stayers* (capturing data on recent and planned mobility, destination preferences etc.). 55 and 56 overseas diaspora took part in the diaspora survey in Tonga and Samoa respectively – see *The Diaspora* report.

Attempts were made to gather a broad sampling of people, from government, church, village, academic and business leadership, as well as dedicated engagements with women, youth and fakaleiti. Face-to-face meetings were held with senior government leaders in Tonga and Samoa. In Samoa this included the Ministry of Prime Minister and Cabinet, the Ministry for Women, Community and Social Development, the Ministry for Transport, Works and Infrastructure, and the Ministry for Natural Resources and the Environment. In Tonga this included multiple senior leaders from the Ministry for Agriculture, Food and Forests and Members of Parliament from Tongatapu, Ha'apai and 'Eua. Multiple attempts were made to meet with senior leadership of the Ministry for Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications, the Ministry of Lands and Natural Resources as well as the National Disaster Risk Management Office. While securing face-to-face meetings with these leaders were not successful, materials overviewing the research were shared with senior leadership. Management-level engagement in Tonga however did occur with employees from the Ministry of Tourism, Ministry of Fisheries and the Ministry for Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications.

Participants were engaged in person (the majority), online, over phone and via video calls, and people from all 'major' island groups in Tonga and Samoa (Tongatapu, 'Eua, Ha'apai and Vava'u, Upolu, Savai'i, Manono, and Apolima) were engaged either through survey, one-on-one or group talanoa, and workshops including the future scenarios workshops.

Fieldwork took place through five total trips to Samoa and three total trips to Tonga over the course of 2023 and early 2024.

## BRIEF COUNTRY-LEVEL COMPARATIVE ANALYSIS

Before presenting the separate country reports, the following table provides a useful (yet high-level) overview of the outcomes of the fieldwork in Tonga and Samoa in relation to some of the key research questions. In the analysis of findings, insights on similarities and differences between Tonga and Samoa were revealed. This table is not exhaustive.

	Similarities	Differences
<b>Scale</b>	<ul style="list-style-type: none"> <li>Household food (in)security as well as climate impacts on income as a current and future driver of mobility</li> <li>Access to funding as an enabler for mobility, as an enabler to rebuild (i.e., critical for choice)</li> <li>Obligation (to family living and passed and to the land itself) as a barrier to mobility, as a reason to remain in place and keep rebuilding</li> <li>Family, including close and extended, are enabling mobility options – both internally and overseas</li> </ul>	<ul style="list-style-type: none"> <li>Erosion of residential land already a mobility driver in Tonga</li> <li>A higher proportion of the Tongan population have undergone or are in the process of mobility where climate change is a factor (based off <i>Survey One</i> results), though estimate ~1,600 moving annually in Tonga and Samoa (noting Samoa's population ~double Tonga)</li> <li>based off survey results, in the next five years, Samoa could see ~3,083 mobilise annually where climate change is a factor, Tonga could see ~3,650 annually (a higher proportion of total population)</li> <li>~1,233 people in Samoa could (also) mobilise overseas annually in the next five years due at least in part to climate impacts (~1,000 people in Tonga)</li> <li>72,900-125,000+ people by 2050 could be under particular climate stress in Samoa, compared with 10,500-35,000+ in Tonga (noting different availabilities of exposure mapping and analysis between Samoa and Tonga). Note also that this climate stress will potentially translate to mobility differently in Tonga and Samoa given e.g., land tenure systems.</li> </ul>
<b>Pattern</b>	<p><b>How people may move</b></p> <ul style="list-style-type: none"> <li>Climate mobility is happening and will happen as a (nuclear) family or household</li> <li>An impermanency (for many) in plans for overseas relocation, including for climate impacts (unless land is lost to sea erosion or inundation)</li> </ul> <p><b>Where people may move</b></p> <ul style="list-style-type: none"> <li>For overseas destinations, the preference is for Aotearoa New Zealand over Australia or the USA (though Australia was a closer second preference for those in Samoa)</li> <li>For internal mobility, many have or plan to move to extended family</li> </ul>	<p><b>How people may move</b></p> <ul style="list-style-type: none"> <li>Future climate mobility in Samoa will likely be as a group/family, climate mobility (internal) in Tonga likely to involve many levels of family separation and dispersal</li> <li>Tongans displaying hints of a pattern of climate related dual-focus mobility: taking steps for internal relocation while planning overseas mobility (for 10-15 years) to fund this longer-term (internal) relocation</li> <li>Could be inter-island group differences in hazard or risk exposure and differences in approaches to mobility (return versus move and stay) for Tonga (e.g., the Ha'apai approach is typically to leave and not return).</li> </ul>

	Similarities	Differences
	<p><b>Who may move</b></p> <ul style="list-style-type: none"> <li>Those with family, including spouses, already overseas, will be the ones more likely to move overseas in the future. Mobility options may be reduced in future in both Tonga and Samoa as the notion of ‘family’ narrows from extended to nuclear family (“immediate needs, immediate family”)</li> </ul>	<p><b>Where people may move and direction</b></p> <ul style="list-style-type: none"> <li>Future climate mobility in Samoa looks more likely to be internal versus overseas</li> <li>Much mobility for households in customary land in Samoa will be coastal to inland and upland</li> <li>Rural-to-urban climate mobility predominates in near term and longer-term future for Samoa, coastal-to-inland and urban-to-rural predominates in Tonga</li> </ul> <p><b>Who moves (or does not)</b></p> <ul style="list-style-type: none"> <li>Women appear to face both unique blockers to mobility (most in Tonga with a possible ‘pent-up desire for mobility’ are female) and were also as a group more ‘mobility willing’ in Tonga</li> <li>Generally, the younger age group (18-24 years) in Samoa are more mobility willing (seeking economic opportunities), in Tonga, <i>Survey One</i> showed 34-45 years most mobility willing (supporting children into overseas education or work)</li> </ul>
<b>Decision making</b>	<ul style="list-style-type: none"> <li>Decisions for family mobility made at a nuclear family level (‘mother and father’/‘husband and wife’, though possibly husband &gt; wife in Samoa)</li> <li>The diaspora is often involved in mobility decisions for family in Tonga/Samoa (though uncommon to make the final decision)</li> <li>Land access or availability a factor in relocation decisions – to move or remain in place – in Tonga and Samoa, possibly Tonga &gt; Samoa</li> </ul>	<ul style="list-style-type: none"> <li>Land tenure systems are different – Samoa characterised by flexibility (at least of customary land) though possible increasing complexity with splitting of Matai titles in a family. An ongoing trend of less households living on customary land in Samoa will likely have an impact in future.</li> <li>Differentiated land holding rights for women versus men in Tonga with vulnerabilities and impacts on resilience for women and women-led households</li> <li>Village level decision-making involving Matai on whether to move, allocation of land etc. in Samoa</li> <li>In Tonga, the influence of the King in village level decision-making, the role of the government in coordinating village mobility (in Samoa, some village level relocation has occurred autonomously)</li> <li>Diaspora in Samoa possibly instigating conversations around mobility more than Tongan diaspora</li> </ul>
<b>Impacts</b>	<ul style="list-style-type: none"> <li>Impact on income/income continuity the priority challenge following relocation</li> <li>Psychological trauma left unaddressed and was identified as a priority issue by those who moved as well as the general community (and diaspora), Tonga more than Samoa</li> </ul>	<ul style="list-style-type: none"> <li>Uptick in domestic violence in Samoa (noting this could be sampling, cultural or otherwise that it was not raised in Tonga)</li> <li>Integration issues, anxieties in Tonga on internal mobility, issues around self-identity (linked to inter-island group cultural and social diversity)</li> </ul>

	Similarities	Differences
<b>Actions (to reduce harm)</b>	<ul style="list-style-type: none"> <li>• Ongoing climate awareness campaigns across all levels of the community and including practical training and access to equipment for adaptation (housing and planting)</li> <li>• Values as resilience – invest in revitalising and reinterpreting in the context of future climate change and mobility</li> <li>• Invest in psychological preparedness for future climate-driven mobility (practical and emotional planning). Prioritise income options and opportunities for those at-risk and undertaking climate mobility</li> </ul>	<ul style="list-style-type: none"> <li>• Samoa is ahead of Tonga in the government's dedicated efforts to strategically approach and coordinate engagement with overseas diaspora to support development priorities.</li> <li>• Need for a contextual national framework for mobility decision-making/relocation.</li> <li>• Financial support options / land access options and planning for climate stressed populations</li> </ul>

## STRUCTURE OF THIS REPORT

Within this joint report is a 'sister' set of reports for each Tonga and Samoa which follow the same relative structure. The research team chose to develop separate or geographic/population-specific reports based on feedback from stakeholders in Tonga and Samoa about what would have the greatest utility. In addition, there are joint sections, including a brief comparative analysis section where similarities and differences between findings in Samoa and Tonga are shared (see previous). There is also a joint section on critical Aotearoa and Māori context for this work, as well as the possible social, economic and cultural impacts of future Tongan and Samoan climate mobility scenarios on Aotearoa New Zealand. Insights from targeted engagements with women (e.g., women's workshops) are integrated throughout each of the respective reports, while findings from dedicated engagements with youth in Tonga and Samoa are shared towards the end of the 'future' sections of Tonga and Samoa's report.

Each of the Tonga and Samoa 'sister' reports follow a general shared flow, starting with brief context before moving into a 'recent and current climate mobility' section which covers scale, pattern and impacts. This is followed by a 'future climate mobility' section which also covers possible scale, pattern and impacts. There is a section on resilience definitions in each of the reports, as well as sections on opportunities to address risk/reduce harm including considerations of differential vulnerability in each of Tonga and Samoa.

The report wraps up with brief thinking on next steps.

### A NOTE ON THE NUMBERS

The figures presented in attempting to provide a 'shape' of current and future climate mobility scale have many limitations. These limitations include geographically incomplete or dated climate hazard mapping and modelling for Tonga and Samoa, hazard-limited analysis (e.g., limited mostly to sea water inundation) and survey limitations (including numbers and sampling). Caveats to all the numbers, and any associated assumptions applied to come up with the figures, have been provided. For current and near-future climate mobility (the next five years) the researchers have proposed figures based on other country specific reports where available, and the results of the mobility survey run in Tonga and Samoa. Note, there is an assumption that those reporting plans to be mobile in the coming five years will indeed move. In terms of information availability, a country-specific report on future disaster displacement was available for Tonga and not Samoa. For future scale, the researchers have been careful to present the numbers and potential scale of people under *climate stress*. Climate stress will come from a range of direct and indirect forces however in this context, climate stress is in relation to (and somewhat limited to) climate hazards most mapped – particularly that of sea water inundation.

# TONGA REPORT

## 1. POLICY-MAKERS SUMMARY - TONGA

The following is a summary of the key insights from the Tonga report on climate mobility. It is centred around answering the key research questions on current and future scale, pattern and impacts of climate-related mobility. It also covers topics such as mobility decision-making and population-specific definitions of resilience. Some of the detail and more on the assumptions behind this summary can be found in the report that follows this summary.

### SCALE

#### Scale – recent climate mobility

1. The research team landed on two possible figures for recent climate mobility in Tonga.
  - a. The Internal Displacement Monitoring Centre (IDMC) suggest ~1,232 people have been displaced annually in Tonga from climate-related disaster/sudden onset hazards.
  - b. The proportion of participants in *Survey One* results indicating that they have moved in the last five years due to climate change factors could suggest that recent internal climate mobility could be at ~800 nationally, annually. This is likely to capture mobility from both slow *and* sudden onset hazards, and possibly some environmental mobility as well given climate change knowledge gaps.
2. Roughly assuming that half of the ~800 figure is mobility following sudden onset hazards, **the researchers suggest a total recent scale of ~1,600 people annually (~400 slow onset + 1,232 sudden onset)**. Factoring in household size and possible household level mobility, this figure could range up significantly.

#### Scale – planned climate mobility (next five years)

1. In looking towards the next five years, 7% of the 305 *Survey One* participants reported plans to move due to the impacts of climate change. This would translate to 7,000 people (plus any dependents) over the next five years (or at least 1,400 people annually). Factoring in household size and possible household level mobility, this figure could range up significantly.
2. Existing studies note significant coastal erosion in parts of Tonga, and fieldwork *talanoa* revealed that people have moved or are in the process of moving due to both coastal erosion and due to difficulties growing food in low-lying urban areas. *Survey One* results show the most common direction of planned future mobility was urban-to-rural. Results also showed that a high proportion of people who reported plans for climate-related mobility were moving urban-to-rural, or coastal-to-inland. Given limitations in climate change understanding, the research team chose to consider all people who reported these directions of travel in the coming five years as possibly being climate-related mobility as well. The survey showed that 10% of all participants reported plans to move coastal to inland or urban to rural. When deducting those already 'counted' in planned climate mobility (i.e., those who reported that climate change was the main reason for this mobility and this direction of travel), this could add up to an additional 6,000 people moving in part because of climate change factors in the next five years (or 1,200 more, annually)
3. When combining projected near future mobility from sudden onset hazards noted in a Tonga country report by the IDMC (2021) (i.e., 1,051 people annually)<sup>9</sup> and from (likely) slow onset hazards (2,600 people annually, when combining those who indicated plans to move due to climate change plus those who indicated their mobility direction to be coastal-to-inland and urban-to-rural), **near future scale (the next five years) could be at least ~3,650 annually**. When factoring in average household size, this figure could range up significantly.

*9. In considering climate mobility following sudden onset hazards, a report by the Internal Displacement Monitoring Centre (IDMC) suggested possible forward-looking annual displacement numbers for Tonga of 1,051 from cyclonic wind annually (as well as 168 from earthquakes and 10 from tsunami), or 5,255 people over five years (IDMC, 2021).*



## Scale – recent or planned overseas climate mobility

1. *Survey One* results offer a clue about the possible scale of overseas climate mobility in the next five years. A number of those planning to move internally in the next five years due at least in part to climate impacts also reported onwards plans for overseas mobility (as well) – 15 participants in fact, or 5% of the total survey participants. While recognising sample size limitations, assuming there is a connection between plans to move internally due to climate impacts and plans to (also) move overseas (as was validated by fieldwork findings) in the coming five years, one could extrapolate this proportion out to **suggest up to 5,000 people (or more, factoring in household size/dependents) could be planning climate-related overseas mobility in the next five years (potentially in a two-step pattern, starting with a temporary internal move, or a dual-focus mobility – see later).**

## Scale – future climate mobility (climate change 'as projected' with considerations of additional impacts from 'more extreme' climate change)

For defining a picture of scale for Tonga's future climate mobility, the research team has carved out a ranged figure of particularly climate-stressed people who, based on their attributes, capacities and situation could be more likely to be mobile in reaction to this stress, or, due to a lack of choice, find themselves in a state of immobility.

1. An IDMC country report for Tonga (2021) gives a 64 per cent probability that in the next 50 years about **21,400 people** in Tonga – a fifth of the current population – will be displaced because of cyclonic winds (IDMC, 2021). Though environmental displacement, it is not immediately clear what proportion of this could be attributable to climate change impacts (noting that the studies that could be found on climate impacts on future tropical cyclone projections did not factor in climate impacts).
2. **Based on the findings of several key studies (ADB, 2021, SPC, 2021 and Lin et al, 2022), and with a geographic scope limited to Tongatapu and Ha'apai, there could be between ~10,500 – 31,000 particularly climate-stressed people by 2050, which could translate to mobility (or immobility, particularly in the case of those assessed as populations of highest risk).** Note, this 'picture' can only consider the ~75% of the population covered in the geographical scope of these ADB and SPC studies, limited to the hazards they assessed, and thus could well be a conservative view.
3. **Taking a different approach, scaled off a proportion of the population currently planning climate mobility (per Survey One) this figure could be in the range of 35,000+ by 2050** (assumes consistent baseline population and consistent proportion of the population moving each five years to 2050 as is planning to in the coming five years).

Under more extreme climate change projections (including +2m SLR), the ADB (2021) propose that 'the majority of Greater Nuku'alofa is inundated', with the population of Greater Nuku'alofa being 34,142 people (Tonga Statistics Department, 2021).

- Modelled SLR of +2m plus pluvial flooding that factors in climate change rainfall and overlays a one-in-100-year rain-induced flood, and a one-in-10-year coastal inundation event, showing 39,237 people - would be exposed to at least 0.2m of flooding.
- An assessment of population risk that overlaid hazard, exposure (population) and vulnerability measures at a village level across Tongatapu, showed over 10 villages would be at 'high' population risk, likely leading to action that could include reactive mobility. The combined population of these villages is ~40,000 people (Tonga Statistics, 2021).
- The inundation mapping done by SPC (2021) for Lifuka Ha'apai showed ~1/6 of Pangai would be inundated at +1.4m SLR, roughly equating to 340 people.

**This would bring the estimate of numbers of climate-stressed (of which some could progress to mobility, or a combination of mobility and immobility) to the range of ~40,000 people by 2050 at SLR of +2.0m, within the geographical scope of Tongatapu and Ha'apai (Lifuka).** Given the key, nationally-relevant infrastructure damaged or lost in this scenario (e.g., Vaiola Hospital), there would undoubtedly be additional mobility based on e.g., service access. The researchers also acknowledge however that these figures do not factor in the impacts of possible future adaptation efforts that could mitigate these numbers.

## Dampening scale and/or increasing choice in climate-stressed people

Fieldwork revealed that there were a range of factors that could dampen scale in the near future and/or increase choice for climate-stressed people. These include targeted financial support for housing or plantation land adaptation, financial support for relocation or rebuilding for (geographically or demographically) at-risk populations, and support (including administrative or financial) for leasing of food growing land for (geographically or demographically) at-risk populations. Other options identified including encouragement to spread household risk through two homes (in town and in plantation land) for those with a tax allotment, noting that in Tongatapu approximately half of households does not have tax allotment/agricultural land. Finally, some encouraged more organised and deliberate engagement with the Tongan diaspora for more coordinated and strategic support of climate and development efforts (similar to Samoa's Diaspora Relations Unit), and for open discussions around land access or exchange options etc.

## PATTERN

This summary section combines findings from fieldwork as it relates to pattern of recent, current or planned mobility as well as future mobility.

### Why and when people may move

Generally, based on the findings of *Survey One*, those in Tonga have less mobility proclivity relative to what was seen in those in Samoa (i.e., generally the population was less enthusiastic about moving internally or overseas and were also planning mobility at lower rates). The exception to this was that there as a small sub-group found in Tonga that had a possible pent-up desire or need to move (showing strong desire to move internally or overseas but having no plans). Though a small sample size, most of this sub-group were female.

Those currently in the process of moving due to climate impacts, reported that difficulty growing food (e.g., significantly lower crop yields) and resultant household food insecurity and challenges generating income from food growing was the key driver, as was the need to seek out additional or alternate income streams to fund internal relocation to higher or different land. Others in Tongatapu shared that it was literal loss of land (to sea erosion) that was the mobility driver. This was validated by reports from the Governor of Ha'apai, Dr Pita Taufatofua who shared that families in Hihifo for example had relocated inland to government land or moved overseas due to land loss.

In future, based on the outcomes of the future scenario workshop, the one-on-one visualisations and one-on-one and group talanoa, people believed that people would relocate from (geographically) at-risk locations (coastal and low-lying urban villages) for due to difficulties growing food, and to ensure the safety of family.

### Why people may not move (immobility)

A lack of availability of alternate (inland) land options was a stated driver of current climate immobility for some, particularly in Ha'apai. Those without land, including the ~half of families in Tongatapu without a tax allotment reported a feeling of a lack of options to move out of harm's way, even when the risk was clearly apparent to them (e.g., those in Patangata). Many pointed to a lack of financial capacity to move elsewhere or an inability to start 'from scratch' elsewhere and/or a hesitation to leave their current location for fear of losing their access to income (e.g., fishing grounds).

Looking towards the future, participants were highly aligned on the place of family for enabling mobility – either internally or overseas. Those without family overseas would likely not mobilise without that pull (and without that practical or financial support). Many also believed that with intensifying climate stressors, the notion of 'family' may narrow in future, with a resultant narrowing of mobility options for many people under climate stress in Tonga. Participants believed that those with little financial means will not move and will choose to remain in place and 'make do' with whatever material they can find to adapt their housing or shelter.

Gender will likely play a role in differential immobility (and/or differentiated outcomes). As mentioned, women's tenuous and limited land holding rights in Tonga translated to reports of hesitancy to consider mobility due to a lack of alternate living options – this was particularly apparent for unmarried women and widows the researchers engaged. Women also expressed a strong hesitancy to move for fear of acceptance elsewhere in Tonga and a likely loss of social status on

relocating. Fakaleiti also shared hesitations in considering future internal mobility, fearing social isolation in a new village as they report having worked extra hard for social acceptance, seeking job roles that would help them to be seen as helpful or valuable to their home village. The fakaleiti that the researchers did engage reported a similar sentiment that if given the option, fakaleiti would seek overseas mobility over internal due to the 'conservative nature' of Tongan society.

There was a strong sense of commitment to rebuilding, both in responses to survey questions about rebuilding following disaster and in talanoa. Many reported that the preference would be to rebuild for practical reasons (a lack of finances to fund relocation) but also for more emotional, spiritual and values-based reasons (including a deep love for the land that has nurtured them and their family, an obligation to honour land gifted initially by King Tupou I, and a commitment to family both here and passed to care for that land). Some felt that they continue to build a knowledge base on how to deal with disasters and recover from disasters and that this would stand them in good stead. Others, including women, shared that they would rebuild simply because they have no other option (noting women's limited rights to hold land in Tonga).

Finally, the decision-making of the Tongan government and the Royal Estate has had and will continue to impact people's choice regarding mobility. Examples of this have been provided in case studies and in the body of the report. Different rules around evacuation, relocation and relocation permanency have been applied to different population groups following the Hunga Tonga-Hunga Ha'apai eruption in January 2022.

### Who may move

Firstly, the researchers emphasise that usual socio-cultural mobility features, including 'who moves' for other forms of mobility may well translate to climate mobility in the near and more distant future. The influence of land rights and who is in line to inherit family land within a sibling line up (the eldest son) and who is not (everyone else), is and has been a factor in driving overseas mobility for many in Tonga who are not the family land heir.

Based on responses to *Survey One*, both in terms of responses to questions about hypothetical future mobility and future mobility plans, the most (generally) 'mobility-willing' in Tonga appeared to be females in the 35-44 years age group. More females than males (recognising a small sample size) reported moving internally in the last five years where climate change was a factor. Also based on survey responses, those reporting plans to move urban-to-rural due to the impacts of climate change were residing in Ha'ateiho, Kolomotu'a (multiple people), Tofoa (multiple people), Hala'ovave (Kolomotu'a). Those reporting plans to move from low-lying to higher areas due to the impacts of climate change were residing in Houma (Nukunuku), Ha'ateiho, 'Anana and Halaleva (Kolofo'ou).

In several group talanoa, including in the future scenarios workshop, participants believed that those with family members overseas and those with spouses overseas would be the ones most likely to mobilise across borders, and similarly, that those without family overseas would face significant immobility challenges.

Through a geographic lens, and future-looking, reports from the comprehensive multi-hazard risk assessment (ADB, 2021), as well as a few other key reports (SPC, 2021, Lin et al, 2022), identify a number of villages at particular risk of sea water/coastal inundation by 2050. Under 0.5m sea level rise, the authors suggested that most of Tukutonga, population 643 (Tonga Statistics, 2021) and part of Popua, population 2,320 (Tonga Statistics, 2021) would be inundated. There would also be discrete inundation of the Popua power plant. The study also ran scenarios where under a sea level rise of 0.5m with the addition of a one-in-100-year rain-induced flood, and a one-in-10-year coastal inundation event, up to 42% of the population of Tongatapu – or 31,169 people - would be exposed to at least 0.2m of flooding. Under 1 metre of sea level rise, the western extent of Kolomotu'a, the south-eastern extent of Kolofo'ou and the south-eastern and northern extent of Ma'ufanga would be inundated up to a depth of 1.8m. At 2 metres of sea level rise, the report stated that the majority of Nuku'alofa would be underwater (ADB, 2021).

### Who may not move

Recognising that climate-stress does not necessarily translate to mobility, the report also assessed village groups by population risk (an assessment covering gender, disability rates, employment rates, home ownership rates etc.). This assessment did not factor in measures of land or family/social capital. This assessment highlighted the populations of Popua, Tukutonga, Folaha and Manuka as having the highest population risk. This may not translate to mobility for these groups and given insights from fieldwork, these at-risk populations may indeed be the ones facing the least mobility choice and thus immobility.

In *Survey One*, those over 44 years old appeared to be least enthusiastic about future mobility under different hypothetical situations and were least represented in terms of current planning for all forms of mobility (there didn't appear to be an age factor in future climate-related mobility plans, plus sample sizes became too small on disaggregating for age). A critical insight was a sub-group identified as possibly having a pent-up desire to move. This group were mostly all female.

In the future scenario workshop, participants believed those who were socially isolated, and who lacked family nearby, in alternate island groups or villages and overseas would be less likely than others to undertake mobility under climate stress. Those without the financial means were also expected to remain in place and 'make do'.

Finally, those who are not land holders, those who are considered 'settlers' in a village or area and those who do not have access to alternate land (e.g., plantation land/a tax allotment) were seen as having little choice to move and thus would likely remain in place.

### How people may move

Firstly, certain socio-cultural practices of mobility will likely persist in future, including in relation to climate mobility. The practice of 'searching for new land' or scouting new locations (*Kumifonua*) may present in future climate mobility. Currently, and in the past, this typically would be a male in the family leaving (for example, for overseas) first. They commonly stay with a brother or other male family member. Once they secure work and accommodation, they would then begin the process of bringing over family – starting with their immediate family but over time actively seeking opportunities and pathways for others, including siblings (and their families).

Climate mobility within Tonga, like with other mobility due to environmental forces, would likely involve multiple levels of separation. The first level would be family separation from the village, church and other community group memberships, the second level would be separating family members between different extended family homes in the same or different villages and the third level, which is common, would be the relocation of family that had been living in that home to make room for those coming in. The whole-village mobility seen following the Hunga Tonga-Hunga Ha'apai eruption was seen as atypical and enabled through the fact that the affected communities were on Royal Estate land and alternate options for the whole community could be identified and organised relatively quickly. In saying that, with the relocation of 'Atataa to Tongatapu, part of that community was still separated from those initially allocated houses, instead spreading out across extended family and for some, residing in a local church hall.

In terms of how others are moving due to climate factors, reports of those leaving Ha'apai due to land erosion indicates that the full nuclear family relocated (both internally within Tonga – inter-island - and overseas). The families that the researchers spoke to who are in the process of climate mobility report that their mobility is as a full (nuclear) family (parents and all children).

An important new insight was the description of stepped mobility by some (i.e., linear, with no planned return) and what the researchers term a parallel or *dual-focus mobility* - where action is being taken for (longer-term) internal mobility while plans are being put in place for (short- to medium-term) overseas mobility – critically the latter was described as enabling the former. For multiple families, they report a planned period of 10-15 years overseas (typically New Zealand) to raise money to either purchase alternate land in an elevated area in Tonga, and/or to pay for a new house build on alternate land.

For a family in Ha'apai planning climate related overseas mobility, one woman described plans to go to Tongatapu first before moving onto Aotearoa New Zealand (and ultimately onto the United States). This participant emphasised that the Ha'apai approach to mobility is different to others – saying they tend to leave and not come back.

In the future scenario workshop, participants believed that cyclical or impermanent overseas mobility would still predominate in different climate futures, however also believed that some – particularly those from coastal areas impacted by sea erosion - would be more likely to leave and not return (based on the loss of land).

Also identified in the future scenario workshop, in the context of 'more extreme' climate mobility, those without options for internal mobility and/or strong reasons for seeking overseas mobility (e.g., family reunification), in a situation where pathways were not available or accessible, participants believed that some would seek out people smuggling ventures or be more vulnerable to human trafficking.

## Where people may move

Based on the results of *Survey One*, it appears that those in Tonga are more likely to be planning overseas mobility more than internal mobility, and under hypothetical situations (e.g., it not being safe to remain at home in future) would also seek out overseas mobility before internal. This was the opposite of what was seen in the results in Samoa. This preference was reiterated in one-on-one talanoa, with many reasons given, such as the lack of land availability in Tonga, the lack of options in Tonga to earn an income to pay for internal relocation, and anxieties about acceptance in a new village. Many also referred to tensions between 'settlers' and landowners or incumbents.

Those planning or considering internal mobility due to climate factors did frequently highlight one particular area – Mata ki 'Eua in Tongatapu, which is relatively elevated – as their target destination.

The overseas destination preference generally, and for those planning overseas mobility in the coming years, was Aotearoa New Zealand. Nearly 3/4 of those planning overseas mobility in the next five years plan to move to Aotearoa New Zealand. In women's and youth workshops, Aotearoa New Zealand was the most desired overseas location, with the most common reasons given being proximity to Tonga, the presence of close family, food quality, it being a safe location, and the temperate climate. Migration data also backs this up, showing that in 6 out of the last 8 years (discounting two years during the pandemic due to closed borders), New Zealand was the most common overseas destination for Tongans leaving Tonga with intended permanency.

Many noted that the island/island groups of Vava'u and 'Eua would likely host future climate displaced people (with many assuming these people would be moving from Ha'apai and low-lying areas of Tongatapu). In the futures scenario workshop, participants frequently mentioned Vava'u, 'Eua and the Niuas as target destinations for those escaping climate impacts in Tongatapu and Ha'apai.

## Modulating scale and pattern of climate mobility in Tonga

Given some of the reasons for mobility or immobility, the researchers concluded that there are a series of actions that could be taken to increase choice when it comes to climate mobility in Tonga.

Land availability was frequently identified as both a reason for immobility as well as a driver of inter-island and overseas climate mobility (particularly in Ha'apai, noting it currently is small scale). There is an opportunity to learn from and scale innovations in land access, like the land exchanges facilitated through the Governor's office in Ha'apai (heirs are contacted, asked whether they would be open to swapping their land in Ha'apai for similar land in Tongatapu, which has freed up some land availability in Ha'apai).

Others expressed ongoing efforts to limit future land leasing in 'Eua just for those residing in 'Eua, noting that they cannot afford to have land vacant, including in a future of possible further climate (or environmental) mobility to their island. Some mentioned the tactic of leasing agricultural land where their (low-lying) allotment is no longer producing as it was, though the rate of land leasing is still very low and mostly concentrated in Tongatapu (Tonga Statistics Department, 2021). A leader in insurance in Tonga reported that insurance penetration in Tonga is very low and there is opportunity to improve uptake (and resilience or adaptation capacity) through better education of leaders and the public on the options and benefits. Targeted products, like one under the United Nations Development Programme (UNDP), would provide a beneficial payout to plantation owners in the event of a category four (or more) tropical cyclone and potentially support choice around remaining in place.

Knowledge of the challenges faced by particularly those relocated from Mango to 'Eua was common knowledge and appeared to be on the minds of those currently facing climate stress in other parts of Tonga. Many leaders and community members referenced the struggles of the Mango people with their stark shift in environment and the expected work or activities thrust upon them (e.g., from fishing to farming). One woman in Patangata, whose family survives on fishing income, referenced the Mango people saying that she doesn't want to move 'like the Mango people', that she doesn't want to have to go and farm for a living.

As highlighted, several geographical areas are more likely than others to receive people mobilising for climate reasons. The preparedness and receptiveness of these host communities will be critical for reducing harm from future internal mobility. Openness and transparency around preparation may also reduce mental barriers for some (climate-stressed populations) considering their options.

Finally, both beliefs around rebuilding versus relocating, and people's financial capacity to do either was a major driver of both climate mobility plans in progress and in anticipated or assumed future mobility. Many reported that rebuilding would be the preference and those relocating would likely have a baseline financial capacity to do so. One head of family who reported plans to move overseas to fund internal relocation in the longer term stated explicitly that if he had access to around TOP\$10,000, he would be able to stay in Tonga and adapt, and that staying in Tonga would be his preference.

### **Mobility decision-making**

For family level climate mobility, in terms of who is making the decisions in Tonga, the participants that reported current climate mobility plans reported that the decision was made at a nuclear family level (i.e., the husband and wife/mother and father). Overseas families were not involved in the decision-making (at that point) for these families. Those in the process of planning or undertaking climate mobility were factoring in a range of considerations, many centred on the (economic and education) opportunities for, and well-being of, their children or family. Most planning overseas climate mobility were transparent about the fact that their preference is to remain in Tonga, but that it is a necessary sacrifice for their family to afford them those opportunities.

Though overseas family were reportedly not part of the decision-making process, the presence of family, including to initially receive them was a common thread in many one-on-one and group talanoa. This social capital, in the form of family, was of the highest value in many future scenarios in terms of optionality for mobility – internally and overseas.

In a women's workshop, women reported that they play a key role in decision-making in considering all aspects of a decision, second and third order impacts and many of the practical planning required. One woman was clear that 'it is the woman in the family that says to run or not'. For many (though not all) women, the safety of their koloa (family heirlooms of mats, ngatu etc.) was of great significance and a factor in their decision making with some describing it as a major disincentive for women to move given the practical difficulties of moving their koloa, as well as the social impact on them in not being able to provide appropriate koloa for different family occasions should they leave their koloa behind.

Some reported that their children, siblings, and cousins overseas frequently encourage them to move to live with them, citing reasons of safety and a desire to better care for them in a way that is not possible while they remain in Tonga. Those reporting this shared that they push back, claiming a love for the lifestyle in Tonga in particular, the freedom of not having to work to eat, and for many, the peace that comes from living on one's own land for 'free'.

Beyond family-level mobility, the influence of key leaders, like the King, is a critical consideration in Tonga. Following the Hunga Tonga-Hunga Ha'apai eruption and tsunami, the decision was made to evacuate those from Mango and 'Atataa and relocate them permanently to 'Eua and Tongatapu, respectively. For those from Mango, a number of people reported that the King has 'forbidden' people to return to Mango to live out of concern for their safety. This same rule was reportedly not applied to those of 'Atataa (nor others, like the affected population of Nomuka who were not relocated). The role of nobles as estate holders is also a key consideration in Tonga. One participant, a senior leader in government, shared that the King called a meeting of the nobles to ask them to 'ease up' off the land so that people can have greater access. This participant reported that not all nobles responded to this request. Regarding household and community food security, other participants report that some nobles continue to allow others from outside their estate to gather food and/or fish in their grounds.

In terms of land availability, another senior government leader recalled a story from years back where the Ministry for Agriculture, Food and Forests was hoping to revoke some vacant land in Tonga in order use that land for food production. Most of this land was diaspora-held. They reportedly presented their case to a senior leader in the Ministry for Lands and Natural Resources who asked for revenue figures for agriculture for Tonga and then for annual remittances (from the diaspora). That was reportedly the end of the conversation.

### **Who is particularly at risk/vulnerable (choice and outcomes)**

Research efforts revealed that there could be a range of differential population vulnerability in Tonga, in terms of mobility choice but also for mobility outcomes. Geographically, those from Ha'apai for example have the highest reliance (based on rates of participation) in agricultural activities (per the 2021 HIES), and high dependency on a healthy ecosystem for other activities like fishing and handicrafts utilising pandanus plants. As such, this population group could be at highest risk of displacement under future climate stress as they seek out alternate ways to feed their family in a climate-disrupted system.

As already mentioned, women have limited and tenuous land holding rights, with this insecurity broadening in its effect for women-led households (which are increasing in proportion in Tonga). Without land, women have limited alternate residential options and cannot access e.g., loans taken out against a land asset. Women also report greater burdens placed on them in the home and community due to the absence of men (e.g., who are on seasonal work programmes) and feel there is both an erosion of resilience at a family and community level because of this. They also acknowledged that greater workforce participation has built some individual and family (economic) resilience. Fakaleiti reported concerns regarding mobility outcomes particularly following internal mobility based on discrimination and a lack of social acceptance.

Finally, those without a tax allotment (household agricultural land), those without the funds to relocate, those without family in alternate villages, island groups or overseas would have less mobility options and their mobility outcomes may also be poorer.

## Resilience

In considering resilience through a Tongan lens, participants reflected that family was a key form of resilience (both as a motivator and as an enabler or channel to broaden one's options – "a person is born into a family, the boundaries are international" 'Ilavaha Tovehi, talanoa, Nuku'alofa, March 2023).

A number of participants referenced values of 'ofa indirectly and directly as a critical form of resilience, with 'ofa as a verb providing an invaluable social safety net in the context of environmental and future climate mobility, with many examples provided. Resilience was also discussed, particularly in the women's workshop, in the context of 'ofa fonua – love of/for the land. Reciprocating love for land that has nurtured a person, their family and ancestors was seen as a powerful driver or motivator for adaptation and recovery on the land. Fakapotopoto was also explored in talanoa as a form of resilience, *Fakapotopoto* describes acting in a wise way – intelligently, prudently, resourcefully and with integrity. Approaching things in a 'fakapotopoto way' could mean producing resources to meet current needs, and when used judiciously, leftover resources can be saved to provide superior resilience for families in future or in times of need. It also enables a person to gift 'spare' resources in an act of 'ofa which can also lift a community's collective resilience.

Some participants spoke on traditional knowledge as resilience, reflecting on a temporary return to some of the old ways of cooking and cleaning during COVID lockdowns, and believing that a loss of traditional knowledge (and subsequent dependence on outside goods and ways) erodes and has eroded a baseline resilience of many in Tonga.

## IMPACTS

The social, cultural and economic impacts of current climate (or environmental) mobility were numerous. Many possible future impacts were also identified.

In considering future climate mobility and cultural impacts, identified risks included a loss of language (including language tied to certain land, and location-specific activities), a loss of knowledge (e.g., how to fish or farm in different land types or locations), and sub-cultural loss from a merging of behaviours and values systems as families disperse across multiple households and locations. Where there is currently a complex set of diverse sub-cultural settings across Tonga, which people emphasised supports both social sense-making and social cohesion outcomes, the sense is that the splitting and merging of people in future, at scale, will lead to the hegemonic override of 'one Tonga'. Some believed there would be land-driven conflict (particularly between 'settlers' and incumbents or landowners, and particularly in areas of relative elevation, including Mata ki 'Eua, Vava'u, 'Eua and the Niuas).

Social impacts from recent mobility included psychological trauma from dislocation from one's land, dislocation from others (living and buried ancestors), impacts on self-identity and self-worth, and a loss of social roles in a family and the community (e.g., women without their koloa).

Data shows that overall, for the population, agricultural, fisheries, livestock and handicraft activities represent the highest contribution to total household income in Tonga (Menaouer & Sharp, 2023). The priority economic impacts (and impact full-stop) highlighted by those relocated following the Hunga Tonga-Hunga Ha'apai eruption was the loss of income and the means to generate an income, often pointing to a loss of access to materials to weave with, old fishing grounds or land to grow food. With this came impacts on education access for their children, housing security and longer-term food security. Looking towards the future, risks were flagged regarding the control of fishing grounds and the Exclusive Economic Zone for Tonga, particularly if, and when, whole islands are vacated (as has happened in Mango). A few participants,

including with Māori leaders engaged in the project and through the one-on-one future visualisation activity raised risks to future sovereignty and both national and regional security on the mobilisation of people at scale, believing that this would result in further foreign entrance.

### Priority efforts to reduce harm from future climate mobility

The report raises a number of options to reduce harm from future possible climate mobility. These ideas came through talanoa as well as outcomes of the future scenarios workshop. Priority actions included

- **Ongoing community awareness campaigns, with easy-to-understand information that is focused on climate change impacts over risks, and specific to different areas and populations of Tonga**, with practical training for e.g., adaptation, and with paired (financial) support and equipment where possible or indicated.
- **Developing a framework for decision-making on village or population level climate mobility**, including on whether to relocate, the permanency and return rules. This framework could include a monitoring and evaluation requirement for relocation events to assess the impact of the relocation on the quality of life of those displaced, and whether the objectives of the resettlement plan have been achieved. Establishing a framework would also allow for learning to be applied to future interventions.
- **Prioritising psychological preparation and support.** The mental and emotional toll of relocation is highlighted throughout this report and in the case studies. There was widespread recognition of the need to focus on providing psychological support to those impacted by climate or environmental relocation, and to have a plan to prioritise this support in any planning for future mobility.
- **Target planning to highest risk groups.** Sub-groups within Tonga have been identified as having differential vulnerability (regarding mobility choice and mobility outcomes) in the context of different climate mobility futures. These sub-groups include women, women-led households and fakaleiti, those who are not landowners and/or who do not have access to a family tax allotment (e.g., alternate, food growing land), those with few family connections internally or overseas, and subsistence farmers (with a possible geographic focus on Ha'apai given relatively high participation rates in agricultural, fishing and handicraft activities that have high dependence on the natural environment). There are also relatively higher hazard-exposed village populations in Tonga (e.g., in Popua, Tukumotonga) that will likely face higher levels of climate stress and based on existing vulnerability assessments, may be at higher risk of poor outcomes following mobility or immobility. Planning for reducing harm from different mobility futures should factor in differential vulnerability and support could be prioritised or sequenced accordingly.
- **Engage diaspora more deliberately and strategically.** Many participants, including government leaders recognised the existing value and latent potential in the overseas Tongan diaspora in a future of high climate mobility. Beyond remittances, fieldwork revealed the role of the diaspora in building resilience to climate impacts and limiting the harm of environmental mobility (e.g., representing an alternative market for handicraft sales for relocated women). The overseas diaspora report frequently inputting into mobility decision making for family in Tonga, directly supporting efforts to address climate impacts at a family level (~1/3, per the diaspora survey) as well as at a village or island level (~1/4, per the diaspora survey). 2/3 of the diaspora surveyed reported they would like to be contacted by the Tongan government to receive national updates on the country and even to be shoulder tapped for specific support asks.



## 2. NOTE ON OTHER PRODUCTS AVAILABLE

This report, though a coming together of all major insights from the research project in Tonga and Samoa, is one of a number of project outputs, or 'products'. Throughout this report, there will be reference to these different products to note where there are connections and deeper insights to be shared through accessing these products. A brief summary of the other research products available are as follows:

**Recent shifts, future signals:** A detailed overview of the latest existing data and projections to 2050 for population and trends of note in the economy, migration and environment data.

**The mobility-willing and the steadfast-stayers (Survey One):** outcomes of a survey of 305 people living in Tonga (and 290 participants living in Samoa) that reveals general mobility 'willingness', beliefs around future climate mobility, overseas destination preferences, and recent and planned mobility, including climate related mobility (internal – including planned direction - and overseas – including planned country).

**Six Kōrero:** New insights from interviews with six prominent Māori on future Pacific climate mobility, including possible implications, risks and opportunities, and a set of principles for engaging on this topic further.

**The Visions:** Powerful and emotive stories from one-on-one visualisation sessions on the future/s of Tonga and Samoa.

**Moving Futures (the scenarios):** Output from the future scenario workshops held with leaders in Samoa and Tonga, detailing four different futures each, and revealing key patterns, scale influences as well as risks and opportunities.

**The Diaspora:** Perspectives and insights from the Tongan and Samoan diaspora (in New Zealand, Australia, the USA and Hawai'i, including their unique contribution, influence and potential in a climate mobile future.

**Landed:** A collection of insights from Tonga and Samoa based on talanoa on land issues, risks, trends, and opportunities in the context of climate mobility.

**(Im)movable women:** Findings from engagements with women, including women leaders, in Tonga and Samoa re: climate futures, unique mobility impacts, risks and opportunities.

## 3. BRIEF CONTEXT SETTING

Tonga's current population sits as approximately 100,000 people. In recent years there has been a slight drop in population. Further, there is a population gender imbalance (for every 100 women there are 94 men) and in recent years there has been an increase in the proportion of households that are female-led (based on data from the 2021 Household Income and Expenditure Survey). Based on UN Population Division assumptions (medium range), Tonga's population may grow moderately by 2050 to 130,000.

The median age for those in Tonga is currently 22 years old. By 2050, the expectation is that the median age will reach 27 years old, which is still younger than New Zealand's current median age of 37 years old.

Over the last decade, Tonga has posted net negative migration, with the main international destination for intended permanent migration being Aotearoa New Zealand.

Environmentally, Tonga and Samoa face similar climate impacts in terms of projected sea level rise, temperature increases, and more intense (though possibly less frequent) tropical cyclones (CSIRO and SPREP, 2021). Most of the urban area of Nuku'alofa is less than two metres above sea level and is subject to periodic flooding during heavy rain (Kingdom of Tonga, 2019). The most severe storm surge, caused by Tropical Cyclone Isaac in 1982, in combination with a high spring tide, reached 1.6 metres, inundating 30% of the island of Tongatapu.

Recent environmental mobility events in Tonga, such as the Hunga Tonga-Hunga Ha'apai eruption, provides great transferable learning on decision-making, impacts and patterns of possible future climate mobility and the researchers intentionally targeted these populations through fieldwork for this reason.

## 4. RECENT AND PLANNED CLIMATE CHANGE MOBILITY

This section sets to answer one of the key research questions – what is the current scale and pattern of climate mobility? The research team has interpreted 'current' to include recent presumed or reported climate change mobility (particularly in the last five years), as well as reported planned (or projected) climate mobility (in the next five years). The team has drawn from unique insights gathered from *Survey One: The Mobility Willing and the Steadfast Stayers (Survey One)* where 305 participants living in Tonga shared details about their recent and planned mobility, and compared and contrasted these findings with key reports, data and projections from organisations such as the Internal Displacement Monitoring Centre (IDMC).

For planned climate mobility, the research team has considered the lenses of 'sudden' and 'slow' onset climate mobility, with scale projections from IDMC mostly related to sudden onset hazards (wind damage/tropical cyclones) and the responses to *Survey One* regarding future climate mobility most likely to be an indication of mobility responses to slow onset hazards (e.g., sea level rise, erosion). This is for several reasons, both logical and contextual. Logically, one would assume that a person or family would typically not pre-emptively plan to move in anticipation of future sudden onset hazards such as tropical cyclone damage. Contextually, the research has clearly shown that the Tongan approach to action typically requires a present stressor. The continuous and progressive nature of slow onset hazards would suggest that any planning happening now for climate mobility in the short term is due to existing, ongoing slow onset hazards and their impacts (e.g., declines in livelihoods).

Some of the scale projections have found further support in insights garnered from talanoa held in Tonga over the course of the project where specific examples of climate mobility have been shared with the researchers by local or government leaders and by those who are in the process of moving themselves.

In terms of current pattern, the researchers have looked beyond just climate mobility (given scale is relatively low at this point) to include environmental mobility events (such as the recent Hunga Tonga-Hunga Ha'apai eruption) given there will be some valuable insights from looking at these examples in terms of who moves, where people move, as well as how they move.

### 4.1 SCALE

#### Context, limitations and assumptions

The researchers wish to make clear the limitations that exist in providing a rough possible picture of both recent/current, planned and future (to ~2050) mobility for Tonga.

When considering the possible scale of recent/current mobility, planned and future mobility based off the results of *Survey One*, the researchers wish to make clear:

1. Though a strong sample size of 305, with sampling of all major island groups, there was an imbalance in participant sampling in both gender (37% male, 63% female) and age (slightly older median age than overall population) relative to the total population.
2. For responses indicating plans (as opposed to wishes) to be mobile in the coming five years, for scale estimations for the near future, it was assumed that all plans would translate into mobility action.
3. For estimations around mobility (recent or planned) based on responses that suggested climate was or will be a factor, it is presupposed that all noting this have a true understanding of climate change and its impacts. This was not the case in all responses in the survey (where nearly 40% indicated that climate change would or does have an impact on volcanic activity or tsunami frequency (further on this is shared later in the section)).

When looking at analysis from existing external reports, for estimates of affected persons, based off current exposure mapping of Tonga, there are limits to the scope of these insights given current limited exposure mapping for all of Tonga. The geographic scope (and therefore limitations) of these estimations are shared explicitly where relevant.

## Scale: recent climate mobility

The Intergovernmental Panel on Climate Change (IPCC) acknowledge that climate change will result in movement of 'stressed' people, while admitting there is low confidence in the ability to assign direct causality to climatic impacts or to the numbers of people affected.

New Zealand's National Institute of Water and Atmospheric Research (NIWA) has drawn closer connections between climate and social impacts through consideration of a loss of habitability. Duvat et al. 2021 (cited in Campbell, 2022) name five habitability pillars: sufficient and safe land, freshwater, food, settlements and infrastructure and sustainable economic activities. Inhabitability, though needing to be contextually defined to include relevant social and cultural elements – is seen as a more likely ultimate driver of climate mobility. Bardsley and Hugo (2010) state that mobility is often less a function of immediate stress resulting from the onset of a natural disaster than a proactive diversification strategy taken in anticipation of such events in the future, or to cope with long-term declines in livelihood. In fieldwork, the researchers found that those who are in the process of undertaking climate mobility (e.g., leasing food growing land elsewhere, saving up to purchase land or build a house in more elevated areas in Tonga or taking steps to move to places like New Zealand) have faced immediate stressors e.g., to food and income security, or significant land loss from erosion. However, there also seems to be an element of anticipatory action in assumptions of longer-term declines in livelihood and/or an ongoing incapacity to fund adaptation while remaining in their current location in Tonga (or, in Tonga full stop). Concerningly, the level of anticipation of climate related mobility in the coming five years increased steeply in *Survey One* results (from a factor in 26% of reported recent mobility to a factor in 39% of reported mobility planned in the next five years).

In *Survey One*, 305 Tongans were surveyed to gather data on the current scale of mobility where climate change was identified as a factor.

Based on survey responses, 4% of the total 305 people surveyed reported moving in the last five years where climate change was a factor (or 26% of those who moved in the last five years reported climate change was a factor). Scaling this figure up across the population of Tonga, this could suggest that with a population of 100,179 (Tonga Statistics Department, 2021), approximately 4,000 people reported mobilising internally in the past five years (~800 annually) due at least in part to climate change.

This figure provides an early indication of the potential scale of recent climate mobility, however there are contextual factors that must be considered in the interpretation of these results.

1. Low general understanding of climate change and how it does, and does not, manifest needs to be considered in people's identification of climate change as a factor in their mobility. For example, while the majority of participants accurately identified sea level rise, stronger storms and seasonal unpredictability as impacts of climate change, 38% of participants responding to the survey believed that climate change impacts tsunami and volcanic eruption frequency.
  - a. Given the relatively recent Hunga Tonga-Hunga Ha'apai eruption, and the subsequent (formal) relocation of several villages, and the relocation of others at a family/household level, this, paired with climate change misunderstandings could have artificially elevated reports of climate related mobility in the last five years (i.e., a proportion captured could be mobility following the recent eruption).
  - b. Similarly, one could argue that limitations in understanding by the population could mean some climate change related mobility factors could also have gone unreported, especially for slower onset climate impacts. It is challenging to quantify the impact of misunderstandings on reports of climate mobility, either way, so the researchers wish to simply highlight this as a key limitation to the findings.
2. For those who reported it, climate change was indicated to be a *factor* in recent mobility decision-making, not necessarily the deciding factor.

Given these results, and this context, it may be more accurate to assume that environmental hazards (as opposed to specifically climate change impacts) has been a factor in 26% of recent mobility in Tonga.

To sense-check this figure of ~800 people undertaking climate (or at least environmentally) related mobility within Tonga annually based on *Survey One* responses, the researchers considered other sources of data and projections on climate/environmental mobility in Tonga. A report by the Internal Displacement Monitoring Centre (IDMC) suggested that approximately 18,000 people in Tonga had been displaced internally in the 13 years between 2008 – 2021 due to disasters,

amounting to approximately 1,385 people annually. At the time of the report, most displacements in Tonga were due to storms (Internal Displacement Monitoring Centre, IDMC, 2021). It is not possible to know how much of this mobility over the 13 years can be linked to climate change contributions, though IDMC have noted that globally, almost 89% of the total disaster-induced displacement in the same period was climate change related. That would revise this figure of 1,385 people down to 1,232 people displaced by climate change-related disasters annually –slightly higher than the ~800 annual figure suggested by the results of this research's *Survey One*. Important to note that this figure of 1,232 is disaster related and would not capture mobility due to slow onset hazards. One would assume that the ~800 annual figure from the survey in contrast would include mobility following both sudden *and* slow onset hazards.

In further testing the *Survey One* climate mobility figure of ~800 people annually, it is critical to note that the survey participants were mostly adults (only 12% of participants were 24 or younger) and many would be parents or heads of household. This figure of ~800 would not factor in the e.g., children within a family that would move along with the survey participant. Given the average household size in Tonga is just over five people (Menaouer & Sharp, 2023), total climate mobility could be significantly higher than 800 annually (e.g., could be 4,000 or more annually) depending on the level and timing of associated family or household mobility. Contextual mobility patterns could impact the timing and thus annual scale of family mobility (e.g., the father moving first, bringing over the wife and children once work and accommodation is secured).

### Scale: planned or projected mobility (the next five years)

In looking towards the next five years, 7% of the 305 *Survey One* participants reported plans to move due to the impacts of climate change. This would translate to 7,000 people (plus any dependents) over the next five years (or *at least* 1,400 people annually, noting the previous point about the impact of family mobility on this number).

Another survey response of interest linked to planned mobility in the next five years was the reported direction of travel (whether they believed climate change would be a factor in their planned mobility, or not). Of the 52 survey participants reporting plans to move internally in the next five years, 23% shared that the direction of mobility would be coastal-to-inland. One could assume (perhaps more so than other directions of mobility, e.g., rural-to-urban) that given this direction, this mobility could be more directly climate change driven. The most common direction of travel in the next five years however was urban-to-rural.<sup>10</sup> This is validated by recent census results from Tonga that shows negative population growth in urban areas and positive population growth in rural areas (Tonga Statistics Department, 2021). On exploration with a range of people in Tonga, it was found that this could be reflecting movement of those leaving the urban areas of Kolofu'ou, Kolomotu'a and Maufanga - all relatively low-lying at ~2m above sea level - for areas outside of the urban centre which are relatively elevated and where it is easier to grow food, such as illustrated in some of the case studies.<sup>11</sup>

10% of all *Survey One* participants reported plans to move coastal-to-inland or urban-to-rural. When deducting those already 'counted' in planned climate mobility (i.e., those who reported that climate change was a reason for this mobility and this direction of travel), this could add *up to* an additional 6,000 people moving in part because of climate change factors in the next five years (or 1,200 more, annually).<sup>12</sup> When factoring in average household size, this could range the figure up significantly.

In considering climate mobility following sudden onset hazards, a report by the Internal Displacement Monitoring Centre (IDMC) suggested possible forward-looking annual displacement numbers for Tonga of 1,051 from cyclonic wind annually (as well as 168 from earthquakes and 10 from tsunami), or 5,255 people over five years (IDMC, 2021).

**When combining near future mobility from sudden onset hazards (i.e., 1,051 people annually) and from (likely) slow onset hazards (2,600 people annually, when combining those who indicated plans to move due to climate change factors *plus* those who indicated their mobility direction to be coastal-to-inland and urban-to-rural), the total near future scale could be at least ~3,650 annually.** When factoring in average household size for the *Survey One*/slow onset mobility, this figure could range up significantly.

10. For those who nominated urban to rural as their planned direction of internal travel, a high proportion reported currently residing in known low-lying urban areas (e.g., Kolomotu'a). Others chose the 'other' category and added comments like "move from lower area to higher area", with two participants saying they aim to move to Mata ki 'Eua – a relatively elevated area of Tongatapu.

11. Case study – Tongatapu one, case study – Tongatapu two

12. Recognising the limitations of sample size.

## Overall scale of climate change mobility (internal) in recent years, and looking forward to the next five years

The research team landed on two possible figures for recent climate mobility that are not immediately comparable. *Survey One* results suggest recent scale of internal climate change mobility at ~800 annually (likely capturing mobility from both slow and sudden onset hazards and possibly some general environmental mobility given climate change knowledge gaps). The IDMC suggest ~1,232 people have been displaced annually in Tonga from disaster/sudden onset climate hazards. Roughly assuming that half of the ~800 figure is mobility following sudden onset hazards, **the researchers suggest a total recent scale of ~1,600 people annually (~400 slow onset + 1,232 sudden onset)**. Factoring in household size and possible household level mobility, this figure could range up significantly.

Looking forward to the **next five years, this figure could be in the range of ~3,650 annually** (~2,600 taken from *Survey One* responses assuming from slow onset hazards + IDMC sudden onset figure of ~1,051 annually). Factoring in household size and possible household level mobility, this figure could range up significantly.

### Scale: recent or planned overseas climate mobility

Recent or planned climate mobility overseas is harder to quantify. In the diaspora survey for example (55 Tongan people living in New Zealand, Australia and the United States), none reported relocating due to environmental impacts or climate change. However, the researchers are aware of reports from e.g., the Governor of Ha'apai, Dr Pita Taufatofua that there has been at least one recent case of a family relocating to New Zealand as a direct result of climate related land erosion in Ha'apai.

A clue towards the possible scale of overseas climate mobility in the next five years could be garnered from *Survey One* results. Of those who responded that they plan to move internally in the next five years due to climate impacts, a number of these participants also reported onwards plans for overseas mobility (as well) – 15 participants in fact, or 5% of the total survey participants. While recognising sample size limitations, assuming there is a connection between plans to move internally due to climate impacts and plans to (also) move overseas in the coming five years, one could extrapolate this proportion out to **suggest up to 5,000 people (or more, factoring in household size/dependents) could be planning climate related overseas mobility in the next five years**. Though destination will be covered in the 'pattern' section, the majority were planning mobility to New Zealand. There would be reason to assume a connection. Joint plans for internal mobility and overseas mobility with climate related drivers is supported by fieldwork. Talanoa with participants revealed planning and decision-making processes where people arrived at a conclusion that they could not raise sufficient income in Tonga (either through perceptions of a lack of employment options or recognising that climate impacts are limiting their capacity to produce sufficient food to sell) to relocate and rebuild inland or upland, and thus they were planning a dual move – within Tonga for the long term, but enabled through a short- to medium-term stay in New Zealand to access the resources to enable this (see: patterns).

## 4.2 CURRENT RISK FACTORS, DIFFERENTIATED VULNERABILITY AND DRIVERS OF SCALE FOR CLIMATE CHANGE MOBILITY

### Geographic / population group vulnerability

As highlighted earlier, climate mobility is likely to be driven through pressures on habitability (including income and food security impacts). In Tonga, there is heavy dependence on the local environment for feeding the family, for fulfilling one's critical social roles, and to an extent, for trade and income generation. The recent Household Income and Expenditure Survey (Menaouer & Sharp, 2023) found that 80% of households were participating in primary activities: 63% participated in agricultural activities, 10% in fisheries, 64% in livestock. Another 37% of households were participating in handicraft activities and food production. Participation in these activities varied significantly between island group populations suggesting a possible differentiation of habitability risk. For example:

- a. Climate change has and will continue to impact fish stocks (CSIRO and SPREP, 2021). 11% of those in Ha'apai (15 years and older) had participated in fishing activities in the last 7 days. This compared to 4% in Vava'u and just 1% of those in 'Eua. Interestingly, those who did fish in Vava'u and 'Eua sold their fish more commonly than those in Ha'apai, suggesting fishing in Ha'apai was predominantly for family consumption (Menaouer & Sharp, 2023). One participant

reported that Ha'apai is an important source of fish for those living in Tongatapu with many sending their catch to relatives there (with the ferry trip short enough to maintain fish freshness).

- b. About half of households in Tonga reported harvesting root crops. Again, those in Ha'apai were most commonly harvesting root crops (76% of households compared to 21% of those in Urban Tongatapu) and were least inclined to be producing or harvesting to sell their products (Menaouer & Sharp, 2023). Men are more commonly involved in fishing and farming activities.
- c. The majority of those undertaking handicrafts for household use and income are women. The pandanus plant is central to traditional handicrafts and stocks are vulnerable to cyclone damage. While an average of 13% of Tongan individuals reportedly regularly participating in handicraft activities (mostly weaving, mostly with pandanus plant), this was a lot higher for those in Ha'apai (22%) than in 'Eua (6%) suggesting those in Ha'apai could be more impacted by stock damage, though possibly less impacted in terms of income as those in Ha'apai less frequently sought to sell their handicrafts compared to other island groups (Menaouer & Sharp, 2023). Important context is that pandanus is said to grow particularly well in Ha'apai and Ha'apai kie is one of the most desired strain of pandanus for the most valuable form of fine mat weaving. The production of kie rolls and weaving is the specialised domain of women and is often done together in kautaha groups.

These findings suggest there could be geographically-differentiated habitability vulnerabilities for those in the island group of Ha'apai given their higher participation in primary activities. Other differentiated vulnerabilities in sub-groups (women, fakaleiti, those without a tax allotment etc.) are explored later in the report.

### Scale: risk factors and drivers of climate mobility

Throughout fieldwork visits to Tonga in 2023, one-on-one talanoa as well as workshops were held and several contributors to recent, desired and planned climate mobility were documented. These risk factors were mostly identified through talanoa with those identified through their responses to *Survey One* (where they indicated recent mobility or plans to move because of climate change) as well as through talanoa with leaders who have oversight at a village or island group level. These were supplemented by findings from talanoa and workshop outputs with those in particularly climate exposed villages, like the low-lying area of Kolomotu'a.

**Food and income insecurity** *"The soil is eroding, the seasons are all out. We are months behind on the crops we usually plant... The tractors here can't operate in muddy soil"* (Fanau'ifo'ou Akau'ola, Tonga)

Lower family crop yields (due to soil salination in low-lying areas, heat affected plants), delayed or missed crop plantings (due to unpredictable seasons, uncommonly heavy rainfall) leading to food insecurity and income impacts were all raised in talanoa. Impacts go beyond one family as many do not have their own plantation land e.g., only half of families in the Tongatapu urban area own their own land for agriculture (Menaouer & Sharp, 2023) and rely on purchasing from those who do. Talanoa with community members and leaders in Tonga uncovered a range of related issues or risk contributors.

1. Access (or lack of access) to fit-for-purpose machinery that can operate in climate impacted soil was reportedly stopping or significantly delaying crop planting
2. Access to climate resilient crops fit for the changing environment in Tonga. Leaders (the Minister and the CEO) of the Ministry for Agriculture, Food and Forests report ongoing efforts to cross-breed local crops with resilient crops from overseas (e.g., the Hawai'i purple kumara)
3. Financial capacity to lease land in elevated areas for growing family crops. One man who reported climate-related difficulties with growing food as a factor in his mobility plans, sharing that he was able to lease land in a more elevated area of Tongatapu to grow his crop there. This cost him TOP\$1,000, which would be an amount unavailable to some facing similar difficulties. This act of leasing and replanting his crop in more promising soil has bought him some time, however he reports plans still to move onwards to New Zealand (see: factors influencing the current or planned pattern of mobility in Tonga).

**Erosion of residential land** due to higher relative sea level, noted in talanoa with families in Tongatapu (e.g., Malie, Tongatapu) and in talanoa with the Governor of Ha'apai who identified areas such as Hihifo, Lifuka as well as in Felemea, 'Uiha where whole villages or individual families have reportedly relocated inland intra-island, relocated inter-island

(reportedly to Tongatapu) or relocated overseas (one destination reported as New Zealand) due to direct land loss from sea erosion.

**Persistent flooding in some low-lying neighbourhoods** following heavy rain, leaving homes partially flooded over a period of weeks. In workshop conversations, this was not explicitly linked to a given family or individual's mobility planning, however, it was noted as a priority to address for those who wished to remain who reported that having the means to raise their house, even in a rudimentary way, would allow them to stay in place as their overwhelming preference.

1. A community survey carried out as part of an Asian Development Bank project found that flooding in Nuku'alofa occurs every year, with approximately 10% of the properties in the city flooded or similar every time it rains, and about 50% flooded after heavy rains (Gildea & Carmine, 2018, p. 6; Kingdom of Tonga, 2019, p. 184) (ADB, 2019)
2. Another study suggested that over 60% (~3,600) of properties in Nuku'alofa can be affected by floodwaters, with community survey results indicating that ~1,100 of these properties are flooded every time it rains, and 2,800 after heavy rain (Tonga Integrated Urban Resilience Project, 2019)

**Fear and perceptions of risk.** In workshop conversations, as well as in one-on-one talanoa with participants in Ha'apai, fear around natural hazard exposure (that came from experience as well as from information received on exposure risk) was seen as a contributor to mobility planning. In Ha'apai, one woman who is currently planning mobility shared *"The land is getting smaller and smaller... I'm fearful when I'm here – the sea is on both sides, I see erosion on both sides... the fear has been there since before the tsunami, there's nowhere to escape, nowhere to run... I'm getting too old to run!"*. Relevant to note that in *Survey One*, of the Tongan participants reporting plans for overseas mobility, 8% reported that their overseas destination choice was mostly decided by the fact it was considered 'a safe place to live'. In contrast, safety was the main consideration in just 3% of overseas destination decisions for Samoan survey participants. Workshop participants involved in the future scenarios session in Nuku'alofa (July 2023), reported that while critical to better raise awareness of specific climate change impacts, there will be an impact on mobility planning for some in accessing this information (e.g., on village-specific inundation risk).

### 4.3 WHAT COULD DAMPEN PROJECTIONS OF SCALE AND/OR WHAT ADAPTIVE APPROACHES HAVE BEEN USED IN THE PAST OR ARE CURRENTLY BEING USED THAT ARE MITIGATING SOME OF THIS MOBILITY (SCALE) RISK?

#### Financial support for building, agricultural land leases or the securing of land for house building in more elevated areas

One person the researchers spoke to (a father of 13) - is planning overseas mobility in large part due to climate change making it too hard to grow sufficient food in his current agricultural land plot. Their family currently lives and were farming in low-lying urban Tongatapu. He has recently paid for a 20-year lease for agricultural land in a more elevated part of Tongatapu. He also seeks to purchase land in the elevated area of Mata ki 'Eua however he does not have the capital. To raise the capital, the only way he sees that being possible is to move to New Zealand to access work. He plans to return in 10-15 years to build a house on this new land. On exploration, he shared that a cash injection (~TOP\$10,000) would allow him to stay in Tonga with his family and adapt (his reported preference). In another case study, a Pastor and his wife (a teacher) were also planning a move to New Zealand in part to fund a house build in Tonga in a different piece of land away from the coast. The land they have been living on for 19 years continues to erode and they have to evacuate their home every time there is a storm as the sea comes right up to their door. Both participants reported they do not especially want to move to New Zealand but see it necessary to support their children into education opportunities and to access income opportunities there. They planned to return to Tonga in 10-15 years.

#### Housing adaptation support, including for low-lying communities

In a women's workshop in Kolomotu'a, Tongatapu (one of the low-lying villages in urban Tongatapu), one woman expressed a strong desire to remain in place, however hoped for some support to raise her home with solid rock. She shared how on any given local street there can be raised houses (reportedly owned by those who work in government jobs or who have children working overseas) and those living in large pools of water that surrounds and enters the home after a bout of

heavy rain. A truckload of solid rock reportedly costs in the range of TOP\$ 100-200. Others in coastal areas, such as in Malie, Tongatapu reported saving up for solid rock to tip into areas where their land was progressively eroding. Due to financial constraints, they report only being able to do this annually. The priority of this support is further illustrated through some of the results of the diaspora survey which showed that one-third of survey participants had provided support (mostly financial) to help their family adapt to climate change, with the most common application of that support being the lifting or raising of a house.

### **Spreading the risk through spreading family living between two homes ('api-'uta, 'api-kolo)**

In a women's workshop in Tongatapu, one woman spoke of plans to build a house inland in their plantation and rent out their coastal home. In a different talanoa discussing resilience, 'Ilavaha Tovehi spoke on her family's decision to have an additional house built inland on their tax allotment/plantation land (already done). This was done for the explicit reason of having an alternative place to move to or shelter in should there be an environmental event that required it. She believed that others should be considering their residential 'plan B', while recognising there are resourcing capacity constraints for others to do the same. The researchers note that it is not uncommon for families with tax allotments to have at least a shack built there for shelter, though often these are not fully stand-alone residences. Worthwhile noting that many families in Tongatapu also do not have access to their own tax allotment - approximately half of households, according to the 2021 Household Expenditure and Income Survey (Menaouer & Sharp, 2023).

### **Improving food security through efforts to increase community level food production (e.g., 'toutu'u') including increasing women's participation**

With food and income security, and productivity an emerging concern, a few government leaders spoke to efforts to support and in some cases, reinvigorate practices of community agriculture to encourage higher land productivity and involvement in food production. *Toutu'u* is a competitive arrangement where groups within a village (e.g., church, youth groups) compete against one another to produce the highest yield. It is a light-hearted, inclusive approach to passing on knowledge and skills from more experienced growers to others for nurturing traditional as well as introduced plants. One senior government leader in MAFF reported that it also enables those without access to their own food growing land to grow food. Those the researchers spoke to reported great effect leveraging Tongan competitiveness and pride to motivate local food production. Another highlighted benefit was that this practice supports those in the village who would otherwise struggle to produce food alone (e.g., the elderly, chronically ill or physically disabled) "it allows the weaker to be supported by the stronger" (Dr Viliami Manu, CEO, MAFF).

The CEO of the Ministry for Agriculture, Food and Forestry (MAFF), Dr Viliami Manu, reported that there have been efforts to engage women in gardening, farming and livestock work – work that has typically been male dominated. Trials include women being recruited to raise different livestock to test different breed's climate change resilience. Other programmes MAFF is running includes providing seedlings and chickens to women's groups, and there are women's groups focused on producing food (e.g., Koko'ana). In the 2021 Household Income and Expenditure Survey (HIES), it noted that there is a population gender imbalance (for every 100 women there are 94 men) and that the proportion of female-led households has grown. Engaging women in food production would have derisking benefits through improved household food and income security and skill development.

Engagement with some international diaspora suggested that there needs to be more provision of support via NGOs who are dedicated to climate adaptation efforts, and can report back transparently on outcomes of support, or even provide support direct to farmers and families in Tonga. Some expressed concern about the lack of farming labour back in Tonga given the high numbers of working aged people spending many months working in seasonal work in New Zealand and Australia.

### **Investment in development, testing, switching to more climate resilient stock**

One family in Tongatapu reported that with unpredictable seasons impacting their planting schedule, they are having conversations within the family about changing the crop types they plant to crops that are less sensitive to some of the impacts of climate change (such as the root crop manioke). Dr Viliami Manu, CEO at MAFF reports ongoing efforts and investment to cross-breed local plant stocks and root crops with overseas strains that are proving more heat and disease resistant.



## Lobbying for more dedicated and direct diaspora engagement to support adaptation

In conversation with a Member of Parliament for 'Eua, Dr. Taniela Fusimalohi, he shared his perspective that it is the international diaspora who are consistently the first financial responders in the event of a natural disaster. He shared details of his efforts to engage the Tongan (and in this case, specifically the 'Eua) diaspora for development and resilience outcomes, giving an example of the Tongan diaspora in Hawai'i funding an island-level climate adaptation project in Ha'apai. Dr. Fusimalohi shared how he undertakes self-funded travel to engage the 'Eua diaspora in key countries like New Zealand, to thank the diaspora for their contributions and share updates on 'Eua including upcoming development projects. He shares that he does not explicitly ask for financial support from the diaspora but believes that providing information to the diaspora helps them identify ways they can best support – financially or in-kind. He also contributes to a Facebook page that promotes development and climate adaptation type work happening in 'Eua. Dr. Fusimalohi believed that there is more effort required at a national level to better coordinate outreach and engagement with the overseas diaspora. In Tonga's Strategic Development Framework (2015-2025), a key aim articulated was to 'build on the opportunities of mutually beneficial exchange with our Diaspora around the world, with particular support for the exchange relations between women groups' (p. 117).

In the diaspora survey run as part of this project, around one-third of diaspora report directly supporting climate change adaptation efforts for their family in Tonga (financial or in-kind), and one-quarter of the Tongan diaspora in this survey also report specifically supporting climate adaptation efforts at a village or island level. Two-thirds of diaspora in this survey reported they would like the Tongan government to reach out to them proactively to share national updates, development or other priorities and even options for the diaspora to support national priorities.

## Diaspora land heirs and openness to making land available

The general availability of land was identified as a concern for many who the researchers engaged. It was noted that at this point land (un)availability was causing some to remain in place despite risk exposure (e.g., in parts of Ha'apai), or it was leading to decisions to move overseas to (1) save up for land elsewhere in Tonga or (2) save up to build a house on family land/other land they have access to. In January 2024, in talanoa with a group of Tongan diaspora in Te Aroha, New Zealand this group shared that communication (or lack thereof) around land may be the actual issue, sharing that people and families often don't share their longer-term plans around mobility that would otherwise allow for conversations about alternate use of land when the heir is overseas. They suggested that encouraging better or more proactive communication within families and maybe even the broader community could address some of the land vacancy issues, saying that heirs can be open to making their land available on request. It was this person's opinion that people in Tonga are often too shy or embarrassed to ask directly about land use. The researchers are aware of many cases of heirs living outside of Tonga granting right of use to non-heirs on request. In a response to the diaspora survey, one Tongan volunteered that they would be happy to make their land available for climate relocation purposes should it be needed.

## The Tongan constitution, deeply embedded values of 'ofa and sharing practices offsetting food security risks

Many volunteered examples of food and resource sharing in Tonga, from family and strangers alike, reporting that one can't 'go without' in any serious way because of this way of being/living. In conversation with one government minister, Lord Fohe, as a noble, he reported that he continues to allow others from outside the village to collect food from his land and fishing grounds, saying "here in Tonga the sea belongs to all Tongans. It is part of the constitution". There had also been a hesitancy to penalise people taking sea cucumber from stocks that the Ministry for Agriculture, Food and Forests has been working on rebuilding, sympathising with the needs of the people. In an example taken from 'Atataa Si'i, at the time of the fieldwork visit, there was an issue with the people of 'Atataa accessing a promised plantation due to the fact there was a current lease on the land and a farmer had already planted his harvest there. On finding out about the situation, this farmer reportedly left the land and gifted his harvest to the people of 'Atataa, even without compensation. The people of 'Atataa, despite their need relayed that they awaited the governments compensation of this farmer before taking over the land as they felt reciprocal 'ofa towards his situation.

In revisiting considerations of habitability, climate stressors and mobility, it is worth noting that 84% of those in Tonga who took part in *Survey One* strongly agreed or agreed that '*life is easy right now – my family have work/study, plenty to eat and are comfortable*'. This suggests that concerns such as food and income (in)security are not established across the

population. Two thirds of those who responded to a hypothetical scenario stated that they would rebuild their house (as opposed to moving elsewhere) even if their home was destroyed in a storm, suggesting some positive baseline resilience.

#### 4.4 CURRENT CLIMATE CHANGE IMMOBILITY/MOBILITY AND CHOICE

##### Possible pent-up desire for mobility in a subgroup in Tonga

In *Survey One*, the research team noted a possible pent-up desire for mobility in a small subgroup of participants. This group (about 15% of the total cohort)<sup>13</sup> 'strongly agreed' to two statements:

- a. *If I/my family was given a new place to live now, in a different village or island, which was safe, I would leave my current home and move there*
- b. *If I/my family was given the chance now to live in New Zealand, I would leave my current home and move there.*

The researchers note that of those who responded *Strongly Agree* to both hypothetical opportunities to move internally and/or to New Zealand 'now', over half were from areas in urban Tongatapu identified as having a higher inundation risk in future (including Kolomotu'a, Kolofo'ou and Popua).

Further exploring this subgroup of 15%, ~1/3 of these reported no plans for mobility in the next five years, internally or overseas. This 1/3 comprised nearly all females (11 of the 13 were female). While recognising the limitations of sample size, it is still an important observation of those feeling strongly about moving but having no plans to, suggesting there could be some gender-based block. Though not necessarily related to climate drivers, one could assume that those facing mobility barriers generally may also face climate mobility barriers in future. This theory is further supported by free text survey notes from a participant in Patangata who reported a high desire to move, but no plans to move citing both family commitments and financial incapacity.

##### Financial capital and immobility

Having financial capital (or not) to relocate was highlighted multiple times by those living in the particularly exposed area of Patangata, Tongatapu.

In a response to *Survey One* from this research where participants were asked about their recent and planned mobility, as well as how climate change may be feeding into their decision making, one respondent from Patangata shared her story in free text comments (translated from Tongan)

*"Forgive me, I feel I need to explain my responses. Though I've said I have not moved and do not plan to move, it is because I cannot move, not because I don't realise the risk of living [in Patangata]. I do not have the [financial] means to move, but I am also the eldest in the family. I need to stay to look after my parents, as well as my younger siblings who are not married."*

Another couple engaged in talanoa in Patangata shared:

*"If we had to move we would be starting from scratch... and how do we make money [to start from scratch] if we are not by the sea?"*

##### Permanency and choice

An interesting consideration of mobility and choice is following an initial mobility event, where there is, or is not choice to return to an area of origin. For those evacuated from Mango, the choice was reportedly made for them by the Royal Estate which, out of concern for their safety, removed the right for them to return to the land of Mango. For those from 'Atataa, the Royal Estate advised that they were free to come and go from 'Atataa as they like, affording that choice. However, talanoa with the team at International Organisation for Migration (IOM), Tonga, reported that the choice to return permanently doesn't really exist on a practical level with the government closure of the school. The church is also

13. In contrast, only 3% of the Samoa cohort said they would move within Samoa or to New Zealand now, given the opportunity

not operating there. The Town Officer in 'Atataa Si'i shared that a number of people travel to 'Atataa from Wednesday to Saturday, and if the church was to restart, he believed some people would choose to resettle there.

## Gender and choice

In Tonga, it is unusual for women to hold land. Under limited (and temporary) circumstances, women can hold property rights e.g., when a male Tongan land holder passes away, it goes to the widow. If that widow remarries or passes away, and does not have children, the land is returned to the land pool overseen by the relevant noble (estate holder). If the widow passes away, and has children but no son, the land goes to a daughter. If that daughter marries or passes away without a son (an heir) the land is returned as well to the land pool of the relevant noble. Any transfer of land or return of land to a noble's land pool however does require the involvement and/or the approval of the Ministry for Land and Natural Resources and potentially the office of the King.

These rules around women and the holding of land can also disincentivise women from taking actions that could otherwise support their future well-being or resilience, for example, remarrying. Further limitations are placed on women and land that are not applied to men, including if a widow is found to have had relations outside of the marriage the land is returned to the noble's land pool to be otherwise distributed. Similar penalties for men and their land does not exist.

Among other advantages, holding land, such as a tax allotment, allows those people – typically men - to secure bank loans where women cannot.

In talanoa with women, both in dedicated workshops and in one-on-one talanoa, women raised various concerns around their adaptive capacity should they be required to move in future due to the impacts of climate change. One participant, who has never been married, reported that because of her marital status she has legal rights to remain in the family home in perpetuity. She had concerns in considering hypothetical situations of displacement saying she would have nowhere to go and would suffer from a loss of a sense of belonging. In exploring these concerns, we discussed a further hypothetical situation where she was gifted land and under that circumstance, she felt there would be no downsides – having land or property somewhere that afforded her security on par with her current set up would be more than acceptable.

One woman in a women's workshop expressed her perspective on lack of choice:

*"We will just continue to rebuild, because where else can we go?"*

## Obligation and immobility

One's fatongia – their obligation and fulfilling one's role (to the family, to church even obligations to the land itself), is a deep-set and critical driver of behaviour for Tongans. Obligation came up frequently in discussions around mobility.

Free text entry on one survey revealed some interesting insights on contextual immobility. One female participant from Patangata in Tongatapu – an area well known for its natural hazard exposure – apologised for some internal inconsistencies in her responses, explaining that she is aware of the risks that she and her family face residing in Patangata, but that they do not have the resources to relocate. She also shared that she feels an obligation as the eldest daughter to remain with her parents at Patangata and continue to care for them, and her younger unmarried siblings.

The research team, reflecting on lived experience, believe that some are influenced still by a strong sense of loyalty and obligation to King Tupou I who made the decision to disperse his land to nobles to then distribute to the people of Tonga. This sacrifice is seen as needing honouring, even when times get tough.

Obligation and impacts on mobility extend beyond a sense of obligation to people. As explored further in the section on resilience, feelings of 'ofa towards the land itself as an entity that has nurtured a person and their family, can be a driver of immobility. One woman in a women's workshop described this as a central reason for continuing to persist in Tonga despite frequent natural disasters – returning a love for the motherland (*'ofa fonua*) that has shown them such love. In the case study for 'Atataa-si'i, one man had initially wanted to stay behind in 'Atataa following the 2022 eruption and tsunami. He reportedly did not want to leave his land alone - his plants and animals. Beyond the economic, part of that was a strong feeling of not leaving the land alone.

## Land and immobility – rights and protections

As has come up in the research in a number of contexts, there is a division in Tongan society between those with land and those without. Those with land, as mentioned, can leverage this asset to secure a bank loan, something that could prove critical in providing mobility choice in future.

In the 2019 Tonga Integrated Urban Resilience Project (TIURP), a comparison of Asian Development Bank policies and Tongan Law identified a range of gaps in Tongan Law in regard to the rights or protection of certain groups under relocation or displacement events (in the context of involuntary displacement for public development/resilience works). This analysis noted that Tongan Law does not have specific policies in place that requires that 'physically and economically displaced persons' are provided assistance with secured tenure to relocation land, better housing and comparable access to employment and production opportunities, as well as the integration of resettled persons economically and socially into their host (location). The analysis concludes that there is both a gap in Tongan Law and that Tongan customs and traditions provide support for certain groups, including women. The researchers note that this poses high risk for displaced people in Tonga in the future as traditional customs have been eroded and likely will continue to be eroded in the coming years.

Further, the gap analysis highlighted gaps in the law for land users with no legal registration, simply stating that these people have 'no rights' to resettlement assistance or compensation. This could represent a not-insignificant group in Tonga, those residing informally on vacant land, or family land.

### Land availability and mobility decision making.

At the intersection of climate change immobility, land and government decision making, there were two main observations from fieldwork in Ha'apai:

1. A lack of land availability is limiting the government's capacity to formally support relocations of those in particularly climate or environmentally exposed areas (e.g., those located in Houmatoufua, Ha'apai)
2. A lack of land availability is discouraging the government from putting in place stronger relocation policies - where they otherwise would - for at-risk/severely climate change impact exposed groups (e.g., those in four villages located between Holopeka Rd and the coastline).

Further, in the 2019 Tonga Integrated Urban Resilience Project (TIURP), the authors noted a challenge with locating a number of overseas land heirs whose land would be affected by planned resilience work (only 6 of the 12 were successfully located during a two-month window), suggesting that practical barriers exist for timely coordination of land matters as relevant to resilience building (and likely, future relocation efforts).

The availability of land (and the cost of land) as a barrier to mobility or relocation was raised often as a key factor in decision making for those currently experiencing climate stressors and is explored further in the *patterns* section.

## 4.5 WHAT IS THE CURRENT PATTERN OF CLIMATE MOBILITY/ENVIRONMENTAL MOBILITY IN TONGA?

As mentioned, in terms of current pattern, the researchers have looked beyond just climate mobility (given scale is relatively low at this point) to include environmental mobility events (such as relocations following the recent Hunga Tonga-Hunga Ha'apai eruptions) given there will be valuable insights in these examples in terms of who moves, where people move, as well as how they move. Further, the researchers have provided some insights more generally on mobility patterns that are culturally and socially relevant and will likely have some place or influence in current or planned climate mobility (e.g., kumifonua – or the search for/scouting of other land before bringing the rest of the family).

Like for scale, for discussing the 'current' pattern of climate/environmental mobility, the team has looked at both 'recent' mobility (in the last five years) as well as planned mobility (the next five years).

The researchers have drawn data from *Survey One* (including data on direction of planned internal mobility, planned overseas destinations), one-on-one or group talanoa, and workshop outputs. Findings have also been complemented with relevant external reports.

## Internal direction and destinations

Based on *Survey One* results of those reporting mobility plans, the majority were planning urban to rural mobility, followed by coastal to inland. When focusing in on those reporting mobility plans to 'escape the impacts of climate change', the direction of mobility was mostly a mix of urban-to-rural, coastal-to-inland and 'other'. Comments in 'other' included moving from low lying to higher land and moving to Mata ki 'Eua (an elevated area of Tongatapu).

Those reporting plans to move coastal-to-inland due to the impacts of climate change were residing in the following villages:

- Hala'ovave (Kolomotu'a)
- Pangai (Ha'apai) (see below for commentary on Lifuka and Pangai risk exposure)
- Sopu
- Ha'ateiho
- Nukunuku

Those reporting plans to move urban-to-rural due to the impacts of climate change were residing in the following villages:

- Ha'ateiho
- Kolomotu'a (multiple people)
- Tofoa (multiple people)
- Hala'ovave (Kolomotu'a)

Those reporting plans to move from low-lying to higher areas due to the impacts of climate change were residing in the following areas:

- Houma (Nukunuku)
- Ha'ateiho
- 'Anana
- Halaleva (Kolofo'ou)

In talanoa with those planning mobility in the coming few years, they were planning coastal to inland (e.g., Malie to Veitongo), and low-lying (urban Tongatapu) to a more elevated area of Tongatapu (Mata ki 'Eua). One family in Ha'apai are planning to move to Tongatapu first then onwards to New Zealand.

In talanoa with the Governor of Ha'apai, Dr Pita Taufatofua (whose family is also from Ha'apai), he described a village that had undergone coastal retreat in Ha'apai – Felemea - as well as family relocations inland (onto government land) from the coast on the main island of Lifuka, particularly from Hihifo, because of sea erosion. We know from work done by SPC (2021) that Lifuka has seen significant coastal erosion in the last 40 years (between 2m – 43m), with the worst erosion concentrated in Pangai and the western shoreline. The report stated that many houses sit within 2m of the shoreline during daily high tides and face inundation with strong onshore winds. Exposure mapping showed that the majority of the built-up area of Lifuka would be subject to inundation +/- 'dangerous wave activity' in a Category 5 Tropical Cyclone event (SPC, 2021).

## Overseas over internal

From the results of *Survey One*, and in comparing the results from Samoa, those in Tonga appeared less inclined to be mobile overall (both plans to move in the near future and willingness to move under hypothetical scenarios). However, when presented with the option of moving internally or overseas under a hypothetical scenario where it was no longer safe to stay at home, and in asking about plans for mobility in the coming five years, those in Tonga appeared to preference overseas mobility over internal.

When looking at mobility plans in the next five years, 17% reported plans to move internally in the coming five years, whereas 27% reported plans to move overseas in the coming five years. In exploring this general preferential pattern of overseas over internal, the researchers identified a series of insights that provides context to this observation.

1. In a series of engagements (talanoa, workshops), participants expressed assumptions that navigating matters of land internally (e.g., access, sharing with new neighbours) may ultimately present a higher barrier than moving overseas.
2. Generally, many shared with the researchers that opportunities for work and education were much better overseas, and many wished to access these opportunities for their families.
3. In a dedicated workshop with women, several voiced concerns about their social vulnerability should they have to move internally, having their social status or recognition challenged by those who do not know them. One woman illustrated this with an example of leaving her church where she had her seat (in a particular spot that was years in the earning) and starting at a new church where she could be “*told to sit outside, on the veranda*”.
4. In talanoa with two participants who also identify as fakaleiti, they reported a preference for overseas mobility over internal given the ongoing conservative nature of Tongan society and fears of not being accepted in a new Tongan setting. Both reported a belief that they have had to work extra hard to be accepted within their current social settings, taking on extra work to be helpful to people, doing professional favours or even self-selecting into government positions to be seen as valuable to the community. Both believed that those identifying as fakaleiti would find it a lot easier to move overseas as opposed to somewhere else in Tonga.

*Survey One* participants were also presented with a more nuanced question that compared internal and overseas mobility preferences but in the context of it being unsafe to remain. With the question “*If in future it isn’t safe to stay at home, and I had somewhere different to live in Tonga (in a different village or island) I would leave my current home and move there*”, 52% responded ‘strongly agree’ or ‘agree’. However, when presented with the question “*If in future it isn’t safe to stay at home, and I had the opportunity to live in a different country I would leave my current home and move there*”, 68% responded ‘strongly agree’ or ‘agree’. Hence, this pattern of preferencing overseas mobility was repeated.

### Overseas destinations

For the 27% of *Survey One* participants who indicated plans to move overseas in the next five years, three-quarters indicated New Zealand would be the destination. This was higher than what was seen in the responses from those in Samoa (where just over half of those planning overseas mobility selected New Zealand as the destination). In further exploring the data on those who had moved internally due to climate change in recent years, who were also planning overseas mobility, three-quarters of this cohort also selected New Zealand as their planned destination. While recognising the limitations of a relatively small sample size, one could take from this that there is no material change in destination preference when overseas mobility may be climate related (versus other drivers).

In the research product *Recent Shifts, Future Signals*, analysis of the last decade of overseas migration data showed that New Zealand was the most common destination for those leaving Tonga with intended permanence. Between 2012–2021, discounting 2020 and 2021 given pandemic travel restrictions, in six out of eight years, more Tongans moved to New Zealand than Australia or the USA. In some years (e.g., 2015–2017), nearly double the number of Tongans moved to New Zealand than Australia (Statistics New Zealand, Australian Bureau of Statistics, DHS Office of Immigration Statistics).

Finally, in discussions with women (in a dedicated women’s workshop), with a couple of participants identifying as fakaleiti, as well as youth (in a dedicated youth workshop), New Zealand was most commonly (and emphatically) identified as the destination of choice. The most common reasons provided included proximity to Tonga, the presence of family, the weather, and food quality (“you have all the honey and cheeses”, participant, talanoa, Nuku’alofa, November 2023).

### Parallel or dual-focus mobility (internal and overseas climate mobility)

Campbell (2022) claims that individual and family migration are likely to be the dominant form of climate change mobility in the Pacific in terms of numbers involved, and that climate migration is most likely to occur internally, at least initially. Fieldwork in Tonga noted a pattern of duality in mobility plans.

Of the 12 *Survey One* participants who reported moving within Tonga in the last five years in part or wholly because of climate change, 9 of these participants also reported plans to move overseas in the coming five years. Recognising the limitations of sample size, this still represents a much higher proportion than the cohort average.

This finding from *Survey One* supports insights from talanoa, where those from Ha'apai and Tongatapu who reported climate mobility plans all reporting a combination of internal and overseas mobility. In talanoa with one woman in Ha'apai, she reported that it is easier to move first to Tongatapu before moving overseas, using Tongatapu as a place to build some confidence and possibly raise some capital before taking the next step. This woman spoke of onwards mobility to New Zealand, then ultimately the USA where she has close family, saying that she subscribes to a Ha'apain approach to mobility "*Ha'apains leave and don't come back - alu 'aupito*" translating somewhat to the act of moving, without end. Others in Tongatapu reported the identification or securing of alternate land internally but needing to spend 10-15 years overseas to raise the capital to buy the land and/or build the house to return to.

This offers an interesting and possibly critical insight into climate mobility patterns where Tongan people mobilised by climate impacts either treat internal mobility as an interim step in a form of onwards linear mobility (i.e., internal, then overseas with the intent of staying or continuing to move to other overseas destinations) or, having a parallel or *dual-focus mobility* where action is being taken for internal mobility while plans are being put in place for overseas mobility to enable the former.

Lolohea (2016) found that in Tonga, recent urban drift had been mitigated by out-migration to places like New Zealand, suggesting that people use Tongatapu as the stepping off point from Tonga, with population flows showing high inwards flows from other island groups, but a stable population given the level of emigration. Depending on the progress and impacts of climate change, one could expect that this same pattern will continue.

### ***Kumifonua* – the 'scouting' of land elsewhere prior to family reunification**

Though not specific to climate or even environmental mobility, the researchers believed it worth noting that it is common practice for Tongans to move overseas following an initial effort by a male in the family to 'scope out' a new land prior to reunifying the family. Tongans living in New Zealand spoke of a husband or a brother travelling first, usually to stay with a male member of the family. Sometimes this person would be advised of where more specifically to set up based on opportunities or otherwise. Once they secured work then accommodation, they would begin bringing over their wife and/or children. Further, this process appeared to be ongoing. One male, a now well-established community and church leader in Te Aroha, New Zealand spoke about how once he was established with his immediate family, he continued to seek out work opportunities for other family members, actively supporting his brother to get work and relocate to Te Aroha. The process therefore repeated, with the brother getting set up and then bringing his wife over to live – she now has a two-year working visa and is working on gaining permanent residency.

### **Heirs and spares**

Though again not specific to climate or even environmental mobility, the researchers believed it worth noting that some participants engaged as diaspora through this project, noted that as younger siblings, they recognised that they won't be in receipt of family land/won't be inheriting land as heirs (i.e., both the town land and plantation 'tax allotment' would go to their eldest brother). This was reported as a key factor in their decision to seek opportunities elsewhere, overseas.

### **Moving together and degrees of separation**

Following environmental, sudden onset mobility, the researchers came across lots of examples where families separated to be accommodated across several family homes across different locations. Following the tsunami caused by the Hunga Tonga-Hunga Ha'apai eruption, a number of participants reported moving as individuals to stay with extended family inland. In Ha'apai, participants in Lifuka reported that people had been accommodated following significant tropical cyclones across family member's houses in the relatively elevated island of Foa. This family spread helps spread the cost for receiving families and helps socio-culturally, for instance, maintaining gender separation in sleeping quarters within houses.

What was seen following the relocation of 'Atataa, or Mango – a whole village moved together - is not necessarily common in Tonga, however it was enabled through the fact that the displacement was from Royal Estate land and the full community was able to be relocated in a relatively straight-forward way to other Royal Estate land. For those leaving

'Atataa, per the case study for 'Atataa Si'i, there was still a high degree of separation due to many of the families not being provided housing. These families have spread out across the homes of extended family, or where overcrowding has been an issue, some have been living for months in a church hall.

Even for those who have been allocated houses in 'Atataa, many have had to modify their spaces, building makeshift outside rooms to separate male and female siblings. Others have moved out to other houses for the same reason.

In discussion with the Government Representative in 'Eua, Mr Lolo Fili believed that the one room houses being built by the government for those whose houses were destroyed following the January 2022 tsunami could be problematic, both practically and socio-culturally, leading to the separation and spreading out of family members.

In the cases of recent climate mobility shared with the researchers, both internal and overseas mobility has been as a family unit. This was also true for those who reported plans for climate mobility in the coming years.

### Permanency/(im)permanency

The researchers met with many in Tonga who spoke of plans or a preference for impermanent mobility. There was an assumption by many that people move overseas for education, work and ultimately return to Tonga for their later years. Several of the senior government officials the research team held talanoa with had done just that – been educated in New Zealand, Australia or the US, raised their children overseas and returned to their land and the lifestyle they value. One government Minister, Lord Fohe, shared that he supports Tongans who have the chance to go overseas saying "they will come back".

Many shared feelings of peacefulness in Tonga, being able to wake up and "do this and that". Many spoke of the fact that overseas everything costs money, while in Tonga one doesn't need paid employment to live or to feed their family. Many valued the sense of security around food access in Tonga "if you're hungry in Tonga you just go down to your Uncle's for food!" (Fanau'ifo'ou, talanoa, Nuku'alofa, March 2023).

In March 2023, in a workshop held with Tongan women, many expressed an interest in 'moving' to New Zealand but on deeper exploration, the intent was for this to be impermanent. Many felt a few months, or a few years would be their limit before wanting to return to the freedom, the social circles and pace of Tonga.

As already mentioned, there was a split in those reporting plans for climate mobility in the sense of intended permanency. Some were using overseas mobility to enable internal relocation of housing away from climate affected areas. These people planned to return to Tonga in 10-15 years. Another, in Ha'apai, was intending to move (and continue to move) without return.

A number of participants experiencing climate related impacts (but not reporting plans yet for climate mobility) mentioned that family have encouraged them to move to live with them overseas, but they are resisting. Speaking hypothetically, a few mentioned if family really wanted them to move, they ultimately would but their preference is to visit, spend a few weeks or months, then return to Tonga.

## 4.6 FACTORS INFLUENCING THE CURRENT OR PLANNED PATTERN OF CLIMATE MOBILITY IN TONGA

As already highlighted, **incapacity to raise capital within Tonga** to purchase alternate land internally and/or fund the building of a new residence on higher land has led to people's plans to mobilise overseas, with their children, usually for a given time period of ~10-15 years.

The **lack of land availability**, or even possibly the assumption of challenges accessing alternate land in Tonga could currently, or in near future led to decisions to move inter-island (Tongatapu) or overseas. A number of participants volunteered anxieties around the availability of land, now and the near future. The CEO of MAFF, Dr Viliami Manu shared:

*"[Internal] relocation is going to be an issue because of land. It is complicated and involves the government, the Royal Estate and negotiation with Nobles".*



In discussion with Dr Taniela Fusimalohi, MP for 'Eua, he shared his concerns, and his **current efforts to implore the government to prevent any further leasing of land to those living outside of 'Eua** saying that land is needed for the people in 'Eua. Further, he shared that land may be needed in future for national relocation events, particularly given the long history 'Eua already has in hosting relocated Tongan communities (e.g., 'Ata, Mango).

The Governor of Ha'apai, Dr. Pita Taufatofua shared that his office has **helped facilitate land swaps** – contacting heirs of Ha'apai land and offering to provide land in Tongatapu in exchange for their Ha'apai land. Some have taken up these offers, allowing some in Ha'apai impacted by climate change (e.g., significant coastal erosion) to remain in Ha'apai and relocate inland.

**The leasing of agricultural land** has been used by people planning climate mobility and one family the researchers met with reported it had bought them some time to plan their next steps (home relocation and overseas mobility). This practice is currently limited, with the Household Income and Expenditure Survey (2021) suggesting just 2% of agricultural land is formally leased in Tongatapu (and negligible elsewhere in Tonga). There could be an opportunity to more deliberately promote land leasing to those with low-lying tax allotments, subsidise or otherwise support the securing of leases for those most exposed to climate impacts, and/or consider limits on leases to those not meeting certain needs-based criteria. Two participants raised concerns about emerging practices of Tongan landowners leasing agricultural land to non-ethnic Tongans, who are reportedly using the land to grow food to sell and export. These participants were concerned about what this could lead to if the practice occurred at scale – diminishing land availability for future relocation and/or simply limiting the arable land available for Tongans to live off now, and to earn an income from.

Finally, **insurance penetration is very low in Tonga**, mostly limited to some commercial property (talanoa, 'Ilavaha Tovehi, Nuku'alofa). Higher insurance take-up could add a resilience layer for some of the population. 'Ilavaha Tovehi, a leader in the insurance sector in Tonga, discussed the opportunity for higher penetration, particularly for the take up of climate-relevant products. One UNDP-backed product, the UNDP Capital Fund, insures plantations/tax allotments and pays out TOP\$2000 if a trigger is met e.g., a Category Four or higher Tropical Cyclone passes over the land, irrespective of damage. Another is income protection for seasonal workers. In 'Ilavaha's opinion, both represent high value for a lot of Tongans however engagement of government leaders is low as is education for the public on the benefits of insurance ("people see it as a cost, not an investment"). Critically, there is no insurance regulation in place (a bill was reportedly drafted over three years ago but has not progressed).

## 4.7 WHAT HAVE BEEN THE PROCESSES OF DECISION MAKING AND THE FACTORS THAT HAVE INFLUENCED CLIMATE CHANGE/ENVIRONMENTAL MOBILITY DECISION MAKING?

This section covers some of the insights gathered regarding decision making factors in climate (or environmental) mobility. The section is split into sudden and slow onset decision making features.

### Sudden onset decision making

#### At a village level

Following the Hunga Tonga-Hunga Ha'apai eruption and subsequent tsunami, most of the low-lying properties on 'Atataa were lost. A number of houses on the more elevated part of the island remained in place. The 'Atataa Town Officer (and now the 'Atataa-Si'i Town Officer), Tevita Sikula relayed a story about the process of leaving 'Atataa and some village level decision making.

Sikula reported that early on he was in contact with the government in Tongatapu trying to coordinate evacuation of the village. He reported that all but one man wanted to leave the island following the tsunami. This particular man worried about leaving his livestock and property. Sikula shared how he spoke at length with this man about his hesitations, and then offered to stay with him if he could not bring himself to leave.

*"I said, if you stay, I will stay with you"*

After talking more, Sikula suggested that the man free his livestock, cutting ropes and opening pens so the animals could be free and fend for themselves. With this the man agreed to leave with the rest of the village.

Prior to leaving 'Atataa island, Sikula reports that two Faifekau led prayer for the village and at that point they all felt it was OK to leave. (See 'Atataa case study for more detail).

Mango, in the Ha'apai island group, was also evacuated and ultimately resettled in 'Eua. In Mango-'Eua, the Town Officer, and the Governor of Ha'apai, both who were with the people of Mango throughout or at their evacuation, reported that all chose to, and were relatively keen to leave. They had spent days waiting for transport, with little to eat or drink and were ready to evacuate. In Mango, one elderly couple shared how when the waves came everyone panicked, and straight after the event everyone wanted to leave as they knew it was not safe.

At the point of departure, there was reportedly not a shared understanding that the move would be permanent.

The Government Representative in 'Eua, Mr Lolo Fili shares that people's lives were likely saved by the fact that the majority of the village was up at the (elevated) site of 'Eua's high school for a rugby 7's match. After the second explosion, Mr Fili asked everyone to return to their homes for safety. On getting to his house, the first tsunami wave struck. There were no sirens or other alert systems, so he asked the Town Officer to use a speaker phone and drive around telling people to move to higher ground.

### At an individual and family level

One woman from 'Atataa reported that all in her family wished to leave 'Atataa after the tsunami because of safety concerns, though older members of her family, including her mother often spoke of missing the island after relocating.

Another woman, who was living in a church hall in Tongatapu at the time (she was one of the families not allocated one of the homes on 'Atataa Si'i), reported no desire to return to 'Atataa, despite her precarious living situation. She did ask for greater transparency, including where her allotment was in Atataa Si'i so that her family could dismantle her home on 'Atataa, and rebuild it in Atataa Si'i. She reported that despite requests, she was not given this information.

A number of people affected by the Hunga Tonga-Hunga Ha'apai eruption and tsunami shared that family overseas had encouraged them not to rebuild and to instead move overseas. One participant shared:

*"My son in New Zealand said aye, leave it Dad it's a waste of time to rebuild, come here to New Zealand. I said no, I go there and I'll just end up taking the grandchildren to school every day then pick them up in the afternoon. I want to be here to feed my pigs and chickens... I'm getting old, we have land here, a tax allotment, it's free. The land in New Zealand is not free".*

A police officer and emergency services worker in a workshop in Tongatapu reported that women have broader considerations when contemplating mobility, particularly in a sudden onset hazard. They were said to be the ones who consider second and third order impacts for the family, the needs of each family member. This woman shared

*"It is the women in the family that says whether to stay or run!"*

She also highlighted that a significant mental blocker for women is considering how they could safely transport their koloa (family heirlooms – ngatu and mats etc.) on leaving home. This woman reported that it would be critical to start planning the seed about possible sudden (or slow) onset climate hazards and mobility given women's complex planning needs and their role in family decision-making.

### Government

In 'Eua, following the destruction of a number of properties along the coast, the government reportedly established seven 'blocks' or levels from the coast heading inland and upland. On the first land block closest to the sea, it is forbidden for people to rebuild here. Those in the next block in have an option to rebuild or not. Those in the third block in have a choice to rebuild, relocate or not. For those who chose to relocate upland the government had provided a house, but they are said to be one room houses. The central government reportedly did not consult with local leaders on design and some reported the builds are not practical or fit-for-purpose.

## Royal Estate

While the Royal Estate reportedly told the people of 'Atataa that they can be free to come and go from 'Atataa, the option to return to Mango has not been extended to the Mango people. Both the Government Representative in 'Eua and the Town Officer reported that those from Mango have been forbidden to return to the land, though they have the right to return to the fishing grounds. The reason for this is reportedly a concern for the safety of the Mango people should a repeat of the eruption and/or tsunami event happen.

One government leader highlighted how different groups have had vastly different rules applied to them following the Hunga Tonga-Hunga Ha'apai eruption, with the rules applied to Mango at one end, and the situation in the island of Nomuka at the other end of the spectrum where the inhabitants were neither evacuated nor instructed to retreat.

## Churches

The Christian religion is dominant in Tonga and church participation and fulfilling one's church duties is central to life in Tonga. Heads of churches are considered powerful, and in the public sphere, they can be more influential than some of the Nobles (estate holders). Further, their geographical reach is extending every year as Tongans leave for overseas destinations at pace ('Epeli Hau'ofa, talanoa, May, 2004). Religion provides a second home (fale-'alua) and a support platform for those within Tonga, including in terms of disaster response and recovery, and those overseas, including to help accommodate settlers and to connect people in with income and work opportunities. Church leaders are often consulted for mobility decision making at a family and village level and as has been highlighted in numerous case studies, churches have played a role in practically supporting the relocation process, in taking care of people's spiritual needs during relocation and also providing shelter and materials for those recovering from disaster.

## Slow onset decision making

### Family level and individual level

In terms of the decision makers, in talanoa with people and families actively planning climate mobility due to slow onset hazards, the discussions and decisions were reported to be within immediate family in Tonga – namely between the husband and wife. On asking whether family overseas had had input, they reported they had not at that point. Families reported that their (school age) children had been involved in discussions. Others not actively planning climate mobility but who reported the impacts of climate change on their household food security or income, shared that family overseas (typically children, often siblings, sometimes other family members like cousins) actively and frequently encourage them to move overseas to stay with them for a better life.

In the diaspora survey with Tongans living overseas (n=55), just over 40% reported they had participated in discussions regarding family leaving Tonga to live overseas. Slightly more females than males reported involvement (half vs one-third).

The most common role for diaspora in mobility decision making was providing information to help with the decision but not making the final decision, and the next most common was providing information and money, but not making the final decision. These results are of course in relation to all drivers of mobility, not specific to climate mobility but there would be reason to assume that input and engagement levels of the Tongan diaspora would be similar for climate mobility.

In terms of drivers and trade-offs, one woman planning climate mobility to Tongatapu then on to New Zealand described the discomfort in moving, that one needs to suffer for one's children and for one's dreams. Other families planning climate mobility (due to food and income insecurity, due to land erosion) report the prioritisation of their children's futures, saying that while climate impacts have been a *factor* in their mobility decision, accessing the best opportunities for their children (overseas) is the priority. All parents reported that it is not their preference to leave Tonga but that they are obligated to support and protect their children.

### Government decision making

The Governor of Ha'apai reported that he has not been involved with, and he is not aware of explicit conversations regarding proactive planning for the relocation of people out of Ha'apai due to climate change. He stated that the main barriers to progressing that would be financial, and the mere fact that many love where they live, including those on the

outer islands of Ha'apai, and do not want to move. A number of government leaders outside of Ha'apai volunteered their beliefs about the future of Ha'apai in particular, with one sharing.

*"In the future, Ha'apai will disappear. Some higher areas in Vava'u may remain".*

One business owner and previous school principal shared his opinion

*"Ha'apai might be in the same category as Kiribati, except there's no planning [for Ha'apai]"*

A noble and the Minister for Ministry for Agriculture, Food and Forestry (MAFF), Lord Fohe, shared his opinion that the government cannot afford to keep replacing the homes of those in particularly exposed areas, and reported that Cabinet passed a bill for some people to move from Vuna Road in Nuku'alofa. These areas were mapped out by both the Ministry of Lands, and the Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC) as part of a series of subprojects to reduce flooding risk in key exposed areas (MEIDECC, 2019).

In discussion with one government leader, a story was shared of a discussion held between MAFF and the Minister for Lands at the time, the late Noble Fielakepa. The proposal was to free up more land for productive agricultural use, identifying a clause from the 1950s in the Land Use Act which dictated that each eight-acre allotment block needed to have at least 200 coconut trees planted on it. MAFF had reportedly identified around 6,000 acres that did not comply and were suggesting taking back that land – much of it held by overseas diaspora – for agricultural production. The Minister for Lands reportedly asked how much Tonga earns from agricultural exports annually (~TOP\$10-20m at the time) and then asked how much Tonga receives in remittances annually (~80-90m at the time). That was said to be the end of the conversation – there is no appetite to upset the current diaspora-land-remittance arrangement.

## 4.8 WHAT HAVE BEEN THE IMPACTS OF PAST AND RECENT CLIMATE OR ENVIRONMENTALLY-DRIVEN MOBILITY?

The following section provides an overview of impacts from environmental mobility, mostly taken from engagements with those who relocated from Mango and from 'Atataa following the Hunga Tonga-Hunga Ha'apai eruption. The researchers believe there will be many translatable insights from mobility following this sudden onset hazard for future climate events and subsequent mobility. In terms of considering impacts from mobility following slower onset hazards, the researchers have included insights from mobility that has occurred under a range of drivers (including economic) from talanoa with those living in Tonga and those living overseas about the how they have been affected personally by mobility as well as observations of changes at a societal level. The section is split into cultural (including spiritual and religious), social and economic impacts, though recognising that there is often interconnectedness between the impacts (e.g., church attendance and social behaviours, or cultural practices and income generation etc.)

### Cultural (+/- spiritual and religious)

#### Deprioritising or discontinuing cultural practices

For women engaged from 'Atataa and Mango, the loss of access to pandanus leaves, typically used for weaving, was having a major impact on their economic resilience as well as their sense of self. One woman spoke about how her life has changed since relocating, that she used to be weaving every day and now in 'Eua without access to pandanus leaves she just sits around the house. In Mango she was involved, like many women in Tonga, in a women's handicraft group (kautaha) however she is not now she is in 'Eua.

One man in Mango-'Eua had his old fishing spear displayed on his porch, despite not spearfishing in 'Eua, it came across as a critical identifier and a subtle mark of cultural resistance to the rhetoric they were facing – that Mango as fisher people are to be farmers now.

### Language and knowledge loss

There is significant sub-cultural diversity in Tonga. Each island group (and even sub-island groups) have a set of value systems, language markers, and behavioural traits. How people in Tonga have moved following an environmental disaster suggests that there may be a dilution of sub-cultural diversity – as families from one location spread out across multiple family homes. This spreading out spreads the costs of absorption and allows for the maintenance of gender separation for example within one home.

For those from Mango, though they were able to move as a village unit and have been able to maintain their family units largely intact, they find themselves in a very different setting:

*“The environment is different here, there are lots of people here, the houses are different... the fishing grounds and the types of fish are different”.*

Knowledge on how to fish, where to fish (in Mango) and even language specific to Mango fishing grounds and practices, as well as knowledge on how to produce food in sandy soils and constant sea breezes will eventually be lost as generations continue to adapt to life in 'Eua.

### Ceasing or reducing usual commitments including church attendance

Churches, and religion, provides a second home (fale 'a lua) for many (most) in Tonga.

In Mango, one person reported that in Mango they were a very 'church-going community', yet since moving to 'Eua they rarely attend. An explicit reason was not given but they said that with their spare time in 'Eua now they just sleep.

In a group talanoa with Tongans currently living and working in Te Aroha, New Zealand, one person shared how many who come to New Zealand to work stop attending church as they don't have the same family oversight, structures or obligations here. Those who stop attending church reportedly quite quickly lose their way in terms of recalling their sense of purpose and reason for being in New Zealand in the first place. A few of those in this group talanoa directly connected a loss of connection with the church with the take up of alcohol, drugs and other socially-problematic behaviours.

## Social

### Koloa and the loss of koloa (family mats, ngatu/tapa) – women

A number of women highlighted the loss of their koloa as a major personal loss:

*“The tsunami just swept it all away”.*

Further, women from 'Atataa spoke about how the loss of their koloa impacted their capacity to fulfil their social role within their family. Women have a critical role to play to provide different koloa for different occasions – like weddings, baptisms, birthdays and funerals. For a funeral in New Zealand for example, people will travel to Tonga to collect koloa or people will travel from Tonga to bring back certain koloa. These koloa represent family wealth and many have been passed down to them by many generations past. Women in 'Atataa suddenly being in a position where they could not fulfil that role reportedly affected their sense of self-worth. One woman shared how there was an explicit message sent out that the women of 'Atataa have no obligation to provide koloa for occasions, and that this act was a relief for her and others who carried a degree of shame about the situation.

One person in 'Eua, in discussing how the homes built by the government for relocation were unsuitable highlighted how, apart from being only one room of which no Tongan family could fit in, there was also nowhere for the things of the women of the family – no room for the koloa.

### Impacts on self-identity, social status, pride and conflict

In 'Eua, at the time of the fieldwork visit (over a year following the evacuation and relocation of the 'Mango people first to Tongatapu and then to 'Eua), the 15 villages of 'Eua were continuing to take turns providing food and money donations (sometimes to the order of TOP\$4,000) monthly. In addition, the people of Mango had been provided land for food growing, had had this land planted for them by the people of 'Eua, had transport offered to them to get to and from the

plantation and reportedly had financial support from the Royal Estate for their electricity costs. At the time they were living temporarily on palace land while awaiting the building of their permanent homes.

The researchers spoke with a man from 'Eua who has not had a direct role in the Mango relocation but is from the church that some of the people from Mango now attend and had been contributing to the monthly collections. He reported an emerging frustration amongst the receiving community in 'Eua about the lack of effort those from Mango were apparently showing to participate in typical 'Eua activities (farming), despite the efforts expended by the receiving community. This person shared that there had been discussions about people not continuing to provide this support to the Mango people for much longer. This lack of reciprocal effort was highlighted by several people the researchers spoke to in 'Eua.

The barriers for Mango people more actively participating in farming life in 'Eua appeared to be deeper than any practical barriers – as mentioned, those from Mango had been provided land, had that land prepared for them, and were even provided transport to their new plantation. Further, in talanoa, people from Mango confirmed that they had previously farmed and that they had the skills and knowledge to do so in 'Eua. The resistance to participating in this new land, interacting with the land in a way that goes against the usual therefore must be deeper, likely tied at least in part to one's belief in who one is (and is not), and therefore what one does (and does not). Addressing the resistance in this situation, and likely in future, would take a different approach.

From the Mango perspective, they have lost significant capacity to practice their identity in 'Eua – the skills that could earn them good income, provided them a sense of pride and allowed them to support others beyond their family had been taken from them (or at least, made a lot more difficult). There was a moderate level of push back noted by the researchers to this 'Eua expectation of a merging or absorption of the Mango people. In conversation with Dr Pita Taufatofua - the Governor of Ha'apai – he shared his perspective:

*"People say oh isn't it great they have land there. I just sit back and laugh. You can't give people land and expect them to be farmers... They were fishermen since they were born."*

Researchers also held talanoa with a Member of Parliament for 'Eua – Taniela Fusimalohi in July 2023. He referenced the challenge of cultural and identity clashes and the time it can take to resolve, if at all:

*"It's [about] how people self-identify – they want to preserve their old identities. Whereas 'Eua wants a more inclusive identity. That's the challenge."*

*"It takes time for the friction and cultural clash to dissipate. Well, they are supposed to dissipate. When I go to 'Eua I think of Fiji – how the Fijians and Indians are trying to live together. I don't think other MPs face the same challenges I do – bringing people together is my greatest challenge."*

On reflecting on other's experiences with mobility more generally, women reported concerns about others not knowing them in a new location, and their social status in their area of origin. They felt that they would be socially vulnerable, with their pride exposed/at risk. This was highlighted more than once. Women the researchers engaged also shared that women are highly socially aware and are affected by concerns about acceptance on moving to a new place.

### **Psychological impacts (disorientation/loneliness/aimless wandering/drug and alcohol misuse)**

Though not specific to climate or even environmental mobility, the researchers believed it relevant to highlight some observed social impacts (and harm) stemming from a couple of decades of heightened overseas mobility for Tongans. In conversation with Mr Kalafi Moala, a well-recognised author, journalist and founder of a major newspaper in Tonga, he shared his perspectives about the impact of particularly seasonal mobility on Tongan society in the last two decades. He shares how sending so many, mostly young men, overseas for extended periods has created psychological harm in those men, leading to reports of loneliness which men have reported to him as driving them to join kava clubs, and turn to alcohol and drugs. More broadly, the absence of so many has created fractures in the family unit, with higher levels of school truancy and marriage break ups reported. Dr Moala felt that the social fractures have led to socio-cultural shifts unthinkable only a couple of decades ago, sharing an example that there are now beggars seen around town – something never seen before in Tonga. He gave another example of people appearing disorientated, walking aimlessly around Kolomotu'a where he lives:

*“People, if they were out walking were always going somewhere with purpose – like to the plantation to work. Now you see people just out walking, you stop and ask them where they are going and they say ‘just over there’, but there is nowhere.”*

Dr Moala attributes these changes on the negative side of mobility and overseas seasonal work and believes it has created a situation of eroded social resilience to any future stressors, including progressive climate change. He hoped that the harm already caused by mobility could be addressed as a priority.

During fieldwork in the relocated village of ‘Atataa-Si’i (relocated to Tongatapu following the 2022 Hunga Tonga-Hunga Ha’apai eruption) researchers noted obvious psychological impacts for those relocated, with one person so disturbed she apologised that she is unable to speak about her experience. Another participant spoke of emotional, mental or spiritual challenges – not just about the trauma of the relocation event but memories of their previous home – that she and others thought had contributed to a high number of deaths in her family in the months following the event.

In conversation with Tongan diaspora in Te Aroha, some shared their concerns about young people losing sight of their purpose for working in New Zealand once they arrive and getting drawn into drug use through socialising with locals. One young woman reported that it was not uncommon for Tongan youth to first access marijuana in New Zealand and be introduced to other suppliers, quickly moving to harder drugs.

In the project’s diaspora survey, one participant wrote:

*“With the strong decline in mental health I strongly feel that support/services in this area should also be provided to help them cope with these changes.”*

Also in talanoa with two Tongan diaspora in Te Aroha New Zealand, they reported that after finding paid work/a source of income, their greatest needs or challenges in the first month after moving to New Zealand was spiritual, mental or emotional challenges. After a year, they shared that this remained a priority (third highest priority after paid work and physical health concerns, trumping cultural or financial challenges).

In talanoa with a school aged youth whose mother was an RSE worker for 10 years shared that it was difficult living without her mother for those years, and now realises the heavy cost of that separation, saying she feels inadequate culturally, socially and domestically within her family as she does not know how to behave in ways expected of her (Unaloto Moli, talanoa, January 2024).

In a recent attitudes survey conducted in Tonga (Tupou Tertiary Institute, 2023), 16% of the ~1,000 participants responded that seasonal work programs have been ‘mostly bad’ for Tongan families.

### **Greater burdens on women, and higher workforce participation**

Many women engaged via fieldwork reported greater burdens on them (inside and outside the home) in the last decade or so as many men travel and remain overseas on seasonal work programmes. Women in Tongatapu reported that in the absence of men many women are taking on employment in physical outdoors work, such as electrical line work, and captaining ferries and container ships. Many reported women are now working in plantations, leading toutu’u, again work that was typically reserved for men. Those who took part in the women’s workshop in Tongatapu felt this was a double-edged sword – that it afforded women more adaptation capacity in the face of climate impacts, but that it was also further burdening women, adding to their already full plates.

The recent Household Income and Expenditure Survey (2021) showed that the number of households led by women has increased, and in the last census, the data showed women taking more of a share of paid employment (Tonga Statistics Department, 2018).

### **Family or marriage break up**

It was accepted knowledge that overseas mobility has led to family abandonment and family and marriage break ups. In discussion with a Tongan church minister in New Zealand, he shared how he has had to intervene and counsel participants in the RSE program to disengage from behaviours that could lead to marriage break ups back in Tonga. One person the research team spoke with in ‘Eua said that they see it ‘all the time’, and that it is particularly heartbreaking when there are young children involved.

## Economic

### A loss of income following relocation is the top priority

Following the relocation of the communities of Mango and 'Atataa, income continuity was a priority challenge. A number of women shared how much they missed being able to weave and earn an income, representing TOP\$500+ in lost income monthly. In 'Atataa Si'i, one woman who could no longer access pandanus plants (they had not been allocated land at the time and planting pandanus to harvest would still mean a two year wait to begin harvesting) had started weaving with string. Without their usual market to sell her wares, her daughter had helped her sell her products via social media to the international Tongan diaspora. She reported earning the same if not more than she did back in 'Atataa.

A woman in her 70s who relocated from 'Atataa shared that her number one wish was to work again. Back in 'Atataa she would be weaving, making ta'ovala to sell (selling at TOP\$800-1,000 each) and kiekie (selling at TOP\$100 each).

*"There is no land here to grow pandanus, and even if [we were] given access now, it would take a couple of years for it to reach maturity to be able to use it... Here we don't do anything – I want to work!"*

Sikula, the Town Officer in 'Atataa-Si'i, expanded on this.

*"This is hard to talk about. One of the hardest things for people here continues to be income. Having enough money to provide for your kids, your family. In 'Atataa you would pick the produce you grow in the morning then sell it that evening. Here it's very hard now. People are trying to grow small gardens on their small land [around their house]"*

The Town Officer and other members of the Mango community now living in 'Eua highlighted their priority concern was income impacts as well:

*"I miss how we used to earn a living from fishing... when we moved here, they asked for a \$4,000 contribution to the house build. If we were fishing back in Mango, we could have paid that in a month. We had to have our family overseas pay [the fee]."*



## 5. FUTURE CLIMATE CHANGE MOBILITY

### CONTEXT

In exploring the next two critical research areas for this project – (1) the scale and pattern of future mobility under different future scenarios and (2) the social and economic impacts of this mobility on Tonga and Aotearoa New Zealand – a few pictures of different futures first need to be defined. Note the commentary on impacts for Aotearoa New Zealand form part of the joint section of the report.

The following provides a necessary reference for the rest of the section on future scale, pattern and impacts, first summarising a picture of two different futures for Tonga – one where climate change is 'as projected' the other where climate change is at the 'extreme' end of the spectrum.

The details for these two scenarios, which covers not only environmental features, but social, economic, cultural (and religious/spiritual) and political are taken from the following sources:

- a. For social, economic, political, cultural, and religious/spiritual assumptions, insights were gathered from:
  - i. the one-on-one future visualisation sessions held in Nuku'alofa Tonga in July 2023 with a range of government, business and community leaders
  - ii. The outcomes of the future scenario workshop also held in Nuku'alofa Tonga in July 2023, also with a range of government, business and community leaders
- b. For environmental projections, inputs were pulled from key reports by the IPCC (2021), CSIRO and SPREP, ADB (2021) and SPC (2021) and as included in this project's first product – *Recent Shifts, Future Signals*
- c. For population and migration projections, data was taken from census and national immigration data and as included in this project's first product – *Recent Shifts, Future Signals*

Note, the environmental descriptions for 'as projected' and 'more extreme' climate futures were the definitions used in developing the set of futures in the future scenarios workshop.

The team utilised two relatively creative research approaches to tap into Tongan participants beliefs, knowledge and assumptions around the future and critically, implications for the future of climate change mobility. In brief, the visualisations were held one-on-one with some government leaders, media, business leaders where they were to project 50 years into the past and 50 years into the future and describe what they were seeing and experiencing, and to compare the differences they noted about the future they 'saw'. The images described were vivid and often triggered strong emotions. The notable differences between the past and the future for those in Tonga was the degradation of the environment and the 'largeness' of the ocean, the absence of people, family and anyone familiar (and the presence of many 'foreigners'), the built-up nature of the environment and apparent social discord and disorientation (e.g., more people wandering, violence on the streets). Many described an ocean that people no longer interacted with.

The future scenarios process led the group first through some of the latest environmental projections specific to Tonga before spending the day in smaller groups developing a set of four future scenarios based on a combination of change forces. The group opted to work on futures where there was either 'climate change as projected' or 'more extreme climate change'. They also opted to consider the additional overlay of tighter or looser immigration controls in places like New Zealand. This 'force' was selected as the group believed it would have the highest impact on mobility scale and pattern in future (note, the future scenario group in Samoa selected a stronger or weaker economy for their additional force overlay).

For further details on the approach, rationale, benefits and for a much more detailed overview of the outputs of the future scenario workshop and visualisations, see: *Moving Futures* and *The Visions* respectively.

### Overview of the two climate futures for reference in considering questions of future scale, pattern and impacts.

The following incorporates insights from reports by CSIRO and SPREP (2021), MNRE and NIWA (2022) and Hoeke et al (2014) and GNS (Lin et al, 2022) in the environment section, as well as insights from the future scenarios workshop and the future visualisations for the social, cultural, political sections.

Dimension	1. 'As projected' climate future 2050	2. 'Extreme' climate future 2050
<b>Environmental</b>	<p>SLR 0.5m<sup>14</sup>, majority of Tukuatonga inundated, parts of Popua inundated.</p> <p>Minor inundation of Popua power station.</p> <p>Sea erosion continued in Ha'apai with many households in Lifuka, Pangai within 120m of the coast experiencing annual flooding and more homes have been lost to erosion.</p> <p>+ 1 degrees Celsius higher</p> <p>Annual rainfall change -5% to +12%</p> <p>More intense tropical cyclones</p> <p>High-intensity rainfall causing severe flooding/ prolonged ponding of water (lower soil infiltration)</p> <p>Maximum fisheries catch potential reduced by 20%.</p> <p>6% of built environment assets lost (buildings, power, roads)<sup>14</sup></p>	<p>SLR 2m<sup>15</sup>, majority of Nuku'alofa is inundated, Popua power station, Royal Palace, Nuku'alofa Passenger Terminal, Vaiola Hospital and New Parliament House majority or fully inundated.</p> <p>Many low-lying and coastal villages abandoned.</p> <p>Significant erosion of residential lands and loss of key infrastructure in Pangai has driven many out of Ha'apai. ~1/6 to 1/3 of the built-up area of Lifuka is inundated.</p> <p>+2 degrees Celsius higher</p> <p>Annual rainfall change -10% to +15%</p> <p>Significantly stronger tropical cyclones (wind strength and rainfall)</p> <p>High-intensity rainfall causing severe flooding/ prolonged ponding of water (lower soil infiltration)</p> <p>Maximum fisheries catch potential reduced by &gt;20%.</p> <p>49% of built environment assets lost (buildings, power, roads)<sup>14</sup></p>

14. For the purposes of this project 'as projected' sea level rise has been taken at 0.5m – relatively high in terms of some projections of ~0.3m (CSIRO and SPREP, 2021), however the researchers found that the impact-focused exposure mapping done for 0.5m (ADB) is most helpful for considering future scale and pattern.

15. 2m is on the current extreme end of SLR projections – in recent work by the ADB, for time horizons of 2050, the authors recommended that SLR of 0.5m should be considered, as should 1m for comparison. They also suggested that a rise of 2m was 'plausible by 2100' and should be considered in projects with a time horizons of greater than 30 years.

Dimension	1. 'As projected' climate future 2050	2. 'Extreme' climate future 2050
<p><b>Social</b></p> <p><i>Fixed assumption: Based on UN population division assumptions, the population will rise from the current 100,179 to ~130,000 by 2050</i></p>	<p>Some resistance from land holders in relatively elevated areas, overcrowding in some areas</p> <p>More informal settlements in relatively elevated areas</p> <p>More occupation of plantation land, impacting food production and income options</p> <p>Issues with community integration</p> <p>Flooding and water pooling leading to more health risks (waterborne, vector-borne diseases e.g., dengue fever)</p> <p>Still high cyclical mobility though permanent mobility out of Tonga for those who had resided coastally or in low-lying urban areas. Youth particularly move overseas for work to support the family through increasingly tough times, mostly women and the older age groups remain in Tonga</p> <p>Damage to roading and persistent flooding isolates some individuals and communities</p> <p>More individualism and tensions rise as remittances and aid drops</p>	<p>People turn inwards to focus on nuclear/immediate family only</p> <p>High levels of movement from low-lying areas in Ha'apai and Tongatapu to relatively elevated land for both housing and food growing – 'Eua, Vava'u, Niua, though limited land available. Strong resistance/protectionism from land holders in these relatively elevated areas, leading to some conflicts.</p> <p>Significant informal settlements in elevated areas and issues with adequate servicing.</p> <p>Climate impacted crops and fishing leads to nutritional deficits and near full dependence on poor quality imported food, a small few control food production in Tonga</p> <p>Flooding and water pooling leading to significantly more health risks</p> <p>High levels of individualism in leadership, human trafficking and smuggling as people become desperate</p> <p>Significant overseas mobility and family mobility, and most mobility is permanent</p>
<p><b>Economic</b></p>	<p>Nature-dependent tourism (e.g., fishing, whale-watching) folds along with relevant linked businesses</p> <p>Lower cultivation of land due to even more people overseas, lower production due to climate impacts</p> <p>Diaspora continue to support adaptation efforts including at an island or village level.</p> <p>&gt;TOP\$700m in asset loss (buildings, roads, power and water infrastructure).<sup>16</sup></p>	<p>Economy is extremely hard hit.</p> <p>Most agricultural land is no longer viable. Many crops no longer flower or produce.</p> <p>Fishing stocks have been gutted.</p> <p>Food importation is significant and importation and processing activity ramps up with outside investment, with some knock-on benefits (e.g., some transport and communication infrastructure)</p> <p>Significant remittance drop-off as diaspora have brought family members from Tonga over to live with them</p> <p>&gt;TOP\$6b in asset loss (buildings, roads, power and water infrastructure)<sup>16</sup></p>
<p><i>Political</i></p>	<p>Trust in leadership has deteriorated as people see less evidence of leaders fulfilling their obligations to the people.</p> <p>Resentment grows towards leaders for a lack of planning.</p>	<p>Restructure of government as villages are abandoned and some constituencies merge.</p> <p>Desperation shifts the focus of leadership to immediate outcomes with less consideration of long-term implications.</p> <p>As aid funding drops globally, alliances are formed with those nations willing to give the most, deprioritising the alignment of values, standards and relationships. China's influence deepens.</p>

16. ADB (2021)

## 5.1 WHAT COULD BE THE SCALE AND PATTERN OF CLIMATE CHANGE MOBILITY UNDER DIFFERENT FUTURE SCENARIOS?

### Scale - critical context and assumptions for forming a picture of scale

To paint a picture of climate mobility scale for the future (2050), a series of inputs have been triangulated to arrive at a rough indication (or 'shape') of possible scale. The researchers wish to make clear their assumptions that underpin possible scale figures. These are that:

1. Figures in existing literature around areas and populations facing the earliest and highest hazard exposure don't or won't necessarily translate to mobility
2. Further, efforts to assess social vulnerability (e.g., based on employment, home ownership) might provide a deeper lens on relative impact, but still doesn't necessarily translate to a picture of mobility (and may in fact point to populations facing immobility and choice risks)
3. Fieldwork undertaken in Tonga has revealed a series of insights about contextual contributing factors to mobility and immobility (e.g., social capital, especially strength of family ties, presence of extended family in alternate internal locations and the presence of more immediate family overseas, the strength of feeling around rebuilding or existing action or plans to relocate within family land allocations) that are critical overlays to other risk, exposure and hazard lens when considering future climate mobility scale.

The researchers will not provide a statement on future scale numbers by 2050. However, the team will attempt to summarise a set of logical figures deduced from existing recent literature and some figures suggestive of scale from *Survey One* regarding reports of future climate mobility plans.

Complementing these figures will be a series of observations and insights from fieldwork which the researchers believe offer important clues as to how hazards, exposure and 'vulnerability' could play out in mobility or immobility outcomes in future.

### Existing, recent literature on possible future displacements and hazard exposure

As shared earlier, in terms of current *disaster* related displacement, the IDMC (2021) estimated that around 18,000 people in Tonga had been displaced in the 13 years from 2008 – 2021. When adjusting the figure for likely climate contribution, this figure could look closer to ~16,000.

The same report gives a 64 per cent probability that in the next 50 years about 21,400 people in Tonga – a fifth of the current population - will be displaced because of cyclonic winds (IDMC, 2021). Other studies on future wind impacts do not account for climate contributions.

Two studies – one comprehensive multi-hazard risk assessment done by the Asian Development Bank (2021) and one by SPC (2021) generated a series of future inundation maps for specific villages and populations at varying sea level rise measures. The ADB study also overlaid pluvial flooding from climate change rainfall and added scenarios of various one-in-one-hundred-year weather events to assess the reach of some of these sea level rise scenarios under 'real world' conditions.

In the study by ADB (2021), under 0.5m sea level rise, the authors suggested that most of Tuku Tonga, population 643 (Tonga Statistics, 2021) and part of Popua, population 2,320 (Tonga Statistics, 2021) would be inundated. There would also be discrete inundation of the Popua power plant. The study also ran scenarios where under a sea level rise of 0.5m with the addition of a one-in-100-year rain-induced flood, and a one-in-10-year coastal inundation event, up to 42% of the population of Tongatapu – or 31,169 people - would be exposed to at least 0.2m of flooding.

The researchers recognise however that there cannot be an assumption that mobility will result simply based on hazard or inundation exposure of 0.2m; it has been estimated that up to 20,000 people in Tonga are regularly affected by flooding (ADB, 2021).

Many other variables come into play, including the availability of alternate options, physical and resourcing capacity. Helpfully, the study also looked at population risk by village. The assessment of population risk overlaid hazard, exposure

(population) and vulnerability (based on a social vulnerability index incorporating disability, age, access to resources etc.). Using this approach, for 0.5m sea level rise, the villages (and populations within) of Popua, Tukutonga, Folaha and Manuka were assessed as having 'high' population risk. The combined population of these villages is 10,239 (Tonga Statistics, 2021). A further 13 villages, including Kolomotu'a, Kolofo'ou and Lapaha (population 41,260 for these three areas alone) were assessed as being under 'moderate' population risk.

In Lifuka, Ha'apai, inundation mapping done by SPC (2021) used the time horizon of 2100 and modelled two SLR scenarios – 1.4m and 2.9m. At 1.4m, ~1/6 of the built-up area of Pangai appeared inundated. At 2.9m, ~1/3 of the built-up area appeared inundated. Pangai's population sits at 2,026 people (Tonga Statistics, 2021).

Also, based on anecdotal reports by the Governor of Ha'apai, Dr Pita Taufatofua, the area of Hihifo has been particularly impacted by erosion, with some families already relocated inland (when government land could be provided). The area of Hihifo, population 714 (Tonga Statistics, 2021) was also identified as particularly impacted by erosion in SPC's 2021 report. Dr Taufatofua also mentioned that the village of Felemea (population 138) had undergone some coastal retreat as well.

Another approach to build a possible picture of scale, would be to consider the results of *Survey One* (recall, some of the questions asked about recent and planned climate-related mobility). In this survey, 4% of the total 305 participants reported mobility in the last five years where climate change was a factor. Looking forward to the next five years, 7% reported plans to move due at least in part to the impacts of climate change, representing a not insignificant increase in the possible influence of climate factors on mobility over a <10-year period. Looking further forward, one could reasonably expect that figure to rise in the coming ~25 years (to 2050) as climate impacts progress. Being conservative however, if it is assumed that 7% of the population continue to plan and undertake mobility each five-year period in the coming ~25 years, that would scale to ~7,000 people each five years to (2050) to a total of ~35,000 people (assuming no change in total population), likely a mix of slow and sudden onset climate mobility. Considering dependents and other household members, as well as UN population division projections on population growth in Tonga, this figure could scale up further.

### Overview of possible total scale under 'climate change as projected'

While there are estimates of future displacement from sudden onset hazards like wind by IDMC (2021) indicating cyclonic wind induced displacement of 21,400 people by 2050, and comprehensive modelling done by the ADB (2021) on wind, these studies highlight a limitation that climate contribution has not been factored in. Therefore, in attempting to paint a picture of climate mobility scale under 'climate change as projected' assumptions, the researchers have focused on the outcomes of the ADB study that:

- Modelled SLR of +0.5m plus pluvial flooding that factors in climate change rainfall and overlays a one-in-100-year rain-induced flood, and a one-in-10-year coastal inundation event, showing 31,169 people - would be exposed to at least 0.2m of flooding.
- An assessment of population risk that overlaid hazard, exposure (population) and vulnerability measures at a village level across Tongatapu, showing Popua, Tukutonga, Folaha and Manuka were at 'high' population risk. The combined population of these villages is 10,239 (Tonga Statistics, 2021).

The inundation mapping done by SPC (2021) for Lifuka, Ha'apai is also factored in as are anecdotal evidence from talanoa with the Governor of Ha'apai on particularly at-risk populations (already undergoing climate mobility). This would add ~300 people to counts (assuming ~1/10 of Pangai is inundated, Pangai population 2,026, and assuming Felemea requires further retreat/relocation).

**Based on the findings of these studies, with a geographic scope of Tongatapu and Ha'apai, there could be between ~10,500 – 31,000 particularly climate-stressed people by 2050, which could translate to mobility (or immobility, particularly in the case of those assessed as populations of highest risk).** Note, this 'picture' can only consider the ~75% of the population covered in the geographical scope of these ADB and SPC studies and thus could well be a conservative view.

**Taking a different approach, scaled off a proportion of the population currently planning climate mobility (Survey One) this figure could be in the range of 35,000+ by 2050<sup>17</sup>.**

### **From climate-stressed to climate-mobile (or climate-immobile)**

As mentioned, the researchers wish not to assume risk translates to mobility and there are a range of contextual factors that the fieldwork surfaced that could provide a guide to which of those most 'at risk' could take up mobility as a response. Critically, it must be noted that others exposed to less relative risk could well take up mobility or even pre-emptively move prior to experiencing impacts based on their capacity, priorities etc.

In the ADB study (2021), the villages of highest population risk were identified through a series of measures of vulnerability (including employment, education and home ownership) as well as assessments of hazards and exposure. The researchers believe it critical to note that a population assessed as more 'at risk' may not be more likely to be mobile than another. In fact, from what was noted in fieldwork, those in the most notably exposed areas of Tongatapu (e.g., Patangata) reported to the researchers that they are aware, through direct experience, of their hazard exposure however do not have the means to relocate elsewhere and thus have not and do not plan to. In contrast, those in areas who have a 'moderate' population risk rating (moderate to high hazard exposure but lower social vulnerability, e.g., Kolofo'ou) may be the populations more likely to be mobile, including in a more proactive way, as they have more means to do so. Indeed, from those the researchers engaged currently planning or undertaking climate mobility, they were coming from urban Tongatapu, not from areas like Patangata which have been mapped as both highest hazard and highest population risk. **An assessment of a population as 'high risk' could well be an assessment of immobility as much as mobility.**

### **Some factors that could shift people from climate-stressed to climate-mobile (or climate-immobile)**

The following will be hashed out across the remainder of the report, however, fieldwork in Tonga (workshops, visualisations, one-on-one talanoa with people in Tonga and living overseas, and survey of those living in Tonga and overseas) suggests the following will contribute to mobility or immobility in a given population in Tonga:

1. **Access to social capital.** Examples given include close family overseas or spouses overseas, extended family in various internal locations (different villages and island groups). Family and family ties were seen as critical for enabling mobility to other island groups and overseas (including providing resources for the same). Those seen as socially isolated were considered to be at highest risk of immobility.
2. **Access to financial capital.** Those who reported they were planning or in the process of undertaking mobility reported interim steps that required access to some financial capital. For example, one man had recently leased land in a more elevated area to grow food while he was working through a process to relocate himself and his children to New Zealand. In contrast, a woman living in Patangata reported in free text via *Survey One* that she is aware of the risks and impacts of staying in Patangata but that they simply don't have the financial means to move elsewhere saying they have 'no other option'. Another couple from Patangata reported similar, saying that their house floods during most king tides but that they spent all they have on recent repairs to their house, they have no land ("we have no land, but we have the sea") and they could not start again elsewhere, particularly if they had no access to the sea (which is their only income), and so they remain. NB: it is difficult to separate social capital and financial in Tonga, with many reporting mobility options that were based on assumptions that family elsewhere would financially enable the shift.
3. **Access to alternate land.** One woman reported their family had already built a house on their plantation land so they have a 'Plan B' residence should they need to leave their primary residence. Others expressed plans to do the same. A large proportion of households in Tongatapu however do not have a tax allotment/agricultural land (~half) (Menaouer & Sharp, 2023).
4. **Gender.** In *Survey One*, the majority of those expressing very strong apparent desire to be mobile but no plans to be mobile were women. In talanoa with numerous women, they expressed a sense of limitation given their capacity to

*17. Based off an assumption from Survey One data of the current rate of climate mobility planning, where a consistent 7% of the population is planning and undertaking climate mobility every five years to 2050. Assumes a static population. Factoring in UN population division assumptions on slight population increases for Tonga between now and 2050, this figure could be closer to 40,000 (see Recent Shifts, Future Signals for population growth assumptions)*

hold land in Tonga and their limited living security (i.e., some expressed a hesitancy to move or consider moving as nowhere else would they be able to have housing security).

The above relates to individuals and family level mobility. At a village level (on the occasion that a whole village is displaced following a sudden-onset hazard/event), fieldwork noted the following:

- There appeared to be strong alignment in decision-making where ongoing safety and risk following a serious event was clearly apparent ('Atataa and Mango examples).
- In the rare instant that someone was not agreeable to move with the group (e.g., on the evacuation of 'Atataa), the Town Officer worked with that person to understand their hesitations and find solutions, which was possible
- There appeared to be a key role for religion and Church leaders in improving acceptance of the difficult decision to move

Commentary on any additionality in *scale* driven by 'more extreme' climate change

Under more extreme climate change projects (including +2m SLR), the ADB (2021) propose that 'the majority of Greater Nuku'alofa is inundated', with the population of Greater Nuku'alofa being 34,142 people.

- Modelled SLR of +2m plus pluvial flooding that factors in climate change rainfall and overlays a one-in-100-year rain-induced flood, and a one-in-10-year coastal inundation event, showing 39,237 people - would be exposed to at least 0.2m of flooding.
- An assessment of population risk that overlaid hazard, exposure (population) and vulnerability measures at a village level across Tongatapu, showed over 10 villages would be at 'high' population risk, likely leading to action that could include reactive mobility. The combined population of these villages is ~40,000 people (Tonga Statistics, 2021).
- The inundation mapping done by SPC (2021) for Lifuka Ha'apai showed ~1/6 of Pangai would be inundated at +1.4m SLR, roughly equating to 340 people.

**This would bring the estimate of numbers of climate-stressed (which could translate to mobility, or a combination of mobility and immobility) to the range of ~40,000 people by 2050 at SLR of +2.0m, within the geographical scope of Tongatapu and Ha'apai (Lifuka).** Given the key, nationally-relevant infrastructure damaged or lost in this scenario (e.g., Vaiola Hospital), there would undoubtedly be additional mobility based on e.g., service access.

#### A note on direct and indirect impacts of climate change on scale estimates

The researchers also wish to note that these figures of population risk exposure cannot factor in complex knock-on effects from climate related damage to e.g., key infrastructure or other climate mobility. At SLR of +0.5m for example, the ADB (2021) noted some damage to road and power assets. Estimates of population impacts do not factor in customer service impacts of the loss of these assets for example, or the impact of road loss on the ongoing viability or liveability of some villages. Similarly, the assessment of asset damage did not cover crop loss, which we know is a factor in current climate mobility albeit at a small scale. Further, impacts on jobs and employment is not factored in. The mobility decisions of some will have a direct or indirect effect on other's mobility decision-making. For example, nearly half of households in Tongatapu do not have their own tax allotment for growing food and therefore rely on purchasing or receiving food from those families that do. Following the mobility of some, dependencies, including for food access may lead to knock-on mobility for others.

#### What could influence scale and impact choice when it comes to future climate mobility?

As mentioned, a range of contextual factors could influence the choices or options some have available to them when faced with progressive climate stressors, including their social and financial capital, their gender, and their access to alternate land (noting these factors aren't all mutually exclusive). The following provides some additional ideas raised by participants in Tonga on factors they believe would contribute to future mobility scale (both internal and overseas) through the reduction of choice around mobility. The researchers felt it critical to highlight these ideas as those who did report plans for climate mobility were doing so not just because their land had been significantly eroded or inundated, but

because of indirect impacts of climate change on their capacity to provide for their family, or, their incapacity to adapt in place because of e.g., a reported lack of income opportunities. In one-on-one talanoa, the future scenario workshops and the visualisations, these factors were often highlighted as contributors to climate mobility decision making. To avoid duplication, factors contributing to scale raised in the current and planned climate mobility section are mentioned but not rehearsed at length.

### **Support, or planning for housing adaptation, repairs and household level income and food security**

As with reflections from participants on current and near future drivers of climate mobility, in the future, participants believed that inability to grow food to feed their family, to catch sufficient fish and an inability to live safely in their homes or effectively adapt them would lead to decisions to be mobile.

### **Social isolation and the loss of connecting infrastructure**

At +0.5m SLR, ADB (2021) estimates that there would be permanent loss of approximately 1% of roads in Tongatapu. At +2.0m SLR, that figure increases to 25% of road loss. It would be reasonable to assume that there would be individuals and communities physically isolated by a loss of roading access. In the future scenarios workshop, participants described increasing physical and social isolation with greater levels of flooding and road loss. Those who were elderly, without family close by or with disabilities were assumed to be most likely to experience immobility as a result. A loss of communication infrastructure could have similar results. Also, in the future scenarios workshop participants described futures where there was less spontaneous visiting of extended family to e.g., gift food due to infrastructure loss. Over time, participants felt this would erode social ties and thus the options available to some over time.

### **Narrowing of the family unit to 'immediate needs, immediate family' leading to reduced mobility pathways, reduced adaptation capacity (drop in remittances)**

A number of participants in the future scenarios session suggested that intensification of climate impacts (and resultant financial and other pressures) may lead to a narrowing of perceptions of the family unit from extended family to immediate family. The assumed implications of this were thought to be reduced openness of extended family to share land (already occupied or vacant), offer accommodation to those needing to relocate, and would even impact remittances from overseas (that would otherwise be sent to extended family) that would otherwise help fund adaptation efforts.

### **A lack of mobility decision-making consistency leading some populations to relocate and others not after a given event, based on the land holder.**

A few participants raised the explicit point that mobility decision-making and rules are applied differently to different populations based on the landholder (e.g., Royal Estate vs. government). For example, Mango was relocated permanently following the Hunga Tonga–Hunga Ha'apai eruption and tsunami, while others in neighbouring islands were simply advised to retreat from the coast but remained in place. A decision-making framework that assesses e.g., ongoing risk, social/cultural risks and benefits, initial and ongoing costs etc. could be determined in Tonga to support (village-level) decision making in future given possible future climate mobility.

### **Lack of management capacity for reef health and fisheries/resource protection**

Several participants – both community members and government leaders reported impacts on fish catch and accessibility (e.g., migrating to further and deeper waters) and anxieties around the progressive nature of this change. Lord Fohe, Minister for MAFF, stated that reef health is a major concern given knock on effects for other life in the ocean, and that the Tongan government simply does not have the resources to monitor nor protect reef health. Based on the recent national household survey, ~10% of households were participating in fishing activities, with those in Ha'apai doing so most commonly. A proportion of these households were also selling fish for income. Some of the most 'at risk' populations identified in the ADB multi-hazard report (2021), such as Popua and Tukutonga are fishing dependent communities, likely adding to their level of vulnerability. High value resources, such as sea cucumber are reportedly being overharvested and sold from Tongan waters, limiting access for locals and hampering efforts to keep any related profits within Tonga.



### Limited income options/at-risk industries

In one future scenario focused on climate change 'as projected', participants in Tonga described people moving internally in a climate changed future not just because of the direct impacts of climate change, but in order to find work to fund additional costs brought on by the impacts of climate change. A number of participants in Tonga raised concerns about the lack of work opportunities in Tonga, and as already covered, some currently undergoing mobility due to climate impacts are planning overseas mobility in order to fund longer-term internal relocation efforts. Several participants, including some in government, shared the difficulties of maintaining a consistent market for some industries in Tonga, including because of the cyclical mobility of many participating in seasonal work programmes overseas.

Tonga's dependence on agriculture, both informally and formally was a concern for those engaged in Tonga, and the need to invest in more value-added activities (e.g., processing), or at least better focusing agricultural efforts towards high value crops. The potential in Lose and Lose flour was raised more than once.

### Low household or community awareness of incoming risks and no active preparation

The number one need (or risk) identified in the future scenarios workshop was the need for ongoing, targeted and practical climate change awareness campaigns and training. People felt that any effective campaign needed to have information that was easy to understand, focused on impacts (not just hazards or risks) and with practical elements or training (e.g., for housing or farming adaptation). Many participants, once made aware of specific climate risks facing particular villages, felt that those populations required targeted intervention, education, encouragement and likely support to begin planning now. Others recognised that not everyone has the same assets, land or property and will require different levels or types of support to plan ahead. One business leader felt that some populations, like those in Ha'apai, are in a similar situation to Kiribati but that there is no equivalent planning for their climate-impacted future.

### Slow or complex land processes/land systems and management not fit-for-purpose for climate changed future

As already covered, many raised concerns about land availability in future. Further concerns raised included the slowness of the process of land transfers (reportedly can take years) and risks around the readiness of processes and laws to respond to significant shifts in land needs in the future. Others raised concerns about the limited and conditional rights of women to hold land, including for overall population resilience as women are increasingly heading households in Tonga. Others were concerned about the transparency of land related processes and raised doubts about fairness in a future where elevated or viable land will be at a premium. Finally, given decision-making can be informed by assumptions of land availability and ease of access, one participant felt that there needed to be more effort to increase the visibility of land access pathways, particularly for priority uses (e.g., food growing land) and including for those in particularly at-risk populations. In a conversation with senior leadership in MAFF, it was reported that climate change land planning is not currently happening.

## What could the pattern of mobility look like under different future scenarios?

### Staged mobility (urban - rural first)

Many felt that those with tax allotments living in low-lying or coastal areas would at least initially retreat to living in housing (made with what they could access) on their plantation land. Some raised concerns about what this could mean at scale for food production and security and that this could spur some to a return to urban settlement with a drop in food production or security.

Some felt that those who initially moved to more elevated areas internally (Vava'u, 'Eua, the Niuaus etc.) may move on in the short- to medium-term given social challenges between land holder and settlers, assuming that there would be push back from the receiving communities against settlers, especially at high numbers.

### Permanency / cyclicity

In the future scenario workshop, if immigration channels allowed, participants believed that in a climate change 'as projected' future, cyclical overseas mobility would still be the predominant form of mobility. Some believed that cyclical economic mobility would ramp up to fund housing adaptation and other climate related costs for the family in Tonga.

Where there was permanent mobility out of Tonga participants believed that would be isolated to those who had been living coastally (and lost their land to erosion) or in low-lying areas (affected by semi or permanent flooding).

In a 'more extreme' climate change scenario, the assumption in the scenario workshops was that (again, immigration settings allowing), mobility out of Tonga would be mostly permanent, with those remaining behind including some isolated individuals (due to age, disability and/or strong spiritual connection to the land).

### Destinations and direction

In 'as projected' and 'more extreme' climate scenarios, participants believed that people would seek to move from lower-lying villages and island groups to places like 'Eua, Vava'u and the Niuaus, as well as to Mata ki 'Eua in Tongatapu, though those who could travel and settle in these places had extended family already in place.

On reflecting on the possible scale of movement, and understandings of likely social responses of incumbent land holders, some participants felt that they could be more hesitant in future to seek mobility internally, assuming that there would be a lot of competition, overcrowding and host community resistance (or even hostility) to those seeking to set up on higher land.

One group in the future scenarios workshop felt that protracted formal processes for land access would disincentivise people to follow those formal paths leading to large, overcrowded informal settlements, including on hazard exposed land. Others thought that the formal processes of land access would be too long, and/or would lack transparency and felt it could be easier to relocate overseas, particularly for those with immediate family members already there. Many identified New Zealand as the overseas destination given proximity and the presence of family.

In a recent attitudes survey conducted by the Tupou Tertiary Institute (2023), participants were asked about the level of importance other countries should place on providing a 'climate change migration visa'. 79% responded 'high importance'. They were then asked "which of these countries do you think should be most willing to offer the climate change migration visa?" 30% indicated New Zealand, 32% Australia and 32% the United States. It is an interesting question approach, as it is hard to deduce the influence of people's destination preference (which all evidence at this stage for Tonga is for New Zealand) and people's perceptions of relative accountability for climate change itself and thus obligations to provide pathways.

Those describing overseas climate mobility it was mostly always described as being actively enabled by family already overseas. One participant wrote a creative piece where she described a father already overseas when a destructive cyclone hits, who organises visas, tickets to bring her, her siblings and her mother over to live with him in New Zealand. Others described children calling for their parents to move overseas to them and spouses overseas actively facilitating their partner's mobility.

In the future visualisations, and in stark contrast to past visualisations, it was noted that nearly all visualised themselves alone in Tonga in the future and without family around. When asked where their family were, some responded that they had moved on, passed away, or moved out overseas.

### By any means necessary – people smuggling

It is worth noting that for the 'more extreme' climate scenarios, one group in the future scenarios workshop felt it inevitable that without sufficient immigration channels, human smuggling would find a place in Tonga as 'desperate people took desperate measures'.

### What could impact the pattern of mobility in these futures?

#### The haves and have nots – the mobile and the immobile

Particularly noted through the future scenarios workshop, participants believed there would be a split in the population in terms of who went where (and who went nowhere) under climate stress.

The first section of society - with low financial capital and low social capital – was assumed to be either immobile due to not having the means to travel or transport their remaining assets or setting up informal settlements in any

alternate land that lay vacant. This group was also thought to be less likely to move overseas through a lack of family connections overseas. Interestingly, the criteria used by the ADB (2021) in their assessment of social vulnerability did not factor in measures of social capital relevant to future climate mobility (including presence of family members overseas or in alternate locations, strength of family connections etc.).

The other section of society (likely land holders, those with strong family connections and/or a spouse in diverse internal locations or overseas) would be the ones able to travel to and set up in elevated areas (Vava'u, 'Eua and the Niuas), and/or moving overseas with the financial and other in-kind support of family.

### The receptiveness or preparedness of likely receiving communities

As mentioned in the previous section, on working through the process of climate displacement and mobility, a few highlighted concerns or assumptions about how 'welcome' they would be and feel having to relocate internally. Many participants described scenes of 'chaos' in some of the more elevated areas of Tonga (Vava'u, 'Eua) as people vied for land, and in one creative writing piece, described confrontations between 'settlers' and the incumbents when those relocated attempted to eke out land to plant food. Many felt that hostilities between movers and receivers would drive people onwards – overseas - in the short- to medium-term.

### Beliefs about rebuilding vs relocating

In *Survey One*, the 305 participants in Tonga were asked a question:

*“Even if our home was destroyed in a strong storm, I wouldn't leave my home/homeland (e.g., I would rebuild, or find a way to stay)”*

23% responded *Strongly Agree*, and another 42% responded *Agree*. At 65% this is not as high as some would expect, especially as generally (and in comparison, to the results from Samoa), Tongans displayed an overall lower proclivity to be mobile. However, when comparing these results for this question to Samoa, only 8% of survey participants in Samoa responded *Strongly Agree* to this question.

One woman in the women's workshop spoke about her strong sense of commitment to rebuild her home following disaster, citing several destructive historical tropical cyclones that had created significant damage “we were swimming in our living room” but that they had rebuilt following that, and intended to keep doing so, leveraging support from family overseas as needed.

Even she however conceded that there may be a point (given severity or frequency) where rebuilding would no longer be logical or in her family's best interest. She believed they would build first inland in their tax allotment, then decide their next move from there.

In talanoa with 'Ilavaha Tovehi, a business leader in Nuku'alofa, she felt it was preferable for Tonga to have a strategy that prioritised rebuilding over relocating wherever possible, referencing the social, economic and cultural issues and struggles of those who had relocated following the Hunga Tonga-Hunga Ha'apai eruption saying “*look at the people of Mango in 'Eua – the gap is not closing*”.

## What are the factors that would likely influence mobility decision making under this scenario?

### Access to financial and social capital

The presence or absence of options was front-of-mind for those in workshop discussions, including the women's workshop and the future scenarios workshop. When asked about future mobility options, in the women's workshop, the options shared were those locations where family currently reside (often locations in New Zealand or Australia), and their preference for these destinations was the presence of family.

Having personal access to funding for mobility was not so much seen as the key as was social capital – in workshops, and in one-on-one talanoa, including with the diaspora, those considering options they would have to move, or those who have moved reported the centrality of family (at the destination) for funding travel and/or providing the critical accommodation and living costs on initial movement. In the diaspora survey (55 participants), many of the diaspora reported that they

would be ready and willing to support financially or in-kind to help family relocate internally or overseas, including providing accommodation should they need it. One diaspora participant did mention a hesitation about doing this, sharing that they are concerned that the international diaspora will become a fall back, or a reason for the government to not put in place support measures for those displaced by climate change.

### Multiple stakeholders

A number of participants, including senior government leadership, foresaw challenges with relocation in Tonga in future because of land "it's going to be difficult because it involves the government, nobles and the Royal Estate".

A conversation held between the researchers and a senior government member is relevant to summarise, though the source will not be shared.

The participant spoke on how the King called a meeting with all the nobles a few years back, asking them to 'let up off the land' a little (originally given to them by the King/through the constitution to distribute) so that people could more easily access it. It was reported that most of the nobles were against this request, and only one took action following the meeting to open up some land availability.

### Transparency and perceptions of transparency of land management, particularly in future high-demand locations

Many participants, in *Survey One*, the future scenarios workshop and in one-on-one talanoa identified the limited area of Mata ki 'Eua in Tongatapu as their planned destination for relocation in the coming years. This relatively elevated area of Tongatapu would require targeted and long-term land use planning to ensure that perceived risks of future informal settlements, overcrowding, servicing issues, and social conflict are managed. There could be an opportunity to consider needs-based or risk-based prioritisation of access to this land and a coordination of planning for this area in particular. Critically, transparent processes around the management of this land would be important. As mentioned, in considering the scale of future mobility, some believed people would make assumptions on the availability of land in certain areas of Tonga and pre-emptively choose pathways for overseas mobility instead.

### Concern levels of family overseas

Many participants in one-on-one and group talanoa, and in the future scenarios workshop, shared that despite hesitations to leave, they would follow the wishes of family overseas to relocate overseas if family felt strongly enough. Many shared that they already face frequent requests and offers from family (children, siblings, cousins) to relocate overseas with family expressing a desire to care for them there, or to help them access work or other opportunities.

### Messaging from leadership, and awareness of risks influencing mobility decisions

One participant working in a government ministry was open in sharing that a few days earlier in a team meeting, a senior government leader had encouraged staff to think about relocating overseas due to the progressive impacts of climate change in Tonga.

In the future scenarios workshop, one group believed that a small group of people (with the means) would proactively move internally or overseas as awareness grew of specific future climate impacts for certain villages.

## What are the potential impacts of climate change mobility in these futures?

### Cultural (+/- spiritual and religious)

#### *Emotional and spiritual<sup>18</sup> impacts*

A number of participants spoke directly to the spiritual impacts of mobility generally, and a few spoke to it under climate drivers. Those speaking more generally referenced perceptions of existing mobility impacts on levels of loneliness and the coping mechanisms of alcohol, kava and drugs that many have taken up.

*18. Spirituality for those in Tonga, Samoa and for Māori involves matters of the mind and heart, and is the basis of culture, shared values, behaviour and even language.*

Participants relocated from 'Atataa discussed trips back to 'Atataa to attend to and be with ancestors left alone/behind in their old land. People from Mango-'Eua still visit Mango's fishing grounds - the fishing grounds of their ancestors - to fish, throwing fish back as a tribute to old Sinilau or Tangaloa. The sea – as a place they see as part of themselves – is where they go to recharge.

The Governor of Ha'apai shared his views on the spiritual impacts of future climate mobility for those in Ha'apai.

*"It will affect them mentally - to see their land like that, see the crabs settling into their land... it's not just emotional... we sometimes think of religion and spirituality together [now] so it is hard to think about spirituality [the old ways]. Maybe we lost that spiritual link. But yes, it is not just emotional".*

In talanoa with a government worker in Nuku'alofa, they believed that it would take at least 2-3 generations for relocated people to accept the change. They pointed to the impact particularly of leaving ancestors behind in the land:

*"Leaving people in the grave – it's huge. That will stay with them... it will leave a vacuum in their heart."*

In the future visualisations, a few of the participants were visibly impacted and even disturbed by the changes they visualised in the future, focusing in on changes to the environment – particularly the loss of natural features (trees, bushes) they associated with their home or home village. Participants also seemed distressed by changes they noted about the ocean - it's lifelessness, the lack of interaction of people with the ocean, the temperature of it. It was not uncommon for participants taking part in the visualisation process to be brought to tears by the changes they 'witnessed'. One participant spoke of being confused and highly disorientated with the loss of natural markers that had been around her family home.

One youth participant in the future scenarios workshop spoke of the deep connection between land and heritage and the inability to separate the two without trauma

*"This land is my mother's heritage. How do you separate someone from their heritage?"* (Olive, Nuku'alofa, Tonga)

Others taking part in the visualisations described a deep sense of loneliness in the future, describing people out wandering on the road but they were strangers. Their family, any they knew, were gone. On querying where their family was, they were believed to be overseas or passed away.

Tongan diaspora (via the diaspora survey) used free text opportunities to highlight the need for mental health support for relocated Tongans in future. One person wrote:

*"Often they move and find themselves lost. Identity crisis occurs. And I know that materials will be important such as food, water, clothing, community... but let's not forget the mental challenges of making a big move and to ensure our people have that support too."*

### *Cultural 'absorption' of diverse sub-cultures, from internal and overseas mobility*

A few participants articulated the connection between land and language, including words that reference things unique to certain areas.

Coastal inundation, which is projected to impact some areas earlier and more intensively than others will possibly see whole villages dispersed across Tonga. Areas like Tukutonga and Popua are projected to be the first to face the worst of the hazards. Whether populations from these areas move first, or whether those in lesser impacted areas (but with higher capacity) move first, it was assumed that families would undergo levels of separation to spread family members across different extended family homes, often in different villages, even different island groups. Participants in the future scenario workshop noted that at scale, this would certainly dilute Tonga's great sub-cultural diversity and likely see the ultimate takeover of a singular hegemonic culture in Tonga, with resultant loss of diverse language, local knowledge, value systems and behaviours.

Thaman (2004) stated that for many Pacific people to be a citizen of a particular nation may not be as important as belonging to a particular group of people. Belonging to a 'group of people' could well encompass all features or identifiers of that group – including language, skills or knowledge sets, shared experiences and belief systems.

In the context of future overseas mobility, as highlighted in the *Six Kōrero* research product, some Māori leaders shared their belief that New Zealand has not been good historically at creating space for different cultures. As a result, their perspective was that without concerted effort, climate mobility futures could lead to the loss of Pacific cultural diversity, with people just being 'absorbed' culturally into their new settings.

### *Impacts on cultural practices that could affect mobility choice or mobility outcomes*

Social capital has been highlighted as one of the critical enablers of choice in future mobility, including the ability to draw on extended family to support (directly or in-kind) access to other land to live, or channels to mobilise overseas should the need or desire arise.

Being able to gift e.g., food to family or people of note in the community, or to be able to send food to family overseas feeds into a critical reciprocal relationship, strengthening and renewing bonds that represent layers of resilience to future climate pressures.

Following recent environmental mobility, those who relocated from 'Atataa and Mango lamented a loss of access to land to grow food and to pandanus plants that would allow them to weave - to both earn an income and to build back up their stock of koloa they had lost in the eruption and subsequent tsunami. For those the researchers spoke to, weaving was their only option for earning an income. Without this, they were even more dependent on others (family, the receiving community, church or the government) to access food or to cover services costs.

Similarly, participating in women's groups and the associated commitments to produce a certain number of handicraft products over a given year, often utilising the pandanus plant, is an important aspect of life in Tonga for women. Having stocks of woven mats, kie, ngatu and other treasures also supports women in their social roles to provide koloa at certain important family occasions (as described earlier).

## **Social**

### *Human trafficking and people smuggling ('more extreme' climate scenarios)*

Some participants in the future scenarios workshop felt that those facing immobility or challenges accessing alternative land or living options in Tonga may ultimately turn to human smuggling operators in their desperation (Note, this was under the 'more extreme' climate scenario). Others thought that with reduced capacity to subsist on own-production food, and climate change impacts on the formal agricultural industry, many would be desperate for a capacity to earn money to access (imported) food. They felt this would set the scene for high levels of worker exploitation in Tonga and an intensification of human trafficking.

### *Land driven conflict*

In a number of settings, participants explored and highlighted the risks of land driven conflict, mostly agreeing that the conflict won't necessarily be overt ("people won't necessarily be fighting in the streets") but that there would be a loss of social cohesion, and many would face hostility, resistance and difficulties accessing land for housing or food growing. This conflict was described as between the land holders and the settlers, or the incumbents and those relocating. Others believed that there would be increasing tensions between villagers and nobles around the fair allocation of land, especially as land for distribution is already tight and land scarcity is likely to continue as climate change impacts progress.

### *Women and fakaleiti – differentiated impacts*

As highlighted already, women have different, and limited holding rights to land in Tonga. Land laws and limitations for women could place them in a tenuous position in terms of limiting options for mobility relative to men, and while assumptions remain that cultural traditions will protect the rights of women to land and resources, the reality is that tradition is eroding, and there is a need to consider whether land laws will be fit for purpose to protect the rights of all in a climate changed future. This becomes even more critical as data shows the proportion of households that are women-led continues to increase.

Women also stand to be impacted in unique ways following disaster and mobility, including impacts on their capacity to fulfil their gendered and cultural roles in their families and communities through often reduced (or ceased) access to e.g.,

materials for weaving. Many described a loss of existing koloa following disaster and/or mobility as a cause of shame and anxiety.

In targeted engagements with fakaleiti in Tonga, these participants shared their concerns about future mobility and how fakaleiti would face challenges others may not, particularly in instances of moving internally. One participant shared how fakaleiti face more challenges being accepted in Tongan society, believing these challenges stem from religious influences and fear (of the unknown). They described heavy bullying during school years, anecdotally leading to a high rate of school dropouts in this population. They were not aware of unique risks of violence to those identifying as fakaleiti in adult years. Two participants identifying as fakaleiti believed that they needed to 'do more' in their community to be seen as of value, with both suggesting they sought out government jobs in part to improve their social acceptance. Given this, both participants felt that in a future of high internal mobility, fakaleiti would face additional challenges with social acceptance if they were to change villages and not have their social supporters available to them in this new location. Both believed that fakaleiti would fare much better overseas – in terms of social and political acceptance and work opportunities – and would likely seek out this option as a strong preference over internal mobility. Both participants were aligned that targeted planning and support for fakaleiti in a climate mobile future would need to involve targeted upskilling and training opportunities in a set of professions (suggesting customer service, event planning and management and more artistic fields including floristry) so that they 'can be known [valued] for something' in their receiving community.

### *Insecure housing, unhealthy and overcrowded housing*

The risk was raised by a few participants that many will not have the means to rebuild following stronger tropical cyclones, or more common or destructive (or persistent) flooding. Some participants in the future scenarios described some having to remain in place (given a lack of options to relocate) and simply 'repairing' their homes with whatever materials they could get hold of. Others described informal settlements and precarious housing for those without access for formal pathways of supported relocation or who had family able to relocate them overseas as needed.

In an inaugural attitudes survey conducted in Tonga (Tupou Tertiary Institute, 2023), survey respondents expressed concerns about the impact of flooding on the longevity of home appliances and family health (including the presence of mosquitos from long term pluvial flooding). Based on projections, pluvial flooding (from heavier rainfall events and reduced soil drainage), this will be an ongoing and likely worsening reality for many in Tonga (CSIRO and SPREP, 2021).

One participant relocated from 'Atataa who had not at the time received a home, reported that she had initially stayed with extended family in Nuku'alofa but the home was overcrowded so she resorted to living in the church hall. As villages and villagers seek new land and homes in future, it is likely that displaced families will separate and disperse across a number of extended family homes (as discussed in the patterns section). Given the average household size is just over five people, it would not take much to push many households into an overcrowded state with resultant health and other risks.

### *Social isolation and the impacts of 'foreigners'*

In the future visualisations held in Tonga, there was a clear theme of people seeing themselves as alone in the future – no one saw themselves with family (in stark contrast to visualisations of the past) and many described seeing no one around (or very few people). One person vocalised that they felt extremely lonely in the future. Some described more vacant land, run down or empty houses, or houses replaced with large commercial buildings. A few people in the future scenarios workshop and a couple of people in their future visualisations described many 'strangers' and 'foreigners' in Tonga, suggesting assumptions around significant changes for population make-up in Tonga. In talanoa, several people raised concerns around current issues of community cohesion between Tongans and some non-ethnic Tongans, reportedly driven in part by perceptions of a lack of community or cultural engagement.

Further, in the future scenario workshop, participants described roading and other infrastructure erosion and failure, paired with widespread flooding leading both to the isolation of individuals – particularly those without family in Tonga, as well as whole villages leading to poor health and well-being outcomes. These reflections on social isolation impacts also have relevance in terms of what has already been highlighted around social capital and mobility choice.

*Poor outcomes or unmet potential as Tongan people 'are not ready for overseas mobility'*

Talanoa with a number of people in Tonga revealed strong alignment in the perception that generally, Tongan people are not well prepared for overseas mobility/living overseas. Participants spoke to a general romanticisation of life in (for example) New Zealand, an ignorance regarding what is required to live comfortably or successfully overseas (including the need for money for 'everything') and the vast difference in lifestyle in Tonga compared to overseas (sharing culture, ability to eat and live without working for a salary/cash in Tonga etc). Participants felt that this led to issues with integration and impacted the likelihood of successful mobility outcomes. In considering mobility at scale, participants were concerned about the strength of the foundation of Tongans overseas if they are not best equipped to be successful and being able to prepare people adequately in future to thrive overseas.

In conversation with diaspora in New Zealand, one person emphasised the risk represented by unaddressed inequality for Pacific people already in New Zealand, including around pay gaps. In the first product for this project (see: *Recent Shifts, Future Signals*) it was noted that the median income for Tongans living in NZ was ~\$21,000, compared with the median income in New Zealand of ~\$52,000.

In talanoa with Māori leader Ngahiwi Tomoana (see: *Six Kōrero*), he shared his perspective on this future impact risks:

*"Pacific peoples cannot be treated in New Zealand as a commodity and be herded into low skilled jobs, we can and must do better... We must support them into pathways for economic development".*

**Economic***Loss of control, access, benefits from Tonga's Exclusive Economic Zone, fishing grounds on partial or full, temporary or final vacation*

In the vacation of Mango following the Hunga Tonga-Hunga Ha'apai eruption, as has already been highlighted, the Governor of Ha'apai made it a priority to request the closure of Mango's fishing grounds to protect those resources from other interests (local or foreign). He pointed to gaps in current policies around the control of fishing grounds which are lost once a land/local area is vacated. Without focused efforts to consider a range of future scenarios, including the relocation of many in the future, the loss of control and economic benefits from Tonga's resources is a possible impact.

*Risks to sovereignty on land loss and foreign entrance*

In conversation with a few participants, including within the future scenario workshops, some of the Māori leaders engaged as part of creating the *Six Kōrero* product, as well as through outcomes from future visualisations, there were many references to future sovereignty risks in the context of relocation and the evacuation of land in Tonga (and the Pacific more broadly). Risks to legal sovereignty, economic control and identity were all raised. Distinguished Professor, Linda Tuhiwai Smith CNZM stated:

*"What does it mean for the Pacific when they move their existence elsewhere? If they vacate the Pacific, some other people or state will fill the space... How will they keep their ... sovereignty if their islands are no longer above sea level?"*

Indirectly, concerns around foreign entrance in Tonga was raised by at least one participant partaking in the future visualisations who described seeing many foreigners around them. Others raised their concerns about the presence of non-ethnic Tongans and the impact it is having and will have on economic resilience. In Ha'apai, one participant relayed concerns about foreign-owned retail businesses asking "what is left for Tongans?" Another in Tonga raised concerns about fisheries catches being harvested and exported without benefit to Tongans.

**What are some options to limit harm in these futures (including addressing differential vulnerabilities)?**

The following are inspired by reflections and recommendations for 'no regret actions' taken from the future scenarios workshop, where following definition and exploration of a set of futures for Tonga, small groups identified a set of actions they felt would offset some of the risks identified in possible futures. Other options are defined by the researchers based on a coming together of insights from talanoa and analysis during the project.



### **Need for large scale and ongoing community education and awareness raising to reduce risks and maximise opportunities from anticipated mobility**

Participants believed that the average person in the community in Tonga has a low level of understanding of climate change and its potential future impacts on them/their family. They believed that public communication on climate change is not easy to understand, is not specific enough to Tonga (or at a more granular village level), does not support decision-making or provide instruction for adaptation. Many participants the researchers held talanoa with, as well as most of the participants in the Tonga future scenario workshop believed an important action would be large-scale and ongoing public awareness campaigns for the community on current climate change impacts as well as future projections. Further, they suggested that practical training or demonstrations of impacts and adaptation techniques (e.g., farming demonstrations) would be well received and beneficial.

### **Targeted planning for at risk groups (e.g., subsistence farmers, those without a family tax allotment, women and women-led households, fakaleiti)**

A number of sub-groups within Tonga have been identified through fieldwork as having differential vulnerability in the context of different climate mobility futures. Vulnerability has been considered in the context of both poor mobility outcomes as well as a likelihood of having less mobility choice now or in the future. These sub-groups include women, women-led households and fakaleiti, those who are not landowners and/or who do not have access to a family tax allotment (alternate land), those with few family connections internally or overseas, and subsistence farmers (with a possible geographic focus on Ha'apai given relative participation rates in agricultural, fishing and handicraft activities that have high dependence on the natural environment). There are also several relatively higher hazard-exposed village populations in Tonga (e.g., in Popua, Tukutonga) that will likely face higher levels of climate stress and based on existing vulnerability assessments (based on gender, employment, home ownership), may be at higher risk of poor outcomes following mobility or immobility.

Planning for reducing harm from different mobility futures should factor in differential vulnerability and support could be prioritised or sequenced accordingly.

### **Consistent framework for mobility decision making and the establishment of policy/ies that mandate ongoing monitoring and evaluation of social, cultural and economic outcomes following relocation**

A range of participants called out the differences in rules and experiences of populations in Tonga following for example, the Hunga Tonga-Hunga Ha'apai eruption, noting that there were different rules of evacuation, relocation and re-access, and even perceived differences in support for different villages. Some connected these differences to whether a population group had been residing on land under the Royal Estate or on government land. Recommendations in the Tonga Integrated Urban Resilience Project (TIURP) report (ABD, 2019) include to establish a monitoring and evaluation requirement for relocation events to assess the social, economic and other impacts of relocation over time (including on impacts on standards of living for those displaced, and whether the objectives of the resettlement plan have been achieved), to also allow for adjustments or different interventions to support outcomes and limit harm. This monitoring and evaluation framework (and requirement) could be set within a broader decision-making framework or policy for contextual yet more standardised approaches to relocation decisions (including the permanency of these evacuations) that build in opportunity for learning.

### **Prioritise psychological support, not just physical - plan for years of integration**

There was widespread recognition of the need to focus on providing psychological support to those impacted by climate or environmental relocation, and to have a plan to prioritise this support in any planning for future mobility. The mental and emotional toll of relocation is highlighted throughout this report and in the case studies, with participants relocated from 'Atataa expressing ongoing disturbance, an inability to talk about the relocation event and the eruption and tsunami leading up to it, and one participant believing that both the trauma of the eruption and the dislocation from 'Atataa led to a number of semi-delayed deaths (eight in total) in her immediate and extended family. In talanoa with Mr Kalafi Moala - well-recognised journalist and media leader in Tonga cautioned against over-anchoring on practical provisions only in relocation efforts, saying "getting a new house? That's just the start." Several village and government leaders recognised that integration, if to happen at all, will take generations, with likely social tension or a lack of social cohesion in the meantime. A Member of Parliament for 'Eua shared how he had had some success with cultural integration (or inter-facing) through setting up multiple project groups to work together on topics such as animal husbandry, handicrafts and farming.

### Practical preparation – skill diversification, training centres

One woman who had previously led the Overseas Employment Office in Tonga, shared how those migrating to New Zealand to work as seasonal workers have a ~30min induction, something she saw as wholly insufficient. Another highlighted that Tonga's approach to education generally is out of step with what the local and overseas market needs, that Tonga over-anchors on highly academic pursuits and does not value (or further, 'looks down on') more practical trades, including the study of agriculture. Improved investment in pre-departure training, skill-building (e.g., financial literacy, legal rights and services in destination country etc.) would be indicated, including for those departing in the near future given the role some (who remain overseas) will play in supporting the arrival and successful integration of others in future.

### Involve diaspora more deliberately, consider a range of channels and possible cost off-setting

A number of participants, including government leaders, in Tonga recognised the existing value and latent potential in the overseas Tongan diaspora in a future of high climate mobility. As shared in the 'Atataa-Si'i' case study, overseas diaspora formed a critical alternate market for members of the relocated community who on losing access to their physical marketplace were selling their woven crafts via social media. Some believed there was more for the government to do in more formally and effectively engaging the diaspora for coordinated and potentially more strategic support of family in Tonga. Some government leaders expressed frustration at having to self-fund efforts to actively engage and thank the diaspora for their contributions and wish to see better efforts to engage and leverage the diaspora's support for climate adaptation, disaster recovery and development outcomes.

As highlighted already, one-third of the Tongan diaspora reported through the diaspora survey that they currently provide support to family specifically to address climate impacts, and many (one-quarter) also provide support to address climate impacts at a village or island level. Two-thirds reported they would like to be contacted by the Tongan government to receive updates on the country and to be shoulder tapped for specific support (e.g., for climate or development projects). Free text comments by Tongan diaspora cited high costs for providing support (including building materials) to those in Tonga, particularly for those based in the USA. Given the scale of remittance sending and the direct role the diaspora play in resilience building and adaptation, there is an opportunity to review administrative and actual costs that could be offset by both sending and receiving nations (e.g., tax offsetting).

Diaspora were also asked for thoughts on their possible role (as a group) in future, in the context of future climate mobility. Responses included funding travel, providing accommodation, helping with mental preparation and cultural acclimatisation, providing professional support, lobbying governments for services and mobility pathways, remote skills training, connecting people with work opportunities and starting or supporting 'special funds' for relocated Tongans.

## 5.2 HOW IS RESILIENCE DEFINED/PRACTICED IN TONGA (CONSIDERATIONS OF RESILIENCE IN THE CONTEXT OF KEY OUTCOMES)?

In this programme's original Theory of Change document, a set of longer-term outcomes were outlined which spoke to social, cultural and economic resilience outcomes and the protection of choice. One of the key research areas for this programme was also to better socially and culturally define resilience including in the context of future climate mobility. This section therefore provides an outline of definitions and understandings of resilience as drawn from workshops, one-on-one talanoa and from the lived knowledge of the researchers themselves.

### On resilience

Definitions of resilience were explored with a number of participants both in one-on-one talanoa as well as in workshops. The following insights were gathered.

## Resilience is family

'Family' is typically associated with a mother, father and children. In this context, family is discussed through the lens of kainga. Kainga is kinfolk and is usually made up of multiple generations. This large family group is typically headed by a male, the ulumotu'a.<sup>19</sup>

One group in a women's workshop shared that family, and the commitment to one's role in the family, was key to their resilience – the reason to keep going during hard times, and to continue to rebuild and regather following disruptions and disasters.

In considering mobility, one participant stated "you are born into a family – the boundaries are international", suggesting a counterpoint to arguments about being born into a land, rather family are considered the 'land' in the sense of being a platform from which to move, grow and thrive. A similar perspective was shared by Epeli Hau'ofa a couple of decades ago, saying 'fonua is people, and people are the land' (talanoa, Suva, May, 2004).

Further, family can be seen as a constant, an enabler, and even a destination. As mentioned in the section below on 'ofa fonua (love of the land), inextricable links are drawn between land and family with land described as both a physical reminder of self as well as one's ancestors. Many throughout fieldwork pointed to the centrality of family in the presence (or lack thereof) of mobility options in future, should mobility be indicated.

In support of these perspectives, Cowling's (2002) work in Tonga surmised that a person belongs more to their family than a place, and Thaman (2004) stated that for many Pacific people to be a citizen of a particular nation may not be as important as belonging to a particular group of people, who may happen to live in more than one country. Hau'ofa (2004) claimed that as long as there are Pacific people in Aotearoa New Zealand, then their fonua is also there.

## Traditional knowledge

Dr. 'Uhila Moe Langi Fasi, described efforts during COVID-19 lockdowns to provide more consistent forms of energy to his constituency. He was initially provided funds to distribute among the people to offset the cost of a gas bottle refill. He decided instead to commission the welding of outdoor cookers fuelled by wood and other scraps so that people would have a sustainable option. He reported that it was a great success, so much so that others from outside the constituency came and asked for their own outdoor cookers. COVID-19 lockdowns saw somewhat of a renaissance of traditional practical knowledge, like sourcing traditional fire starters (toume) from coconut, and cleaning outdoors using natural products. Dr. 'Uhila Moe Langi Fasi saw this as sorely needed in Tonga – a return to traditional knowledge, and perhaps more so, a return to self-reliance.

As in *fakapotopoto* (see below), and the Tongan concept of 'tali afaa' (literally meaning 'in preparation for hurricane (disaster), those that can afford to, secure 'api kolo (an urban home) and 'api 'uta (a plantation home) – similar to the Samoan *fale-alua* concept. When using the plantation home, people still teach and learn the traditional ways of survival by practicing traditional ways of food gathering and processing (e.g., the collection of toume), traditional ways of accessing ground water etc. The provisions for natural sanitation and cleanliness are practiced there and passed on to others in a kainga unit.

## Love for the land / the motherland ('ofa fonua)

In a women's workshop, another group described resilience as having and enacting a deep love for Tonga as the motherland. One woman shared that after a disaster they feel they can't just abandon the motherland, noting that it is not easy to leave anyway (many lack the option) so there is not so much a conscious choice to stay, but a conscious choice to show love for the motherland in staying, and doing what they can to repair, regrow and return the land to what it was.

Land in Tonga is a physical reminder of self, ancestors, memories both happy and sad, it is one's birth mother. It provides landmarks people use for directions to connect to resources, and each other. The love and devotion of the land has created and nurtured a person to be who they are and thus a person has a filial obligation back to the land. Staying with the land in times of upheaval (e.g., disasters) and nurturing it back to health represents a deep cultural and moral fatongia (obligation).

19. This ulumotu'a ('the old head' or 'the wise head') would be a son of an earlier 'ulumotu'a of the kainga. The 'ulumotu'a play the role of speaker for the kainga in cultural occasions but the researchers sense a change in roles within family in recent years.

Illustrating this connection further is a Tongan saying "*Ko Tonga Mo'unga Ki He Loto*" meaning my mountain is my heart, or my mountain is carried within me, a reference to the intimate relationship that Tongans have with the land, and the inextricability of land and self.

'Ofa fonua came to the fore in a one-on-one talanoa with a communication technician in Ha'apai who was planning migration to Tongatapu and onwards overseas. She became upset discussing her 'ofa fonua, considering the impending separation from the land of her childhood, the fonua that nurtured her own family, and the fonua where her ancestors lie. 'Ofa fonua represents a deep pride and loyalty. In talanoa with two women in Nuku'alofa, Tongatapu they referenced this in relation to the showing of national pride at rugby matches:

*"Look at the pride and energy driven by 'ofa - see how it colours fields red in those international matches"* (talanoa, Ana Huni and Maleponi Taunaholo, Nuku'alofa, November 2023).

### Experience and knowledge, knowledge and resilience

One woman discussed several severe tropical cyclones that her family have lived through and believed that with each disaster they have learned something new about survival or rebuilding or derisking their lives and property. She believed that resilience comes from knowledge and that each trial brings new knowledge to support their survival. This woman leads a women's group focused on disaster risk reduction and preparation in Kolomotu'a.

### Fakapotopoto as resilience

*Fakapotopoto* – a socio-cultural value within Tonga/Tongans describes acting in a wise way – intelligently, prudently, with integrity and resourcefully using one's skill and effort to produce the best out of a situation or endeavour. *Fakapotopoto* can also describe acting in a frugal way. Participants highlighted *fakapotopoto* as a value closely tied to the concept of resilience – approaching things in a 'fakapotopoto way' could mean producing resources to meet current needs, and when used judiciously, leftover resources can be saved to provide superior resilience for families in future or in times of need.

Because resources, including 'spare' resources, can be turned into *mea'ofa* (in the context of resources, being gifts - practical and emotional) for others, people acting in a collective *fakapotopoto* way also lifts a community's collective resilience.

*Fakapotopoto* can also describe learning from stories of past hardship and effective mitigation or adaptation strategies, and using that knowledge to recover, with the minimal use of resources to maintain a resource reserve to then meet the next challenge or difficulty.

In a one-on-one talanoa with 'Ilavaha Tovehi (Nuku'alofa, April, 2023), she discussed how her family take the concept of *fakapotopoto* 'to the extreme'. She described examples of her mother pushing them to resist wasteful or 'showy' spending, and they actively encourage each other – whether family are in Tonga or overseas - to work hard, be resourceful and seek the boldest outcomes possible in matters of work and education – adding to the family's overall resilience. Herself and her siblings have benefited from living this value, reflecting on the professional successes of the family ('Ilavaha Tovehi, talanoa, Nuku'alofa, April, 2023). 'Ilavaha also spoke to how this value informs planning by her family for alternate futures – sharing that they have built a second home on their tax allotment as a 'plan B'.

### 'Ofa as resilience

'Ofa is love, unseen. It is regarded as a godly quality, but can be represented physically in acts of *me'a'ofa* e.g., through gifting (Kavaliku, 1977; Thaman, 1988). It can also describe a great depth of empathy for others. The values of *fakapotopoto* and 'ofa, like many other values, are interlinked - to have the means of 'ofa to give, one must practice *fakapotopoto* to accumulate the means to give 'ofa with (Vaioleti, 2006; 2011).

Socially, spiritually and culturally, 'ofa provides meaning to both individuals and a group and is a strong means of social (and practical) resilience. Many participants referenced acts of 'ofa for others in times of disaster, providing shelter and food to others without question, carrying elderly people uphill and attempting to stay with those with physical disabilities. The generous monthly gifting by villages in 'Eua to the people of Mango is another tangible example of 'ofa in action. Even the strict rules established by the King forbidding those from Mango from returning to their island for their own safety is an action underpinned by 'ofa.

As mentioned earlier in the report, as also in the case study for 'Atataa, the Town Officer displayed great 'ofa for his village people in his offer to stay with one man who hesitated in leaving 'Atataa, saying "if you stay, I will stay with you". The lack of reports of others expressing hesitations to leave their home islands (including in Mango and 'Atataa) is interpreted by the researchers as a form of 'ofa - an understanding that their decisions would impact the choices of others who would respond empathetically and with 'ofa (including to offer to not leave them alone).

## TONGA'S YOUTH AND THE FUTURE

In March 2023, a youth workshop was held in Halaleva, Tongatapu. Important context to share is that in Tongan culture, 'youth' can refer to anyone up to around the age of 35 years, depending on their marital status.

Around 20 youth joined the session which was focused on their beliefs and perspectives regarding how youth may be changing in Tonga, how climate change could impact on mobility, how mobility impacts youth (specifically), destination preferences, and definitions of resilience. For context, many of the youths' parents were there in support – the mothers sat outside with the youngest children, and the men gathered behind the hall for faikava.

### How are youth changing in Tonga?

The youth in the workshop mostly focused on more tangible or visible changes they noticed between themselves and their parents' generation. Things that were highlighted included clothing or attire (and increasing informality, including for church attendance), more modern haircuts and they types of food youth eat now (more imported food like chicken and rice, not traditional 'Tongan' food types).

### Beliefs around climate change and mobility

Youth in the workshop believed that climate change would lead to people having to leave their homes, though as a 'last resort' "at the end of the day, if there are no other choices, people will move".

The ultimate decider reported by youth would be moving for safety reasons (the preservation of life). Some also felt that the move, though climate related would also be in search of better opportunities elsewhere.

Youth felt that finances would be a key influence in a decision to move, stating that if it is not financially possible, "people will rather stay and rebuild". One group went on to say that people are reluctant to move from what they are used to.

Based on *Survey One* results for Tonga, ~50% of those aged 18-24 *Strongly Agreed* or *Agreed* that climate change would mean that their family will need to leave home at some point in the future. Those in the 25-34-year age group (can still be considered youth in Tonga) showed the strongest belief (~30% strongly agreeing) of all age groups.

### Mobility impacts on youth

The impacts of mobility on youth were described in a relatively balanced way – some referenced changes in lifestyle including food choices, saying that more unhealthy food choices exist overseas. Some felt that the weather in other countries – being less hot – is good for some peoples' health. Many referenced sadness and homesickness from being separated from friends and family.

Youth tended to believe that mobility could lead to conflict. One group referenced examples of new families moving into a new village:

*"If a new family moves into the neighbourhood, it's obvious that the local people or the old people there who already live in the village will treat them differently. It's usually because of jealousy."* This reflection is an interesting one as it mirrors some of the anxieties and assumptions (of resistance or even hostilities from incumbents to newcomers and/or landowners towards settlers) of non-youth participants, including those engaged through the women's workshop and in the future scenarios workshop.

## Destination preferences

Overwhelmingly, the youth in the workshop indicated a preference to move to New Zealand over other overseas destinations, if they 'had' to choose. Reasons given for choosing New Zealand included the weather, fresh air, and access to the latest technology. The majority said that they would not move to New Zealand now however, saying they are not ready to leave Tonga – they aren't ready to leave their family or their heritage. Their preference would be to adapt.

## Tongan youth on resilience

Youth in this workshop described resilience as a state of mind, with one group stating that it is encouragement and capacity to achieve a set target or goal. Others described it as active minds or even having a critical mind. Some shared that it depends on how a child is raised and whether they were adequately exposed to high expectations and encouragement to keep going until they reach a level of success.

Another group shared that resilience is the characteristic of perseverance, tenacity, being engaged and not giving up. One discussed an example of how the trees and plants immediately after a storm are battered and withered but after a few days they start to pick up again and strengthen.

# SAMOA REPORT

## 1. POLICY-MAKERS SUMMARY - SAMOA

The following is a summary of the key insights from the Samoa report on climate mobility. It is centred around answering the key research questions on current and future scale, pattern and impacts of climate-related mobility. It also covers topics such as mobility decision-making and population-specific definitions of resilience. Some of the detail and more on the assumptions behind this summary can be found in the report that follows this summary.

### SCALE

#### Scale – recent climate mobility

1. A report by the Internal Displacement Monitoring Centre (IDMC) suggested that approximately 14,500 people in Samoa had been displaced internally in the 13 years between 2008 – 2021 due to disasters, amounting to approximately 1,115 people annually. However approximately 5,000 of the internal displacements in Samoa were reportedly due to one event – the 2009 Samoa tsunami (Internal Displacement Monitoring Centre, IDMC, 2021). It is not possible to know how much of this mobility over the 13 years can be directly linked to climate change contributions, though IDMC have noted that globally, almost 89% of the total disaster-induced displacement in the same period was climate change related. First discounting those who moved following the 2009 tsunami, the annual average figure of 1,115 people is revised down to 731 people. Then accounting for the proposed climate change contribution of 89%, this suggests a figure of 650 people *displaced* through climate change contributions, annually.
2. Based on *Survey One* responses, 2% of the total 290 people in Samoa surveyed reported moving in the last five years where climate change was a factor. Scaling this figure up across the population of Samoa, this could suggest that with a population of 205,557 (Samoa Bureau of Statistics, 2021), 4,111 people could have mobilised internally in the past five years (~822 annually) due at least in part to climate change impacts. Very roughly assuming that half of the ~822 figure is mobility following sudden onset hazards, **the researchers suggest a total recent scale of ~1,050 people annually (~400 slow onset + 650 sudden onset)**. Factoring in household size and possible household level mobility, this figure could range up significantly.

#### Scale – planned climate mobility (next five years)

1. In looking towards the next five years, 5.5% of the 290 *Survey One* participants reported plans to move due to the impacts of climate change; a steep increase on recent mobility reportedly linked to climate change. This would translate to ~11,300 people (plus any dependents or household members) over the next five years (or at least 2,261 people annually – ‘at least’ due to the previous point about the impact of family mobility and household size on this number).
2. 6% of all *Survey One* participants (18 participants total) reported plans to move coastal-to-inland. Of these 18, 11 reported the mobility was also climate related. Of the remaining 7 people (representing ~2% of the overall participants in the survey) a number reported the movement inland was for safety, or to better access food. Given this, the researchers felt that these 7 from the survey could be counted as possible planned climate related mobility (as well). Recognising the limitations of sample size, scaling up this proportion to Samoa’s population, this would represent an additional ~4,111 people moving in part because of climate change factors in the next five years (or 822 more, annually). When factoring in average household size, this could range up the figure significantly.
3. Therefore, on scaling up the proportion of the survey participants who indicated plans to move in the next five years due to climate change to Samoa’s population (2,261 people annually) plus those who indicated their mobility direction to be coastal-to-inland but did not indicate the mobility was climate related but suggested some related reasons (822 people), the **total near future scale could be at least ~3,083 annually**. When factoring in average household size, this figure could range up significantly.

### Scale – recent or planned overseas climate mobility.

A clue towards the possible scale of overseas mobility in the next five years due to climate change impacts could be garnered from *Survey One* results. Of those who responded that they plan to move internally in the next five years due to climate impacts, half of these participants also reported onwards plans for overseas mobility (as well), representing 3% of total survey participants. While recognising sample size limitations, due to the relatively high proportion of those who are planning internal mobility due to climate change also planning onward overseas travel in the coming five years, one could assume that this indicated there could be connections between internal climate-related mobility and overseas mobility. When applying this proportion to the overall population of Samoa it could **suggest up to 6,167 people (or more, factoring in household size/dependents) could be planning climate related overseas mobility in the next five years (or 1,233 annually).**

### Scale – future climate mobility (climate change 'as projected' with considerations of additional impacts from 'more extreme' climate change)<sup>21</sup>

For defining a picture of scale for Samoa's future climate mobility, the research team has carved out a ranged figure of particularly climate-stressed people who, based on their attributes, capacities and situation could be more likely to be mobile in reaction to this stress, or find themselves in a state of involuntary immobility.

Applying an assumption of a ~1km coastal flooding incursion across Samoa (based off inundation modelling done for the Mulinu'u Peninsula and surrounds), at 0.3m sea level rise and with 50-year and 100-year return period storms, that could involve 61% of Samoa's total population (61% of Samoa's population resides within 1km of the coast, UNDRR and ADPC, 2022), totalling 125,390 affected or *climate-stressed* people. This has obvious limitations, for one, it does not factor in topographic influences around the highly variable coastline of Upolu and Savai'i. However, in support of this logic of coastal population exposure, though with a different hazard, looking at projections of damaging winds in Samoa for the next 50 years, mapping by GNS (Lin et al, 2022) suggests that ~half of both Upolu and Savai'i's total coastline (concentrated eastern and southern sides), extending inland at least 5km (based off map scale), have a chance of experiencing maximum one-minute sustained wind speed of ~200km with a 40% chance to be exceeded at least once in the next 50-years. For reference, Tropical Cyclone Evan in 2012, which displaced ~7500 people (IDMC, 2022) recorded peak wind speeds of 210km/hr (Government of Samoa, 2013). Further, looking at impact reviews of Tropical Cyclone Evan, mapping of homes affected across Upolu indicate a concentration of damage to housing on the coast, particularly the southern, central northern (centred around Apia), and the north/eastern coast. Crop damage and loss (totalling approximately 45% of agricultural area in Upolu) was mapped as most severe in the southwest, central and southern areas of Upolu (MNRE, 2013).

The IDMC reported internal displacement<sup>20</sup> from disasters in Samoa in the last 13 years to be approximately 14,500 people, however approximately 5,000 of these were due to one event – the 2009 Samoa tsunami (Internal Displacement Monitoring Centre, IDMC, 2021). It is not possible to know how much of the balance of this displacement over the 13 years can be directly linked to climate change contributions, though IDMC have noted that globally, almost 89% of the total disaster-induced displacement in the same period was climate change related. Discounting those who moved following the 2009 tsunami, then accounting for the proposed climate change contribution of 89%, this suggests a figure of 650 people displaced by climate change annually. If we assume, conservatively, that at least the same rate of annual displacement applies going forward, looking forward to 2050, this could add up to 16,900 people (i.e., not including those impacted and potentially displaced by slow onset hazards alone).

Another approach would be to consider the results of *Survey One*. Looking forward, 5.5% of the total 290 participants reported mobility plans at least in part due to the impacts of climate change, representing a not insignificant increase in

20. While a country report for Tonga done by the IDMC (2021) suggests a 64 per cent probability that in the next 50 years about 21,400 people in Tonga – a fifth of the current population - will be displaced because of cyclonic winds (IDMC, 2021), unfortunately, a similar country risk profile has not been produced yet for Samoa.

21. Given the lack of broad and specific hazard mapping with different SLR scenarios for Samoa, the researchers do not feel in a position to apply a new set of assumptions for 'more extreme' climate change on top of rough estimates already done for a picture of climate mobility scale for climate change 'as projected'. The researchers understand that climate-induced sea level inundation risk profiles for Samoa (as well as Tonga and four other Pacific nations) is being progressed via the PARTneR-2 project) and that once these are available late 2024, more specific estimates may be possible for different future climate scenarios.



the possible influence of climate factors on mobility over a <10-year period (if plans translate into action). Looking further forward, one could reasonably expect that figure to rise in the coming ~25 years (to 2050) as climate impacts progress. Being conservative however, if it is assumed that 5.5% of the population continue to plan and undertake mobility each five-year period in the coming ~25 years, that would scale to ~11,300 people each five years to (2050) to a total of ~56,500 people. Researchers assume this figure to represent climate mobility from slow onset hazards, assuming that planning for climate mobility is due to a present stressor (e.g., people would not plan to move for climate reasons in anticipation of a future tropical cyclone). Considering dependents and other household members, and UN population division projections on possible population growth by 2050, this figure could scale up significantly.

Based on these different approaches, and rough assumptions, the **number of people in Samoa who could be affected by future sudden and slow-onset climate stressors** (that could translate to mobility for some) could be in the range of **73,400-125,000+ people by 2050** (not factoring in UN population division population growth assumptions, nor applying possible household mobility assumptions to slow onset mobility figures).

The researchers wish to emphasise that these proposed figures of climate-stressed populations do not factor in complex knock-on effects from climate related damage that could contribute to broader internal or overseas climate mobility. In considering the impact of Tropical Cyclone Evan for example, the Government of Samoa estimated a loss of ~9,200 jobs which would have likely driven further mobility. The researchers also acknowledge however that these figures do not factor in the impacts of possible future adaptation efforts that could mitigate these numbers

### Dampening scale and/or increasing mobility choice in climate-stressed people

Fieldwork revealed that there were a range of factors that could impact (including dampening) scale and/or increase mobility choice for climate-stressed people in Samoa. Some examples include targeted infrastructure or engineering solutions for at-risk communities (e.g., river dredging by Lelata village), relocating inland or living between two or more aiga dwellings (as has been noted in multiple places in Samoa, including Satitua and Lalomanu villages), reducing red tape and/or the complexity of applying for financial support for rebuilding, replanting household gardens and/or adapting housing (e.g., in the case of the four families who ended up leaving Lelata as they could not secure funding in a timely way).

## PATTERN

This summary section combines findings from fieldwork as it relates to pattern of recent, current or planned mobility as well as future mobility.

### Why and when people may move

Generally, based on the findings of *Survey One*, those in Samoa have more mobility proclivity relative to what was seen in those in Tonga (i.e., generally the population was more enthusiastic about hypothetical scenarios about moving internally or overseas and were also planning mobility – both internally and overseas - at higher rates).

In future, based on many one-on-one talanoa and the outcomes of the future scenario workshop believed that food insecurity would be a major mobility driver in the near and more distant future. Participants believed that in both climate change 'as projected' scenarios and 'more extreme' climate scenarios, those living subsistence lives would be displaced from their villages due to environmental degradation and a resultant loss of household food security. The assumption across most future scenarios in that workshop is that the predominant flow of mobility would be rural-to-urban.

### Why people may not move (immobility)

Many mentioned a hesitancy to leave their land or village due to spiritual and ancestral ties to the land. Some mentioned immobility in the context of obligation – both obligation to people and to the land itself, often inextricably. Participants gave examples of feelings of obligation to remain with e.g., their mother who wished to remain on their land. Others gave examples of children wanting to remain in a place as their parents (or other ancestors) were buried in the land. A powerful story was shared by a family in Satitua who returned the remains of ancestors back to the land in the old coastal settlement, feeling like the ancestors wanted to rest upland with them though asking them to remain by the coast to take care of the land there on behalf of the family (see case study, *Satitua*).

Linked were insights around the land tenure type of climate affected areas. Those in Lelata, commonly affected by severe flooding, believed that the exit of four families following ongoing flood damage was in part due to the land being freehold land and thus an assumption around the spiritual connection (or lack thereof) to that land which may have made leaving the land, at least on one level, 'easier'. An interesting connecting insight is the progressive drop in the proportion of households living on customary land (and the concomitant rise in those living on freehold land) per census data (Samoa Bureau of Statistics, 2021).

Participants believed that those with little financial means will not move and will choose to remain in place and 'make do' with whatever material they can find to adapt their housing or shelter. Some in the future scenarios workshop assumed that some would set up in informal settlements with risks to health due to a lack of service connection. Those living through subsistence farming were seen as having less choice than others, with limited 'savings' to bridge gaps in income, and less capacity to raise capital (e.g., loans) through existing assets. Access to financial capital and social capital were heavily linked, with many families reporting that they were only able to rebuild because overseas family, particularly siblings, filled funding gaps for rebuilds following a range of natural and climate related disasters. Like in Tonga, many believed that with intensifying climate stressors, the notion of 'family' may narrow in future, with a resultant narrowing of mobility (and adaptation) options for many (more) people under climate stress in Samoa.

### Who may move

Based on responses to *Survey One*, both in terms of responses to questions about hypothetical future mobility and future mobility plans, the most (generally) 'mobility-willing' in Samoa were those in the 18-24 years age group. There appeared to be no gender dimension to mobility willingness in Samoa. Also in *Survey One*, of those reporting plans to move coastal-to-inland due to the impacts of climate change 3 of the 11 live/d in Savai'i – north and east coast locations (Asaga, Fatuvalu Safune and Fusi-Safotulafai), 1 lived in Apolima Tai and the remainder live/d in Upolu – predominantly south and north coast (Vaiala, Siufaga, Vaitele fou, Siumu, Faleasiu, Malie and Vailoa).

Those reporting plans to move urban-to-rural due to the impacts of climate change were residing in Palisi (Upolu) – Apia area, Vailima river runs adjacent, Vaimoso (Upolu) – also Apia area. Those reporting plans to move from rural to urban areas due to the impacts of climate change were residing in Saina (Upolu) and Matautu Lefaga (Upolu).

Based on one-on-one talanoa, including with local land experts, it was shared that if people are not comfortable where they are, it is not unusual for people to undertake inland mobility within village bounds. It was assumed that some people in villages that run more coastally (i.e., do not have land that extends inland) or those in villages than have relatively inhospitable inland topography (e.g., sudden steep cliffs), would be driven to leave their village land under high climate stress given a lack of options to move within village land.

In several group talanoa, including in the future scenarios workshop, participants believed that those with family members overseas would be the ones most likely to mobilise across borders.

Data highlights a possible pattern of *incoming* mobility from Samoans living overseas in response to climate or environmental events. Net migration data for Samoa shows an average net negative migration annually for records between 2005 and 2022 (Samoa Bureau of Statistics, 2022). An interesting shift is noted in the data however where migration shifted by ~15,000 people to post a rare net positive migration figure for 2009 (the year of the major tsunami). A modest but noticeable shift was also noted in 2012 (Tropical Cyclone Evan) where net migration was -1,419 compared to -4,423 the year before and -5,431 the year after. In 2018, the year of Tropical Cyclone Gita, again the data showed a pullback in overall net negative migration compared to the year before and after. In talanoa, participants reported that overseas family do return, sometimes temporarily to support rebuilds, and in the recent diaspora survey run for this project, responses indicated that around one-quarter of Samoans living overseas have directly supported family in Samoa with dealing with the impacts of climate change, with that support most commonly going to rebuilding a family home (or business).

### Who may not move

In *Survey One*, those in the 44-55 years old age group appeared to be most enthusiastic about staying in place based on their responses to statements "even if life got harder, I want to stay in [Tonga/Samoa] as long as possible" and "even if our home was destroyed in a strong storm, I wouldn't leave my home/homeland." As with those appearing to be more 'mobility-willing', there was no clear gender dimension.

In talanoa with families relocated following environmental disasters, many stories recounted the resistance of the older generation to leave their land. Some were ultimately convinced to move with the family by younger family members, others shared how they or their siblings have remained with a parent on their land, including once that parent has passed away.

In the future scenario workshop, participants believed those who were socially isolated, and who lacked family in villages and overseas would be less likely than others to undertake mobility under climate stress. Related, the assumed narrowing of family from extended to immediate due to increasing climate stress, was thought to contribute to limiting future mobility options for many. Those without the financial means were also expected to remain in place and 'make do'.

### How people may move

Many participants reported that climate (and environmental) mobility in future would reflect the current approach to living and other patterns of mobility in Samoa – past and current – that is, that the aiga live, and move, together. One participant referenced this communal approach to living and moving, in the relocation of villages in the Aleipata district, emphasizing that even on relocation people rebuild close to each other. She reported this happens when people move overseas as well.

While a high proportion (37%) of *Survey One* participants reported plans for overseas mobility in the coming five years, one of the team's in-country research partners shared that it became apparent that this mobility often did not intend permanency. Many reported verbally that they plan to stay for one or a few years before returning to Samoa.

### Where people may move

Most – from villagers to land experts and government leaders - believed that future climate mobility would occur within village land, with people mobilising inland and upland to escape coastal inundation and erosion. This assumption was reflected in a future visualisation where one man pictured himself and his family living in the mountainous part of their family land, with no one else around. A few raised the risk for those in villages that do not have inland land or whose inland land is too steep to reestablish a community. In this instance these people would reportedly disperse amongst extended family.

In *Survey One*, the most common direction of planned internal mobility was coastal-to-inland. In talanoa and in future scenario workshops, the shared assumption was that most mobility in future would be rural-to-urban – driven by reduced food and income security (income from the sale of grown food) given environmental degradation.

Also from *Survey One*, it appears that those in Samoa are planning overseas mobility more than internal mobility (37% versus 18%). However, the overall level of planned internal mobility falls far short of the rate of internal mobility reported for the recent past. Logically, one would assume that the 'business as usual' mobility drivers (work, education, marital mobility etc.) would not be dropping off significantly in the future, hence there could be an under-reporting of planned internal mobility and/or the proportion indicated is simply not representative of the actual level of mobility that may occur in the coming five years – from climate drivers and other drivers combined. This drop in planned mobility relative to recent mobility may also reflect an approach to internal mobility that is just less planned, i.e., internal mobility may end up looking similar to levels from the last five years, but at this stage, people are not necessarily planning it (and/or recent mobility was relatively reactive).

The overseas destination preference generally, and for those planning overseas mobility in the coming years, was Aotearoa New Zealand. Just over half of those planning overseas mobility in the next five years plan to move to Aotearoa New Zealand. Australia came up more commonly in Samoa than in Tonga as an overseas destination of choice (one-third indicated Australia as the planned destination), and in workshops and one-on-one talanoa, Australia was mentioned more commonly as a target destination than it was in Tonga. Migration data also backs this up noting a preference for New Zealand followed closely by Australia. Of the 16 *Survey One* participants who reported plans to move within Samoa in the next five years in part or wholly because of climate change, eight of these participants also reported plans to move overseas in the coming five years. Interestingly, seven of the eight planned to move to New Zealand.

In 'more extreme' climate change future scenarios, it was assumed that there would not be a material increase in overseas mobility as people would recognise that harsh climate change impacts would be global.

## Modulating scale and pattern in Samoa

Given some of the reasons for mobility or immobility, a series of actions could be taken to increase choice when it comes to climate mobility in Samoa.

This includes broader and more targeted investment in household food security, with common suggestions being the provision of greenhouses/growing tunnels that help mitigate climate impacts. Based on the experiences of those in Lelata, reducing the complexity and time involved in applications for funding for house repair and plantation recovery may have prevented the relocation of some or all of the four families who ultimately left. Many indirectly referenced the deterioration of the collective view and prioritisation of the extended family as loosening ties with village life and contributing to future urban flow in the context of future climate futures. Some believed that deliberately investing in revitalising Samoan value systems and practices in Samoa would modulate future mobility, and in the least, improve the coordination of mobility and outcomes.

The increasing proportion of households in Samoa residing on freehold land, not customary land, may impact the scale of mobility (due to weaker land/ancestral connections) and the pattern of mobility in terms of who is more likely to be mobile inter-village or overseas in future under climate stress, given those on freehold land do not have the same flexibility to relocate within customary land boundaries.

## Mobility decision-making

In terms of **village level decision-making**, particularly in examples of mobility following sudden onset hazards, participants in places like Lalomanu, and in Leauva'a (that has a historical mobility event ~5 generations ago) reported gatherings of the village Matai to decide on the next steps for the village. In terms of final decision making, many participants pointed to the Sa'o (title-holding Matai) as the final decision-maker in village-level matters, including in mobility decisions. Others reportedly involved in village-level decision-making processes include Tagata Matutua/Matua Tausi (elders) of the aiga, parents and family overseas. Matai residing overseas were reported to 'exert influence' through family there and that they have equal input into decision making as those [Matai] residing in Samoa. A number of participants, including land tenure experts in Samoa, as well as village Matai shared observations and at times, concerns, about the increasing complexity in land-related decision making at a village level owing to the splitting of chiefly titles across generations. More decision makers involved in decision making was drawing out many decision-making processes.

In terms of the role of women in decision-making at a village level, one participant, an academic leader and a daughter of a Paramount Chief in Savai'i, shared that 'there are very few decisions [made in the village] that women don't influence' and that if there is a decision made by Matai that the village women don't agree with, they will tell them to change it. This same participant reflected on the strength of traditional village structures and processes (including decision-making) in Savai'i compared with Upolu, believing that there is more importance or reverence placed on these processes in Savai'i (now) compared with Upolu, suggesting that the change may be due to overseas or western influences in Upolu more so than Savai'i.

There was clear consensus that for mobility decisions of **individual families**, that is made at the nuclear family level. Many reported it to be a balanced decision between 'husband and wife' or the 'father and mother', whereas in a women's workshop in Upolu, some women reported that the final decision would fall to the husband 'as the head of the family'. Others who influence the decision were named as family overseas and those not involved in the decision included those living in the house who were not blood relatives, and children (below the age of ~20 years, though they were kept informed). In the results of the diaspora survey (n = 56), ~50% of Samoans living overseas reported that they had been involved in some way in a decision regarding the mobility of family in Samoa.

At a **government level**, those engaged in senior leadership roles were not aware of specific planning for future climate mobility in Samoa. Some leaders expressed confidence that there was sufficient elevated land to accommodate future climate mobility, including at scale, should it occur. Others noted that there would be financial barriers and complexities given current experiences negotiating customary land access for work that could be deemed climate resilience infrastructure.

Regarding the factors most likely to influence mobility decision making in future, people reported reduced household level food security would be the main driver of mobility. In terms of trade-offs, many spoke of practical limitations dictating their decisions to move or remain in place and seek to rebuild. Families the researchers engaged in high-exposure locations

(e.g., Lelata) reported that their decision to remain in place or return was due to a lack of alternative options. Some took out loans while others sought funding from family overseas to fund their rebuilds. It was the perspective of some that starting from scratch would not be a financial reality for most who struggle with day-to-day costs and a low relative minimum wage. Many participants shared that Samoa is where they prefer to remain describing it as a peaceful and happier place to live, where they can eat for free, and where one lives freely 'without paying rent' on their own land.

### Who is particularly at risk/vulnerable (choice and outcomes)

It is apparent from the field research that there are groups of people who represent a higher level of risk exposure both in terms of mobility choice, and mobility outcomes. These include:

1. Those residing in villages without easily habitable inland or upland land (e.g., coastal land cuts rather than coastal to inland land cuts)
2. Those outside of community structures (e.g., those 'banished' from their village due to the breaking of bylaws) or who lack representation in key decision-making forums in the village e.g., the Village Council
3. Some of those residing on freehold land (in the sense that their options for relocation is relatively limited/financially constrained compared to those residing on customary land). 36% of households reported residing on freehold land in the 2021 census.
4. Subsistence farmers (14% of the population reported this as their 'employment type' in the 2021 census) given barriers to accessing finance or loans, and their deep dependence on the environment/their high vulnerability to a climate change degraded environment
5. Women, children and those with disability, including due to their exposure to domestic violence, access to materials for income generation (women) and general mobility challenges (those with physical disability)

It is critical to first acknowledge these groups as requiring possibly tailored or additional support, including income support or efforts to secure income continuity to either lessen the drive for mobility (if it is not their preference to be mobile), or on relocation (to limit negative impacts). In preparation for possible future mobility, for those groups at higher risk of housing or land insecurity (e.g., those in villages without inland or upland land extensions) planning support and assistance would be indicated.

### Resilience

In considering resilience through a Samoan lens, participants reflected that resilience is found in building (or returning to) self-reliance and self-sufficiency. Many spoke to concerns about the lack of cultivation of existing (land) assets, and the impact of having many in overseas seasonal work schemes for 'short term gain' was seen as being actively corrosive for longer term resilience potential for Samoa and Samoans.

Families who had undertaken internal mobility (coastal retreat) and rebuilds following flood damage highlighted the critical role of family (particularly siblings) overseas for covering the high costs of mobility and rebuilds and/or plugging the gaps in funding. As already mentioned, it was assumed by those in the future scenarios workshop that family overseas would be key in providing mobility options for family in Samoa in future. Also as already mentioned, one-quarter of the Samoan diaspora surveyed reported providing support to family in Samoa to help them deal with the impacts of climate change.

In engagements with women in Samoa, they highlighted the centrality of observing and practicing traditional knowledge and arts for cultural, social and spiritual well-being. One group in the women's workshop described traditional knowledge as their 'treasures'.

Participants in workshops (youth, women) and in one-on-one talanoa reported that the study and practice of Christian faith and fulfilling one's church duties was key to maintaining well-being. One group highlighted how seeking advice from God and dedication to reading the bible would support peaceful living in the village. Others believed that the Church has an important ongoing role to play in supporting the well-being of the community, including in a communication and counselling capacity. Youth in a workshop in Apia emphasised the need to 'hold on to the teachings and doctrine of Jesus Christ' as their best hope to deal with incoming change and disruption.

A few participants spoke specifically on the role of traditional Samoan values and systems for resilience. One group in the future scenarios workshop described a positive future where there was a dedicated effort to reinvigorate the family unit, the practicing of Samoan values and strong village protocols (and resultant increases in village autonomy) had been reinstated. In contrast, more negative future scenarios described the detrimental social impact of dissolving traditional social and cultural structures and systems (e.g., the Matai system). A loss of reverence or recognition for these structures, the decision-making processes were assumed to lead to the breakdown in collectivism at the village level, resultant social discord and social fracturing/separation, and potentially providing a further push from rural villages to urban centres.

## IMPACTS

Social, cultural and economic impacts of current climate (or environmental) mobility and possible future climate mobility were numerous.

In terms of cultural impacts, evidence from previous disasters suggests a weakening of church contributions and a subsequent weakening of church in its role as a social safety net. Participants referred to future risks of a loss of language and traditions as language tied to land and cultural practices tied to locations (and as people lose access to materials like pandanus for weaving and/or as practicing cultural traditions is deprioritised in favour of meeting day to day needs. Many participants referenced risks related to weaker village systems and the matai system, leading to (even) higher levels of rural to urban mobility. One participant considered the cultural and social impact of no longer being able to configure villages in the traditional way (with the Paramount Chief and their orator in the centre in new contexts (e.g., numbered roads).

Socially, participants were concerned about the impact of high climate mobility futures on mental health and the need to prioritise mental preparedness, reflecting on the long lead time for this (compared to practical preparation). Others considered the impacts of high rural-to-urban flow (driven by environmental degradation and food/income insecurity) and what it would mean to take away people's village support systems and structures for physical and mental well-being. A number of participants in a range of settings believed that high levels of mobility, relocation and the disruption and uncertainty this caused would see a further uptick in domestic violence. Others reflected on existing contention around land, the reduction in food growing land available around Upolu and the likelihood of future land-based internal conflict (village to village, family to family).

Economically, most concerns were around income continuity, particularly for those without financial reserves (e.g., subsistence farmers). Those in relocated communities in the district of Aleipata reported that a reduction in income generation options following relocation inland was their greatest and their ongoing concern (and a source of other issues, including increased violence in the home).

### Priority efforts to reduce harm

The report raises a number of options to reduce harm from future possible climate mobility. These ideas came through talanoa as well as outcomes of the future scenarios workshop. Priority actions included

- **Ongoing community awareness campaigns, with easy-to-understand information that is specific about the impacts of climate change** for different areas and populations of Samoa, with practical training for e.g., adaptation and paired (financial) support and equipment where possible or indicated.
- **Target planning to highest risk groups.** Sub-groups within Samoa have been identified as having differential vulnerability (regarding mobility choice and mobility outcomes) in the context of different climate mobility futures. These sub-groups include those residing in villages without inland and/or upland land extensions, those whose inland land extensions are inhospitable, those with low or no Village Council representation, women, those with disability and children, subsistence farmers (formal) as well as villages with high participation rates, and even those residing on freehold land given their relatively lesser options for internal mobility that those living on customary land have access to. Planning for reducing harm from different mobility futures should factor in differential vulnerability and support could be prioritised or sequenced accordingly.
- **Mental preparation, psychological support.** Though awareness campaigns will go a way to beginning mental preparation, there are opportunities to target those at higher risk of mobility (or immobility) to begin discussions around priorities, options and possible approaches or responses to climate stress in future.

- **Support the use of assets in Samoa for longer-term outcomes.** Many pointed to a weakened baseline of resilience in Samoa, in large part due to the under-cultivation of Samoa's vast land assets. Participants believed that returning to traditional forms of work (on the land) would reestablish critical self-reliance and better prepare Samoa for a less dependent climate changed future.
- **Invest in Samoan/Pacific populations already living overseas.** Those in Samoa as well as the diaspora emphasised the need to address existing inequalities in Samoan (and Pacific) populations in places like Aotearoa New Zealand in order to strengthen the foundations of those likely to play a critical role in the future receiving and integrating those leaving places like Samoa due to the impacts of climate change.
- **Broaden diaspora engagement through the Diaspora Relations Unit.** Samoa has a head start on Tonga in terms of formal (government-led) diaspora engagement. Given the results of the diaspora survey indicating ~one-quarter contribute directly to addressing climate impacts in Samoa at the family level, there is an opportunity to be more strategic in engaging diaspora in this critical adaptation work. 10% also reported climate change support at a village or island level (a lot lower than the Tongan diaspora), indicating there is room to increase this contribution through better communicating channels for this.
- **Explore ways to revitalise interest in, and the practice of Samoan values** to help restore the family unit and build social resilience to upcoming change/s.

## 2. NOTE ON OTHER PRODUCTS AVAILABLE

This report, though a coming together of all major insights from the research project in Tonga and Samoa, is one of a number of project outputs, or 'products'. Throughout this report, there will be reference to these different products to note where there are connections and deeper insights to be shared through accessing these products. A brief summary of the other research products available are as follows:

**Recent shifts, future signals:** A detailed overview of the latest existing data and projections to 2050 for population and trends of note in the economy, migration and environment data.

**The mobility-willing and the steadfast-stayers (Survey One):** outcomes of a survey of 290 people living in Samoa (and 305 people living in Tonga) that reveals general mobility 'willingness', beliefs around future climate mobility, overseas destination preferences, and recent and planned mobility, including climate related mobility (internal – including planned direction - and overseas – including planned country).

**Six Kōrero:** New insights from interviews with six prominent Māori on future Pacific climate mobility, including possible implications, risks and opportunities, and a set of principles for engaging on this topic further.

**The Visions:** Powerful and emotive stories from one-on-one visualisation sessions on the future/s of Tonga and Samoa

**Moving Futures (the scenarios):** Output from the future scenario workshops held with leaders in Samoa and Tonga, detailing four different futures each, and revealing key patterns, scale influences as well as risks and opportunities.

**The Diaspora:** Perspectives and insights from the Tongan and Samoan diaspora (in New Zealand, Australia, the USA and Hawai'i, including their unique contribution, influence and potential in a climate mobile future.

**Landed:** A collection of insights from Tonga and Samoa based on talanoa on land issues, risks, trends, and opportunities in the context of climate mobility.

**(Im)movable women:** Findings from engagements with women, including women leaders, in Tonga and Samoa re: climate futures, unique mobility impacts, risks and opportunities.

## 3. BRIEF CONTEXT SETTING

Samoa's current population sits at approximately 206,000 people. Based on UN Population Division assumptions (medium range), Samoa's population may grow significantly by 2050 to 320,000.

The median age for those in Samoa is currently 21 years old. By 2050, the expectation is that the median age will reach 25 (still younger than New Zealand's current median age of 37).

Over the last decade, Samoa has mostly posted annual net negative migration, with the main international destination for intended permanent migration being Aotearoa New Zealand, followed closely by Australia.

Environmentally, Tonga and Samoa face similar climate impacts in terms of projected sea level rise, temperature increases, and more intense (though possibly less frequent) tropical cyclones (CSIRO and SPREP, 2021). Most of the urban area of Apia sits ~1 metre above sea level and is subject to periodic flooding during heavy rain.

Recent and past environmental mobility events in Samoa, such as the 2009 tsunami, the eruption of Mt Matavanu in the early 1900s, and recent tropical cyclone events such as Tropical Cyclone Evan in 2012, provide useful transferable learning on decision-making, impacts and patterns of possible future climate mobility and the researchers intentionally targeted these populations through fieldwork for this reason.



## 4. RECENT AND PLANNED CLIMATE CHANGE MOBILITY

This section sets to answer one of the key research questions – what is the current *scale* and *pattern* of climate mobility? The research team has interpreted 'current' to include recent presumed or reported climate change mobility (particularly in the last five years), as well as reported planned (or projected) climate mobility (in the next five years). The team has drawn from unique insights gathered from *Survey One: The Mobility Willing and the Steadfast Stayers (Survey One)* where 290 participants living in Samoa shared details about their recent and planned mobility, and compared these findings with key reports, data and projections from organisations such as the Internal Displacement Monitoring Centre (IDMC).

For planned climate mobility, the research team has considered the lenses of 'sudden' and 'slow' onset climate mobility, with scale projections from IDMC mostly related to sudden onset hazards (wind damage/tropical cyclones) and the responses to *Survey One* most likely to be an indication of mobility responses to slow onset hazards (e.g., sea level rise, erosion). This is for a number of reasons, both logical and contextual. Logically, one would assume that a person or family would typically not pre-emptively plan to move in anticipation of future sudden onset hazards such as tropical cyclone damage. Contextually, the research has clearly shown that the Samoan approach to action typically requires a present stressor. The continuous and progressive nature of slow onset hazards would suggest that any planning happening now for climate mobility in the short term is due to existing, ongoing slow onset hazards and their impacts (e.g., declines in livelihoods).

Some of the scale projections have found further support in insights garnered from talanoa held in Samoa over the course of the project where specific examples of climate mobility have been shared with the researchers by local or government leaders and by those who affected by climate impacts (e.g., frequent flooding) themselves.

In terms of current pattern, the researchers have looked beyond just climate mobility (given scale is relatively low at this point) to include environmental mobility events (particularly the 2009 tsunami in Samoa) given there will be some valuable insights from looking at these examples in terms of who moves, where people move, as well as how they move.

### 4.1 SCALE

#### Scale: recent climate mobility

The Intergovernmental Panel on Climate Change (IPCC) acknowledge that climate change will result in movement of 'stressed' people, while admitting there is low confidence in the ability to assign direct causality to climatic impacts or to the numbers of people affected.

New Zealand's National Institute of Water and Atmospheric Research (NIWA) has drawn closer connections between climate and social impacts through consideration of a loss of habitability. Duvat et al. 2021 (cited in Campbell, 2022) name five habitability pillars: sufficient and safe land, freshwater, food, settlements and infrastructure and sustainable economic activities. Inhabitability, though needing to be contextually defined to include relevant social and cultural elements – is seen as a more likely ultimate driver of climate mobility. Bardsley and Hugo (2010) state that mobility is often less a function of immediate stress resulting from the onset of a natural disaster than a proactive diversification strategy taken in anticipation of such events in the future, or to cope with long-term declines in livelihood. Concerningly, the level of anticipation of climate related mobility in the coming five years increased steeply in *Survey One* results for participants in Samoa (from a factor in just 6% of reported recent mobility to a factor in 33% of reported mobility planned in the next five years).

In *Survey One*, 290 Samoans were surveyed to gather data on the current scale of mobility where climate change was identified as a factor. Based on survey responses, 2% of the total 290 people surveyed reported moving in the last five years where climate change was a factor (or 6% of those who moved in the last five years reported climate change was a factor). Scaling this figure up across the population of Samoa, this could suggest that with a population of 205,557 (Samoa Bureau of Statistics, 2021), 4,111 people could have mobilised internally in the past five years (~822 annually) due at least in part to climate change.

This figure provides an early indication of the potential scale of recent climate mobility, however there are contextual factors that must be considered in the interpretation of these results.

1. An average general understanding of climate change and how it does, and does not, manifest needs to be considered in people's identification of climate change as a factor in their mobility. For example, while participants accurately identified sea level rise, stronger storms and seasonal unpredictability as impacts of climate change, 10% of participants responding to the survey believed that climate change impacts tsunami and volcanic eruption frequency and 33% responded 'other' providing suggestions such as more frequent earthquakes and air pollution. NB, the majority of those responding 'other' used the opportunity to highlight the issue of heat/temperature as a key manifestation of climate change in Samoa.
2. For those who reported it, climate change was indicated to be a *factor* in recent mobility decision-making, not necessarily *the* deciding factor.

Given these results, and this context, it may be more accurate to assume that environmental hazards (as opposed to specifically climate change impacts) has been a factor in 6% of recent mobility (reported as climate related) in Samoa.

To sense-check this figure of ~822 people undertaking climate (or at least environmentally) related mobility within Samoa annually based on *Survey One* responses, the researchers considered other sources of data and projections on climate/environmental mobility in Samoa. A report by the Internal Displacement Monitoring Centre (IDMC) suggested that approximately 14,500 people in Samoa had been displaced internally in the 13 years between 2008 – 2021 due to disasters, amounting to approximately 1,115 people annually. However approximately 5,000 of the internal displacements in Samoa were reportedly due to one event – the 2009 Samoa tsunami (Internal Displacement Monitoring Centre, IDMC, 2021). It is not possible to know how much of this mobility over the 13 years can be directly linked to climate change contributions, though IDMC have noted that globally, almost 89% of the total disaster-induced displacement in the same period was climate change related. First discounting those who moved following the 2009 tsunami, the annual average figure of 1,115 people is revised down to 731 people. Then accounting for the proposed climate change contribution of 89%, this suggests a figure of 650 people displaced by climate change annually (sudden onset, climate related) – slightly less than the ~822 annual figure suggested by the results of this research's *Survey One*. Important to note that this figure of 650 people is disaster related and would not capture mobility due to slow onset hazards. One would assume that the ~822 annual figure from the survey in contrast would include mobility following both sudden *and* slow onset hazards.

In further testing the *Survey One* climate mobility figure of ~822 people annually, the researchers reflect on assertions by Campbell (2022) that individual and family migration are likely to be the dominant form of climate change mobility in the Pacific in terms of numbers involved. It is critical to note that the survey participants in Samoa were mostly adults (20% of participants were 24 or younger) and many would be parents or heads of household. This figure of ~822 would not factor in the e.g., children within a family that would move along with the survey participant. Given the average household size in Samoa is 6.6 people (Samoa Bureau of Statistics, 2021), total climate mobility could be significantly higher than 822 annually (e.g., could be 5,400 or more annually) depending on the level and timing of associated family or household mobility.

### Scale: planned or projected mobility (the next five years)

In looking towards the next five years, 5.5% of the 290 *Survey One* participants reported plans to move due to the impacts of climate change. An increase on recent mobility reportedly linked to climate change. This would translate to ~11,300 people (plus any dependents or household members) over the next five years (or *at least* 2,261 people annually – 'at least' due to the previous point about the impact of family mobility on this number).

Another survey response of interest linked to planned mobility in the next five years was the reported direction of travel (whether they believed climate change would be a factor in their planned mobility, or not). Of the 47 survey participants reporting plans to move internally in the next five years, the most common direction was coastal-to-inland – with 38% sharing that is their planned direction of mobility. One could assume (perhaps more so than other options directions of mobility, e.g., rural-to-urban) that given this direction, this mobility could be more directly climate change driven. Aside from those responding 'other' (where the most common reports were moving to stay with a spouse's family), the next most common direction was urban-to-rural (13%). This could also have dimensions of climate impacts, especially given the urban centre of Apia sits on average ~1m above sea level (MNRE, NIWA, 2022).

6% of all *Survey One* participants (18 participants total) reported future plans to move coastal-to-inland. Of these 18, 11 reported the mobility was also climate related. Of the remaining 7 people (representing ~2% of the overall participants in the survey) a number reported the movement inland was for safety, or to better access food. Given this, the researchers felt that these 7 could be counted as possible planned climate related mobility (as well). Recognising the limitations of sample size, scaling up this proportion to Samoa's population, this would represent an additional ~4,111 people moving in part because of climate change factors in the next five years (or 822 more, annually). When factoring in average household size, this could range the figure up significantly.

While a country report for Tonga done by the IDMC (2021) suggests a 64 per cent probability that in the next 50 years about 21,400 people in Tonga – a fifth of the current population - will be displaced because of cyclonic winds (IDMC, 2021), unfortunately, a similar country risk profile has not yet been produced for Samoa.

Therefore, on scaling up the proportion of the survey participants who indicated plans to move in the next five years due to climate change to Samoa's population (2,261 people annually) *plus* those who indicated their mobility direction to be coastal-to-inland but did not indicate the mobility was climate related but suggested some possibly related reasons (822 people), the total near future scale could be at least ~3,083 annually. When factoring in average household size, this figure could range up significantly.

### Scale: recent or planned overseas climate mobility

Recent or planned climate mobility overseas is harder to quantify. In the diaspora survey for example (56 Samoan people living in New Zealand, Australia, the United States and Hawai'i), none reported relocating due to environmental impacts or climate change.

A clue towards the possible scale of overseas mobility in the next five years due to climate change impacts could be garnered from *Survey One* results. Of those who responded that they plan to move internally in the next five years due to climate impacts, half of these participants also reported onwards plans for overseas mobility (as well), representing 3% of total survey participants. While recognising sample size limitations, assuming due to the relatively high proportion of those who are planning internal mobility due to climate change also planning onward overseas travel in the coming five years, one could apply this proportion to the overall population of Samoa to **suggest up to 6,167 people (or more, factoring in household size/dependents) could be planning climate related overseas mobility in the next five years (or 1,233 annually)**. Though destination will be covered in the 'pattern' section, the majority were planning mobility to New Zealand or Australia.

## 4.2 CURRENT RISK FACTORS, DIFFERENTIATED VULNERABILITY AND DRIVERS OF SCALE FOR CLIMATE CHANGE MOBILITY

### Geographic / population group vulnerability

In mapping done by MNRE and NIWA (2022) as part of a study on the Vaisigano river and flood risk, flood risk and relative risk areas for human safety and building damage was assessed. The areas of highest human safety threat was concentrated around the area of Lelata, Upolu with assessments of either medium threat to human safety or extreme risk to human safety. Those engaged in Lelata report ongoing flood risks for many following heavy rain and the relocation of four families from the area due to flood impacts.

Modelling done in 2014 under The Centre for Australian Weather and Climate Research (Hoeke et al, 2014) mapped out different scenarios of sea-water flooding in 1-in-20 year, 1-in-50 year and 1-in-100-year events, combined with different sea level rise scenarios. Modelling showed that by 2055, increases in sea level (+0.3m) would result in a 1-in-50-year storm tide completely inundating the Mulinu'u Peninsula. Other areas of Apia identified as being at 'considerable risk of flooding' during tropical cyclone storm tides include the coastline from Fugalei to Vaiusu to the west of Mulinu'u Peninsula and Vaipuna on the eastern side of town (under higher sea level rise scenarios) (Hoeke et al, 2014).

In a country risk profile assessment, done under the Pacific Catastrophe Risk Assessment and Financing Initiative, completed by GNS (Lin et al, 2022) it highlighted the eastern and southern coasts of both Savai'i and Upolu being most exposed to one-minute sustained wind speeds (of 200km+), with a '40% chance to be exceeded at least once in the next 50 years' (Lin et al, 2022). There were areas of high exposure around Apia as well, particularly on Mulinu'u Peninsula and around Vaipuna to the east.

This same study mapped annual average loss for all assets (buildings, infrastructure and crops) due to tropical cyclones and earthquake shaking, highlighting Apia and surrounds as well as the eastern end of Savai'i and both the eastern and western ends of Upolu as having the highest annual average loss. As highlighted earlier, climate mobility is likely to be driven through pressures on habitability. These studies suggest a possible differentiation of habitability risk within Samoa, with high exposure and loss risks concentrated around Apia (and especially the Lelata area), the eastern and western ends of Upolu and the eastern end of Savai'i.

### Scale: risk factors and drivers of current climate mobility

Through five fieldwork visits to Samoa in 2023 and early 2024, one-on-one talanoa as well as workshops were held and a few contributors to recent, desired and planned climate mobility were documented. These risk factors were mostly identified through talanoa with those in areas identified by government contacts have been particularly impacted by e.g., frequent flooding events (e.g., people in Lelata) as well as through talanoa with leaders who have oversight at a village, island group or national level. Note, the majority of those engaged to talanoa reported that climate induced mobility is at a very low level currently (if happening at all) and shared that the majority of mobility happening within Samoa is driven by economic factors as well as family reasons (relocating to a spouse's land elsewhere in Samoa, family problems driving mobility to alternate land, as reported in *Survey One* results). This perception is not surprising given the results of *Survey One* that suggested that just 2% of *Survey One* participants had undergone mobility in the last five years where climate change was a factor. Where climate relevant factors influencing current mobility have been shared with the researchers, they typically fall under the following two categories:

#### 1. Inability to access funding/assistance for rebuilding in a timely way

Lelata, Upolu which sits next to the Vaisigano river often floods with many family homes damaged (repeatedly). Families engaged by the researchers reported that of the 40 families living in the area, four families ended up leaving Lelata as they could not access the means to rebuild. It was assumed that these families moved elsewhere in Apia to live with extended family.

Interestingly, those the researchers spoke to didn't believe that the frequent and severe flooding itself was necessarily driving mobility decisions ("*nothing has really changed there. People don't move because of the flooding. Youth move overseas for work opportunities and the older people stay behind*"), but the practical inability to fund a rebuild.

#### 2. Household level food insecurity (and related income impacts)

Anecdotal reports from an agriculture consultant working with communities across Samoa shared his concerns that climate-impacted household food security is a significant risk and is currently a driver in mobility from rural to urban centres as people seek alternate ways to feed their families and earn an income.

In a range of talanoa, in Upolu and Savai'i, village mayors, High Chiefs, church leaders and other community leaders shared concerns about the impact of climate change on productivity, saying that severe heat prevents people working in the plantation, or limits people's work hours to the early hours of the morning only. Some reported new rules made within a village (see case study, *Leauva'a*) where it is no longer allowed to fell a tree for crop planting, with crops being planted now in the shade of the trees.

*"Most people don't work [in the plantations], maybe it's too hot in the sun now? They just want to eat breadfruit because it's easy and grows wild – but now there's no breadfruit, the season is late"* (Rev. Aokuso, Savai'i, Samoa)

Though small numbers, the results of *Survey One* indicated that a small number of people in Samoa are moving for better access to food.

### 4.3 WHAT COULD DAMPEN CURRENT SCALE AND/OR WHAT ADAPTIVE APPROACHES HAVE BEEN USED IN THE PAST OR ARE CURRENTLY BEING USED THAT ARE MITIGATING SOME OF THIS MOBILITY (SCALE) RISK?

One-on-talanoa with those facing high levels of climate hazards (e.g., families based in Lelata) as well as those involved in resilience building work in Samoa, and on engagement of those who have previously undertaken mobility following environmental drivers, a series of possible mitigants were surfaced.

#### Relocating inland or living between two or more aiga dwellings (fale a lua)

Fale a lua is the Samoan concept for having two (or more) places of home or rest, giving mobility optionality to move or shelter in different places depending on the situation, to maintain aiga resilience when or if needed.

In talanoa with a family in Satitoo (Aleipata district), they shared how they discussed as a family moving inland and upland within their village bounds following the 2009 tsunami, and while they are happy and content in their new setting, they report regularly returning to the site of their original house down by the coast to sweep and clean around the area. In a women's workshop in Lalomanu – another village that relocated inland and upland following the 2009 tsunami – participants shared how they have options to move further inland and upland within their village land, should climate change impacts require it. Others shared how it can be common to live in more than one dwelling within village land and customary land tenure allows for this flexible approach to family living. Examples of this were shared for those communities or villages who had partially or wholly relocated inland and upland following the 2009 tsunami. Participants in Satitoo shared how around 10 families and more commonly the younger generation of those families, have returned to second or original dwellings closer to the coast.

#### Targeted infrastructure or engineering solutions for at risk communities

In talanoa with a family in Lelata, they reported that they lobbied a well-connected MP just prior to an election to help with river dredging and sand banking near their property. They reported this helped significantly and they wished it could have been done sooner “the river has always flooded, in 2020 we had eight floods”.

This participant reported that they believe that the issues and risks to those in Lelata from the river are well known but that support is not well targeted or sufficient and they believed that the support received at the time was partially politically motivated given the timing of the election.

Others engaged through the research noted issues with progress on the Vaisigano river wall, from government leaders to affected community members, noting very slow progress through the phases of development.

Two senior government leaders from the Ministry for Works, Transport and Infrastructure (MWTI) reported plans for an upstream dam project to manage flood risks (with concomitant benefits, including for renewable energy generation) however planning was early stage at the time of fieldwork.

#### Reducing red tape and/or the complexity of applying for financial support for rebuilding, replanting and/or adapting housing

Two different families the researchers engaged reported that four families left Lelata as they could not complete the intensive processes and paperwork involved in applying for recovery assistance.

It was reported that they moved to other areas/homes in Samoa, with participants assuming that they moved into extended family homes elsewhere in Apia as they see them around town sometimes.

*“...they cleared out as could not salvage [anything] and gave up... several houses have been abandoned... there was no support to rebuild... they are trying to sell the land and get money but I don't think they will come back... most land in Lelata is freehold and not regarded as ancestral”.*

One resident of Lelata, shared their challenges with accessing funding support for replanting following (recurrent) flood damage to their family land:

*“There are options like the provision of loans for greenhouses and other supports for self-sufficiency through the Green Climate Fund... lots of people took it up; I tried but it was too much effort and a lot of work was involved; you have to go get a quote from the supplier and then they look through your quote and then send it to the funder to pay the supplier... [there’s] a lot of bureaucracy and signing of forms needed so I was not into that. I applied for \$19,000 tala; I wanted to raise planters but needed a permit and quotes and it was just too much... the hassle... you have all these agencies doing bits of projects and someone needs to show you how it all works; they gave me paperwork and I gave it a miss. It was too intensive.”*

This family shared that they took out a loan of WST\$100,000 to rebuild their home, with modifications to lessen the impact of future flooding. They are close to paying off this loan after nearly a decade.

Further, food security and productivity were a concern raised by a number of village and community leaders in Samoa, and many connected food security risks and challenges with climate mobility risks in the near future. In the future scenarios workshop, one participant who is currently working on a resilience-focused community consultation project, believed that without support to purchase food growing tunnels for households, food security issues in rural villages will soon drive high mobility into the urban centre.

One woman, a village chief, showed the researchers photos of her new food growing tunnel/greenhouse, reporting that since having the tunnels she has plenty of food for her family and has a thriving small business that she and her son work together on, selling her excess produce.

In revisiting considerations of habitability, climate stressors and mobility, it is worth noting that 64% of those in Samoa who took part in *Survey One* ‘Strongly agreed’ or ‘Agreed’ that ‘life is easy right now – my family have work/study, plenty to eat and are comfortable’. This is materially lower than what was reported by participants in Tonga (where 84% strongly agreed or agreed). This could hint at a lower sense of resilience within the population, and existing habitability concerns. Just over half of participants who responded to a hypothetical scenario stated that they would rebuild their house (as opposed to moving elsewhere) even if their home was destroyed in a storm, again materially lower than responses from participants in Tonga (where two-thirds reported they would rebuild). This could suggest a range of things however, not just resilience or intent to remain in place, including having more options to relocate in Samoa, within aiga land, rather than rebuild in the original location.

#### 4.4 CURRENT CLIMATE CHANGE IMMOBILITY/MOBILITY AND CHOICE

This section speaks to some of the themes that have come up regarding recent and historical mobility and the presence of choice (or not).

##### Land tenure and ownership in high exposure communities and immobility

In conversation with a land tenure expert in Samoa, he shared his belief that the flexibility of customary land tenure in Samoa will be (and perhaps already has been) an asset in allowing those on customary lands to move and adapt to change.

In talanoa with a male participant in Lelata – an area that is reportedly majority freehold land - he shared how following the particularly destructive floods of 2012 the family was traumatised and ‘moved around a bit, renting here and there but it wasn’t the same’. They decided to return to Lelata as they had no other option:

*“We decided to stay there in Lelata and rebuild... it’s easy to say, that you are not safe but you are part of it, the land... and where else would we go... there is no other option.”*

Interesting context for this participant and his family are that they are originally from one of the villages in Savai’i that were evacuated to Upolu. His grandfather purchased several pieces of land across town, saying that they were one of the original families in Lelata. This history complicates matters no doubt for him given more complicated links back to their customary land in Savai’i (noting that the people of Leauva’a reported going through a challenging process with the Land and Titles Court to secure in 2000 reaccess rights to their original village).

In talanoa with another family in Lelata – a Matai and emergency services worker, shared:

*"I've been living here since I was born. I have not thought about leaving or going anywhere, we just wanted to rebuild... people in the village own their land so they don't want to leave their land for any period of time."*

This participant's wife, shared how other families have nowhere else to go, and that staying in Lelata is the only option they have - whether they can rebuild or not. She reports that some who are unable to fund rebuilds have just had to 'make do'.

### Obligation and immobility

Similar to some reports in high exposure communities in Tonga, reading between the lines in talanoa with a family in Lelata, they suggested a level of obligation to stay with and care for their elderly mother as well as the land itself. This participant shared how their siblings live and work in Australia and New Zealand

*"There is just me and mum but everyone else is away... my siblings, I hope they come back and stay at the house and look after the land... that's the hope but they are doing well and they are well established [overseas]"*

In a small group talanoa in Apia in November 2023, one couple discussed how one of their older sisters (and husband) remained in the home village in Savai'i, in order to stay with their mother, there. Their mother is now buried in the land, and they report that their sister doesn't want to move and leave their mother.

### Access to capital

Several participants reported that a blocker to relocating is that people simply cannot afford to start again. One woman in her 70s reflected on all that she has built in her time and that it would be 'very hard to start from scratch'. Another participant reflected on how challenged people already are with making ends meet and that there is no 'extra' available to redefine a new space or place to live. Also reflecting on how people move – as a collective – this participant shared that it would mean starting the family from zero (as opposed to being eased into a new location through staying with extended family).

One senior government leader reported that the minimum wage in Samoa and the current high cost of living would be a blocker for people looking both to rebuild and/or relocate. Following flooding damage for example, another senior government leader within the Ministry for Transport, Works and Infrastructure reported that compensation is not typically provided to families unless they reside on land used by the government. Participants in Lelata confirmed that they received no compensation or funding for rebuilding. Those in Lalomanu and Satitua reported a one-off payment of between WST\$10,000 and \$18,000 though they say this was not enough to pay for a house 'with walls'.

Response to *Survey One* suggest a baseline level of economic stress in the population. In response to the statement *"life is easy right now – my family have work / study, plenty to eat, and are comfortable"* just 19% responded *Strongly Agree* (28% responded either *Disagree* or *Strongly Disagree*). For comparison, in Tonga, 36% of participants responded *Strongly Agree* to this statement.

### Spiritual ties and barriers

A few participants highlighted the different relationships held by people in Samoa depending on whether they own the land or reside on customary land. Both can drive a level of immobility but for different reasons.

*"Yes, there are people who own their land so obviously [they stay/rebuild] as it's an investment, and there are people who feel differently, about belonging to a land. A high number of people who live on traditional land... particularly older people... have a deeper connection to that place."*

In Lalomanu participants shared that 'we are the people of this land', and that their preference is to remain where they live freely.

In Lelata, though it is freehold land, one participant shared:

*"We are original settlers but other families bought land from someone else and have no attachment like us... it's just land they have and no connections but for us it's deeper."*

In Satitua (see case study), one family shared how their elderly father was initially insistent on remaining on the coastal end of the village land where their house had been, and family had to convince him to move with them upland. This same family shared how they frequently travel down to the coast to sweep and tidy around the foundation of their original coastal home, and also shared a moving story about returning the remains of ancestors to their original burial sites close to the coast, believing that those returned didn't want to go back to this burial area but that they told them they have to remain to 'look after the land'.

### Family and choice

In a women's workshop in the village of Lalomanu, participants often reported that their mobility options are facilitated through family, and particularly the presence of their children, overseas. A number of women reported children in New Zealand and Australia (including Perth).

Other participants shared that mostly when people move overseas they first stay with extended family to find their feet before moving out to their own accommodation.

## 4.5 WHAT IS THE CURRENT PATTERN OF CLIMATE MOBILITY/ENVIRONMENTAL MOBILITY IN SAMOA?

As mentioned, in terms of current pattern, the researchers have looked beyond just climate mobility (given reported scale is low at this point) to include environmental mobility events (such as relocations following the 2009 tsunami, as well as an example of relocation from Savai'i to Upolu following the eruption of Mt Matavanu multiple generations ago) given there will be valuable insights in these examples in terms of who moves, where people move, as well as how they move.

Like for scale, for discussing the 'current' pattern of climate/environmental mobility, the team has looked at both 'recent' mobility (in the last five years) as well as planned mobility (the next five years), as well as the aforementioned historical move in the early 1900s. The researchers have drawn data from *Survey One* (including data on direction of planned internal mobility, planned overseas destinations), one-on-one talanoa, and workshop outputs.

### A history lived, inland

In discussion with a few different participants in Samoa, including an academic leader and land expert at the National University of Samoa, there were references to a growing body of knowledge in Samoa that suggests inhabitation was traditionally or originally inland and upland. One participant shared that there were current efforts underway (at the time of fieldwork in 2023) to use radar mapping of inland and upland areas in Savai'i that was reportedly turning out evidence of complex built up towns and communal infrastructure (e.g., large village ovens) in these areas.

One leader shared how evidence points to this original inland habitation, and that it only shifted on the visitation and arrival of Europeans, suggesting that migration to the coast was in aid of trade interests.

This reemergence of knowledge and the growth in evidence could be interesting timing from a cultural and social perspective in informing ways of living, being and reconnecting with other stories of identity as climate change impacts potentially drive increasing internal mobility from coastal to inland locations into the future.

### Internal direction, places of origin

As has been touched on in this synthesis already, based on *Survey One* results of those reporting mobility plans, the majority who were planning internal mobility described the direction as coastal-to-inland. When focusing in on those reporting mobility plans to 'escape the impacts of climate change', the direction of mobility was also mostly coastal-to-inland (11 out of 16 people). Two reported a mobility direction of rural-to-urban and two urban-to-rural. One person simply offered 'changing my village'.

Of those reporting plans to move coastal to inland due to the impacts of climate change:

- 3 of the 11 live/d in Savai'i – north and east coast locations (Asaga, Fatuvalu Safune and Fusi-Safotulafai)
- 1 lived in Apolima Tai



- The remainder live/d in Upolu – predominantly south and north coast (Vaiala, Siufaga, Vaitele fou, Siumu, Faleasiu, Malie and Vailoa)

Those reporting plans to move urban to rural due to the impacts of climate change were residing in the following areas:

- Palisi (Upolu) – Apia area, Vailima river runs adjacent
- Vaimoso (Upolu) – also Apia area

Those reporting plans to move from rural to urban areas due to the impacts of climate change were residing in the following areas:

- Saina (Upolu)
- Matautu Lefaga (Upolu)

### **Mobilising internally**

As has been highlighted in this project's case studies from Samoa, a lot of internal mobility following environmental drivers has been within people's own village land, moving inland from the coast and upland in many cases e.g., Satitua, Lalomanu. Further, participants engaged in Lalomanu expressed an openness to continue to mobilise inland 'for safety' should that be required. In talanoa with a Samoan land tenure expert, he shared that it is not unusual for people to move inland if they are not comfortable [where they are], sharing examples of the village inland movement, like of Lepa on the Southern coast of Upolu following environmental disasters in the early 1990's.

In Satitua, one family reported that following the 2009 tsunami their family chose to rebuild inland on what was their plantation land. They have since cleared more land even further inland for use as a plantation.

In talanoa with a family in Lelata – a village that is frequently exposed to flooding – reported on rebuilding their home they shifted its location to the back of the section. A high proportion of Lelata is reportedly freehold land and thus there were limited options for this family to retreat further than their 'fixed' section.

### **Possible diaspora return following a major environmental event**

An interesting possible pattern to note is incoming mobility from Samoans living overseas in response to climate or environmental events. Net migration data for Samoa shows an average net negative migration annually for records between 2005 and 2022 (Samoa Bureau of Statistics, 2022). An interesting shift is noted in the data however where migration shifted from net -10,879 in 2008 to net +4,084 for 2009 (year of the major tsunami). A modest but noticeable shift was also noted in 2012 (Tropical Cyclone Evan) where net migration was -1,419 compared to -4,423 the year before and -5,431 the year after. In 2018, the year of Tropical Cyclone Gita, again the data showed a pullback in overall net negative migration, at -4,043, compared with -7,815 the year prior and -8,363 the year after.

In talanoa, participants suggest that overseas family do return, sometimes temporarily to support rebuilds, and in the recent diaspora survey run for this project, responses indicated that around one-quarter of Samoans living overseas have directly supported family in Samoa with dealing with the impacts of climate change. Most commonly, climate change support went towards rebuilding a family home (or business) after a storm or flooding (contrasted with Tonga, where the most common climate change support went to raising a family home with rocks or on poles).

### **Temporary or permanent gifting or allocation of land following a major event**

Those in Lalomanu reported that following the 2009 tsunami that adjacent villages 'temporarily gifted' land to those from Lalomanu to stay until they could reorganise and rebuild. While reportedly not common, it is a practice that can occur following a major event.

Following the eruption of Mt Matavanu in the early 1900's, and while Samoa was under German administration, residents of Savai'i who opted to, relocated to Upolu to a new village of Leauva'a (see case study). This land was initially covered in bush and the relocated community cleared the land themselves, while being hosted by people in adjacent villages before the land was subdivided amongst families. At the time of writing there were active challenges to the use of land by the people of Leauva'a outside of their formally allocated 723 acres.

## The pull of (non-customary) land

A recent report by IOM (2021) found that the direction of internal migration in Samoa corresponds to areas with the highest proportions of freehold or leasehold (versus customary) land, indicating that land access could be a key pull factor. In a small group talanoa held in Apia in November 2023, one couple reported a recent move to leased residential land (a 20-year lease), moving from family/village land to have some independence and space for their growing family. They reported the application process took around three years. Some benefits they highlighted was that it was peaceful and that they had their own space, downsides include the cost to cultivate and harvest (new) land, losing their job (which is closer to their village land) and leaving behind their position in their village church.

In responses to *Survey One*, many participants reported plans to move internally, with the reason or driver given as 'moving away from extended family' and frequently, 'move to our own land/moving to bought property away from communal property'. Without a baseline it is difficult to compare, however the frequency of mention of desires or plans to move to gain space from extended family/leave customary land is an interesting insight into a possible trend. The reported high availability of land (for lease, for residential purposes) in Apia was mentioned by a few participants, including a Paramount Chief in Savai'i who shared that 'the government has a good arrangement available to lease land at a good rate', adding that land for farming in Upolu is harder to come by and too small for a meaningful level of production (e.g., quarter acre blocks).

In a workshop with women (location withheld), some mentioned an option to move to their 'own land' in future, for the reason of 'no interruptions from Matai'.

## Internal vs. overseas and possibly more reactive internal mobility

In *Survey One* results, those in Samoa showed a higher overall proclivity to be mobile compared with those in Tonga, having moved internally at higher rates (28% of participants report having moved internally in the last five years) than those in Tonga.

Given a hypothetical situation in future where it was no longer safe to remain at home, survey participants in Samoa reported they would more likely move internally than overseas, given the option (67% responding *Strongly Agree* or *Agree* to moving elsewhere in Samoa – to a different village or island versus 53% responding *Strongly Agree* or *Agree* to moving overseas). This is interesting as the question specifies internal mobility to a different village or island (i.e., taking away the option to move within village land, which is often the assumption of internal mobility in Samoa), suggesting that there remains a drive to remain within Samoa that isn't necessarily related to customary land/village land access.

When looking at mobility plans in the next five years, 18% reported plans to move internally in the coming five years, and 37% reported plans to move overseas in the coming five years. This was curious for the researchers for a couple of reasons:

1. Participants reported lower levels of planning for internal mobility (generally) than has happened in the last five years (28% reported recent internal mobility while 18% reported plans for internal mobility in the coming 5 years)
2. The proportion of internal mobility that may be climate driven jumps significantly for planned mobility (33% compared to recent mobility (6%).

Logically, one would assume that the 'business as usual' mobility drivers (work, education, marital mobility etc.) would not be dropping off significantly in the future, hence the researchers posit that there could be an underreporting of planned internal mobility and/or the proportion indicated is simply not representative of the actual level of mobility that may occur in the coming five years – from climate drivers and other drivers combined.

This surprising drop in planned mobility may also reflect an approach to internal mobility that is just less planned, i.e., internal mobility may end up looking similar to levels from the last five years, but at this stage, individuals and families are not necessarily planning it/the mobility being more reactive. A number of participants in Samoa did volunteer that this is the typical ' Samoan way' when it comes to planning – crossing the bridge when one gets to it, and not before.

## Overseas mobility and destinations

A participant who had previously worked with the Ministry for Women, Community and Social Development reflected on the findings of *Survey One* which suggested a very high proportion of survey participants (37%) were planning overseas mobility in the coming five years. Disaggregating by age, nearly half of those between 18-24 years old reported plans to move overseas in the coming five years. She shared how much of a shift this represented in one generation:

*"It's interesting how that is in their consciousness now. In my time, at that age, it would never have been a thought. It's different times."*

In terms of destination, *Survey One* participants in Samoa who indicated plans to move overseas in the next five years, just over half (58%) indicated New Zealand would be the destination. This was lower than what was seen in the responses from those in Tonga (where three-quarters of those planning overseas mobility selected New Zealand as the destination). 32% of those planning overseas mobility were planning to move to Australia. For the three people who reported moving internally due to climate change in recent years, two were planning onwards mobility to Australia and one was planning relocation to New Zealand. Reasons given for these destinations were 'a more comfortable life' (Australia) and 'good work opportunities' (New Zealand and Australia). In a small group talanoa held in Apia, one couple reported that one of the families in their extended family relocated to Auckland following flood damage to their property in Samoa two years ago. They were then involved in the floods in Auckland following Cyclone Gabrielle. They ultimately settled in Christchurch. In talanoa with a participant based in Lelata, they reported that people 'go where the money is' in choosing a destination overseas, noting the stark difference in pay between Samoa and its minimum wage and that of New Zealand and Australia. This participant shared that people tend to move to New Zealand first as a stepping stone to Australia. This is backed up by evidence in a report from DevPolicy Blog (2021) that showed this two-step mobility pattern (labelled 'indirect migration' in the report).

The survey also asked a hypothetical question *"If in future it isn't safe to stay at home, and I had the opportunity to live in a different country I would leave my current home and move there."* Those who responded Strongly Agree or Agree, about half indicated their first-choice destination would be New Zealand, followed by Australia (~30%) followed again by the USA (~12%). These proportions tracked very closely to the planned overseas destinations reported above.

In the research product *Recent Shifts, Future Signals*, analysis of the last decade of overseas migration data showed a bit of a mixed picture for most common destination for those leaving Samoa with intended permanence. Between 2012-2021, discounting 2020 and 2021 given pandemic travel restrictions, in five out of eight years, more Samoans moved to New Zealand than Australia or the USA, with these five years being the most recent (pre-pandemic) (Statistics New Zealand, Australian Bureau of Statistics, DHS Office of Immigration Statistics). For the other three years, in 2012, 2013 more Samoans moved to Australia than New Zealand or the USA, and in 2014, the stats showed approximately the same number people left Samoa to live in New Zealand as those who left to live in Australia.

One participant shared her perspective that Australia has one of the most difficult immigration policies, and that even visiting Australia represents high financial and time costs. She shared that planning to visit Australia must happen weeks in advance and that many wishing to travel to for example a funeral often miss the event due to delays in visitor visa processing. This perspective contrasted with perceptions of those in the future scenarios workshop run in Apia in August 2023. In this session the participants were asked to vote for the change force they believed would have the biggest impact on future mobility. The force they voted for was the strength (or weakness) of the Samoan economy. Not one participant voted for tightened or loosened immigration policies. This was in stark contrast with the results of voting in Tonga where workshop participants there voted overwhelmingly for the change force of tightened or loosened immigration policies. This was explored with participants who shared a belief that 1. Samoans already have access to a range of immigration channels to New Zealand and 'these quotas are never filled anyway', assuming then than any loosening of current policies wouldn't have a material effect on mobility choices, and 2. If e.g., New Zealand did loosen policies, 'they would just take it back (change their mind)' soon after. The researchers wish to note that while it is correct that mostly the annual quotas for e.g., the Samoan Quota resident visa go unmet, it is not through lack of applications or interest. Analysis shows that many more apply for the quota annually however those issued with the opportunity can often not ultimately take it up as they do not meet the employment requirement (Radio New Zealand, 2017).

## Recent or planned internal mobility and overseas climate mobility

Of the three *Survey One* participants in Samoa reporting recent mobility where climate change was a factor, all three were also planning overseas mobility in the coming five years. Of the 16 *Survey One* participants who reported plans to move within Samoa in the next five years in part or wholly because of climate change, 8 of these participants also reported plans to move overseas in the coming five years. Recognising the limitations of sample size, this still represents a higher proportion than the cohort average (where 37% reported plans to 'move' overseas in the coming five years). Interestingly, 7 of the 8 planning overseas mobility as well as internal mobility (due to climate drivers) plan to move to New Zealand.

This offers an interesting and possibly critical insight into climate mobility patterns where Samoan people mobilised by climate impacts either treat internal mobility as an interim step in a form of onwards linear mobility (i.e., internal, then overseas with the intent of staying or continuing to move to other overseas destinations) or, having a *parallel or dual-focus* where action is being taken for internal mobility while plans are being put in place for overseas mobility to enable the former. While there was anecdotal evidence in support of the latter in Tonga, this was not as apparent in Samoa. One participant in the often-flood-impacted village of Lelata did report that families and individuals leaving Lelata for overseas were mostly doing so for economic reasons but that some were saving up for building or rebuilding a house.

### Moving together

Many participants reported that climate (and environmental) mobility in future would reflect the current approach to living and other patterns of mobility in Samoa – past and current – that is, that the aiga live, and move, together.

One participant shared her personal story of living on aiga land with extended family and that any future mobility would be as a family unit:

*"We exist as a collective, so mobility will follow that. People will move and will try to stay close to each other. Where I live is with my extended family – with my cousins and second cousins – where I live goes back five generations."*

One participant used the example of the retreat from the coast in the district of Aleipata (following the 2009 tsunami)

*"Look at Aleipata – when they moved it was such a rush, but if you look at how they resettled, it's not like they moved 100m apart from each other – they still live close to each other. They always live similar to how they lived [in the original place]. Even when you see them living overseas. That's the communal sense of being."*

Though leaning into the space of considering impacts, one participant shared how moving together can have drawbacks in terms of the resourcing needed for relocation:

*"So you move together, and so having everything here, [moving there] would mean everyone starting again [from scratch]. People don't have the means – the means to have to redefine space and make ends meet too. People will be worse off."*

This collective mobility is not seen as much in the case of Lelata, where a number of families there reported individual family relocation out of Lelata (assuming to have spread out across other family homes in Apia). This difference could be explained by the land tenure type in Lelata however – with residents reporting that most land there is freehold, not customary land.

### Moving to family

Much like what was described in Tonga, participants in Samoa reported that those who move overseas move to stay first with extended family before finding their own accommodation, moving out to 'do their own thing'.

### Permanency/(im)permanency

One of the research teams in-country research partners who supported the completion of *Survey One* in Samoa held a number of surveys over phone. She reflected that she was surprised with the number of participants reporting plans for overseas mobility. However, on chatting with the participants following the survey, it was found that a number of those reporting plans to move overseas 'to live' were not intending permanency. In fact, a number were aiming to spend 1-5 years overseas (for work, to support children into education) before planning to return.

Similar to Tonga, a number of participants reported that it is common to return to Samoa in the later years of life, including if one can access a pension in Samoa. Some could identify a number of people and families they know of returning to their village or nearby recently from living overseas with the aim of returning to a slower pace of life and self-sufficiency to 'live off the land'.

One participant described the return to Samoa as also commonly temporary:

*"Family overseas send money to support families here... they may [come and] build a house for family and then they go back [overseas] after making some contribution locally."*

## 4.6 FACTORS INFLUENCING THE RECENT, CURRENT OR PLANNED PATTERN OF CLIMATE (OR ENVIRONMENTAL) MOBILITY IN SAMOA

### Age

Age was often mentioned as a factor in considering who moves in climate or environmental mobility. In *Survey One*, it was clear that the most 'mobility willing' (for all drivers) in Samoa were those in the 18-24 years age group (where ~half of the participants in this age group reported planning overseas mobility in the coming five years). The sample size was too small to assess any age-related factors in recent climate mobility.

In talanoa with a family in Satitua, it was the younger generation in the family who convinced the father to relocate inland and upland following the 2009 tsunami, and it was the youth who were reportedly returning to live closer to the coast. In Lelata, participants reported that it continues to be the youth leaving the village for opportunities elsewhere (though it was their perspective that this was not driven by the impact of floods but the ongoing pattern of economically driven mobility).

In a workshop with youth in Apia, some shared their belief that youth would lead the flow of people from villages to urban settings in future (particularly if traditional villages systems continue to erode).

### Family connections

Participants in a workshop who reported their mobility options had close ties to family connections i.e., their options to move internally or overseas were centred on the presence of close or extended family in these destinations and an assumption that family would be able to facilitate mobility.

### Beliefs regarding rebuilding vs relocating

In *Survey One*, half of participants in Samoa responded *Agree* or *Strongly Agree* to the statement: *Even if our home was destroyed in a strong storm, I wouldn't leave my home/homeland* (e.g., *I would rebuild, or find a way to stay*). This was slightly lower than what was reported by Tongan survey participants.

In talanoa with one woman in Apia in November 2023, she reflected on this result and believed it didn't align with her experience – talking about memories following the eight or so tropical cyclones that have hit Samoa since 1990. The memory that sticks out to her is the sound of nails and hammers for a week straight after each cyclone. It is her belief that most want to and do rebuild – either because they see their home and land as a critical investment (freehold) or because of a deeper ancestral connection to the land (those on customary land). She also believed that the alternative – relocating – was out of reach for most given financial barriers.

In conversation with a senior government leader in the Ministry for Prime Minister and Cabinet, she also reflected on these results around the strength of feeling of rebuilding and believed current strains from the cost of living and the relatively low minimum wage contributed to beliefs about the capacity of many to rebuild.

In terms of drive to remain in Samoa, three-quarters of Samoan participants responded *Agree* or *Strongly Agree* to the statement *"Even if life got harder, I want to stay in Samoa as long as possible"*. While relatively high, the strength of feeling of these responses (i.e., the proportion that was *Strongly Agree*) was lower than that of participants in Tonga as well.

## Connection to land

One participant, a senior government leader, said that he appreciated the New Zealand government funding this research, to understand what is important in Samoa and understand the context. He shared a personal story where during the 2009 tsunami his elderly father called him:

*"My father called me and told me to go to higher ground. He said he was born on this land and that's where he would die".*

Another participant talked about the difference between those who live on freehold land they purchased as an investment, and those on customary land:

*"People feel differently, about belonging to a land, people who live on traditional land have a deeper connection to that place"*

In talanoa with Galumalemana Poesse, an ex-Mayor of Samata-i-Tai in Savai'i shared:

*"No matter what, we will stay here. We will find ways to make our houses stronger to withstand the changes. This is where I grew up, its where my roots are. This is where I belong"*

In work undertaken by the Government of Samoa (2013) following Tropical Cyclone Evan, the report noted that 'a larger proportion of people, notably from rural areas, expressed no interest in relocating. This lack of interest was attributed to emotional ties to ancestral lands, links between their lands and livelihoods and their existing community and social networks' (pg. 120, Government of Samoa). These emotional ties between land and people are illustrated with a Samoan saying "Ua tagi le fatu ma le eleele" meaning the stones and the earth weep. It is a saying applied to the death of a beloved chief.

Those engaged in the village of Lelata suggested that the four families that did move had purchased the land relatively recently and it was easier for them to decide to leave as they had no historical or ancestral connection to that land.

## Collective or communal values

Following a major environmental event, families commonly host others on a temporary to medium-term basis. In the relocated village of Leauva'a, heads of families reported that their ancestors who relocated were hosted by people (non-related) in adjacent villages for the year or so it took them to clear the land to start planting and building on it.

In work done by the Government of Samoa (2013) following Tropical Cyclone Evan, communities and families that hosted displaced people were surveyed. The report suggests that some families took in up to 40 extended family members, bearing the responsibility of covering costs including food for these family members. For those hosting family there was no reported negative sentiment for doing so, the person who did share some concerns had hosted people who were not related. Some did question why they were not supported with any aid for the role they played in the response with one family reporting they had to empty their whole freezer.

## 4.7 WHAT HAVE BEEN THE PROCESSES OF DECISION MAKING AND THE FACTORS THAT HAVE INFLUENCED CLIMATE CHANGE/ENVIRONMENTAL MOBILITY DECISION MAKING?

This section covers some of the insights gathered regarding decision making factors in climate (or environmental) mobility, but also mobility and even decision-making in general given assumptions that there are similarities in decision-makers and structures across mobility drivers. The focus is lean towards who makes decisions, why (including reports of trade-offs), and how decisions are made (where relevant), split across village-level, family-level and government decision-making. The section also touches on some decision-making influences including the impact of historical events.

### Decision-making at a village level

Particularly in examples of mobility following sudden onset hazards, participants in places like Lalomanu, and in Leauva'a (that had a historical mobility event ~5 generations ago) reported gatherings of the village Matai to decide on the next steps for the village.

In terms of final decision making, many participants pointed to the Sa'o (title-holding Matai) as the final decision-maker in village-level matters, including in mobility decisions.

Others reportedly involved in village-level decision-making processes include Tagata Matutua/Matua Tausi (elders) of the aiga, parents and family overseas. In talanoa with To'omata Tua – a Paramount Chief in Samata-i-Tai, Savai'i – he shared a bit about the decision-makers, processes and forums in his village. Monthly there is a village meeting where speeches are made, they talk about keeping the peace, they 'talk about the future'. Every January a plan is made for the year for the village (including setting expectations around land use, production expectations etc.). He shared that Matai residing overseas 'exert influence' through family there and that they have equal input into decision making as those [Matai] residing in Samoa. During the talanoa, To'omata shared how there had recently been a celebration to appoint new Matai in the village including those who live in New Zealand, Australia and the USA.

Both To'omata Tua and Reverend Aokuso in Samata-i-Tai, Savai'i reported that they find themselves encouraging people to remain in the village. To'omata shared:

*"I encourage people not to leave here – we are higher and safer here than other places. This land and its position is a gift from God... Apia is one of the most flood prone places in Samoa."*

Reverend Aokuso shared:

*"When I preach I say to stay here. I say, if you stay in Samoa, you boss yourself. You won't miss your parents. You go to New Zealand to work? The palagi will boss you... it is ok if single people go overseas, get educated. I say 'don't forget your kainga when you get something in your hand'... people don't really come to consult me on decisions to join the RSE anymore. It's all political now."*

In terms of the role of women in decision-making at a village level, one participant shared that 'there are very few decisions [made in the village] that women don't influence' and that if there is a decision made by Matai that the village women don't agree with, they will tell them to change it.

This same participant reflected on the strength of traditional village structures and processes (including decision-making) in Savai'i compared with Upolu, believing that there is more importance or reverence placed on these processes in Savai'i (now) compared with Upolu, suggesting that the change may be due to overseas or western influences in Upolu more so than Savai'i.

### **Decision making complexities – village level**

A number of participants, including land tenure experts in Samoa, as well as village Matai shared observations and at times, concerns, about the increasing complexity in land-related decision making at a village level owing to the splitting of chiefly titles across generations. More decision makers involved in decision making was drawing out many decision-making processes.

Land experts, including one who is currently undertaking work with the Land and Titles Court shared that the volume of cases going to court are increasing. Others the researchers engaged supported this observation. Decision making processes within the Court were described as 'highly contextual', with each case considering individually with high discretion afforded to decision makers. This expert shared that he had been asked to identify opportunities for standardisation of some decisions to improve efficiency, however he shared that this would be a challenge given the breadth of rules around land use and rights under customary law, some of which are open to interpretation.

One participant shared how having the title holding Matai – the Sa'o – overseas, as can be the case, does introduce new considerations, such as outside cultural influences and a distancing from context for these key decision-makers.

### **Decision making vulnerabilities – village level**

In talanoa with one participant who worked for years in the Ministry for Women, Community and Social Development, she shared that there will possibly be groups who are vulnerable to decisions made at a village level based on their representation – or not – in Village Councils. There are instances for example where a family or families do not have a representative on the Council (representing their interests). Similarly, there may be many families represented under

one senior Matai. In these circumstances, the participant felt that it would be highly unlikely that there could be equal consideration of all family needs (or equal land allocation in the example given during the talanoa). This participant also shared a story of providing food to a homeless man in Apia who shared his story that he and his family had been banished from their village after breaking a bylaw. On a related note, some participants in a workshop in Upolu shared a wish for the future that some of the strict bylaws in their village would be softened, describing some bylaws and the punishments as 'too harsh'.

### At a family level

Paramount Chief, To'omata, and an ex-Mayor, Galumalemana Poese, engaged in Savai'i both shared that mobility decisions are made at a family level, though if 'problems' arise, this can be elevated to the Village Council. Galumalemana shared that the whole family will be brought together to discuss but that the decision is down to 'the mother and father.'

At a family level, for important aiga decisions, participants in a women's workshop in Lalomanu reported that both 'husband and wife' make a final decision, with one group adding that the husband is 'given priority to voice their final say being the head of the family'.

When describing their role in aiga-level decision-making processes, the women in the workshop in Lalomanu were well-aligned, sharing that their role is to provide advice on the benefits of a given decision, to openly discuss all aspects of the decision (e.g., all possible implications), to make sure a decision is fair for all family members, to support the decision (once made), and to prepare the family (and/or the village) for what is decided. It was generally agreed that children (younger than ~20 years) were not involved in the decision-making process but that they are kept informed. It was also agreed that those living with them without a blood connection are not involved in decision-making (e.g., in-laws and friends).

In the results of the diaspora survey (n = 56), ~50% of Samoans living overseas reported that they had been involved in some way in a decision regarding family in Samoa and mobility (moving to live overseas), though none of those surveyed reported making the final decision. A higher proportion of Samoans (compared to Tongans) living overseas reported instigating the conversation around mobility. The most common reported involvement in mobility decision making by the Samoan diaspora was providing financial support and information to help with the mobility decision.

In terms of trade-offs considered in mobility, many spoke of practical limitations dictating their decisions to move or remain in place and seek to rebuild. Families the researchers engaged in high-exposure locations (e.g., Lelata) reported that their decision to remain in place or return was due to a lack of alternative options. Some took out loans while others sought funding from family overseas to fund their rebuilds.

Many participants reflected on Samoa being where they prefer to remain describing it as a peaceful and relatively happier place to live, where they can eat for free, and where one lives freely 'without paying rent' on their own land.

### At a government level

The researchers were grateful to meet with a range of senior government leaders in Samoa in 2023 and early 2024, including the CEO (Fui Tupai Mau Simanu) and ACEO (Sagauga Leilani Galuvao) of the Ministry for Works, Transport and Infrastructure (MWTI), members of the Ministry for Natural Resources and the Environment (MNRE) including Toiata Uili, ACEO Renewable Energy Division, Elisapeta Areta and the ACEO at the Disaster Management Office, Molly Faamanatu Nielsen. Researchers also met with ACEO Jennifer Key at the Ministry for Prime Minister and Cabinet and the CEO for the Ministry for Women, Community and Social Development, Dr Mema Motusaga.

These leaders shared a genuine interest in the topic and project and shared examples of where the government has or will play a role in tempering some future scale, including through steady progress with the Vaisigano river wall and early plans (at the tender stage in 2023) for an upstream dam to mitigate flooding risks to areas of Apia – a project with a reported eight-year timeline. A few senior leaders recognised that there is climate finance available for infrastructure projects but that red tape and high compliance requirements requires 'a lot of energy'.

A few leaders shared that their financial reality limits their capacity to undertake critical adaptation work 'even when it wants to', and that the government cannot directly compensate all who are affected by e.g., flooding events. For those in disaster management, they report capacity limitations to look beyond current needs (e.g., cycles of disaster response and recovery). A senior government leader added that members of her team – employed officers in the Disaster Management Office had left their jobs to work in seasonal work schemes in New Zealand and Australia.



One government leader shared that there are several ongoing infrastructure projects that have climate mobility linkages, including work on the Cross Island Road. This was seen as possible 'climate infrastructure' as on completion it will provide better connections inland and across the island, allowing for easier retreat and relocation inland. There were reports of complexity with this effort, including high time costs in effectively and culturally appropriately engaging with the various landowners for which the road crosses.

This same government leader reported that while they are not aware of specific conversations or planning happening in Samoa for future climate mobility, the general approach of government is one now focussed on resilience, with aims to embed resilience targets across ministries. A number of leaders pointed to the work of the Community Integrated Management (CIM) plans, which form part of the Government of Samoa's Adaptation Fund. One senior government leader suggested there is work to do to better integrate the CIM plans with other strategies, including district level plans.

In terms of beliefs around future climate mobility, a senior leader in a Samoan government ministry believed that Samoa will not see high numbers of climate-driven overseas mobility in the future:

*"I don't think Samoans will move overseas because of climate change, it's not like the situation in Kiribati or even parts of Tonga. There's lots of land here and it's elevated."*

Another government leader shared further thoughts on this:

*"It would be good if the New Zealand government would help with developing our infrastructure and work with us to move people inland so that they will not have to move out of Samoa... we have a lot of land but we need to build roads and access to services and development opportunities to keep people in place."*

In terms of the government linkages with social and cultural systems of decision-making, this same leader shared the following:

*"Through my professional work and visiting many other Pacific countries I have grown in my appreciation for what we have in Samoa. Our social and cultural systems are in place and our government can connect in well to these systems... I talk with two representatives from every village – one male and one female – this representation was put in place by Mema at the Ministry of Women, Community and Social Development. The village fono links us from the village to the government and [through this] picks up on the needs."*

Useful to note that a Climate Change and the Global Environment Facility (GEF) division was recently established under MNRE to coordinate and implement climate change related projects in Samoa. A National Climate Change Coordination Committee was also established to monitor climate change activities at a policy level.

### Trust in decision-makers

A few participants reflected on a historical event whereby people within the village of Sogi were reportedly encouraged to leave their land due in part to their exposure to climate change risks. Some left, some did not (including a participant that the researchers engaged). There was local controversy regarding the move and the motivations of decision-makers at the time, with reported plans to place a market in the area. With a change of government, plans for the market changed. A few participants who spoke on this matter reported that it had a detrimental effect on trust in government decision-making and created a level of cynicism regarding the use of climate change as a reason to relocate some people.

## 4.8 WHAT HAVE BEEN THE IMPACTS OF PAST AND RECENT CLIMATE OR ENVIRONMENTALLY-DRIVEN MOBILITY?

The following section provides an overview of impacts from recent climate and environmental mobility, mostly taken from engagements with those who relocated inland following the 2009 tsunami (participants in Lalomanu and Satitooa), those who relocated to the new village of Leauva'a following the eruption of Mt Matavanu in 1905, and some reports from those frequently affected by flooding (participants in Lelata). In terms of considering impacts from mobility following slower onset hazards, the researchers have included insights from mobility that has occurred under a range of drivers (including economic) from talanoa others in Samoa about the how they have been affected personally by mobility as well as observations of changes at a societal level. The section is split into cultural (including spiritual and religious), social and economic impacts, though recognising that there is often interconnectedness between the impacts.

## Cultural (+/- spiritual and religious)

### The relocation (or re-location) of ancestors

In Satitua, in the district of Aleipata (see case study), one family shared how the village recovered the remains of ancestors dislocated from their burial grounds at the coast. They collected and cleaned the remains and held something akin to another funeral before transporting their ancestors remains back down towards their original burial site. This family shared how the bones got heavy 'like a body' as they got closer to the old burial ground. They interpreted this as perhaps meaning that their ancestors didn't want to return to that same land, that they wanted to be higher up where they now resided. They told them they must return to the land by the coast to look after the land.

One participant in a talanoa held in Apia shared an experience from a work trip to Tokelau back in 2007. She described coconut trees in the ocean even back then, and how people there were undergoing efforts to relocate ancestors away from the coast. She said that there was a conversation had at the time and a realisation that any mobility required the movement of the dead as well. It was a strong triangular connection – between them, their dead and the land itself.

In discussions with a senior leader in MWTI, they shared how in negotiations for land access for road relocations and builds, there is a need in those negotiations to work through the relocation of graves.

### Deprioritisation of monetary support for church

In work conducted by the Samoan Government following Tropical Cyclone Evan, they found that due to financial losses and impacts of the recovery, many families pulled back on their monetary contributions to the church. In turn, this limited the capacity of many churches to provide social safety nets for some of the most needy in the community (Government of Samoa, 2013).

## Social

### Distance to travel

In talanoa with a family in Satitua, a village that predominantly moved inland and upland following the 2009 tsunami, they reported a benefit from moving upland was a closeness to where they plant their food. Though they reported some challenges with travelling (further) uphill to their plantation the newly sealed road helps them a lot. They also highlighted the benefit of having a school built upland where they now reside. This family reported that about 10 families had moved back to the coast, with mostly youth relocated back there.

In Lalomanu, also one of the villages of Aleipata that had relocated, frequently mentioned distance as a concern – distance to school for their children to now travel, distance from the main road where they could sell crafts to passing tourists, distance from transport links into work opportunities in Apia and other areas, and distance from the sea where they used to source fish for food. While appreciative of the roads put in place for accessing their relocated village upland, a lack of transport/cars to use the road was a significant issue for those in the village.

### The ocean, food and quality time

Women in the relocated village of Lalomanu lamented a loss of access to the ocean, saying that before they moved inland and upland they would often play with their children and have fun with them in the ocean. Many would fish and some reported sadness that this was no longer a source of food (or income) for their families.

### Access to services (especially water)

Challenges with service connection, particularly water – was a major concern for those in the relocated village of Lalomanu. They shared that a lack of fresh water is creating issues for health and hygiene in their community and is an ongoing source of stress.

In talanoa with a participant in Apia, she reflected that Samoa is still a 'developing country', and that in many villages' electricity is not readily available or financially out of reach and water still has to be fetched from elsewhere:

*“This is 2023 and it made the news the other day about a certain village that successfully drilled for fresh water... the basics of life are still not there for many, then you add the weight of climate change on top of that”.*

### **Housing, spacing and connection**

There were mixed reports about village set up and the impact of spacing between houses in two different relocated villages. In Lalomanu, women in a women's workshop reflected on the fact that houses in the relocated upland village are spaced further apart, meaning they often can't see others anymore, and indirectly referring to a loss of social oversight and connection.

Down the road, the opposite response was reported in the relocated village of Satitoo, where a family shared that the houses now have more space around each of them, meaning they don't need to see everyone's business – what they are eating for dinner, their disputes.

### **Youth (mis)behaviour**

As mentioned, youth tend to be the ones returning to the coast from relocated villages. In a youth workshop in Apia, participants believed that youth moving away from village structures and oversight and into urban centres was contributing to youth misbehaviour and committing small crimes.

In separate talanoa, several participants reported recent shifts in criminal behaviour, one family reporting that they made considerations of security in rebuilding their house following flood damage, and another family who owns a shop reporting that it is common for youth to jump the counter to steal items.

### **Domestic violence**

In talanoa with a community expert in Samoa, she shared reflections on a social tendency to resort to violence – that change and uncertainty can manifest as violence, and that women are likely more vulnerable to this. She reflected on the outcomes of a survey run during COVID lockdowns where an uptick in violence in the home was reported. In talanoa with Dr Tepora Wright, she shared thoughts on a possible 'unaddressed history of violence' in Samoa. How this violent history has been brushed over, or euphemised in some ways, and yet this history can still surface in behaviours and in language.

In a workshop with women in a village relocated following the 2009 tsunami, several women reported higher rates of domestic disputes and violence in the home since relocation, pointing to higher stresses, including financial – since the move inland from the coast. Some appealed for greater enforcement of domestic violence laws in their village.

### **Family abandonment and/or marriage break ups**

Though not specific to climate or even environmental mobility, the impact of mobility on family structures and stability in Samoa is worth noting. Reverend Aokuso and his wife, based in the village of Samata-i-Tai, Savai'i shared that in their village alone they have had two cases where a husband has gone to Australia to work and had not returned for years. The children have been left with the mother and these mothers have in turn left the children with the in-laws and left (including to remarry elsewhere). The Reverend and his wife report extra efforts they invest to try to support these children through the church.

A senior leader in a Samoan government ministry raised a concern that 'no one is supporting our women' when it comes to the negative social impacts of seasonal work programs in particular. This leader shared tragic stories of the struggles of women 'left behind', including at least two that she is aware of who took their own lives following the departure (and prolonged absence) of their children's father.

### **Lack of preparedness for overseas mobility leading to poor outcomes**

Talanoa with a number of people in Samoa, including senior government leaders, revealed strong alignment in the perception that generally, Samoan people are not well prepared for overseas mobility/living overseas and that many struggle to adapt and integrate, or make good use of opportunities due to a lack of preparedness.

Reverend Aokuso shared “people try to go overseas to find their ‘freedoms’ but don’t really understand what it is like”. His wife shared:

*“We try to educate the youth on the realities of moving and working overseas – it’s not easy. I tell them about my experience working in New Zealand, having to leave home very early, catching the bus to work, coming back at 11pm. Not seeing the family. It all costs money overseas, even going to the bathroom can cost money.”*

### Land based conflict

Several participants referenced contention around land, not necessarily linked to climate or even environmental mobility but the researchers thought it worth pointing out that there is a baseline of contention and one that some believed was increasing with time.

An academic leader and land expert in Samoa shared his perspective that contention and conflict around land in Samoa really began with colonisation and more specifically, with a shift in beliefs about the value of land – from something where food can be grown to provide for the aiga, to something that can be commercialised and developed for profit. In talanoa with another senior academic leader in Apia, it was mentioned that there was recently a family conflict over land in Savai’i that ended with someone being shot.

In the relocated village of Leauva’a (see case study), following the researchers fieldtrip and engagement of three heads of families there, land contention between Leauva’a and the adjacent village of Afega hit the media with reports of land clearing in areas where some from Leauva’a had been living and planting, outside of the 723 acres originally gifted on their relocation in the early 1900s.

### Economic

#### Community filling the gaps

The cost of relocating came up frequently – both for those impacted and ‘outside’ observers in Samoa. One participant stated that inland relocation of communities in Savai’i in response to tropical cyclones and tsunamis ‘cost so much – aid can help in the beginning but it is not enough’. She went on to share how following damage and displacement to communities in Aleipata, there was something akin to a ‘national movement’ (though not formally coordinated) where people travelled from all over Samoa to donate goods – ‘things like spoons, pillowcases, sugar – all the things they needed’.

#### Loss of income and income options

In the relocated village of Lalomanu, other than water and car access, the main concern was the stark reduction in income options on moving a distance from the coast and particularly the main road. Women in Lalomanu reported that they miss their small business that they could run by the roadside selling their handicrafts to tourists and others passing by. One woman reported that her family had resorted to selling knick-knacks like car fresheners outside a supermarket in an attempt to make a few tala.

Following Tropical Cyclone Evan, subsistence farmers and their crops (as well as fishing grounds of fisher people) were heavily impacted (approximately 45% of Upolu’s agricultural land was impacted) and people engaged by the Samoan government reported that some were seeking employment as the family’s only source of income was lost (Government of Samoa, 2013).

#### Existing mobility eroding long term resilience

A number of participants, from villages leaders (e.g., church leaders, Matai) shared that mobility and migration is not a good option for Samoa. One participant – a consultant who works in development and food security in Samoa, believed that countries like New Zealand and Australia approach people in Samoa ‘like they are coming from a zero-asset base’, arguing that there is always a trade-off and the productivity and realisation of value through land in Samoa is what has been traded off in the export of labour.

One senior government leader cautioned about raising people's hopes of overseas mobility options:

*"[climate mobility] would be another level of brain drain in the country... it is a big concern as the country's labour resources continue to be drained. There would be no advantage for Samoa should this happen especially when it is the young and strong who leave Samoa for better opportunities."*

Other participants reported a major shift in attitudes of people towards work in Samoa over the last decade or so, believing that seasonal work schemes in New Zealand and Australia have materially changed people's approach to work and subsequently impacted social and economic resilience at a village level. Reverend Aokuso, Samata-i-Tai, Savai'i shared:

*"Youth just want to get on the RSE... most people don't work [like they used to], they aren't interested... I tell people 'this land is the home of millionaires', the land is very fertile, it is very rich... I tell them 'go to work, go to work', I was in the plantation yesterday where I hurt my eye – I try to lead by example... I'm not shy to say it now, there are heaps of lazy people now".*

Paramount Chief, To'omata Tua shared similar reflections, sharing examples of a man who came back from Australia with a lot of money, 'lost it all' and is now having to borrow a car off a brother who remained in Samoa to work. Another participant shared his observations that 'RSE workers come back, many drive taxis around Samoa' and just wait to return to work in New Zealand in order to repair or upgrade their taxi.

## 5. FUTURE CLIMATE CHANGE MOBILITY

### CONTEXT

In exploring the next two critical research areas for this project – (1) the scale and pattern of future mobility under different future scenarios, and (2) the social and economic impacts of this mobility on Samoa and Aotearoa New Zealand – a few pictures of different futures first need to be defined. Note the commentary on impacts for Aotearoa New Zealand form part of the joint section of the report.

The following provides necessary context for the rest of the section on scale, pattern and impacts, first summarising a picture of two different futures for Samoa – one where climate change is 'as projected' the other where climate change is at the 'extreme' end of the spectrum.

The details for these two scenarios, which covers not only environmental features, but social, economic, cultural (and religious/spiritual) and political are taken from the following sources:

- a. For social, economic, political, cultural assumptions, insights were gathered from:
  - i. the one-on-one future visualisation sessions held in Apia, Samoa in August 2023 with a range of community leaders
  - ii. The outcomes of the future scenario workshop also held in Apia, Samoa in August 2023, with a range of NGO, youth and community leaders
- b. For environmental projections, inputs were pulled from key reports by CSIRO and SPREP (2021), MNRE and NIWA (2022) and Hoeke et al (2014) as included in this project's first product – *Recent Shifts, Future Signals* – as well as a few more publications that came to light after the production of this product (e.g., Lin et al, 2022).
- c. For population and migration projections, data was taken from census and immigration data (Samoan Bureau of Statistics, NZ Stats, Australian Bureau of Statistics) as included in this project's first product – *Recent Shifts, Future Signals*.

Note, the environmental descriptions for 'as projected' and 'more extreme' climate futures were the definitions used in the future scenario workshop held in Apia (see *Moving Futures*).

The team utilised two relatively creative research approaches to tap into Samoan participants beliefs, knowledge and assumptions around the future and critically, implications for the future of climate change mobility. In brief, the visualisations were held one-on-one with five participants ahead of the future scenarios workshop where they were to project 50 years into the past and 50 years into the future and describe what they were 'seeing' and experiencing, and to compare the differences they noted about the future they 'saw'. The images described were vivid and often triggered strong emotions. The notable differences between the past and the future for those in Samoa was intense heat and the degradation of the environment, unhappy people, and for some, the assumption of internal relocation with or without family. Some described an ocean that was lifeless, and that people no longer interacted with it.

The future scenarios process led the group first through some of the latest environmental projections specific to Samoa before spending the day in smaller groups developing a set of four future scenarios based on a combination of change forces. The group opted to work on futures where there was either 'climate change as projected' or 'more extreme climate change'. They also opted to consider the additional overlay of a stronger or weaker economy in Samoa. This change force was selected as the group believed it would have the highest impact on mobility scale and pattern in future (note, the future scenario group in Tonga selected tighter or looser immigration controls for their additional force overlay).

For further details on the approach, rationale, benefits and for a much more detailed overview of the outputs of the future scenario workshop and the visualisations, see: *Moving Futures* and *The Visions* respectively.

**Overview of the two climate futures for reference in considering questions of future scale, pattern and impacts.**

The following incorporates insights from reports by CSIRO and SPREP (2021), MNRE and NIWA (2022) and Hoeke et al (2014) and GNS (Lin et al, 2022) in the environment section, as well as insights from the future scenarios workshop and the future visualisations for the social, cultural, political sections.

Dimension	1. 'As projected' climate future 2050	2. 'Extreme' climate future 2050
Environmental	<p>SLR 0.3m<sup>22</sup>, this SLR paired with a storm event (50-year return period) leading to majority inundation of Mulinu'u Peninsula and flooding depths of 1.5 to &gt;2.5m in some coastal areas of Apia.</p> <p>Coastal erosion and saltwater intrusion into aquifers</p> <p>+1 degrees Celsius higher</p> <p>Annual rainfall change -7% to +8%</p> <p>Less frequent but more intense tropical cyclones, with extreme wind speeds (200km/hr) likelier on the southern coast of Upolu and the eastern ends of both Savai'i and Upolu, with some concentration around coastal Apia as well.</p> <p>Maximum fisheries catch potential reduced</p> <p>Assuming no major change to infrastructure, ongoing river flooding to areas such as Lelata, Upolu.</p>	<p>SLR 2m<sup>23</sup></p> <p>Inundation of the majority of Apia</p> <p>+2 degrees Celsius higher<sup>24</sup></p> <p>Annual rainfall change -8% to +5%</p> <p>Significantly stronger and more impactful tropical cyclones (wind strength and rainfall) with extreme wind speeds likelier on the southern coast of Upolu and the eastern ends of both Savai'i and Upolu, with some concentration around coastal Apia as well</p> <p>High-intensity rainfall causing severe flooding, including through river systems</p> <p>Maximum fisheries catch potential reduced significantly</p> <p>Assuming no major change to infrastructure, ongoing and severe river flooding to many villages adjacent to the Vaisigano river.</p>

22. Higher end of the range (RCP 8.5) for SLR, however aligning with the definition of climate change 'as projected' used for the future scenarios workshop and with modelling done

23. Beyond current scenarios however, aligning with studies for Tonga that suggested scenarios looking at time horizons of 2050 and beyond should consider 2m SLR. Also aligns with the definitions of 'more extreme' climate change used for the future scenarios workshop in Samoa.

24. +2 degrees Celsius may be reached between 2030 - 2050 (global mean temp) under RCP 8.5, CSIRO and SPREP (2021)

Dimension	1. 'As projected' climate future 2050	2. 'Extreme' climate future 2050
<p><b>Social</b></p> <p><i>Fixed assumption: Based on UN population division assumptions, the population will rise from the current 205,557 to ~320,000 by 2050</i></p>	<p>More people from rural areas without the resources to adapt to climate change impacts move into town looking for work. People move away from more traditional sectors of work, such as agriculture that have less certainty now, or which take longer to generate income and seek out work that can pay faster money – including new forms of work in entertainment. More people are now seen living on the streets in town. Others unable to adapt sufficiently to the changes around them move overseas for work and with the hope of an easier life there</p> <p>Deterioration of natural resources due to higher demand on ecological resources driven in part by climate change impacts which has increased the scarcity of arable land as well as reduced fish catch</p> <p>More occupation of plantation land by those moving inland and challenges securing sufficient services.</p>	<p>Many narrow their focus to care for immediate family only. Heads of family turn away from obligations to care for extended family members in Samoa and conflicts within family groups become more common. Within villages, systems of governance are eroded as people narrow their view of family and culture starts to suffer as it is practiced less and less. Villages without inland or highland areas to retreat to break up one family at a time as people seek shelter with family elsewhere, staying for short or longer periods with family. Significant mobility inland and upland, often haphazard, and major issues with adequate servicing</p> <p>Some people with close or immediate family overseas opt to move overseas and chance life there, those without family overseas remain in Samoa</p> <p>Changes in land use (people living on their inland plantations) combined with the destructive impacts of stronger cyclones, extreme heat events and less predictable seasons, food production and food security within many villages becomes a serious issue. More imported food with subsequent health impacts.</p>
<p><b>Economic</b></p>	<p>A focus on money-making has led to more conflicts in the community over traditional money-making resources, particularly land. People seem more individualistic. Necessary fixes to roads, bridges and communication infrastructure are done as cheaply as possible and often do not last. A lack of funds prevents the government from investing in more long-term but costly infrastructure improvements and much of the key infrastructure in Samoa remains vulnerable to progressive climate change impacts.</p>	<p>Degradation of significant areas of rural land, particularly impacting those living in villages that were once fully immersed in subsistence farming and fishing, has led to high inland and urban flow. Overseas aid into Samoa has all but dried up as nations globally struggle with the impacts of extreme climate change and remittances have slowed significantly as people globally struggle with climate impacts.</p> <p>Tourism businesses have folded as key natural tourist attractions are lost.</p>
<p><b>Cultural, religious, spiritual</b></p>	<p>Samoaan value systems endure, and cultural practices largely continue though participation decreases as other things – like earning an income in place of subsistence living – is prioritised.</p>	<p>Greater influence of the government, and concerns about the loyalties of their leadership, some begin resisting the inputs of their Matai. Village systems, and the families themselves begin breaking down. Cultural breakdown follows as village practices and rules are adhered to less and less. Significant urban mobility leads many to unhealthy, unproductive lifestyles as the usual support systems of extended family and their previous church community is absent</p>

Dimension	1. 'As projected' climate future 2050	2. 'Extreme' climate future 2050
Political	Many struggle with what they perceive as a lack of integrity amongst some leaders who do not prioritise what is best for all and instead appear to prioritise their own agendas. People lament the deteriorating infrastructure and the unregulated overuse of resources particularly by businesses. Development is less environmentally friendly as people across the board look to fill financial gaps with what resources they can.	Desperation in the general population is reflected politically. Some criticise government for initial decisions some saw as short-sighted, prioritising quick payouts over longer-term outcomes. Some believed that conflicts of interest were prevalent. Significant land arrangements are negotiated with village Matai (chiefs) for access to land for infrastructure works. New laws around land and development are passed through government and these laws chip away at previously autonomous governance.

## 5.1 WHAT COULD BE THE SCALE AND PATTERN OF CLIMATE CHANGE MOBILITY UNDER DIFFERENT FUTURE SCENARIOS?

### Scale - critical context and assumptions for forming a picture of scale

To paint a picture of climate mobility scale for the future (2050), a series of inputs have been triangulated to arrive at a rough indication (or 'shape') of possible scale. The researchers wish to highlight the limitations in these estimations for Samoa, including in relation to estimates possible for Tonga:

1. In depth studies of exposure at a village level, overlaid with assessments of e.g., social vulnerability that were completed by the Asian Development Bank for Tonga have not been done for Samoa, and comparable studies with this level of detail could not be identified through relevant contacts or through independent desktop research
2. Similarly, a country specific report done by the Internal Displacement Monitoring Centre (IDMC) that estimated future displacement for Tonga was not done for Samoa
3. Studies that are available with more granularity for Samoa are still limited in geographic scope based on the impetus for the study (e.g., storm surge risk analysis done for Apia with a focus on Mulinu'u Peninsula as part of the Samoa Parliamentary Complex Redevelopment Project)
4. The researchers understand that climate-induced sea level inundation risk profiles for Samoa (as well as Tonga and four other Pacific nations) is being progressed via the PARTneR-2 project) though these will not be available until late 2024.

The researchers have not provided a firm statement on future scale numbers by 2050. However, efforts have been made to summarise a set of logical figures deduced from existing recent literature that does map sea level rise inundation risks for parts of Samoa, as well as some figures suggestive of scale from Survey One based on reports by participants in Samoa of future climate mobility plans. The numbers provided should be considered through the lens of those experiencing particular climate stress (that may translate to mobility or immobility).

Complementing these figures will be a series of observations and insights from fieldwork which the researchers believe offer important clues as to how hazards, exposure and 'vulnerability' could play out in mobility or immobility outcomes in future.

### Existing, recent literature on possible future displacements and hazard exposure

In a study by CSIRO (Hoeke et al, 2014), storm surge mapping of the Mulinu'u Peninsula and surrounds, at various sea level rise scenarios, was done which showed at 0.3m sea level rise paired with 50 year and 100-year return period storms, there would be coastal flooding that could reach up to ~1 km inland around Mulinu'u Peninsula and Apia. The study went on to conclude:



*“Results indicated that areas of Apia are highly vulnerable to inundation during tropical cyclones. Future increases in mean sea level will exacerbate that risk. The Mulinu’u Peninsula is particularly vulnerable... with future increases in sea level, complete inundation of the peninsula will be achieved under less extreme conditions. Model results indicate that for a 1-in-100-year storm tide, including future projected sea-level rise, sea levels on Mulinu’u Peninsula may reach 2.4 m above current mean sea level by 2055” (p. 52, Hoeke et al).*

### The geographic scope of this study was unfortunately not broader.

Work done to map flood risk for the Vaisigano river (MNRE and NIWA, 2022) reflected that Apia generally sits ~one metre above sea level and was developed in what was originally a wetland environment. The Vaisigano catchment passes through the urban centre of Apia and can ‘favour rapidly rising floods during periods of intense rainfall’, likely to be exacerbated by progressive climate change (MNRE and NIWA, 2022). The study mapped risks to humans, vehicles, and buildings. Risks to life centred around the Lelata area. Risks to buildings indicated a ‘medium level threat’ for almost half of the buildings – residential and commercial across the greater Apia urban area (for a 1-in-100-year event).

Each of Samoa’s 25 districts has a Community Integrated Management (CIM) plan, which includes mapping done by MNRE of coastal erosion risk zones, tsunami hazard zones, and coastal flood risk zones. For the Vaimauga West District (Upolu) for example, around 15 villages were identified as being in a coastal flood zone, representing ~3,500 people (Samoa Bureau of Statistics, 2021). However, this district includes the urban centre of Apia which is the most significant employment area in Samoa and inundation of this area would have much further reaching consequences for the population of Samoa, with knock-on impacts for future mobility – likely internal and overseas.

### Overview of possible total scale under ‘climate change as projected’ (numbers of climate-stressed)

Given limitations of current available studies of specific hazard and exposure mapping for Samoa, a few rough approaches are proposed to start to paint a picture of possible future climate mobility scale for Samoa.

Applying an assumption of a ~1km coastal flooding incursion across Samoa (based off inundation modelling done for the Mulinu’u Peninsula and surrounds), at 0.3m sea level rise and with 50 year and 100-year return period storms, that could involve 61% of Samoa’s total population (61% of Samoa’s population resides within 1km of the coast, UNDRR and ADPC, 2022), totalling 125,390 affected or *climate-stressed* people. This has obvious limitations, for one, it does not factor in topographic influences around the highly variable coastline of Upolu and Savai’i. However, in support of this logic of coastal population exposure, though with a different hazard, looking at projections of damaging winds in Samoa for the next 50 years, mapping by GNS (2022) suggests that ~half of both Upolu and Savai’i’s total coastline (concentrated eastern and southern sides), extending inland at least 5km (based off map scale), have a chance of experiencing maximum one-minute sustained wind speed of ~200km with a 40% chance to be exceeded at least once in the next 50-years. For reference, Tropical Cyclone Evan in 2012, which displaced ~7500 people (IDMC, 2022) recorded peak wind speeds of 210km/hr (Government of Samoa, 2013). Further, looking at impact reviews of Tropical Cyclone Evan, mapping of homes affected across Upolu indicate a concentration of damage to housing on the coast, particularly the southern, central northern (centred around Apia), and the north/eastern coast. Crop damage and loss (totalling approximately 45% of agricultural area in Upolu) was mapped as most severe in the southwest, central and southern areas of Upolu (MNRE, 2013).

The IDMC reported displacement<sup>25</sup> from storms and floods in Samoa in the last 13 years to be in the range of ~9200. This averages at ~710/year. If we assume, conservatively, that at least the same rate of displacement applies going forward, looking forward to 2050, this could add up to ~18,460 people. If we apply the same assumption as applied for workings in Tonga, where the IDMC assume that 89% of recent disasters had climate change links, the figure would settle at at least ~16,400 people displaced in Samoa by 2050 due to climate change disasters (i.e., not including those impacted and potentially displaced by slow onset hazards alone).

Another approach to build a possible picture of scale, would be to consider the results of Survey One (recall, some of the questions asked about recent and planned climate-related mobility). In this survey, 2% of the total 290 participants in Samoa reported recent mobility where climate change was a factor. Looking forward, 5.5% of the total 290 participants reported mobility plans at least in part due to the impacts of climate change, representing a not insignificant increase in

*25. Internal displacements correspond to the estimated number of internal displacements over a given period of time (reporting year). Figures may include individuals who have been displaced more than once (IDMC, 2022).*

the possible influence of climate factors on mobility over a <10-year period (assuming that plans translate into action). Looking further forward, one could reasonably expect that figure to rise in the coming ~25 years (to 2050) as climate impacts progress. Being conservative however, if it is assumed that 5.5% of the population continue to plan and undertake mobility each five-year period in the coming ~25 years, that would scale to ~11,300 people each five years to (2050) to a total of ~56,500 people. Researchers assume this figure to represent climate mobility from slow onset hazards, assuming that planning for climate mobility is due to a present stressor (i.e., people would not plan to move for climate reasons in anticipation of a future tropical cyclone). Considering dependents and other household members, and UN population division projections on possible population growth by 2050, this figure could scale up significantly<sup>26</sup>.

Based on these different approaches, and rough assumptions, the **number of people in Samoa who could be affected by future sudden and slow-onset climate stressors** (that could translate to mobility for some) could be in the range of **72,900-125,000+ people by 2050** (not factoring in UN population division population growth assumptions, nor applying possible household mobility assumptions to slow onset mobility figures).

### From climate-stressed to climate-mobile (or climate-immobile)

The researchers do not assume risk exposure or climate stress will directly translate to mobility. There are a range of contextual factors that the fieldwork surfaced that could provide a guide to which of those most climate stressed could take up mobility as a response. Critically, it must be noted that others exposed to less relative risk could well take up mobility or even pre-emptively move prior to experiencing impacts based on their capacity, priorities, options, age or indirect impacts e.g., climate impacts on employment (note, estimates of 9,600 job losses due to TC Evan, Government of Samoa, 2013).

In Lelata, Upolu for example, residents report that four families (~10% of families that had been residing there) eventually relocated following a particularly impactful flooding event (Tropical Cyclone Evan, 2012). There is context for this situation as well, which is the fact that this land is freehold, not customary land tenure, which would have had an impact on decision making to be mobile (e.g., capacity to put the land up for sale, a possible lesser emotional or spiritual connection to the land).

### Commentary on any additionality in scale driven by 'more extreme' climate change

Given the lack of broad and specific hazard mapping with different SLR scenarios for Samoa, the researchers did not feel in a position to apply a new set of assumptions on top of rough estimates already done for a picture of climate mobility scale for climate change 'as projected'. The researchers understand that climate-induced sea level inundation risk profiles for Samoa (as well as Tonga and four other Pacific nations) is being progressed via the PARTner-2 project) and that once these are available late 2024, more specific estimates may be possible for different future climate scenarios.

### A note on direct and Indirect Impact of climate change on scale estimates

The researchers wish to emphasise that these proposed figures of climate-stressed populations do not factor in complex knock-on effects from climate related damage that could contribute to broader internal or overseas climate mobility. In considering the impact of Tropical Cyclone Evan for example, the Government of Samoa estimated a loss of ~9,200 jobs. Further, significant damage to agricultural land (~45% of agricultural land in Upolu) and loss of subsistence farming crops likely drove some families from subsistence living to finding employment, with one participant engaged by the Government of Samoa (2013) sharing:

*"From next month there will be no income flow in the family, which means [the men] will have to find employment to meet the daily family needs"* (pg. 112, Government of Samoa, 2013)

26. Roughly factoring in population increases (UN Population Division Assumptions, medium range scenario) for Samoa to 2050, this figure could scale up to 65,000+.

## What could influence climate mobility scale, and impact choice (on whether to move or not) – some factors that could shift people from climate-stressed to climate-mobile (or climate-immobile)

Fieldwork in Samoa (workshops, visualisations, one-on-one talanoa with people in Samoa, and survey of those living in Samoa and overseas) as well as research done by the Government of Samoa following Tropical Cyclone Evan suggests the following factors could contribute to shifting a climate-stressed person/family in Samoa to one that is either mobile or immobile.

### Access to social capital, to move.

Family and family ties were seen as critical for enabling mobility, particularly overseas. Participants, in sharing what mobility options they have available to them, highlighted destinations where their children (in particular) reside. Some mentioned family in alternate villages in Samoa though less frequently.

A number of participants in the future scenarios workshop suggested that intensification of climate impacts in the future (and resultant financial and other pressures) may lead to a narrowing of perceptions of the family unit from extended family to caring only for immediate family. The assumed implications of this were thought to be reduced openness of extended family to share land or make land available, offer accommodation to those needing to relocate, and would even impact remittances from overseas (that would otherwise be sent to extended family) that would otherwise help fund adaptation efforts.

### Access to financial capital, to stay.

Those who reported the direct experience of climate stressors (e.g., those in Lelata facing ongoing flooding risk) noted that not getting timely access to funding for rebuilding *to stay* was the key to some families leaving Lelata following the particularly damaging flooding from Tropical Cyclone Evan. The paperwork and processes involved to access funding for rebuilds or replanting were described as 'intensive'.

One particular family who avoided the intensive application process for climate funding reported they took out a loan of WST\$100,000 to rebuild their home in Lelata, taking over a decade to repay this. Certain groups may have less choice than others through their capacity to access loans. Taking out a loan was reportedly not an option available to many, particularly for subsistence farmers and their families, following the damage and loss sustained following Tropical Cyclone Evan. One participant engaged by the Government of Samoa following Tropical Cyclone Evan shared:

*"Most people don't have collateral and are subsistence farmers so have no access to loans"* (pg. 114, Government of Samoa, 2013).

One family in the relocated village of Satioa reported overseas family financial support for rebuilding that enabled them to rebuild a more resilient home inland over the course of nine years.

NB, as is the case in Tonga, it is difficult to separate social capital and financial.

### Access to financial capital and land, to move.

In the future scenarios workshop, participants reflected on limited choices that some would have, noting that some would not have the means to fund relocation or rebuilds elsewhere and would therefore remain in place. Others highlighted vulnerabilities in those villages without land that extends inland or upland noting that these villages would have no option but to disperse across extended family in other parts of Samoa.

Engagement done by the Government of Samoa following Tropical Cyclone Evan detected some interest by affected families in relocating to safer inland or upland areas however noted that this interest was tempered by realities of access to funds for relocation and rebuilding elsewhere, as well as availability of inland property and the usually lengthy negotiations needed to acquire new land. People also expressed concerns about the difficulties of residing in a village where one doesn't belong (Government of Samoa, 2013).

### Access to traditional decision-makers

One participant who previously worked with the Ministry for Women, Community and Social Development suggested that in future there could be families with less mobility choice, and/or poorer outcomes due to their access to or influence (or lack thereof) of decision makers and in key decision-making forums like the Village Council. Some families reportedly have no direct representation on Village Councils and thus are at risk of missing out on e.g., fair land allocation and potentially mobility options.

### Presence or awareness of alternatives, to move.

In talanoa with families in Lelata, they reported initial efforts to rent residential property elsewhere in town but ended up returning to their freehold land in Lelata as they had 'no other option'. In engagements by the MNRE in Samoa following Tropical Cyclone Evan, one participant from Falefa village shared "yes, I would like to relocate, but I am not sure where to go." (Government of Samoa, 2013).

In talanoa with heads of three families in Leauva'a – a community that relocated to Upolu from Savai'i in the early 1900s, it was reported that not all chose to relocate as they felt they did not have enough information on where they were going and decided to stay where they were familiar.

### What could the pattern of mobility look like under different future scenarios?

The following provides a set of insights gathered from fieldwork in Samoa over 2023 and early 2024 which provide useful information on the possible pattern of future mobility. Significant insights were taken from both the future scenario workshop as well as the one-on-one future visualisation sessions. Where there are material differences in pattern at a 'more extreme' level of climate change (as described by participants) these are explicitly called out.

Coastal to inland and upland, including setting up on plantation land

During one-on-one future visualisations, one participant's future vision described a situation where his family (including grandchildren) had relocated to a mountainous part of family land. They were the only people there, surrounded by mahogany trees, and with a view out over a 'lifeless' ocean:

"There's no waves. It looks like concrete, like a wasteland of water."

Another participant 'saw' herself also relocated inland but not necessarily within village or family land. She described a new community, living freely, in a strong and engaged collective. She did not have her immediate family with her but felt a strong sense of belonging in this new living arrangement.

In many engagements, from senior government leaders to subsistence farmers reported an openness (and preference, given the choice) to relocate inland should climate impacts, particularly coastal erosion and coastal flooding, necessitate a retreat for family safety. Village leaders reported currently advising people to relocate into their plantation land (for space, and convenience – to live closer to where they grow their food).

In the future scenarios workshop, participants described many moving inland, being forced to set up makeshift homes on plantation land with resultant issues for food production as food growing land is both degraded by progressive climate impacts and land is taken over for housing.

On describing internal mobility, no participant specifically referenced mobility to a different island (based on assumptions of e.g., less exposure/greater safety, contrasted with reports from participants in Tonga who often referenced internal mobility to relatively higher islands).

### Significant rural to urban flow and poor outcomes for subsistence farmers in particular

Participants assumed that environmental degradation from climate impacts will increase over time, and food growing in rural land will become more difficult. Many believed that in a climate change 'as projected' future, increasing numbers of subsistence farmers will be driven from rural to urban locations in search of employment to feed their families and earn an income. Participants also highlighted coastal and fishing communities will be impacted and will also move into

urban centres. Those supporting themselves and their families through subsistence farming and fishing may have greater challenges with climate impact resilience and adaptation and may also have less access to the means to be mobile in future. As already mentioned, a lack of collateral represents a major barrier for subsistence farmers to access e.g., loans to support either rebuilds or relocation.

This group, that relies most heavily on the viability of their environment may be at risk of both not being able to fund a successful relocation, and/or not being able to fund sufficient adaptation in place. In the future scenarios workshop, participants assumed that the 'rural poor', unable to adequately adapt in place would be most likely to mobilise towards urban centres in search of work or other sources of livelihood. Others believed that this group would not be able to afford to leave and would have to remain in place and make do.

Some assumed this would lead to people living on the streets in places like Apia as many ex-subsistence farmers would not have the means to access funding for leases or land purchases, particularly if the move is relatively sudden.

Participants also reflected on the difficulties of people finding homes and work in and around Apia as sea level rises (impacting businesses, services and infrastructure), believing that there could be a reversal of this movement after a period of time (i.e., people moving rural to urban and back to rural, given difficulties).

### Limited overseas mobility

None of the future scenarios or future visions highlighted at-scale mobility out of Samoa. Overseas mobility was mentioned in one of the 'more extreme' climate scenarios, describing a situation where some people with close or immediate family overseas opt to move overseas and chance life there. Interestingly, the assumption in the future scenario workshop was that there would be no major uptick in overseas mobility for 'more extreme' climate change impacts versus climate change 'as projected', noting that people in Samoa would be aware of challenges elsewhere and prefer to 'tough it out' in a familiar setting/with current support systems.

Other mention of overseas mobility was in the context of failed efforts to adapt in-place (often after trying multiple avenues), though again it was typically mentioned in the context of family overseas enabling that mobility. Specific destinations were not mentioned though we know from responses to Survey One, and from the last ~decade of migration data that the slight preference is for New Zealand, followed relatively closely by Australia.

### Village separation for some, and temporariness

Many participants assumed that future mobility would typically reflect the current patterns of mobility (as a family or aiga or even as a village) as it also reflects a collective world view and way of living – with extended family.

In 'more extreme' climate futures, participants in the future scenarios workshop felt that there would be a dissolution of some villages – particularly those without land that extends inland and upland (or those who have land inland and upland, but the terrain proves too severe for living or relocation, such as steep cliffs). It was the belief that these people would need to negotiate with family elsewhere to stay with them temporarily or for longer periods, with the assumption that they would face risks of ongoing displacement and persistent house and land insecurity.

As was seen in Lelata, those families who left were reported by others living in Lelata to perhaps have less of a history or connection with the freehold land they resided on which led them to decide to leave (amongst practical issues of not being able to access funding for rebuilding). These families were assumed to have dispersed and resettled across Apia with extended family.

## What could impact the pattern of mobility in these futures?

### Continued strength (or deterioration) of the collective world view and prioritisation of the extended family

In multiple future scenarios, participants took the perspective that progressive climate impacts (with resultant degradation of people's lifestyles, well-being, asset base and income capacity) would lead to a narrowing of the family to focus on 'immediate needs and immediate family'. The implications of this shift would include a reduction in mobility options for those under climate stress, as extended family in alternate internal locations, and overseas locations 'closed ranks', and became less able and willing to host others.

Some reflected that this narrowing in would negatively impact remittance flows which would have real impacts on people's choices – both in terms of being about to adequately adapt in place or fund relocation. Worth reiterating here that approximately one-quarter of participants in the Samoa diaspora survey reported providing support for family in Samoa specifically for climate impacts (with the majority of that support reportedly going to home rebuilds or repairs).

In the future visions, one described relocation with just their nuclear family, and no others were around, and another participant described living in a new inland village, surrounded by close-knit community who were not family.

### **Strength of connection to land/ancestral connection – customary/rural dwellers versus freehold**

As mentioned already in this report, there may be differences in the groups who do and who do not choose to move based on the relationship they have with the land they reside on. Participants suggested that those living rurally and on customary land would be the least willing to move under climate stress (or other drivers).

In the diaspora survey, one participant framed their perspective on this land-ancestry connection and the sense of obligation to remain:

*“Moving people out of Samoa and within Samoa will be disrespectful to the older generations that have gone before us today that have paved the way for those families who have lived their best lives in their villages.”*

### **The strength (or deterioration) of village structures and systems**

A few groups in the future scenarios workshop highlighted a deterioration of trust and a drop in adherence to the Matai system for different reasons in different future scenarios. In one scenario, groups drew connections between new central government laws around land use (e.g., for climate resilience infrastructure or development work) and questions raised by some in the village around the loyalties of some village leaders. Others believed the drawing in of families to focus on the immediately family only would erode the strength and influence of the village level systems. One group described this as heads of families turning away from their obligations to cater to and care for the extended family. This erosion of the Matai system and village structures was seen as another strong contributor to future rural-to-urban flow.

### **Family abroad**

Future scenario workshop participants believed that the presence (or absence) of family abroad would dictate who moved overseas and who did not. Family overseas were seen as key to facilitating the move itself and playing the critical hosting role.

## **What are the factors that would likely influence mobility decision making under this scenario?**

### **Household level food security**

As has been mentioned already, many research participants in Samoa highlighted the role of food security as a decision-making driver (emerging and in future). In a number of the future scenarios developed during the scenarios workshop, climate change degradation of the environment and an incapacity to adapt to climate changes led to decisions/forced decisions to mobilise from rural agricultural land to urban centres in search of work.

### **Access to financial capital**

Ready access to finance to support relocation (or not) was a key theme in the future scenarios as well. Many felt that there would be people without the means to adapt/rebuild and thus would be forced to relocate (without much funding behind them, if at all) to urban centres.

### **Input and support of the diaspora/family overseas**

Participants in the future scenarios workshop believed that having family overseas would provide an option to some to relocate should they find no other suitable option to adapt in Samoa. Participants believed the presence or absence of family overseas was a deciding factor in seeking that form of mobility.

In the diaspora survey, Samoan people living overseas often suggested a willingness to actively fund relocation (travel and accommodation support) both internally and overseas (often to stay with them) for those who needed it.

Others highlighted their role in mobility decision-making in future, with one saying that they saw a key future role of theirs to be to "support them in their choices (to move) if it's for safety, work or education." Half of participants in the diaspora survey reported having a role in decision making around family leaving Samoa.

In the future scenarios workshop, a few groups believed that particularly in 'more extreme' climate futures, remittance flows would drop as climate adaptation costs and financial pressures increased and feelings of obligation to extended family decreased.

### Households and predominant land tenure type in future

A Samoan land tenure expert emphasised that the customary land system, of which 55% of households reside (Samoa Bureau of Statistics, 2021) will likely be able to accommodate most future scenarios of climate mobility:

*"The overriding message for [customary] land in Samoa is one of flexibility. There is a lot of room... all [people] will have an option to move. [Though] it will also be complex."*

Records show however that there is a decreasing trend of households living on customary land – in 2016, 64% of households were residing on customary land, and in 2011, this figure was 69%. In that decade, there has been a corresponding uptick in households living on freehold land.

As mentioned earlier, participants, including those in the often flood-impacted village of Lelata, believe that the four families who ended up leaving Lelata after floods were those that not only were on freehold land but who had recently purchased the land. Many participants (and a Government of Samoa study, 2013) reported that those on customary land would be most hesitant to leave their land given ancestral connections.

If the proportion of households living on customary land continues to track downwards, there could be real implications for the capacity for residential 'flexibility' and for the likelihood of mobility of those living on the land given predominantly economic over family, spiritual or emotional ties.

### Ease of accessing [alternate] land and complexity of negotiations

Risks were highlighted in current state and for the future regarding decision-making around land, land rights and use. A few participants reflected on an ever-growing caseload at the Land and Titles Court, and the inefficient nature of decision-making processes in the sense that each case assessed against heavy contextual details.

As mentioned earlier in the report, the practice of splitting of Matai titles is having an impact on the complexity of land related negotiations, as highlighted by both village leaders and senior leaders in government. Looking forward towards necessary climate infrastructure work and development in Samoa, one senior government leader expressed hesitations about the complexity and time involved in negotiating access for these types of projects, highlighting others that had been many years in planning and implementation.

### What are the potential impacts of climate change mobility in these futures?

The following provides a set of insights gathered from one-on-one talanoa with experts, community leaders, workshop participants as well as those who participated in the one-on-one future visions/visualisations. As has already been stated, many of these examples are not mutually exclusive (e.g., there is crossover between cultural and social impacts).

#### Cultural (+/- spiritual and religious)

##### *Reconfigured 'villages'*

One participant reflected on the capacity of traditional Samoan societies to continue when relocated to urban locations or overseas, believing that it would have real social and cultural implications for systems of hierarchy, communication and the maintenance of cultural norms and benefits:

*“How would you replicate the village set up in a different context? The Paramount Chief and their Orator are typically at the centre of the village and then others are set up around them – the structure of a village matters. How would that play out with say, numbered roads?”*

In discussion with a senior government leader, they raised challenges around assumptions of village processes applying in new urban settings. An example was given where an organisation attempted to have village leaders in an urban setting identify a set of people for an opportunity expecting that the same level of social closeness/familiarity and hierarchy would apply in urban villages as rural, though it was found to not be the case. A loss of village cohesion could have implications for communication, coordination and even social harmony.

#### *Weakening of the traditional village structures / Matai system*

Participants in the future scenarios workshop believed that intensified climate impacts would lead many to turn inwards, focusing on immediate family. This would include heads of family at a village level potentially turning away from their obligations to the wider group – eroding leadership and systems of organisation and decision-making at the village level. Some felt that in futures that required significant infrastructure work/climate infrastructure that self-interest by some village leaders in dealings with central government, or perceptions of a ‘loss of loyalty’ of these leaders would turn others away from traditional village systems.

Participants believed that trends they are already seeing in society that concern them, like increasing levels of individualism, would continue if people continue to be mobile – particularly overseas, where they are influenced by ‘western’ values and priorities.

Weakened village systems were linked with poor social behaviours, critical social support structures, and a loss of coordination, decision-making and organisation that has been central to a number of relocations to date.

#### *Weakening of the Church, including its capacity to be a social safety net*

In the future scenarios workshop, participants believed that with high mobility and significant financial challenges (due to climate driven disasters and rebuild or relocations costs), that contributions to churches would drop and participation in church duties would also be deprioritised in favour of time spent on meeting day to day needs. The drop in funding would then hamper the capacity of churches to support those most in need.

One group in the workshop believed that churches themselves would likely relocate in attempts to keep or capture members who are relocating to urban centres, leaving social safety net gaps in rural areas. These assumptions, particularly of church offerings is backed up by findings following Tropical Cyclone Evan (Government of Samoa, 2013).

#### *Loss of language and traditional knowledge, and erosion of gender norms*

Some groups in the future scenarios workshop believed that in different climate change futures there would be a deprioritisation of cultural practices in favour of meeting more ‘practical’ needs such as feeding the family, particularly for those in rural areas.

In talanoa with one female participant, she worried about severing ties with land at scale, stating

*“So much of who we are is the place we are from... it’s our language and traditions, so much comes from the land... all our material traditions – our siapo – all of that comes from the land”.*

She also spoke of a lack of access to the pandanus plant in the future – the plant commonly used for weaving – noting that this plant does not grow in New Zealand and highlighted the critical need to practice traditional knowledge in order to pass it on.

In the future scenario workshop, many highlighted a forced (direct environmental damage) or chosen (climate impacts making growing too unpredictable or slow) move away from agricultural work to seek employment in urban settings. Participants believed this would lead to a significant loss of traditional knowledge of the land, how to grow and tend to food in the following generations, and possibly impacting future resilience.

Interestingly, in both the women’s and youth workshop held in Lalomanu, beliefs were relatively consistent that in 20 years’ time, the culture, traditions and values of Lalomanu will be largely unchanged.



## Social

### *Mental health and mental preparedness*

Several groups in the future scenarios workshop highlighted risks of widespread mental health issues in 'more extreme' climate futures, with one group highlighting issues particularly with those relocated inland, noting practical struggles where critical services (water, electricity) are not connected, and feelings of emotional distress and 'victimhood' are common. Participants noted that there would be little in the way of mental or emotional health support in these circumstances.

In a future visualisation session, one participant described people out walking on the road, saying that these people looked unhappy. The participant got teary in their descriptions of what they were seeing, and described choking on the dry dust in the air saying:

*"I feel so scared. Kind of like I've lost my country"*

A couple of participants, including one reflecting following a future visualisation session, highlighted the criticality of mental preparedness for reducing harm following climate mobility/relocation. This participant, who was in her 70s, believed it critical to start actively preparing people for significant change. She felt that while practical preparation is important, the lead time for adequate mental preparation is the longest. Particularly for those in her generation she reported, starting from scratch would be extremely difficult or traumatic.

### *Rural-to-urban flow reducing natural support systems*

As noted already, the most common presumption was that mobility flows in different climate futures would be rural-to-urban as people (particularly those living subsistence lifestyles) seek out work or other ways to feed their family. The presumed impacts would include a loss of usual support systems provided by extended family and the village, as well as their previous church community. Participants believed this fracture would lead some to fall into unhealthy and unproductive lifestyles (examples given include going to nightclubs in town). Youth believed that this would lead to higher youth crime levels in urban areas as well.

### *Exacerbation of inequality*

Participants in the future scenario workshop believed climate change impacts would be unevenly experienced, with an increasingly obvious difference in experiences of those 'with' and those going 'without'. One group in the workshop felt that those with least means would most likely choose mobility to seek out work or safety elsewhere. Others believed that those most reliant on the land for food and a livelihood would be more likely to have to move to seek out alternate sources of food and/or income, resulting in mobility. Others felt that those with the least resources would be without any options of adaptation, including mobility, and would have to remain in place. In contrast, one group highlighted that those with resources would be able to not only adapt-in-place but would benefit from changes brought about by climate impacts. The perception was that the cost of travel overseas, even to New Zealand, would be a real barrier for many even if they had a need and option to move, and felt that having family overseas to sponsor initial travel was critical.

### *Domestic violence and other land and resource related conflict*

In the future scenarios workshop, particularly in 'more extreme' climate scenarios, participants assumed there would be an uptick in domestic violence, driven by high uncertainty, financial pressures, and trying to feed the family under harder and harder environmental conditions. This reflects the recent and current experience of relocated women the researchers engaged.

## Economic

### *Income continuity*

Access to work and income opportunities was an issue highlighted in a range of future scenarios, particularly as climate change erodes many family's capacity to grow, catch and sell food at a household level. Participants projected that cultural practices, including participating in handicrafts groups, would be deprioritised, representing a loss in income options for women.

Noting the impact on women in the relocated village of Lalomanu, and the loss of their small businesses as they moved inland, it is likely that without dedicated efforts to support income stream continuance (or replacement) for those relocating inland in future (e.g., sufficient connecting infrastructure, access to transport and access to the same or alternate markets) it could be an issue that becomes more widespread as internal (climate) mobility ramps up.

### *Key industry impacts*

In the future scenarios, participants projected the 'folding' of Samoa's tourism industry that relies heavily on natural attractions. Participants pointed to marine reserves and the To Sua Ocean Trench that would likely be lost to climate impacts in the future, and associated businesses like accommodation and hospitality businesses would also be partly or widely lost, driving internal and overseas mobility in search of alternate income opportunities.

### **What are some options to limit harm in these futures (including addressing differential vulnerabilities)?**

The following are inspired by reflections and recommendations for 'no regret actions' taken from the future scenarios workshop, where following definition and exploration of a set of futures for Samoa, small groups identified a set of actions they felt would offset some of the risks identified in possible futures. Other options are defined by the researchers based on a coming together of insights and analysis during the project.

### **Need for large scale and ongoing community education and awareness raising to reduce risks and maximise opportunities from anticipated mobility**

Participants believed that the average person in the community has a low level of understanding of climate change and its impacts on them. They believe that public communication on climate change is not easy to understand, is not specific enough to Samoa (or at a more granular village level), does not support decision-making or motivate action for adaptation. Many participants the researchers held talanoa with, as well as most of the participants in the Samoa future scenario workshop believed an important action would be large-scale and ongoing public awareness campaigns for the community on current climate change impacts as well as future projections. Further, they suggested that practical training or demonstrations of impacts and adaptation techniques (e.g., farming demonstrations) would be well received and beneficial. A number of people believed that practical support should be given to complement the awareness raising, such as providing food growing tunnels/greenhouses or much easier application processes for adaptation grants or lending.

### **Targeted planning for at risk groups (those outside of community structures/low social capital, subsistence farmers, freehold landowners or leasers)**

It is apparent from the field research that there are groups of people who represent a higher level of risk exposure both in terms of mobility choice, and mobility outcomes. These include:

1. Those residing in villages without easily habitable inland or upland land (e.g., coastal land cuts rather than coastal to inland land cuts)
2. Those outside of community structures (e.g., those 'banished' from their village due to the breaking of bylaws) or who lack representation in key decision-making forums in the village e.g., the Village Council
3. Some of those residing on freehold land (in the sense that their options for relocation is relatively limited/financially constrained compared to those residing on customary land). 36% of households reported residing on freehold land in the 2021 census.
4. Subsistence farmers (14% of the population reported this as their 'employment type' in the 2021 census) given barriers to accessing finance or loans, and their deep dependence on the environment/their high vulnerability to a climate change degraded environment
5. Women, children and those with disability, including due to their exposure to domestic violence, access to materials for income generation (women) and general mobility challenges (those with physical disability)

It is critical to first acknowledge these groups as requiring possibly tailored or additional support, including income support or efforts to secure income continuity to either lessen the drive for mobility (if it is not their preference to be mobile), or on relocation (to limit negative impacts). In preparation for possible future mobility, for those groups at higher risk of housing or land insecurity (e.g., those in villages without inland or upland land extensions) planning support and assistance would be indicated.

### **Mental preparation, psychological support**

Many participants in one-on-one talanoa reported that it is difficult to get Samoan people to plan ahead. Many shared the perspective that the approach is typically to cross a bridge when one gets there.

One participant shared her sense that there is a great resistance to discussing or addressing negative things in Samoan culture, and that personally she finds it extremely difficult to engage her family and close ones on the topic of climate change or preparation that may be needed. She went on to say:

*"I'm not sure people are ready to contemplate what that would look like, because it is something negative. There is a fear element... there is so much that needs to be done [but] they don't want that, they aren't interested yet."*

Another participant, as mentioned earlier, came to the realisation after participating in a visualisation session, that more people must be engaged in similar processes, saying that the lead time for mental preparation is long, but that 'nothing beats a prepared mind'.

Given assumptions in the future scenario workshop about widespread mental and emotional issues in different climate futures, including following large-scale displacements, dedicated efforts should be invested, and early, to seek to prevent some of this harm.

### **Support the use of assets in Samoa for longer-term outcomes**

As highlighted by a number of village leaders in particular, concerns are growing about the lack of cultivation of land, a missing labour force, and perhaps more so, a highly demotivated population. Leaders point to the impacts of overseas seasonal work programmes for detracting the attention of the working population away from the potential that sits idle in the lands and resources of Samoa. A number of participants hoped that there could be efforts by countries currently benefiting from Samoan labour to ensure that skilled labour is returned to Samoa and the development of assets in Samoa is better incentivised 'for longer term outcomes' and social and economic resilience.

### **Invest in Samoan/Pacific populations already living overseas**

One Samoan participant in the diaspora survey believed that there was work to be done now to build a strong social and economic foundation with those already in places like New Zealand, saying:

*"In New Zealand, especially in Auckland, there is a need to prepare for the inevitable through infrastructure planning. As Pacific Islanders we are strong unionists – [we need to] continue building the foundation to ensure there is fair pay and safe working conditions.....there are things we can do in our normal lives currently that won't cost monetarily but that we can contribute to with our time, knowledge and skill to hopefully get better outcomes not only for those Samoans in New Zealand [now] but also any future migrant/refugee generations to come"*

As noted in the product *Recent Trends, Future Signals*, the median income of Samoans living in New Zealand in 2018 was \$25,400, compared with the median New Zealand income of ~\$52,000 (Stats New Zealand, 2018).

### **Broaden diaspora engagement through the Diaspora Relations Unit, consider survey feedback**

The existing Diaspora Relations Unit has the potential to ramp up and consider specific climate change adaptation efforts (current focus is on national development aims). In this project's diaspora survey, two-thirds of the Samoan diaspora surveyed said they would like to be contacted by the Samoan government to hear about developments in the country, and options for them to support certain priorities. One-quarter also said they have or are currently providing support to family in Samoa to address the impacts of climate change and 10% reported doing so at an island or village level. Free text comments by Samoan diaspora cited high costs for providing support (including building materials) to those in Samoa.

Given the scale of remittance sending and the direct role the diaspora is playing in resilience building and adaptation, there is an opportunity to review administrative and actual costs that could be offset by both sending and receiving nations (e.g., tax offsetting). The Samoan diaspora was also asked for their thoughts on their possible role (as a group) in future, in the context of climate mobility. Responses included funding travel, providing accommodation, providing professional support (e.g., legal), lobbying local governments for support and services, connecting people with work opportunities and providing equipment and goods for relocation either inland (in Samoa) or overseas.

### Explore ways to revitalise interest in, and the practice of Samoan values to help restore the family unit and build social resilience to upcoming change/s

One of the key recommendations out of the future scenarios workshop, other than targeted support for key vulnerable groups and improved climate awareness and training programmes, was to seek out ways to more broadly and deeply integrate knowledge sharing on the history, practice and benefits of traditional Samoan value systems. Participants suggested channels such as church, schools/the schooling curriculum, and self- or family-directed learning (online and/or in-person). One participant emphasised "Samoa is people based, and the strength of Samoa is in its people". Benefits expressed included developing strong and contextual leadership, improving social cohesion and improving social resilience to stabilise the population and guide against social division in the face of significant climate change-driven disruption.

## 5.2 HOW IS RESILIENCE DEFINED/PRACTICED IN SAMOA (CONSIDERATIONS OF RESILIENCE IN THE CONTEXT OF KEY OUTCOMES)?

In this programme's original Theory of Change document, a set of longer-term outcomes were outlined which spoke to social, cultural and economic resilience outcomes and the protection of choice. One of the key research areas for this programme was also to better socially and culturally define resilience including in the context of future climate mobility. This section therefore provides an outline of definitions and understandings of resilience drawn from workshops, one-on-one and small group talanoa.

### On resilience

Definitions of resilience and the contributors to well-being were explored with a number of participants both in one-on-one talanoa as well as in workshops. The following insights were gathered.

Resilience is found in self-reliance and cultivation of existing assets

Talanoa with village leaders indicated a close connection between self-reliance, including being able to sustainably work and live off the land, and resilience. Reverend Aokuso in Samata-i-Tai, Savai'i as well as Paramount Chief, To'omata Tua, shared their concerns about attitudes to working the land and the risk this represents, particularly in a climate changing environment:

*"Some young people and working people in families don't work the land, they just take food from other family plantations or they eat breadfruit which grows wild. But now the breadfruit aren't there as expected – the seasons are all out"* (To'omata Tua, talanoa, July 2023).

To'omata Tua believed that well-being in Samoa required that people be self-sufficient.

In talanoa with a Samoan consultant who undertakes work for organisations like the FAO, shared his concerns about assumptions that people in Samoa are coming from a zero-asset base. He emphasised the need for people – both Samoans and those in leadership in places like New Zealand, to recognise the latent value in (particularly land) assets in Samoa, and support the realisation of this value for longer term outcomes. The ongoing participation of many in overseas seasonal work schemes for 'short term gain' was seen by a number of participants, including some senior government leaders, as actively corrosive for longer term resilience potential for Samoa and Samoans.

### Resilience in (overseas) family

A number of families who had undertaken internal mobility (coastal retreat) and rebuilds following flood damage highlighted the critical role of family (particularly siblings) overseas for covering the high costs of mobility and rebuilds

and/or plugging the gaps in funding. As already mentioned, it was assumed by those in the future scenarios workshop that family overseas would be key in providing mobility options for family in Samoa in future. Also as already mentioned, one-quarter of the Samoan diaspora surveyed reported providing support to family in Samoa to help them deal with the impacts of climate change.

The Government of Samoa has recognised the resilience potential offered by the diaspora, forming the Diaspora Relations Unit. This unit currently has a database of over 1,000 Samoans residing overseas, with members of the unit reporting an initial target of Samoan celebrities/public personalities. The unit coordinates connection with overseas Samoans, sharing opportunities for these people to support development priorities in Samoa. In return they are celebrated during visits to Samoa, provided gifts and where possible, offered an opportunity to meet with the Prime Minister.

### Resilient traditional knowledge

Particularly in engagements with women in Samoa, they highlighted the centrality of observing and practicing traditional knowledge and arts for cultural, social and spiritual well-being. One group in the women's workshop described traditional knowledge as their 'treasures'. The practicing of knowledge included participation in organised women's groups for knowledge sharing and practice. One woman noted:

*"Women are the makers of traditional wealth... it links to their self-worth, their mental health because that's what they are there for, they pride themselves in being the wealth makers. How will that be passed down if they don't have the means to show others? You can print it on paper but it won't stick – to pass on knowledge is to practice it"* (community expert, talanoa, November 2023).

### Faith and church

Several participants, in workshops (youth, women) and in one-on-one talanoa reported that the study and practice of Christian faith and fulfilling one's church duties was key to maintaining well-being. One group highlighted how seeking advice from God and dedication to reading the bible would support peaceful living in the village.

Reverend Aokuso (Savai'i) shared his belief that the church has an important ongoing role to play in supporting the well-being of the community, including in a communication and counselling capacity.

*"We ask the young ones what is happening at home, what happened last night, if there are issues we can bring in the parents to talk it through. It is important to keep sharing."*

In a workshop with youth held in Apia in November 2023, they emphasised the need to 'hold on to the teachings and doctrine of Jesus Christ' as their best hope to deal with incoming change and disruption.

### Maintaining social, cultural structures of collectivism, (gender) norms and values

In future scenario workshops, a number of workshop groups described the potential detrimental social impact of dissolving traditional social and cultural structures and systems (e.g., the Matai system). A loss of reverence or recognition for these structures, the decision-making processes were assumed to lead to the breakdown in collectivism at the village level, social fracturing/separation and would add to a rural-to-urban flow.

In discussion with female participants, the importance of maintaining gender norms, particularly the role of mothers in the village (to provide advice, to look after the interests of the family) was seen as critical. All women in the workshop were highly aligned in the description of their relative roles and the expectations of them within the broader village context. Fulfilling these roles reportedly contributed to well-being.

Finally, a few participants spoke specifically on the role of traditional Samoan values for resilience. One group in the future scenarios workshop described a positive future where there was a dedicated effort to reinvigorate the family unit, the practicing of Samoan values and strong village protocols (and resultant increases in village autonomy) had been reinstated. Interesting to note that in more negative futures, participants in the workshop described the stronger influence of government including in village affairs as corrosive.

## SAMOA'S YOUTH AND THE FUTURE

The researchers held two dedicated workshops for youth in Samoa – one in the relocated village of Lalomanu (July, 2023), and the second with a church youth group in Apia (November, 2023). Youth were also involved in other research activities (e.g., there were three youth representatives in the future scenarios workshop) however the following is focused on the inputs taken from the two dedicated workshops. Youth were asked first to share their sense of the future – what may change, what may stay the same, and their hopes and fears for the future. Secondly, youth were asked to share some of their thinking on decision-making and priorities in the context of mobility. Those in Lalomanu were asked to share their impressions of 'good' and 'bad' impacts of mobility given their exposure to these impacts over time and their likely knowledge taken from parents and others in the community following the relocation of their village following the 2009 tsunami.

### Picture of the future/s

Some groups when asked to describe their feelings or thoughts about the future chose to draw a picture. In the workshop held in Apia, one group shared a detailed drawing of a tree. One half was lush and thriving, which was said to represent Samoa in current state. The other half was void of all leaves, its roots dry and contorted. Another group depicted people holding hands and gathering around a large crucifix at the centre of the page.

### Hopes for the future

In the youth workshop in Lalomanu, the overall impression was that the youth there had a mostly positive sense of the future – they looked forward to careers of value and a happy and fulfilling life. Many mentioned having a family and providing for them.

Many also mentioned mobility, with one sharing:

*"My hope is to move out of the country and work and send money to family"*

Another wrote:

*"[My hope is for] our dreams to become a reality - move to Australia for a better job and education"*

Some saw their futures in Samoa, with one hoping to 'become a leader by being well educated and involved in women's committee and contribute to changing village protocols', others wished for someone in the village to become the Prime Minister so that the needs of the village can get more attention. Some shared that they believe that the well-being of the village will improve in future, that population will rise and that there will be 'more business owners and tourist attractions' around their village<sup>27</sup>.

### Fears/priority concerns for the future

In the Apia youth workshop, many of the youth shared fears of changing attitudes and culture, with one group sharing that their main fear is that 'our culture will be faded away because of foreign influence'. Some shared examples, like the changing attire of some youth (from traditional clothing to more Western influence). Others fears challenges with getting work and difficulties keeping up with the cost of living ("people get WST\$3 an hour but a loaf of bread costs WST\$6 now. Maybe by the time we get jobs it will be WST\$50").

Others shared that they fear increasing lawlessness led by some youth, including those moving from rural villages into urban areas as their families and usual village leadership lose oversight and influence over them. One group shared that they believe people will change their behaviours towards each other, suggesting a shift in value systems of e.g., respect, sharing.

One youth group in Apia were concerned about a change in access to food, including from the ocean, hoping for efforts to "rebuild our old Samoan lifestyle and ways of fishing and farming".

27. One small group in the youth workshop shared that their hope for the future was that all women in the village wear high heels.

## Beliefs about the impacts of future mobility

Youth were asked to share what they think are the major challenges and some benefits when moving away from home – they were invited to consider the experiences of others they know of as well.

Some of the benefits shared included getting different or new experiences in life, having improved facilities or a new home, having a new community and friends, learning a new language (if overseas) and 'improving ourselves, mentally and physically'.

Some of the challenges raised were being far from the town, shops and school (noting that this was a major issue raised in the women's workshop in Lalomanu as well). Other issues were feeling sad or homesick, having to find different jobs, missing family, and friends, starting new ways of life or adapting to a different culture, social status change, and having no internet. One group shared their concerns that new people might have different attitudes and be dangerous. A few of the small groups noted that financial problems were a major concern, with one saying that they are a source of fighting (in the family).

In the youth group in Apia, one group shared their concerns about overcrowding in some areas as climate change impacts progress and believed that there would be new settlements and likely associated increases in some crimes.

## Beliefs about priority help needed when moving from home

The youth in Lalomanu had a good grasp on practical needs and were well-aligned between groups. Priority help included access to water and power, having good community engagement, having a car or transport, having a bigger or better house and one mentioned having freehold land.

### Decision making and priorities

Finally, youth in Lalomanu were asked about what important things they would have to think about if they had to be the ones deciding to move their family to another place. They shared priorities around how to finance the move and the costs of resettling, protecting/keeping safe the family properties while moving, making sure that the destination and neighbourhood is safe, and that your family is happy with the moving plan. It was apparent that safety was a relatively strong consideration in youth responses.

## WHAT ARE THE POTENTIAL IMPACTS OF FUTURE CLIMATE CHANGE MOBILITY FOR AOTEAROA NEW ZEALAND?

To recap, Aotearoa could be on the receiving end of significant future climate mobility from Tonga and Samoa. Based on fieldwork, we understand that climate-stressed people in Tonga may be more inclined to take up overseas mobility than internal mobility than those in Samoa (owing to many reasons covered earlier in the report). Those undertaking mobility from Tonga and Samoa will carry with them a host of social, economic and cultural/spiritual/religious impacts, and those that host them will need to be both cognisant of these facts and sufficiently prepared to minimise harm to those moving, and to those communities receiving those moving. Further, with sufficient early engagement and planning, done in the right way, there is an opportunity to not just minimise harm, but identify and realise positive opportunities for mutual benefit for those in places like Tonga and Samoa, and Aotearoa New Zealand.

In the projects first product (See: *Recent Trends, Future Signals*), issues of economic inequality (e.g., significantly lower median income for Tongans and Samoan in New Zealand compared to the national median income), lower educational attainment and higher rates of unemployment were explored in terms of current capacities for the diaspora to continue to provide for the resilience of families in the Pacific, as well as considerations of the foundational strength, well-being and capacities of existing populations in New Zealand to receive and support the successful integration of family in the future.

Further, risks to sovereignty, economic control and regional security have been raised, and explored already in existing research products (e.g., *Six Kōrero*).

Beyond these matters, the following covers three topic areas that were identified during fieldwork that will be critical focus areas in minimising harm and leveraging opportunities for the Pacific, Māori and Aotearoa New Zealand.

### THREE CRITICAL FOCUS AREAS RAISED BY MĀORI LEADERS

This section covers three matters that were consistently spotlighted by Māori leaders in this research engagement, in the context of future Pacific climate mobility and Māori. The first was the process taken for any future discussions and decisions on Pacific climate mobility, the second was the unavoidability of land matters in future climate mobility scenarios and the need to be brave, and generous. The third was around shared values. These discussion points are summarised in the final section, with some high-level thinking on related policy implications.

#### The approach to decision-making is critical

Mana whenua and tangata whenua Māori have been and will continue to advocate for partnership in decision-making processes, where it impacts them, their taonga and their wellbeing to uphold their rangatiratanga and leadership obligations. In addition, the principle of partnership under the Treaty of Waitangi upholds their right to be consulted, including in climate change and climate mobility.

*Will the government talk to us if they decide to bring Pacific people here [at scale] because they should... that's what partnership means – to include us so we can decide, and help—Rore Stafford<sup>28</sup>*

Principles of partnership in the Treaty would necessitate the Crown and Māori working together to figure out what options there are, to involve Māori in decision-making and to ensure that Māori are best positioned to support people in the Pacific; the leaders engaged for this research were firm in that the Crown cannot simply come to Māori with proposals on actions in this space.

Māori leaders believed that Pacific peoples and Māori need space to genuinely kōrero, without input from the Crown – listening with an open heart to each other's needs, priorities and aspirations. The solution or sets of solutions will need to be co-developed between Māori, the Crown, and Pacific peoples. Discussions, planning, and actions should also be values-

28. *Ibid.*



led, particularly as Māori and Pacific share many common values.

In recognising that Pacific perspectives and priorities cannot be assumed or generalised, Rore Stafford emphasised that there will also be a natural diversity of views within and between Māori, particularly on complex matters like climate mobility that will have land-related dimensions; engagement must recognise these differences in views. He suggested that pragmatically, there may need to be different levels of engagement – at a national, iwi and even hapu level, and that progress with discussions, and trialling solutions, may be more effective at a hapu level.

Finally, Professor Linda Smith shared her belief that early discussions need to be bold and 'push the boundaries' of thinking – on risks, opportunities and what is possible "in order to know where we can ultimately 'be', comfortably".

Co-development of solutions should be proactive, and implemented through a strengths-based lens, with goals that include economic independence, and mutual benefit.

### **Land, and future land access: generosity will be needed**

Several leaders in Samoa and Tonga believed that future climate mobility may mean seeking alternate land overseas, assuming that there may be instances of large scale (sudden or not) mobility that requires concerted planning efforts. One government leader in Tonga shared:

*Where will we put people? Will we build up? Or will we need to start negotiations with New Zealand and Australia for land? We will need to go as useful members of society—Taniela Fusimalohi, MP for 'Eua, Tonga<sup>29</sup>*

This connection between land and moving with a plan and pathways was mirrored in statements by Māori leader, Ngahiwi Tomoana:

*We must support them into pathways for economic development. We must support them into housing, even being their advocates to buy land ... Ngahiwi Tomoana<sup>30</sup>*

Land matters however are already central for Māori and confronting regional and Pacific climate mobility scenarios in the context of land will be contentious.

*There is a land provision element to the preservation of culture but that is a very difficult one to consider. We as Māori and Iwi will have to be generous.<sup>31</sup> Linda Smith*

The issue for me is then is how do Pacific peoples live in New Zealand in relation to Māori, but also have their cultural identities supported and protected. And for me, for that to happen they need place. They actually need land.<sup>32</sup> Linda Smith

All leaders, and those participants who raised matters around land access and acquisition in places like Aotearoa New Zealand, recognised that while necessary, entering into discussions on land in the context of climate mobility will be very difficult, especially as land matters remain unresolved between Māori and the Crown.

Existing challenges in land governance and land management including ownership structures and administration may come to the fore in scenarios of climate-related land negotiations. Complexities would increase where land has multiple owners or where land titles do not have any management structure in place. Further, Māori have and continue to face barriers to the use and development of their own land. The Report of the Controller and Auditor-General, Tumuaki o te Mana Arotake (2004) notes the historic legacy of land legislation and policies that prevented Māori from developing their own land and in many circumstances resulted in Māori land being alienated. Barriers like compliance costs for Māori in accessing their whenua may impact land availability and options for future climate relocation. While improvements to the Te Ture Whenua Māori Act were made in 2021, the substantive issues still largely remain.

29. Vaioleti, L. et al. (2024) p.112

30. Ibid.

31. Ibid.

32. Ibid.

Finally, Māori, who had in-built adaptive capacity to climate change through seasonal movement, had their seasonal movement ceased soon after the signing of the Treaty of Waitangi; effectively becoming fixed to place, and remaining fixed to the land that they managed to keep. In talanoa (August, 2023), a land expert in Samoa - Tofā Ta'ioa Dr Matavai Tautunu (Director of the Centre for Samoan Studies, NUS) - reflected on a similar history with land in Samoa in that following colonisation, Samoans became relatively fixed in place with the introduction of other land tenure types (previously, of course, all land had been customary land and managed flexibly as such).<sup>33</sup> This common or shared experience could provide a helpful platform for Māori-Pacific discussions on land in the context of regional climate mobility.

### **Māori and Pacific shared values and relationality as a critical base**

Many engaged in this research highlighted shared values and shared whakapapa between Māori and Pacific peoples. Many saw it as the necessary platform, or starting point, for successful discussions on future climate mobility to Aotearoa.

*"We need to establish a framework based on common whakapapa and common values and caring for one another in time of need. Their need is now and we must be open to welcoming them - Jason Mika"*

A few pointed to the need to decolonise the minds of some who have 'amnesia' about their shared Pacific histories, and several Māori leaders also shared a belief that those from some nations of the Pacific – namely Polynesia - have a unique right to resettle in Aotearoa should they wish. Rore Stafford shared his deep sense of empathy, and aroha, towards those Pacific peoples in the future who may lose their land due to climate impacts, reflecting on how critical it is to his well-being to be able to walk on his own whenua daily. Rore described the need for Māori to fall back to their values in Pacific mobility futures, to manaaki those in the Pacific who will be suffering.

## **SUMMARY OF INSIGHTS AND POSSIBLE POLICY IMPLICATIONS THROUGH A MĀORI LENS**

The following provides a short summary of insights from engagement with Māori leaders for this project, and some possible policy implications for consideration.

### **Insight one: How decision-making is done around climate mobility, including receiving people from Pacific nations is critical.**

Recognising that there will be a broad diversity of views to navigate for Māori (i.e., not one 'Māori view') and Pacific (i.e., great diversity of Pacific perspectives, priorities etc.)

#### **Possible policy implications**

1. Discussions must be truly inclusive, engaging Māori from the start. Consider a Te Ao Māori approach
2. Decision-making should include space for Māori-Pacific dialogue and the sharing of needs, aspirations, lessons learned (e.g., sovereignty, cultural protection matters), priorities and opportunities
3. Early discussions should push thinking and the imagination to the boundaries of what is possible so that all risks, opportunities can be explored and tested
4. Future planning for Pacific climate mobility should be equally led by Pacific peoples, Māori, and the Crown
5. Discussions and decision-making should be Māori and Pacific values-led
6. Engagement could be at both a 'national' and iwi or hapu level, and testing or piloting of approaches could happen at a local/hapū/whānau level initially.

**Insight two: There is a central land dimension to Pacific climate mobility, and this will need to be faced/addressed.** The mana of Māori must be protected throughout planning and decision-making around land and Pacific climate mobility

33. Talanoa, Tofā Ta'ioa Dr Matavai Tautunu, Director of the Centre for Samoan Studies, NUS, August 2023.

### Possible policy implications

1. Centre the principles of the Treaty of Waitangi for the protection of Māori land, and to give effect to kaitiakitanga. The need to explore the principles of the Treaty of Waitangi, specifically in the context of climate mobility
2. In any planning or decision making, mana whenua groups must be consulted on decisions that may impact their rights
3. Progress efforts to reduce existing land access and utilisation by Māori of Māori land
4. Consider other land related risks (e.g., conflict from unequal power dynamics of landowners versus 'settlers') and contextual (e.g., values-based) approaches to mitigating.

Māori are already undergoing climate mobility within Aotearoa and have gathered valuable lessons that can be applied for future Māori and Pacific climate mobility (including leveraging lessons and experiences on things to prioritise, things to avoid)

### Possible policy implications

1. Mātauranga Māori is shared about local knowledge and enduring and well-tried practices
2. Consider opportunities for experience and lesson sharing at family, community, national and regional levels
3. 'No regrets' efforts could include prioritising the sharing of knowledge systems and data (on experiences, lessons), and addressing data sovereignty concerns or issues.

**Māori in partnership with Pacific peoples shows promise in both business and community and can contribute to short- medium-term resilience.** Existing Māori-led or Māori-Pacific led organisations could be valuable assets for improving future Pacific mobility outcomes in Aotearoa

1. Seek out further 'best practice' examples of partnerships that can be supported and scaled e.g. RSE partnerships and support
2. Better understand the desires and wishes of Pacific peoples, as well as their broader capability sets and skills, and options to develop current or new skills, with targeted investment (e.g., training or education)
3. Identify further Māori-Pacific enterprises that could support integration and mobility outcomes, and their priority support needs

## NEXT STEPS

This project in Tonga and Samoa has turned out some brand-new insights on possible mobility scale, mobility pattern, contributors to mobility choice, mobility decision making, differentiated vulnerability in each Tonga and Samoa, definitions of resilience in the context of climate mobility, and more.

The project has also revealed the power and potential in taking a mixed methodology approach, including the value in highly subjective and creative approaches, to information gathering on this topic in Tonga and Samoa.

It has also shown the potential for greater (breadth and depth) of talanoa with Pacific peoples in-country, Māori (including rangatahi), the Tongan and Samoan diaspora and other stakeholders in Aotearoa New Zealand to begin to scope out the complex set of risks and opportunities, and a plan for future/s of higher climate mobility for the region and for Aotearoa New Zealand as a country.

A range of 'no regrets' actions were identified through fieldwork in Tonga and Samoa that will serve to reduce the risk of harm in the future from possible climate mobility at scale. These include establishing ongoing climate change and mobility awareness campaigns to begin to prepare minds, and support practical family, village and national planning and prioritisation around possible climate mobility futures, reviewing current land tenure systems to test how fit-for-purpose current arrangements are under possible climate mobility futures, and progressing thinking around climate mobility specific policies, including in support of relocation decision making, and monitoring and evaluation of interventions and outcomes.

Further focused research on approaching and addressing psychological impacts of mobility (including from environmental and climate drivers) in Tonga and Samoa would be indicated.

Participants were moved and convinced at the utility of both the future scenarios workshop and the future visualisation process for raising awareness and importantly, for beginning to engage the hearts and minds of those facing these significant challenges in the future.

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